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# The Global Trade Analysis Project: Issues and Future Directions

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# OBJECTIVES, GOALS AND ACCOMPLISHMENTS

## Objective of GTAP

GTAP is dedicated to the development and support of a global research network, data base, and modeling framework for the analysis of international trade, environment and resource issues.

More specifically, GTAP comprises:

* a fully documented, publicly available data base,

* a standard modeling framework and associated software which are well-documented and flexible, and which lend themselves to straightforward replication of analyses by third parties,

* a global network of researchers, linked together via email and a Worldwide Web site, and finally,

* a Consortium of national and international agencies providing leadership and a base level of support. The vehicle, which has been set up for Consortium members to provide this guidance and direction, is the *GTAP Advisory Board*.

The Board advises the Director on matters of policy, research agenda and funding. In so doing, it helps to set the direction of future developments in the GTAP network, training courses, data base and modeling framework. In keeping with the title of "*advisory* board," responsibility for the final decision in these matters rests with the Director. In this way we hope to keep the project moving ahead on an effective and timely course.

## Assessment of Goals for Past Year

The goals for the past year, as laid out at the 2002 GTAP board meeting, are listed below, along with an assessment of our progress towards accomplishing these goals. (A complete summary of last year's board meeting is available from the consortium page of the GTAP web site: http://www.gtap.agecon.purdue.edu/events/board_meetings/2002/Summary.pdf

1. Improve communications with I-O table contributors: This will involve more formal communications from the Center to contributors at each stage in the process. It will also involve the sharing of more information with contributors including FIT targets, FIT statistics, and adjusted tables.

Assessment: We have now implemented a plan for improving this communication. An outline of the procedures for communicating with contributors is provided in Appendix 2.

2. Provide better feedback to contributors on adjustments to national data bases; provide better access to programs and data sets used to reconcile national data bases with international targets; assist in capacity development for national data base preparation. This will likely involve putting the FIT program on the web, as well as developing training materials and experimenting with a one-day workshop prior to next year's annual conference.

Assessment: We hope to make available to the board, at the upcoming meeting, a version of FIT which will permit them to re-FIT individual region's data bases based on alternative input-output structures. This is a first step in the direction of opening up the data base reconciliation process.

3. Develop a new set of income and price elasticities of demand for use in GTAP, based on international cross-section econometric analysis.

Assessment: GTAP Working Paper #23 (forthcoming as a GTAP technical paper following reviews and revisions) provides estimates of income elasticities of demand for 10 aggregated GTAP consumption categories obtained by estimating the AIDADS demand system directly on the GTAP data base. Therefore these represent consumer demands at producer prices. Since preferences are common across all regions, these parameters may be used to generate demand elasticities for other countries as well, provided one has per capita income and tariffs (price variation is obtained entirely from the tariff data). There is also work underway at ERS/USDA and the University of Florida (Regmi and Seale) using the ICP data set to develop a comprehensive set of income and price elasticities of demand.

4. Develop a new set of Armington elasticities, estimated at the disaggregated, GTAP merchandise commodity level.

Assessment: We now have a set of econometrically estimated elasticities of substitution among imports at the disaggregated GTAP merchandise commodity level. These have been obtained based on the work of David Hummels (see GTAP Working Paper No. 17), which exploits bilateral variation in international trade and transport costs in order to obtain more precise estimates of these key substitution elasticities.

5. Encourage research aimed at model validation.

Assessment: "Encourage" is a pretty general term – and that is about all that we have done this year. The journal paper by Liu, Arndt and Hertel (see also GTAP Working Paper #24) summarizes historical validation/estimation/hypothesis testing work reported previously to the Board. The workshop proposed by Francois and Hertel has not yet materialized due to competing demands, but we are hopeful something will still be done along these lines.

6. Produce interim releases of version 5 incorporating the new CEECs, Russia and the new IDE data bases for Southeast Asia.

Assessment: The system of interim releases has been quite successful. Interim release 5.1 addressed problems with the EU agriculture sector. Release 5.2 included the new CEEC data bases, and 5.3 included Russia, Albania, and the new IDE data bases for Southeast Asia. Taken as a group, this represents a very significant advance over version 5.0, and sets the stage for a smoother transition to the prerelease of version 6 than would have been thecase if we had waited until v.6 to bring these data bases in.

7. Obtain a detailed comparison of the WITS and MacMAPS data bases and make a determination of which to use for tariffs, as well as how best to make use of the MacMAPS data on anti-dumping duties in the version 6 data base.

Assessment: Betina Dimaranan has been interacting with interested members of the board, providing comparative protection data bases and evaluating the role of tariff preferences. Our current plan is to use the 2001 MacMAPS data in version 6.

8. Improve the quality of the domestic data bases by improving the treatment of dwellings and government services.

Assessment: We have successfully developed a program for identifying and fixing problems with government services in the source I-O tables.

9. Improve the value-added splits for developing countries by making use of household survey data to split self-employed labor out of capital for manufacturing and services sectors.

Assessment: This has been done for 14 developing countries in the GTAP data base, for which household survey data are available.

10. Refine the treatment of domestic support for agriculture in the context of the version 6 data base.

Assessment: We have fixed the treatment of payments tied to land, to better reflect their decoupled nature, in a pilot study of domestic support (see GTAP Working Paper #19). We plan to include this change in version 5.4.

11. Incorporate data on bilateral services trade into the GTAP 6 data base following the approach outlined by McDougall.

Assessment: This is the highest priority item not yet accomplished. It will be a high priority in the wake of the Board meeting.

12. Hold short courses in the UK (Sheffield) and South America (likely Buenos Aires – to be sponsored by the IDB).

Assessment: The UK course was a success – even more so since this was the first time that Tom Hertel did not participate! This is another sign of the growing maturity of the Project. The South America course did not materialize due to budget constraints. Overseas courses are quite costly, particularly if we wish to cover expenses for participants.

13. Support the program committee of the Sixth Annual Conference on Global Economic Analysis, to be held in The Hague: Thursday, Friday and Saturday AM, June 12 – 14. The GTAP board meeting will precede this event, taking place on Monday and Tuesday, June 9 and 10. This will leave one day in between for workshops and informal meetings.

Assessment: It looks like we are on track for another very successful conference. The program committee has lined up a good group of speakers and a lovely venue for the conference.

## DATA BASE DEVELOPMENT

### Data Base Management

Robert McDougall and Betina Dimaranan have now developed and implemented a robust approach to managing the GTAP data base. Key principles are as follows:

1. Archiving of previous versions and replication of data bases: With the increasing frequency of interim releases and the increasing complexity of data base construction, it is key to be able to reconstruct earlier versions of the data base and to identify and explain differences. This capability is ensured with the system of archiving developed by Dimaranan and McDougall.

2. Two tracks for data base development: In order to avoid confusing users as well as to sharpen the distinction between interim releases (5.1, 5.2, 5.3, etc.) and pre-releases of a new data base, Robert McDougall came up with the following two-track system. Interim releases of a data base utilize improved national source data *but do not change the international data bases or the data base programs/procedures*. Thus, version 5.1 was the same as 5.0, excepting for the fact that the EUI-O tables had been pre-adjusted to better match the EUROSTAT targets for agricultural output. So the data for all other regions was unchanged. Version 5.3 was the same as 5.2, excepting for the fact that Russia was broken out of FSU and the new data bases for Albania and Southeast Asia were introduced. Version 5.4 is similar to 5.3, but incorporates various small bug fixes In contrast with these interim releases, the pre-release of version 6 will include new international source data (for 2001), as well as e.g., improved procedures for handling the energy data.

3. We now maintain all of the GTAP source data at the level of more than 200 "standard countries". This facilitates the introduction of regional flexibility, whereby new regions can be added with a relatively modest amount of work. This is what has permitted us to move to the frequent interim releases.

**Individual Region Data Bases**

***A bit of history for the newcomers:*** As you know, the GTAP data base consists of bilateral trade, transport, and protection matrices that link individual country/regional economic data bases. The regional data bases are derived from individual country input-output tables, from varying years. Version 1 of the GTAP data base relied exclusively on I-O tables inherited from the Australian Industry Commission's SALTER project. For this reason, GTAP adopted the SALTER concordance that identified 37 sectors/commodities. In the version 3 data base, 11 of the national data bases still traced their roots back to the Industry Commission's SALTER project. (Of course they were updated for each new release using the FIT program.) These I-O tables were heavily concentrated in the Pacific Rim, reflecting SALTER's focus on APEC issues. Six of these were updated in version 4 (New Zealand, China, Indonesia, Thailand, Taiwan, and Canada). This left old I-O tables only for Japan, Korea, Malaysia, Philippines, Singapore, and Hong Kong. Version 5 updated both Japan and Korea, and Malaysia, Philippines, and Singapore (along with Indonesia and Thailand) were updated in version 5.3, based on data from the Institute for Developing Economies (IDE) in Japan. This leaves Hong Kong as the last remaining I-O table inherited from SALTER. Since there is no actual I-O table in existence for Hong Kong, this had to be "fabricated" by SALTER staff. We may wish to contemplate a change in the treatment of Hong Kong in the future – possibly re-estimating this I-O table, or eventually combining Hong Kong with China. Input from the board on this issue would be welcome.

In addition to these updates of the original SALTER I-O tables, version 4 featured updates of four more existing regional data bases, as well as entirely new data bases for 14 countries (Vietnam, Sri Lanka, Venezuela, Colombia, Uruguay, UK, Germany, Denmark, Sweden, Finland, rest of EU, Turkey, Morocco and South Africa). Version 5 updated 16 national data bases (Australia, China, Japan, Korea, Taiwan, Vietnam, India, Colombia, United States, United Kingdom,) and added 23 more countries. Interim releases of version 5 have added 13 more countries in Central and Eastern Europe (including Russia).

***Current Status:*** The current list of 68 I-O tables used in GTAP is provided in Table 1. With the exception of the IDE tables, these are all available to consortium members on the GTAP web site. The remaining 10 regions in the 78 region, version 53 data base are made up of composite data bases representing groups of countries. The I-O tables (or simplified social accounting matrices) for these *composite regions* are based on subsets of the 68 original data bases and a one-to-one mapping between these individual regions and those countries in each of the composite regions. As new I-O tables have been added to the data base, the economic size of these composite regions has rapidly diminished, and our ability to match up with the unknown countries has simultaneously improved. For example, in version 2 we had a single "South Asia" region, with "real data" only for trade and macro-economic totals. In version 3, India was added

and the structure of the Indian economy was used as a starting point for estimating the SAM's for several other countries in the "rest of South Asia" region. In version 4, Sri Lanka was added. This further reduced the size of the "rest of South Asia" region, while providing another proxy country to be used in estimating the structure of countries in that residual region. In version 5, Bangladesh has been added. This leaves a residual, "rest of South Asia" region that is dominated by Pakistan. This is an excellent example of how the GTAP system of dealing with missing domestic data bases has led to a continual improvement of the data base.

***Contributors:*** There are essentially two ways that we have for renewing country data bases and adding new ones. The first method is for individual contributors to step forward and offer a GTAP-ready data base. This has been the predominant vehicle in the past. There are basically three incentives for contributing to this public good: (1) this assures the user that they have the best available national data for their own country in any GTAP applications undertaken, (2) contributors receive a free copy of the final data base, as well as an aggregation of the pre-release, and (3) it's the right thing to do. (There are still some idealists out there!) These individual contributions are sometimes simply one-off exercises that are not repeated. However, in many cases, once we have an established relationship with a contributor, they will update their contribution as new data become available. In some cases, these individuals have obtained support from interested Consortium members. For example, the US International Trade Commission has provided modest financial assistance and substantial professional support for a group of economists at Moscow State University who have assembled an I-O table for Russia. Given the importance of Russia in international trade as well as the global climate change debate, this was a major advance, and we are grateful to Robert Koopman and his staff at the ITC for facilitating this development.

The second vehicle for obtaining new data bases is through special projects, aimed to support some particular line of research or policy analysis. In versions 5.0 – 5.3 there have been several such projects. The first, undertaken by the LEI, with partial funding from the European Commission, involved the production of a set of 15 new data bases for the member countries of the EU. The purpose of this project is to support improved analysis of issues such as WTO2000 and EU enlargement and their impact on individual EU members. Since the EU-15 represent a very large share of world GDP, and since this work has been done with the latest available information, at the full, 57 sector level of disaggregation in version 5, it represented a very substantial upgrade to the full data base. More recently, the European Commission has supported development of thirteen national data bases for Central and Eastern Europe. These were developed by Martin Banse, at the University of Goettingen, and Terrie Walmsley, working on behalf of the Center, took the further steps necessary to make these "GTAP-ready". These new data bases have greatly expanded the scope for credible analysis of EU enlargement

Another major project with an important data base component built on the I-O tables developed under IFPRI's MERISSA project, funded by the Danish aid agency, DANIDA. In order to incorporate these data bases into GTAP and improve the associated trade and protection data, Channing Arndt obtained funding from the UK's DFID. This was largely used to fund the work of Mark Horridge, at the Centre of Policy Studies, Monash University. As a result, there is

now a substantial amount of research underway, focusing on regional trade and multilateral agreements involving Southern Africa. Mark Horridge has also done a similar project for the US Department of Commerce, which was interested in breaking out Albania, and this is reflected in the latest interim release.

In addition to the challenges of extending regional coverage, and keeping it up-to-date, we also face problems of inadequate sectoral disaggregation in the source data bases. This was exacerbated by the further disaggregation of food and agricultural sectors in version 4, and of services in version 5. For example, it is not uncommon for individual I-O tables to have only one aggregated agricultural sector and one food processing sector. Yet the v.5 GTAP data base has 20 farm and food sectors! In order to reduce this barrier to the contribution of new data bases, we have taken a more active role in the disaggregation of these sectors. Agricultural disaggregation has been supported by the work of Everett Peterson, at VPI University who has combined the FAO data with supplementary price information and detailed input-output relationships from some countries, in order to create a country-level data base containing targets for agricultural disaggregation in version 5. We are currently working with Everett to improve this system for version 6 of the data base.

While the problem of disaggregation is most severe in agriculture, it also crops up in other cases. When no other information is available, our default option is typically to use a worldwide representative I-O table developed as a weighted summation of the set of I-O tables for which full sectoral detail was available. Wherever autos and parts, electronic equipment, or services need to be split, this representative table is used. As users of this data base, you need to be aware of these limitations. In particular, if you are looking at the auto industry in one of these regions — say Canada — the trade and protection data will be authentic, 1997 information. However, the structure of production, intermediate usage, and consumption will be derived from the representative table, subject of course to control totals for the relevant cells within the aggregated transport equipment sector. Thus, if you are working on a specific country, it is important to refer back to the basic I-O table documentation on the GTAP web site to see if these were disaggregated in the original data base.

***Quality assurance:*** The board gave quite a unified message to the GTAP staff at this year's meeting – focus efforts in version 6 on improving the quality of the domestic components of the GTAP data base. In the past, concerns about quality have focused more heavily on the international components of the data base, including: trade data, then the protection data, including domestic support for agriculture, and the energy data. The fact that consortium members and contributors have begun scrutinizing the national data bases is partly a sign of the maturity of this ambitious project. Having come to grips with the international parts of the global data base, attention is now being focused on the components contributed by individual members of the network. Since these contributions come from many different sources, the quality assurance problem is in some ways more challenging. Furthermore, in reconciling the international and national data bases to build a consistent global data base, it is the national data bases that must adjust. This naturally causes a certain amount of discomfort on the part of contributors. And it has led many of

these individuals to blame the messenger, namely "FIT" –the program that reconciles each national data base with the international targets.

An information-theoretic measure of the extent to which FIT alters the domestic data bases is now computed and Robert McDougall provided a national-level summary of these statistics to the board. The results were found to be generally quite sensible, with those economies represented by outdated I-O tables, or as composite regions, and those economies with extensive re-exports requiring the greatest amount of change in FIT (see Table 2). The board expressed a strong interest in having these measures made more widely available, and in communicating them back to contributors of individual I-O tables, along with some discussion of the most dramatic outliers. Accordingly, a new set of summary measures has been computed for the I-O tables included in the interim releases and these are included in Table 2 which summarizes the extent to which national data bases have been altered in the FITting process.

More generally, the board suggested at the 2002 meeting that we take steps to improve communications with individual contributors of I-O tables. This will take the form of more formal correspondence at key stages of the interaction: (a) when the I-O table is first contributed, (b) when the pre-release data base becomes available to contributors and (c) when the final release comes out. At each stage, GTAP staff should communicate as much information as possible back to contributors, including: (i) FIT statistics for the individual country, as well as the overall summary (to put their region in perspective), and (ii) the modified single region data base in SAM format. These communications with contributors will be handled by a single staff member: Terrie Walmsley. She already works closely with contributors at the time they are preparing a data base. Another of the procedures for these communications is available in Appendix 2. We believe this will go a long way towards reassuring contributors that their data have not been mistreated.

Much of the discussion surrounding the modification of domestic data bases at the 2002 Board meeting stemmed from a lack of appreciation of the difficulties in reconciling data from diverse sources. Nowhere is this more evident than in the case of EU agriculture, where version 5 appears to overstate the size of the sector by about $100 billion. Robert McDougall provided a detailed report to the board on his work this spring aimed at eliminating this discrepancy (culminating in the version 5.1 interim release data base). Interestingly, more than two-thirds of the discrepancy may be traced back to discrepancies between the contributed I-O tables from the LEI (1995) and Lionel Hubbard (1990) and the agricultural production targets (1997) from EUROSTAT. Of the remaining (one-third) discrepancy introduced by FIT, most was due to differences in export targets and differences in rates of output subsidies. When the I-O tables were pre-adjusted in light of the new targets, the FITted EU data base comes within 3% of the EUROSTAT targets. In the process of conducting this reconciliation, Robert McDougall uncovered many other inconsistencies between the targets and the domestic data bases. The most severe are the cases where exports exceed domestic production (likely due either to problems in measuring re-exports or in the differential classification of products between raw and semi-processed). These problems go well beyond the GTAP data base and will have to be resolved at the level of individual country statistics.

Another important case study involving FIT was provided in the context of interim release 5.3 – specifically matching up the Russian data base with the international data sources – particularly the IEA energy data. This problem is explored at length in a recent GTAP Research Memorandum by Robert McDougall. It boils down to a problem of infeasibility for the electricity sector in which costs exceed revenues. McDougall's exploration of this issue highlights the complexity inherent in bringing together data about the same economy from diverse sources, and the tension between the expectations of the greenhouse modeling community — who generally prefer that IEA data be maintained, and the I-O table contributors, who may consider their own data superior to the IEA; in particular cases. This research memorandum also highlights the complexity of GTAP's energy module, the revision of which is high on the agenda for future work.

These experiences with FIT, and the very information- and time-intensive nature of the job required to "get the data right" clearly shows that this work cannot be done on a comprehensive, global basis at Purdue. We need to move towards an "open-source" model in which contributors and consortium members have access to the tools required to do this kind of work themselves. As an exploratory first step, we plan to make the FIT program available for downloading from the web site so that consortium members and contributors can experiment with alternative targets and experience the challenge of reconciling conflicting data. Beyond this, we are also thinking of holding training sessions at which Center staff will train contributors in the techniques required to reconcile domestic and international data sources using pre-adjustment techniques as well as the FIT program.

In summary, we believe that we must keep the Center out of the business of basic data construction. In order to help contributors to contribute better tables, we must share programs, techniques, and ideas with them and generally open up the reconciliation process so that contributors can better understand how this work is done. While data reconciliation is necessarily a central function, the way for researchers to get involved in it is by contributing to our maintained code base. Contributors can also do their own "anticipatory reconciliation" in preparing tables to submit to the Center. This is in effect what was done by Robert McDougall in the case of EU agriculture, for example.

**Bilateral Trade Data**

*Merchandise trade:* The bilateral merchandise trade data linking the regional data bases in GTAP comes from the Statistical Office of the United Nations. These data are ideal for our purposes, but their reliability is questionable. What exporters report as going to importers rarely coincides with importers' documentation of the same bilateral flow. Mark Gehlhar, at ERS/USDA, has developed a set of procedures for reconciling discrepant trade statistics and producing balanced bilateral trade and transport matrices and he is the source of all of these data used in the GTAP data base. In addition to quality control, obtaining all of the trade data from one source assures us of consistency in procedures. Furthermore, as ERS/USDA continues to invest in improvements in these basic procedures, the GTAP data base will be able to capitalize on them.

Mark's version 5 work closely parallels that for versions 3 and 4 and his general approach is documented in GTAP Technical Paper #10.

*Trade in Services:* Given the increasing importance of services trade in the international economy, this is an area begging for further work. In general, the area of services trade and investment remains a difficult one for GTAP. The fundamental problem is a lack of data. GTAP does not originate data, rather we establish standards that facilitate applied general equilibrium modeling of trade, resource and environmental policies, and then seek to assemble and modify existing data to meet these standards. Where uniform data have not existed (e.g., energy prices), we have occasionally been able to obtain outside funding to hire someone to do the job for us. Unfortunately in the services area the data generally do not exist. This puts us in a difficult situation, which is why progress has been so slow.

We have undertaken two major initiatives in the services area. Firstly, version 5 introduced additional disaggregation of services sectors, so that the different types of activities and different protection regimes can be more readily isolated. In particular, transport services are disaggregated by mode: land, sea and air, and finance, insurance and communications are disaggregated. The second initiative involved obtaining data on bilateral services trade flows. We began this work when Wusheng Yu had a short internship at the WTO in the fall of 1998. During this time, he managed to assemble most of the (rather spotty) publicly available information on bilateral trade flows of non-factor services. Robert McDougall has developed a methodology for estimating the missing flows in this matrix, and reconciling the discrepant bilateral information. Unfortunately that work proved more problematic than anticipated, and Robert was diverted by other data base problems. As a consequence, *the version 5 data does not contain outside information on bilateral flows.* Estimates of the profile of national exports and imports are obtained from the individual region I-O tables, but definitions of services vary widely by country and this causes problems when we attempt to reconcile global trade. Improving the representation of global services trade and specifically incorporating additional bilateral detail is a key goal for version 6.

*Transport margins:* With the additional detail on transport services, we have been able to disaggregate the international transport margins by mode as well. This requires a new piece of data: VTWR(m,i,r,s) which corresponds to the amount of margins services of type m used to transport commodity i from region r to region s. These data are inferred based on commodity-specific modal shares (e.g., 80% by sea, 15% by air and 5 % other modes for commodity X, 90% air and 10% other for commodity Y) taken from US statistics, as provided by Mark Gehlhar. It would be very good if we could supplement this with data from other countries' trade. However, this was not assigned a high priority at the 2002 board meeting and it is unlikely that improvements will be introduced in version 6.

**Protection Data**

*Non-agricultural merchandise tariffs:* This is an area where great strides are being made. The fundamental source for the applied tariff data has long been the UNCTAD TRAINS data base. The WTO is also an important source of information on tariff bindings. In addition, there are numerous regional initiatives aimed at the collection of tariff data, such as the work of the Inter-American Development Bank in Latin America. The problem has been one of organizing these data, converting specific tariffs to *ad valorem* rates and aggregating them over commodities and countries. This is particularly challenging in light of the preferential arrangements that have proliferated over the past decade in the wake of the rapidly growing number of free trade agreements. The significant progress that has been made in the past two years has related to this processing of the tariff data.

The version 5 tariff data were based on an early version of the WITS system, undertaken as a joint UNCTAD/World Bank effort. At the time, it was not possible to obtain preferences in the context of aggregated tariff data. However, more recently, WITS has been handling tariff preferences more effectively, and we have obtained alternative protection data reflecting the inclusion of such preferences. Betina Dimaranan has circulated some comparisons of the MFN-applied GTAP-level tariffs and the preference-laden tariffs. The main question has been one of scope – how many of the preferences are actually reflected in the aggregated data.

A parallel effort aimed at making widely available tariff data was presented at last year's GTAP Board meeting by Sebastien Jean. This work, supported by CEPII and undertaken by the International Trade Center in Geneva, is nick-named MacMAPS. It has focused special attention on the conversion of specific tariffs, inclusion of anti-dumping duties, and alternative methods of tariff aggregation that avoid the biases of standard trade-weighted averages. The MacMAPS team has provided a preliminary GTAP aggregation of 2001 tariffs and anti-dumping duties for inspection and discussion by the Working Committee on Tariffs. Based on the feedback to date, we anticipate using these data for non-agricultural tariffs in the version 6 pre-release. Clearly the sourcing of GTAP tariff data is an important issue and we look forward to feedback on this issue at the upcoming board meeting. Also, anyone with a strong interest in this area is encouraged to join the Working Group and provide Betina Dimaranan with specific feedback.

*Agricultural tariffs:* Due to the prevalence of specific and compound tariffs in agriculture, as well as the widespread use of tariff rate quotas (TRQs), the compilation of a tariff data base for agriculture requires special attention. Fortunately a consortium of national and international agencies was formed to address this issue. This group includes three of our consortium members: ERS, OECD, and UNCTAD, and their product is called the Agricultural Market Access Database (AMAD). (More information is available at: http://www.amad.org.) It provides tariff data for food and agricultural commodities for all of the major trading partners in the world. In version 5, data based on AMAD were used in preference to the merchandise data sourced directly from WITS. One of the issues under consideration by the GTAP Working Group on Tariffs is whether to continue to source these data from AMAD. To facilitate such an evaluation, the associated data for

2001 have been requested from Paul Gibson at ERS who, together with his staff, convert the AMAD information to GTAP specifications.

*Agricultural Support:* Accurate assessment of the economic effects of agricultural support remains a specialized task requiring careful treatment, lots of data and good judgment. This has become more challenging as countries have sought to "de-couple" their agricultural support by shifting the emphasis from output subsidies to payments based on historical production as well as payments based on planted acreage and livestock numbers. In order to sharpen our thinking on this topic, we scheduled a special session with Jesus Anton of the OECD Agriculture Directorate on the day after the board meeting in Taiwan. At this meeting we essentially reached a consensus on how to handle these subsidies to agriculture, as reported in the OECD/PSE data base. Compared to the version 5 data base, the main change is the treatment of land subsidies for the US and EU which must be treated in a more balanced fashion when they are made independently of the crop planted (i.e. the *ad valorem* rate must be equal across all uses qualifying for payments). Beyond this adjustment, there is a great deal of scope for refinement, but this becomes controversial and we are inclined to leave such adjustments to individual researchers and agencies working on agricultural policy.

*Textiles and Apparel Quotas:* The quota rents (export tax equivalents) associated with textile and apparel quotas in version 5 are based on the work of Joseph Francois and Dean Spinanger, drawing in detailed industry data, interviews and observations on quota rents for selected countries. Dean Spinanger provided us with a detailed discussion of this approach on the day after the 2002 Board meeting. We hope that this information can be updated to 2001 for the version 6 data base, but this is a difficult issue – in part due to the volatility of these quota rents, and in part due to the fact that most of them are unobserved.

*Barriers to Services Trade:* Finally, there is the question of barriers to services trade. These flows are becoming an ever more important feature of global trade. Furthermore, there is a perception that barriers in this sector are much larger than in merchandise trade. Therefore, omission of these barriers in our analyses has severe consequences for the analysis of changes in allocative efficiency following any simulation that reallocates trade between services and non-services goods. The Productivity Commission, under the leadership of Philippa Dee, in collaboration with Australia National University has a major project in this area. Results are reported at their web site:
http://www.pc.gov.au/research/memoranda/servicesrestriction/index.html
At the 2001 board meeting, we discussed a possible timetable for bringing these estimates into the GTAP protection module. The feeling seemed to be that we should focus on getting the services trade data in place first, allowing more experimentation with the protection data until a consensus is reached on how best to measure and model these barriers. This seems to be a point that we should revisit each year. Services did not get a lot of attention at the 2002 Board meeting, so it would be good to have some further discussion of it in the upcoming meeting in The Hague. While most agree it is a critical area, when "push comes to shove" we seem to end up devoting scarce resources to other topics where Board members are more vocal.

**Data on Energy Volumes and Prices/Taxes**

The energy sector is the first area where we have explicitly brought in data on physical flows and sought to reconcile these data with GTAP's value data and independent information on prices and taxes. We have discovered that this is a very challenging task. In many cases the two data sets: that of the International Energy Agency (IEA) and GTAP are simply inconsistent. Also, it is not uncommon for total costs to exceed revenues in some of the energy intensive industries. In the face of these infeasibilities, some adjustments must be made. Chapter 17 of the version 5 data base documentation discusses these issues in considerable detail, also providing a comparison of implied prices between version 4E and version 5. From this, you can see that Jean-Marc Burniaux's adjustments in version 5 made a substantial improvement in the quality of the energy data base in GTAP. More recently, major difficulties were encountered in incorporating Russia into the GTAP 5.3 data base. This work is documented in Robert McDougall's research memorandum on this topic, available on the consortium page of the GTAP web site. His paper offers a valuable case study of the challenges involved in merging input-output data with IEA data.

The next challenge in the energy area is to develop stronger collaboration with the agencies originating these data. If we operate by analogy with the tariff data – in versions 1 and 2 these were obtained from WTO Trade Policy Review Publications. WTO and the World Bank now has become involved in the process of supplying these data directly. UNCTAD has gotten involved, which has brought us directly to the source of the tariff data. In the energy area, we are working to establish closer ties with the IEA. We believe there is much more information and expertise that can be drawn upon and getting them involved and interested would be a good step in the direction of long run improvements in this area.

We envisage the benefit of having IEA's data and expertise support. For example, it is helpful to estimate $CO_2$ emissions based on IEA's Expanded Energy Balances (EEB), from which the GTAP energy volume data are derived. EEB identifies fairly disaggregated energy commodities. Commodity-specific emission factors are also available from IEA. These are immediately evident contribution of IEA to an improved GTAP $CO_2$ emissions data base. For energy prices/taxes, IEA has been expanding the coverage of countries. IEA's data support will be substantial help to reduce workload of collecting country-specific price/tax data and pre-processing.

**GHG Emissions Data Bases**

One of the important new developments for GTAP has been the funding of a three year project on land use and non- $CO_2$ Greenhouse Gases by the US Environmental Protection Agency. This has permitted us to hire Huey-Lin Lee, a post-doctoral researcher working in the area of climate change policy. Thus far, she has produced several emissions data bases which will be of use to researchers working on climate change issues. The first is a $CO_2$ emissions data base, built up from the GTAP energy volume data, taking into account the use of energy commodities as

feedstock in some industries. (Ignoring this fact leads to an over-estimation of emissions.) The second is a data base on non- $CO_2$ GHG emissions built up from estimates by the US Environmental Protection Agency of global emissions of methane and nitrous oxide. Huey-Lin Lee has worked hard to establish an appropriate mapping from this data base to GTAP, as well as identifying appropriate "drivers" of emissions upon which to base future changes. She will report on this work at the upcoming board meeting, as well as provide board members with these data bases.

**Land Use by Agro-ecological Zone**

The main thrust of the EPA-GTAP project involves development of a framework and supporting data base to explore issues of land use and net emissions of Green House Gases. This part of the project was kicked off in September 2002 with a workshop hosted by John Reilly and the MIT Research Group on the Science and Policy of Global Change. Jean-Marc Burniaux presented a prototype framework for analysis of land use change and Roy Darwin, of ERS-USDA presented the outline of a global data base on land use by agro-ecological zone that might support such a model. In addition, about 20 experts on integrated assessment of climate change policy provided summaries of related work and commented on the research of Burniaux and Darwin.

One of the most important findings to come out of this meeting was the identification of a half-dozen groups around the world all wrestling with the problem of mapping land use by agro-ecological zone. As a result, we solicited contributions from these groups, focusing on the cases of China and the United States. Huey-Lin Lee has provided a detailed comparison of the alternative data bases for these two countries. They are quite different, and there are likely good reasons for most of these differences (definitions of AEZs, as well as land cover, etc.). Fully reconciling these diverse efforts is a tall order and not yet on the critical path of any of the research groups. However, we do see great potential for mutual gain from a shared effort of the sort that GTAP can facilitate.

At present, we are working with the contributions from Roy Darwin and his group at ERS. This is being supplemented with global forestry data from Brent Sohngen at Ohio State University in order to construct a prototype data base and comparative static framework for looking at net emissions associated with land use in the context of climate change policy. Once we have agreement on this prototype approach, we will extend it to the full set of GTAP countries. Huey-Lin Lee will present an update on this work at the upcoming board meeting.

**Domestic Margins**

One of the important pieces of advice from the Advisory Board at last year's meeting was the recommendation to begin developing a framework for incorporation of domestic wholesale, retail and transportation margins into GTAP. This is one of those projects that has implications for nearly everything that we do. While it hasn't been on the critical path to date, it does offer the potential for improving research in energy and climate change policy (IEA prices are based on user

costs, inclusive of margins, and domestic transport is an important source of energy demand), services trade and investment in distribution networks, agricultural policy (one-third of the consumers' food dollar goes to these activities), and poverty analysis (household survey data are inclusive of margins). Accordingly, we have asked Everett Peterson, who has worked in this area in the past, to develop a prototype data base and modeling framework for GTAP. He will present a summary of this work at the upcoming Board meeting. This would be an excellent opportunity for those with an interest in this area to help shape the direction of the project.

**Income Distribution and Poverty**

From its inception, GTAP-based analyses have tended to focus on the *inter*-regional incidence of policies, as opposed to the *intra*-regional incidence. This is clearly the comparative advantage of a multi-region, global model. However, as GTAP becomes more widely used, the pressure to say something about the distributional impacts of trade policies within countries – especially the developing countries – is becoming ever stronger. This has clearly been the case at conferences focusing on the new WTO round, and it is coming up in the context of national and regional trade policy liberalization as well. This is first and foremost a problem of data – how do we come up with information on expenditure and factor earnings profiles for disaggregate groups of households when we are struggling to simply put together a national data base for many countries? Can we bring the same network externalities to bear in this area, as have worked so successfully in the area of national I-O tables? Can we establish a standard format for the submission of national household survey data that will permit researchers to say something about the regional or global impacts of multilateral trade policy on poverty? We will have a brief update on a project, partially supported by the World Bank, to come up with GTAP-consistent aggregated household survey data for 14 developing countries. Those board members with a strong interest in income distribution analysis are encouraged to comment on this work as well as to contribute to extending the data base.

**Non-land, Primary Factor Usage**

Anyone who has worked on the general equilibrium incidence of policies knows that the factor intensities of different sectors represent very important information. Unfortunately, this aspect of the data base has received less attention than it deserves. Perhaps the most severe problem arises with the treatment of self-employed labor. To the extent that labor payments in the GTAP data base exclude these workers, then the returns to capital will be over-stated. There is good reason to believe that this measurement error has contributed to an excessive capital intensity of many developing countries' economies in the GTAP data base. This is confirmed when we attempt to reconcile GTAP data with household survey data for which profits have been imputed to labor and capital. Accordingly, we have re-estimated the division of value-added between capital and labor (both skilled and unskilled) for the 14 developing countries for which we have household survey data. We plan to include this information in the pre-release of version 6.0. This is another reason to aggressively pursue further contributions of household survey data for additional countries.

The other problem that has surfaced in this area has to do with attributing value-added among the various primary factors in agriculture. Due to volatile weather and inelastic demand, value-added is particularly volatile and it is not uncommon for sectors to show negative residual returns, once wage labor is accounted for. Here, we have taken the approach of relying on econometric studies of the sector. This has the advantage of eliminating the idiosyncrasies of the base year for the domestic data base, but it has the drawback that all agricultural sub-sectors within the economy exhibit the same primary factor intensities. Soren Frandsen expressed concern over this point at the last Board meeting, since the Danish research teams spends a fair amount of time on this issue for their data base – but this is overwritten by the sector-wide econometric estimates when it comes to building the GTAP data base. Since changing these factor intensities is a relatively easy exercise, he proposed to look into it in more detail and report back to us.

**Distribution of the GTAP Data Base**

*Products and pricing:* In theory, global welfare would be improved by giving away the data base for free – and better yet, giving away the software needed to build it. However, to date, our proposals to obtain public funds to do this have fallen on deaf ears. Meanwhile, data base sales continue to increase their share of the GTAP budget (now about 25%). Consortium membership has leveled off at around 19 members, while the number of data base users has continued to expand. We plan to maintain the same pricing structure for version 6, as was used for version 5 (see below). Note that we offer a very substantial discount to academic users. In addition, we sell an aggregation-constrained version of the GTAP data base for half the price of the full data base. This is particularly well-suited to students and faculty interested in small-dimensioned applications. If they decide later on that they want the full data base, they can upgrade by paying the balance and receiving a license file that releases their aggregation constraint. Finally, we offer a further 50% discount to individuals and agencies in the Least Developed Countries (see the Web for a listing of these countries.)

Proposed Version 6 pricing schedule

| | |
|---|---|
| Government/Private sector | $4000 |
| Upgrade | $2500 |
| Multiple Academic users | $1500 |
| Upgrade | $ 800 |
| Single academic user | $ 800 |
| Upgrade | $ 400 |
| 50% discount for aggregation-constrained version (10x10 maximum) | |
| 50% discount for Least Developed Country users | |

Table 5 shows the timetable for production of the version 6 data base, which will have a 2001 reference year. As you can see, there are many inputs from many diverse sources. We anticipate several pre-releases of version 6, beginning on August 30th, 2003, and culminating in a public release 6 months later.

*Prerelease access for Version 6:* Our pre-release policy has been to make the GTAP data base available to consortium members six months in advance of the general public. With a prerelease of version 6.0 envisioned for August, 2003, we anticipate public distribution in February 2004. (A detailed release schedule is presented in Table 5.) However, there are important elements of version 6 – in particular the additional country disaggregation in versions 5.2 and 5.3, as well as the improved treatment of EU agriculture in version 5.1 – that have been available to consortium members for some time now. We feel that it is important to make these components more widely available to users of GTAP, so that they, too, can benefit from these advances. Thus, we propose to make available version 5.4 (this is 5.3 with a few bug fixes) in the fall of 2003 (six months following release of 5.3) to those individuals who purchase the version 6.0 data base in advance. Thus, if they are working on EU-enlargement, they can get a start working with the 1997-based data before version 6 becomes public. We believe this is a healthy compromise that accommodates our new approach to interim releases of the data base. If there are strong arguments against this policy, we would like to hear them at the upcoming Board meeting.

*Encrypted distribution via the Web:* While we can't afford to give away the GTAP data base, we would like to make it available "in bits and pieces" to web browsers, researchers and students. For example, what if you wanted to know the average international trade and transport margin for global trade? You wouldn't buy the data base to find this number, but if you just go on the web and obtain this number with a few mouse-clicks, you might become a GTAP-convert, or at least you might find this to be a useful tool. Mark Horridge has facilitated this form of data base distribution using encryption tools. The way it works is that you can download an encrypted file with (at this point) an aggregated version of the GTAP data base (full sectors/10 regions and full regions/10 sectors). It is viewable using special software, but you cannot copy from the screen. We hope this will increase the public value of the data base over time.

## MODEL DEVELOPMENT, VALIDATION AND PARAMETER ESTIMATION

The basic philosophy behind GTAP is "one data base -- many models". Therefore, model development has naturally played a lesser role at the board meetings. Since many board members have their own models that utilize the GTAP data base, there is little need to agree on a common model structure. However, in recent board meetings we have found a common interest in the question of parameter estimation and model validation. So this is where we will focus our attention at this year's board meeting.

*Parameter estimation:* To anyone who has used a CGE model for policy analysis it comes as no surprise that the choice of parameter values is key. In the GTAP model, the trade elasticities attract the most attention, as they govern the gains from trade liberalization, as well as

the terms of trade effects. These are followed by the consumer demand elasticities and the elasticities of substitution in production. For models of imperfect competition, price-cost markups and measures of unexploited scale economies are also critical. To the extent that we can improve the quality of this parameter file, it will greatly enhance the credibility and quality of virtually all analyses flowing from the GTAP data base. In the past year some progress has been made on several fronts.

The first column of Table 3 reports current GTAP values for the elasticity of substitution among imports from different sources. These values were inherited from the SALTER project which conducted a literature review as well as some original econometric work for one country. Note that there is only one value for food products, as well as just a single estimate for several important categories of manufactures. Given the critical role of these parameters, any more recent evidence is welcome. The second column of Table 3 reports estimates for this elasticity of substitution for disaggregated GTAP merchandise trade categories. These have been estimated following the methodology of Hummels (see GTAP Working Paper #17, but re-estimating of the GTAP sector level. Note that there is much more variation across sectors, although the average size of these elasticities is not all that different from GTAP. (A simple average of the new estimates is 7.0 vs. 5.3 for GTAP.) These estimates also come with standard errors, so that we can evaluate how significant they are. We can also use these two pieces of information to construct a probability distribution for each parameter, which in turn enables us to undertake systematic sensitivity analysis with respect to particular scenarios. An example of this kind of analysis with respect to the Free Trade Agreement of the Americas (FTAA) will be presented at the upcoming GTAP Conference. It should also be noted that the US International Trade Commission has an active research program in this area, and we look forward to hearing bout their most recent work at the board meeting.

Let us turn next to the issue of consumer demand elasticities. Unlike the elasticities of substitution among imports in the GTAP parameter file, the price and income elasticities of consumer demand are country-specific. In the past we have typically focused on the income elasticities of demand and combined these with the assumption of additivity and observed variation in the Frisch parameter across income levels to get own-price elasticities of demand, which can then be modified or augmented with additional observations on own-price elasticities of demand where available (e.g., from the FAO). Together, this is enough information to calibrate the CDE demand system used in GTAP.

In the past, the income elasticities of demand have been taken from the international cross-section analyses of Theil and his co-authors, most notably Theil, Chung and Seale (1989), in which they use the International Comparisons Project (ICP) data base. The problem with these studies is that they are now quite old. They also use commodity groupings that do not fit particularly well with GTAP, and they are defined in terms of consumer goods, not producer goods. So the commodity goods demanded include the wholesale/retail/transport margins alluded to above.

Jeff Reimer has come up with an alternative approach to the estimation of consumer demands for use in GTAP. He utilizes the per capita national consumer demand data from GTAP directly, adding per capita income from the World Bank and price variation based on the assumption of homogeneous products combined with the GTAP average tariff rates. His results, documented in GTAP Working Paper #23, compare favorably to updated ICP-based estimates, with the exception that wholesale/retail/transport margins now show up as a distinct category of demand. Reimer's estimation is done at the 10 commodity level using An Implicitly Additive Demand System (AIDADS) invented by Rimmer and Powell. The estimated demand elasticities for 52 GTAP countries included in the version 5 data base are reported in Table 4. Because this demand system is globally well-behaved it can also be used to generate income elasticities of demand for countries/regions not in the sample as well. We plan to use these elasticities, in place of those from Theil et al., in the version 6 data base.

In another promising development, James Seale, (of Theil, Chung, and Seale), working with Anita Regmi at ERS/USDA, has been updating the work of Theil, Chung and Seale using 1996 ICP data, which covers 114 countries. The important thing about their work is the estimation of a two-level demand system in which the top level is rather aggregate, as with previous work, and the bottom level determines disaggregated substitution relationships among food products. Once this work is finalized, it will offer an alternative source of parameters for the specification of consumer demand across countries in GTAP. This seems particularly appropriate for those with a strong interest in food demand.

At this point I have no new work to report regarding the estimation of elasticities of substitution among inputs in production. However, if Board members are aware of such work, it would be good to bring it to our attention at this meeting. Recall also the elasticity data bank project presented to the Board by Renger van Nieuwkoop last year. While he has been busy with other things this year, he does plan to return to this effort in the coming months. Finally, we should discuss whether there is sufficient interest to begin assembling GTAP consistent information on markups and Cost Disadvantage Ratios for use in modeling imperfect competition.

*Model Validation and Hypothesis Testing:* As GTAP-based models become more widely used, the issue of model validation has begun rearing its head with greater frequency. With the ready proliferation of different model structures, we need some method of discriminating amongst alternative specifications. A classic debate has to do with the use of CET parameters on the export side of these models. Similar issues arise in the context of monopolistic competition vs. Armington specifications. Which model is right? Which is the preferred specification for a given region of the world?

To date, the Center has undertaken one such hypothesis testing exercise. This is documented in the paper by Liu, Arndt and Hertel (GTAP Working Paper #24, also forthcoming in the Journal of Economic Integration). In this paper, we run the model backward in time and ask what parameters best permit the model to explain this historical experience. We then proceed to test several hypotheses. Most important is the "rule of two" whereby the import sourcing elasticity

of substitution is twice as large as the import-domestic elasticity of substitution. Notably we fail to reject this hypothesis, thereby lending support to this widespread practice. Other researchers are pursuing similar lines of research (e.g., the work by Arndt and Robinson on Mozambique, and the work by Francois on model estimation and hypothesis testing.) We hope to hear more about work underway in this area, and we would like to co-sponsor a workshop bringing together those working in this area at some point in the future.

*Dynamic Modeling and a GTAP Baseline:* The dynamic GTAP model, developed by Elena Ianchovichina and Robert McDougall, emphasizes international capital mobility and tracking cross-country ownership of assets. It is now being used by a number of researchers for specific policy applications. Most of these users have been involved in some way with the model's development, or they attended the dynamic modeling course offered in October of 2000. We are aware that there is a substantial demand among a broader audience for a standard dynamic model. However, supporting a dynamic model is much more costly than supporting a static model, and we have not had the personnel to go to this next level. Terrie Walmsley has now agreed to lead this effort. We plan to hold a Dynamic GTAP short course in August 2004. Numbers will be restricted so if you are interested in attending or sending someone to the course, please reserve a place with Judy Conner. We also plan to assemble the Technical Paper (#17), as well as other documentation on the baseline and welfare decomposition, and the a variety of GTAP-Dyn applications into a book on the dynamic GTAP model over the next year so that a draft of this book will be available for the short course in 2004.

In a related development, Thomas Rutherford has developed a standard, intertemporal (i.e. forward-looking) dynamic model designed to run on the GTAP data base. He presented this work at Purdue University in December 2002 and hopes to finalize it in the near future. This would be a nice compliment to the recursive-dynamic GTAP model, as the two models emphasize different things.

We continue to maintain a shared, baseline data base, which can be used by consortium members for their own dynamic modeling work. We have been discussing this "GTAP baseline" at the past three board meetings. This work is also being led by Terrie Walmsley. We need continued input from the board in order to ensure that this is useful to those who have a requirement for a baseline, and also to ensure that we are capitalizing on all available inputs.

## ANNUAL CONFERENCE ON GLOBAL ECONOMIC ANALYSIS

As noted previously, the Fifth Annual Conference, held in Taiwan June 5-7, 2002 was a great success, with a record number of participants. The Sixth Annual Conference will be held at the Carleton Beach Hotel, following this year's board meeting. Planning for this event is well in hand, with Nico van Leeuwen of the CPB chairing the organizing committee which includes representatives from the CPB, the LEI and Erasmus University. We will get an update on this event at the board meeting. Plans are also underway for the Seventh Annual Conference on Global

Economic Analysis. This will take place June 17 – 19, 2004 in Washington, D.C. It will be hosted by the World Bank and co-sponsored by the Center for Global Trade Analysis and the six consortium members based in the Washington, D.C. area.

**WEB SITE DEVELOPMENT**

The GTAP Web site is our most important window to the outside world and our primary channel of communication with members of the GTAP community. The current site, which was fully revamped in 2001, now serves many critical missions to the Center. It is a distribution platform for the GTAP data bases, documentation, utilities, and product updates. The site is an online directory of contributors, as well as a repository of GTAP applications. In addition the Web site plays an important role in promoting and coordinating GTAP training activities and conferences.

Since the last Board Meeting, over 560 new visitors have taken the time to establish a profile on the GTAP Web site. As measured by the number of registered users, the network now comprises close to 2,100 members, and about 40% have attended a course or conference, or purchased the data base. Many members have also contributed new studies to our online "Resource Center". Over the past twelve months, we collected 130 new GTAP applications, all of which are referenced on the Web site. One important objective in the coming year will be to encourage and to facilitate new contributions, so as to better reflect the quantity and the quality of research work and publications based on the GTAP framework worldwide. Part of this objective would involve the definition of new guidelines to ensure that all GTAP applications are fully documented and that results may be replicated.

An important challenge for the Web site is to cater to the many audiences with interest in the GTAP Project -- policymakers, economists and economic modelers, data contributors and members of the Consortium, students, private sector, etc. Over the past year, we have made significant changes and additions to the site in order to better respond to the specific needs of various categories of stakeholders, and we will continue to develop the Web site with this important goal in mind.

In Appendix 6, you will find detailed activity statistics for the site. In brief, the number of (non-Purdue) hits per day is typically around 6,000. The number of visitors is steadily rising, with an average of 300 visitors per day over the past 12 months (last year's average was 232). This represents a very substantial, sustained level of activity.

The web site continues to play a central role in facilitating the annual conference. The last three conferences have been managed almost entirely via the web-driven interface, including: submission and review of papers, management of the review process and final decisions, registrations, etc. This is now a robust and flexible application, which allows for a variety of customizations to fit the needs of the local organizing team. The efficiency gains of this new approach are obvious; however, a

substantial commitment of consortium resources is needed to maintain this level of web support. Melanie Bacou will provide a summary of effort involved in supporting the annual conference.

We received a few important suggestions for improvement, which we plan to implement in preparation for the 2004 Conference. These include:

- Providing better guidelines for reviewers evaluating the relevance and quality of submitted abstracts, so as to avoid large discrepancies between reviewers, and to guarantee high standards to the conference program.
- Redefining the division of work between the Center and the local organizing committee. There seems to be a rational for the Center to monitor and administer abstract submissions and reviews, as well as participant registrations. The GTAP web site is already equipped to handle all these processes, and the Center staff is very experienced at dealing with members of the GTAP Network on a personal level. The Center would be responsible for promoting the event, and we would respond to all enquiries from participants. In turn this would free up resources for the local organizing team to plan for the logistics of the venue, to focus on the program highlights and invitees, and to search for funds and sponsors.

## FUNDING AND STAFFING OF GTAP ACTIVITIES

To be distributed at the board meeting, along with a budget.

## GOALS FOR THE COMING YEAR

To be developed at the board meeting.

## NOMINATIONS FOR RESEARCH FELLOWS

Research Fellows are nominated for a three year term. So this year, we must revisit for re-nomination the individuals selected in 2000. In addition, please submit new nominations of deserving individuals whom you think exhibit the kind of capabilities and commitment to excellence in global economic analysis that warrant this honor. To do so, simply submit their name, a brief statement of why you think they are appropriate, and their CV. It would be best if these nominations were made in advance of the meeting, so that we can have the necessary background materials on hand for the board's consideration

Table 1. Sources of I-O tables in GTAP Data Base

| Region | Reference period | Source of I/O Table | Version 5.x contributor(s) |
|---|---|---|---|
| AUS | 1993-94 | Australian Bureau of Statistics | Andrew Welsh, Ilias Mastoris and Johanna Travis |
| NZL | 1992-93 | Statistics New Zealand (1997) | |
| CHN | 1997 | Department of National Economy Accounting, State Statistical Bureau, Chinese Statistical Publishing Housing | Zhi Wang, Fan Zhai, and Dianqing Xu |
| HKG | 1988 | Tormey (1993) | |
| JPN | 1995 | Management and Coordination Agency, Japan (1999) | Mantaro Matsuya |
| KOR | 1995 | Bank of Korea (1998) | Jong-Hwan Ko and Inkyo Cheong |
| TWN | 1996 | Directorate General of Budget, Accounting & Statistics (2000), Taiwan | Hsing-Chun Lin, Lin-Chun Chung and Ruey-Wan Liou |
| *IDN* | *(1995)* | *n.a.* | *Institute of Developing Economies - Japan External Trade Organization* |
| *MYS* | *(1995)* | *n.a.* | *Institute of Developing Economies - Japan External Trade Organization* |
| *PHL* | *(1995)* | *n.a.* | *Institute of Developing Economies - Japan External Trade Organization* |
| *SGP* | *(1995)* | *n.a.* | *Institute of Developing Economies - Japan External Trade Organization* |
| *THA* | *(1995)* | *n.a.* | *Institute of Developing Economies - Japan External Trade Organization* |
| VNM | 1996 | Social Accounting Matrices for Vietnam: 1996 and 1997. (Chantal Pohl Nielsen) | Chantal Pohl Nielsen |
| BGD | 1993-94 | Bangladesh Planning Commission and Bangladesh Institute of Development Studies (1998) | A.N.K. Noman and Jong-Hwan Ko |
| IND | 1989-90 | Central Statistical Organization, Department of Statistics, Ministry of Planning and Program Implementation, India (1997) | Rajesh Chadha and Pratap Devender |
| LKA | 1989 | Center of International Economics, Export Development Broad, Colombo, Sri Lanka | |

Continued

Table 1. Sources of I-O tables in GTAP Data Base (Continued)

| Region | Reference period | Source of I/O Table | Version 5.x contributor(s) |
|---|---|---|---|
| XSA | 1997 | COMPOSITE | |
| CAN | 1990 | Statistics Canada | |
| USA | 1992 (1996) | U.S. Department of Commerce, Bureau of Economic Analysis (1997) | Kenneth Hanson and Agapi Somwaru |
| MEX | 1995 | Secretaria de Pramacion y Presupuesto (1985), Burfisher, Thierfelder, and Hanson (1992) | |
| XCM | 1997 | COMPOSITE | |
| COL | 1996 | National Department of Statistics (DANE) | Ramiro Guerrero |
| PER | n.a. | n.a. | Juan Jose Echavarria & Maria Arbelaez |
| VEN | 1986 | Planning Agency (CORDIPLAN), Venezuela | |
| XAP | 1989 | COMPOSITE | |
| ARG | 1984 | Secretaria de Planificacion(1986), Argentina | |
| BRA | 1985 | Fundacao Instituto Brasileiro de Geografia e Estatistica (1995) | |
| CHL | 1986 | Central Bank of Chile (1986) | |
| URY | 1983 | Banco Central Del Uruguay, Departmentto De Estadisticas Economicas (1991) | |
| XSM | 1997 | COMPOSITE | |
| *AUT** | *1983 (1995)* | *Austrian Central Statistical Office, Wien, Austria* | *Myrna van Leeuwen (LEI)* |
| *BEL** | *1995* | *Peeters (Limburgs Universitair Centrum LUC-Deipenbeek, Belgium)* | *Myrna van Leeuwen (LEI)* |
| *DNK** | *1992 (1995)* | *Statistics Denmark, Copenhagen* | *Myrna van Leeuwen (LEI)* |
| *FIN** | *1995* | *Statistics Finland (Leena Kerkela)* | *Myrna van Leeuwen (LEI)* |
| *FRA** | *1992 (1995)* | *Insitut National de la Statistique et des Etudes Economiques, Paris, France (1996)* | *Myrna van Leeuwen (LEI)* |
| *DEU** | *1995* | *Federal Agricultural Research Centre (FAL), Braunschweig, Germany (Martina Brockmeier)* | *Myrna van Leeuwen (LEI)* |
| *GBR** | *1990 (1995)* | *Office of National Statistics* | *Myrna van Leeuwen (LEI)* |
| *GRC** | *n.a.* | *n.a.* | *Myrna van Leeuwen (LEI)* |

Table 1. Sources of I-O tables in GTAP Data Base (Continued)

| Region | Reference period | Source of I/O Table | Version 5.x contributor(s) |
|---|---|---|---|
| *IRL** | *1990 (1995)* | *Central Statistical Office, Dublin, Ireland (1997)* | *Myrna van Leeuwen (LEI)* |
| *ITA** | *1992 (1995)* | *Instituto Nazionale di Statistica, Rome, Italy (1996)* | *Myrna van Leeuwen (LEI)* |
| *LUX** | *n.a.* | *n.a.* | *Myrna van Leeuwen (LEI)* |
| *NLD** | *1995* | *CBS, LEI, The Hague* | *Myrna van Leeuwen (LEI)* |
| *PRT** | *1993 (1995)* | *Instituto Nacional de Estatistica, Lisbon, Portugal (1996)* | *Myrna van Leeuwen (LEI)* |
| *ESP** | *1994 (1995)* | *Universidad de Deusto, San Sebastian, Spain (Azier Minondo)* | *Myrna van Leeuwen (LEI)* |
| *SWE** | *1985 (1995)* | *Statiskiska Centralbyran, Orebro, Sweden (1992)* | *Myrna van Leeuwen (LEI)* |
| CHE | 1990 (1995) | Laboratoire d'economie appliquee, University of Geneva (scaled to 1995 at Swiss Federal Institute of Technology) | Markus Lips and Renger van Nieuwkoop |
| XEF | 1997 | COMPOSITE | |
| *ALB* | *2000* | *Horridge (2000), "Estimating an Albanian Input-Output Table for 2000"* | *Mark Horridge* |
| *BGR* | *1996* | *National Statistical Institute of Bulgaria* | *Martin Banse* |
| *HRV* | *1995* | *n.a.* | *Martin Banse* |
| *CZE* | *1996* | *n.a.* | *Martin Banse* |
| *HUN* | *1991 & 1996* | *Central Statistical Office, Budapest, Hungary (1999)* | *Martin Banse* |
| *MLT* | *1996* | *n.a.* | *Martin Banse* |
| *POL* | *1997* | *Central Statistical Agency, Warsaw, Poland (2000)* | *Martin Banse* |
| *ROM* | *1997* | *n.a.* | *Martin Banse* |
| *SVK* | *1997* | *n.a.* | *Martin Banse* |
| *SVN* | *1997* | *n.a.* | *Martin Banse* |
| *EST* | *1997* | *Estonian Statistical Office* | *Martin Banse* |
| *LVA* | *1997* | *n.a.* | *Martin Banse* |
| *LTU* | *1997* | *Banse - based on LVA I-O table* | *Martin Banse* |
| *RUS* | *1997* | *The Russian Federation State Statistics Committee (2001)* | *Roman Romachkine and Sergei Kiselev* |
| XSU | 1989 | The World Bank | |

Continued

Table 1. Sources of I-O tables in GTAP Data Base (Continued)

| Region | Reference period | Source of I/O Table | Version 5.x contributor(s) |
|---|---|---|---|
| *CYP* | *1986* | *n.a.* | *Martin Banse* |
| TUR | 1990 | State Institute of Statistics (Turkey) | |
| XME | 1997 | COMPOSITE | |
| MAR | 1990 | Maurizio Bussolo and David Roland-Holst (1993) | |
| XNF | 1997 | COMPOSITE | |
| BWA | 1993-94 | McDonald | Mark Horridge |
| XSC | 1995 | Industrial Development Corporation, South Africa | Mark Horridge |
| MWI | 1994 | MERRISA/Wobst | Mark Horridge |
| MOZ | 1995 | MERRISA/Arndt et al. | Mark Horridge |
| TZA | 1992 | MERRISA/Wobst | Mark Horridge |
| ZMB | 1995 | MERRISA/Hausner | Mark Horridge |
| ZWE | 1991 | MERISSA/Thomas and Bautista | Mark Horridge |
| XSF | 1997 | COMPOSITE | |
| UGA | 1992 | Ugandan National Statistics Department (UNSD) | Adam Blake |
| XSS | 1997 | COMPOSITE | |
| XRW | 1997 | COMPOSITE | |

***** Input-output tables of European Union member countries were adjusted to match target values for EU agricultural production in 1997 as supplied by Hans Jensen.

Table 2. Change in I-O Structure Under Fitting, By Region, Sorted by Magnitude of Change

| Region | Change | Region | Change |
|---|---|---|---|
| Cyprus | 0.63 | Chile | 0.07 |
| Other South African | 0.55 | Ireland | 0.07 |
| Malta | 0.51 | Switzerland | 0.07 |
| Bulgaria | 0.31 | Slovakia | 007 |
| Rest of South America | 0.28 | Rest of World | 0.07 |
| Zambia | 0.27 | Malaysia | 0.07 |
| Luxembourg | 0.23 | Brazil | 0.06 |
| Rest of EFTA | 0.21 | Belgium | 0.06 |
| Malawi | 0.21 | Denmark | 0.06 |
| Rest of Middle East | 0.19 | Slovenia | 0.06 |
| Rest of North Africa | 0.18 | Uganda | 0.06 |
| Hong Kong | 0.17 | Austria | 0.05 |
| Albania | 0.15 | Portugal | 0.05 |
| Tanzania | 0.15 | Sweden | 0.05 |
| Philippines | 0.14 | Rest of South African Customs Unit | 0.05 |
| Central America / Caribbean | 0.14 | Thailand | 0.04 |
| Estonia | 0.14 | Bangladesh | 0.04 |
| Latvia | 0.14 | Canada | 0.04 |
| Rest of Former Soviet Union | 0.14 | Peru | 0.04 |
| Vietnam | 0.13 | Germany | 0.04 |
| Sri Lanka | 0.13 | Romania | 0.04 |
| Czech Republic | 0.13 | Turkey | 0.04 |
| Lithuania | 0.13 | India | 0.03 |
| Zimbabwe | 0.13 | France | 0.03 |
| Venezuela | 0.12 | Italy | 0.0.3 |
| Rest of Andean Pack | 0.12 | Poland | 0.03 |
| Rest of Sub-Saharan Africa | 0.12 | Korea | 0.03 |
| Netherlands | 0.11 | Russian Federation | 0.03 |
| Croatia | 0.11 | United States | 0.02 |
| Botswana | 0.11 | New Zealand | 0.02 |
| Argentina | 0.10 | Colombia | 0.02 |
| Uruguay | 0.10 | China | 0.02 |
| Hungary | 0.09 | Finland | 0.02 |
| Morocco | 0.09 | United Kingdom | 0.02 |
| Mozambique | 0.09 | Japan | 0.02 |
| Singapore | 0.08 | Indonesia | 0.02 |
| Rest of South Asia | 0.08 | Australia | 0.01 |
| Greece | 0.08 | Spain | 0.01 |
| Mexico | 0.07 | Taiwan | 0.01 |

*Source: "Global Trade, Assistance, and Protection: The GTAP 5 Data Base,* Center for Global Trade Analysis, Purdue University.

Table 3. Estimation Results

| Code | Description | Original Elasticity | Estimated Elasticity | SD | Num Obs |
|---|---|---|---|---|---|
| pdr | Paddy rice | 4.4 | 10.1 | 4.0 | 26 |
| wht | Wheat | 4.4 | 8.9 | 4.2 | 32 |
| gro | Cereal grains nec | 4.4 | 2.6* | 1.1 | 131 |
| v_f | Vegetables, fruit, nuts | 4.4 | 3.7* | 0.4 | 1,199 |
| osd | Oil seeds | 4.4 | 4.9 | 0.8 | 239 |
| c_b | Sugar cane, sugar beet | 4.4 | N/A | N/A | 3 |
| pfb | Plant-based fibers | 4.4 | 5.0 | 2.4 | 71 |
| ocr | Crops nec | 4.4 | 6.5* | 0.4 | 1,796 |
| ctl | Bovine cattle, sheep and goats, horses | 5.6 | 4.0* | 0.7 | 156 |
| oap | Animal products nec | 5.6 | 2.6* | 0.3 | 813 |
| rmk | Raw milk | 4.4 | N/A | N/A | - |
| wol | Wool, silk-worm cocoons | 4.4 | 12.9* | 2.7 | 76 |
| for | Forestry | 5.6 | 5.0* | 0.7 | 529 |
| fsh | Fishing | 5.6 | 2.5* | 0.6 | 527 |
| col | Coal | 5.6 | 6.1 | 2.4 | 71 |
| oil | Oil | 5.6 | 10.4 | 3.8 | 56 |
| gas | Gas | 5.6 | 34.4 | 14.3 | 8 |
| omn | Minerals nec | 5.6 | 1.8* | 0.3 | 1,584 |
| cmt | Bovine meat products | 4.4 | 7.7 | 1.9 | 211 |
| omt | Meat products nec | 4.4 | 8.8* | 0.9 | 411 |
| vol | Vegetable oils and fats | 4.4 | 6.6 | 0.7 | 717 |
| mil | Dairy products | 4.4 | 7.3* | 0.8 | 547 |
| pcr | Processed rice | 4.4 | 5.2 | 2.6 | 62 |
| sgr | Sugar | 4.4 | 5.4 | 2.0 | 156 |
| ofd | Food products nec | 4.4 | 4.0* | 0.1 | 6,917 |
| b_t | Beverages and tobacco products | 6.2 | 2.3* | 0.3 | 998 |
| tex | Textiles | 4.4 | 7.5* | 0.1 | 14,375 |
| wap | Wearing apparel | 8.8 | 7.4* | 0.2 | 9,090 |
| lea | Leather products | 8.8 | 8.1* | 0.3 | 3,457 |
| lum | Wood products | 5.6 | 6.8 | 0.2 | 4,120 |
| ppp | Paper products, publishing | 3.6 | 5.9* | 0.2 | 6,597 |
| p_c | Petroleum, coal products | 3.8 | 4.2 | 1.1 | 344 |
| crp | Chemical, rubber, plastic products | 3.8 | 6.6* | 0.1 | 61,603 |
| nmm | Mineral products nec | 5.6 | 5.8* | 0.2 | 6,240 |
| i_s | Ferrous metals | 5.6 | 5.9* | 0.3 | 5,524 |
| nfm | Metals nec | 5.6 | 8.4* | 0.4 | 3,194 |
| fmp | Metal products | 5.6 | 7.5* | 0.2 | 9,926 |
| mvh | Motor vehicles and parts | 10.4 | 5.6* | 0.3 | 2,238 |
| otn | Transport equipment nec | 10.4 | 8.6* | 0.4 | 1,843 |
| ele | Electronic equipment | 5.6 | 8.8* | 0.2 | 8,916 |
| ome | Machinery and equipment nec | 5.6 | 8.1* | 0.1 | 44,386 |
| omf | Manufactures nec | 5.6 | 7.5* | 0.2 | 7,586 |

Table 4. Expenditure Elasticities Evaluated at Observed, Country-specific Price Levels

| Region code | Grains, other crops | Meat, dairy, fish | Processed food, beverages, tobacco | Textiles, apparel, footwear | Utilities other housing services | Wholesale/ retail trade | Manu-factures, electronics | Tran-sport, communication | Financial & business services | Housing, education, health, public services |
|---|---|---|---|---|---|---|---|---|---|---|
| TZA | 0.342 | 1.633 | 0.765 | 1.128 | 1.662 | 1.106 | 1.625 | 1.649 | 1.246 | 1.011 |
| MOZ | 0.361 | 1.591 | 0.761 | 1.071 | 1.620 | 1.097 | 1.584 | 1.608 | 1.233 | 1.007 |
| VNM | 0.376 | 1.566 | 0.726 | 1.083 | 1.596 | 1.106 | 1.561 | 1.582 | 1.241 | 1.022 |
| MWI | 0.384 | 1.538 | 0.737 | 1.060 | 1.569 | 1.100 | 1.535 | 1.556 | 1.232 | 1.019 |
| IND | 0.433 | 1.359 | 0.778 | 1.052 | 1.399 | 1.088 | 1.364 | 1.382 | 1.214 | 1.040 |
| UGA | 0.388 | 1.377 | 0.836 | 1.079 | 1.418 | 1.102 | 1.383 | 1.400 | 1.232 | 1.055 |
| BGD | 0.440 | 1.327 | 0.798 | 1.046 | 1.369 | 1.085 | 1.334 | 1.351 | 1.211 | 1.044 |
| ZMB | 0.484 | 1.243 | 0.844 | 1.040 | 1.291 | 1.045 | 1.254 | 1.271 | 1.173 | 1.047 |
| CHN | 0.415 | 1.308 | 0.811 | 1.076 | 1.356 | 1.117 | 1.318 | 1.335 | 1.245 | 1.089 |
| ZWE | 0.520 | 1.164 | 0.839 | 1.017 | 1.227 | 1.088 | 1.182 | 1.200 | 1.206 | 1.077 |
| LKA | 0.558 | 1.092 | 0.865 | 0.995 | 1.173 | 1.084 | 1.118 | 1.139 | 1.228 | 1.113 |
| IDN | 0.613 | 1.054 | 0.849 | 0.985 | 1.147 | 1.080 | 1.085 | 1.108 | 1.232 | 1.121 |
| PHL | 0.587 | 1.022 | 0.872 | 0.976 | 1.135 | 1.096 | 1.061 | 1.089 | 1.261 | 1.155 |
| MAR | 0.614 | 1.026 | 0.853 | 0.973 | 1.133 | 1.093 | 1.063 | 1.089 | 1.252 | 1.148 |
| BWA | 0.651 | 0.983 | 0.865 | 0.957 | 1.112 | 1.089 | 1.029 | 1.059 | 1.262 | 1.158 |
| XRW | 0.623 | 0.994 | 0.853 | 0.963 | 1.121 | 1.099 | 1.039 | 1.069 | 1.271 | 1.169 |
| THA | 0.643 | 0.936 | 0.837 | 0.930 | 1.104 | 1.115 | 0.998 | 1.038 | 1.306 | 1.208 |
| COL | 0.648 | 0.904 | 0.832 | 0.915 | 1.097 | 1.120 | 0.977 | 1.022 | 1.319 | 1.221 |
| PER | 0.651 | 0.896 | 0.833 | 0.911 | 1.095 | 1.119 | 0.972 | 1.018 | 1.319 | 1.221 |
| MYS | 0.611 | 0.869 | 0.818 | 0.898 | 1.097 | 1.135 | 0.959 | 1.011 | 1.342 | 1.248 |
| TUR | 0.620 | 0.871 | 0.807 | 0.901 | 1.098 | 1.136 | 0.960 | 1.012 | 1.343 | 1.249 |
| POL | 0.621 | 0.865 | 0.791 | 0.897 | 1.099 | 1.141 | 0.957 | 1.011 | 1.350 | 1.256 |
| VEN | 0.615 | 0.824 | 0.783 | 0.871 | 1.093 | 1.144 | 0.934 | 0.995 | 1.353 | 1.263 |
| MEX | 0.594 | 0.810 | 0.773 | 0.866 | 1.094 | 1.149 | 0.927 | 0.992 | 1.360 | 1.271 |
| HUN | 0.596 | 0.815 | 0.770 | 0.869 | 1.096 | 1.150 | 0.930 | 0.995 | 1.362 | 1.272 |
| BRA | 0.590 | 0.790 | 0.759 | 0.852 | 1.093 | 1.152 | 0.918 | 0.987 | 1.361 | 1.275 |
| CHL | 0.567 | 0.768 | 0.743 | 0.841 | 1.093 | 1.156 | 0.908 | 0.982 | 1.361 | 1.279 |
| URY | 0.511 | 0.718 | 0.702 | 0.815 | 1.094 | 1.163 | 0.888 | 0.973 | 1.360 | 1.285 |
| KOR | 0.458 | 0.698 | 0.681 | 0.807 | 1.098 | 1.171 | 0.883 | 0.973 | 1.366 | 1.293 |
| PRT | 0.402 | 0.649 | 0.647 | 0.785 | 1.090 | 1.161 | 0.868 | 0.964 | 1.330 | 1.269 |

Continued

Table 4. Expenditure Elasticities Evaluated at Observed, Country-specific Price Levels ( Continued)

| Region code | Grains, other crops | Meat, dairy, fish | Processed food, beverages, tobacco | Textiles, apparel, footwear | Utilities other housing services | Wholesale/ retail trade | Manu-factures, electronics | Tran-sport, communication | Financial & business services | Housing, education, health, public services |
|---|---|---|---|---|---|---|---|---|---|---|
| ARG | 0.385 | 0.638 | 0.637 | 0.780 | 1.090 | 1.162 | 0.865 | 0.963 | 1.328 | 1.269 |
| TWN | 0.352 | 0.624 | 0.623 | 0.775 | 1.089 | 1.160 | 0.862 | 0.962 | 1.320 | 1.264 |
| GRC | 0.335 | 0.617 | 0.622 | 0.775 | 1.085 | 1.153 | 0.862 | 0.962 | 1.302 | 1.251 |
| ESP | 0.332 | 0.616 | 0.620 | 0.774 | 1.086 | 1.154 | 0.862 | 0.962 | 1.303 | 1.251 |
| IRL | 0.271 | 0.598 | 0.607 | 0.773 | 1.079 | 1.142 | 0.862 | 0.961 | 1.271 | 1.228 |
| NZL | 0.257 | 0.595 | 0.605 | 0.773 | 1.077 | 1.138 | 0.863 | 0.962 | 1.263 | 1.221 |
| FIN | 0.224 | 0.589 | 0.600 | 0.775 | 1.074 | 1.132 | 0.865 | 0.963 | 1.248 | 1.209 |
| CAN | 0.225 | 0.584 | 0.594 | 0.770 | 1.076 | 1.136 | 0.862 | 0.961 | 1.257 | 1.217 |
| ITA | 0.221 | 0.590 | 0.602 | 0.776 | 1.073 | 1.130 | 0.866 | 0.963 | 1.244 | 1.206 |
| AUS | 0.214 | 0.590 | 0.602 | 0.777 | 1.072 | 1.128 | 0.867 | 0.963 | 1.239 | 1.202 |
| SWE | 0.199 | 0.590 | 0.604 | 0.780 | 1.070 | 1.124 | 0.869 | 0.964 | 1.229 | 1.195 |
| NLD | 0.196 | 0.590 | 0.603 | 0.780 | 1.069 | 1.123 | 0.869 | 0.964 | 1.229 | 1.194 |
| FRA | 0.187 | 0.591 | 0.605 | 0.783 | 1.068 | 1.120 | 0.871 | 0.964 | 1.222 | 1.189 |
| AUT | 0.187 | 0.591 | 0.606 | 0.783 | 1.067 | 1.120 | 0.871 | 0.964 | 1.221 | 1.188 |
| GBR | 0.186 | 0.590 | 0.604 | 0.782 | 1.068 | 1.121 | 0.870 | 0.964 | 1.223 | 1.189 |
| DEU | 0.182 | 0.591 | 0.606 | 0.784 | 1.067 | 1.119 | 0.872 | 0.965 | 1.218 | 1.186 |
| BEL | 0.175 | 0.592 | 0.607 | 0.786 | 1.066 | 1.117 | 0.873 | 0.965 | 1.214 | 1.182 |
| LUX | 0.158 | 0.596 | 0.612 | 0.791 | 1.063 | 1.111 | 0.877 | 0.966 | 1.202 | 1.173 |
| DNK | 0.159 | 0.596 | 0.612 | 0.791 | 1.062 | 1.110 | 0.877 | 0.966 | 1.201 | 1.172 |
| JPN | 0.100 | 0.599 | 0.616 | 0.800 | 1.059 | 1.103 | 0.884 | 0.969 | 1.185 | 1.159 |
| USA | 0.116 | 0.612 | 0.630 | 0.808 | 1.054 | 1.096 | 0.888 | 0.970 | 1.171 | 1.147 |
| CHE | 0.090 | 0.591 | 0.602 | 0.796 | 1.060 | 1.105 | 0.881 | 0.968 | 1.188 | 1.162 |

Table 5. Timetable for Data Base Development Activities

| Dates | GTAP 6 (2001 reference year) | | GTAP 5.x (1997 reference year) |
|---|---|---|---|
| | Input Deadlines | Activities | |
| March 2003 | - macro data (Mensbrugghe/World Bank)<br>- bilateral trade (Gehlhar/ERS)<br>- MAcMaps data (Mimouni/ITC) | - follow-up on data requests (BD/TH)<br>- invite new/revised I-O tables (BD) | - extend TS trade data (BD)<br>- prepare GTAPAgg package (BD)<br>- prepare FlexAGG package (BD)<br>**- March 18: interim release 5.3** |
| April 2003 | - domestic support data (Jensen/SJFI)<br>- agricultural tariff data (Gibson/ERS)<br>- export subsidies (Elbehri/ERS) | - pre-process macro data (BD)<br>- pre-process trade data (RM)<br>- work on energy module issues (RM/HLL) | - bug fixes (non-zero intra-reg trade in egy, JPN exp tax, exp subs, BWA tariffs, exp rev in MAR, non-zero intra-US tariffs) (BD/RM)<br>- minor plumbing of build (BD) |
| May 2003 | - agricultural I-O data (Peterson/VPI)<br>- USI-O table (Tsigas/USITC)<br>- TS trade data (Gehlhar/ERS)<br>- MFA data (Spinanger/Kiel) | -I-O table checks (TW)<br>- pre-process MacMaps data (BD)<br>- pre-process other protection data (BD) | - 5.4 packaging – GTAPAgg/Flexagg (BD/RM)<br>- put doco on new regions on website (BD)<br>**- May 30: interim release of 5.4** |
| June – Aug 2003 | - services trade data (c/o Rob)<br>**- Aug 30: 1st pre-release of 6.0** (includes macro, trade, tariffs) | - build structure changes (BD/RM)<br>- individual module code changes (BD/RM)<br>- bring in govt consumption module (RM/BD)<br>- bring in I-O FIT report module (RM/BD)<br>- pre-process MFA data (RM)<br>- pre-process energy data (HL/RM)<br>- pre-process services trade data (RM)<br>- pre-process new parameters data (BD)<br>- pre-process TS trade and macro data (BD)<br>- packaging of first pre-release (BD)<br>- pre-process agr I-O data (RM) | - CD-ROM for public release of 5.4 (JC) |
| Sept – Nov 2003 | - other I-O tables - New Zealand (Rae/NZL); Korea (Ko/KOR); etc.<br>**- 1 or 2 pre-releases of 6.0** (includes energy, agr I-O, other protection, bilateral services trade) | -I-O table checks (TW)<br>- agr I-O module work (RM)<br>- bilateral services trade work (RM)<br>- packaging of pre-releases (BD)<br>- packaging of final release (BD/RM) | **- Sept 30: public release of 5.4** – available to advance subscribers of GTAP 6.0 (JC) |
| Dec 2003 – Jan 2004 | **- Dec 1: advance release of GTAP 6.0 to board** | - CD-ROM for public release of 6.0 (JC)<br>- work on 6.0 documentation (BD) | |
| Feb 2004 | **- Feb 28: public release of 6.0** | | |

## APPENDIX 1. Synopsis of Last Year's (2002) GTAP Advisory Board Meeting

This year we have made this available on the web site. You may find the associated files by visiting the following URL:

http://www.agecon.purdue.edu/gtap/events/board_meetings/2002/default.asp

# APPENDIX 2. Communications with Contributors

**Outline of Communications with Contributors**

1. ***Contributor makes contact***
    a. Contributor emails Terrie Walmsley or contacts GTAP via the web site or referral.
    b. Terrie Walmsley then emails the prospective contributor to:
        i. introduce herself;
        ii. present them with a copy of technical paper 1 (Huff, McDougall and Walmsley, 2000);
        iii. provide them with details of the web site for contributors;
        iv. provide them with details of any forthcoming releases; and
        v. outline the benefits of contributing (see issues below).
    c. Contributors decide whether or not to contribute

2. ***Contributor puts together table***
    a. Information for contributors is available from the following sources:
        i. The technical paper.
        ii. The web page. A web page is currently being created to include:
            1. information from the technical paper in a web friendly format;
            2. a problems section which is updated to include recent queries by contributors;
            3. a template for the documentation; and
            4. access to programs used by the GTAP staff and other contributors for:
                a. putting IO tables together; and
                b. for checking the IO tables (these are the same programs used in step 3 to check the IO tables).
        iii. Terrie Walmsley is also available to answer specific questions. Emails are sent out on regular basis to:
            1. give procedural advice (such as suggesting that the mapping is checked early to avoid the contributor having to redo the IO table); and
            2. ensure that any difficulties are addressed early.

3. ***Table and draft documentation is contributed***
    a. Once the IO table has been contributed a number of checks are undertaken:
        i. The mapping between the original IO table and the GTAP sectors is checked to ensure it is correct
        ii. The draft documentation is examined.

iii. The IO table is checked to ensure that:

1. it balances,
2. contains no negatives, and
3. contains no ridiculous tax.

iv. In addition we may also raise issues related to:

1. any strange values (i.e. values which indicate that shares are abnormal when compared with representative table);
2. the government sector – whether it has been treated in a reasonable manner; and
3. the dwellings sector.

b. A report including any problems is then sent back to the contributor. The contributor is then asked to fix any pertinent problems and fix or comment on any other issues raised in the report.

c. If there are no problems the IO table is sent on to Betina Dimaranan for processing.

***4. Data Processing***

The table is then used as an input into the data processing stage. If there are any substantial problems at this stage then Betina Dimaranan or Robert McDougall will communicate directly with the contributor to see whether the problem/s can be fixed.

***5. Post Data Processing***

a. Once the IO table has been incorporated into the GTAP data base, the contributor is sent:

i. the relevant version of the GTAP data base;

ii. the country split out and presented in a SAM structure (following the structure presented in McDonald and Thierfelder, 2003);

iii. statistics produced on:

1. the entropy-theoretic measure of the total change in the share structure:

$$D = \frac{1}{2}\left[\sum_i (F_i - U_i)(\log F_i - \log U_i)\right]$$

where: $U_i$ is the share in the unfitted table

$F_i$ is the share in the fitted table

2. the entropy-theoretic measure of the change in the share structure for each sector.

$$D_i = \frac{1}{2} V\left[(F_i - U_i)(\log F_i - \log U_i)\right]$$

where: V is total final demand of the region

b. From these values the contributor can ascertain by how much the IO table has been altered to ensure that the data for the IO table fits the externally obtained data, such as the macro, trade, protection and

energy data. This value can be compared to those of other regions to determine if the table was altered significantly more or less than other regional IO tables. Moreover, the contributor can ascertain by how much individual sectors have been altered. This will aid them in explaining the differences and in case of errors, fix them.

c. The contributor is then given time to examine these statistics and respond. Any documentation is also finalised.
d. The documentation and the statistics are then placed on the web for board members and other interested users of the data base to examine.

### *6. Further releases*

Contributors are given access to all data and reports that they are entitled to and that would assist them in improving the quality of their IO tables. We envisage that this access would be granted via the web. This naturally leads to the question: What should contributors receive for contributing data?

a. Currently contributors receive:
    i. a 10x10 (and a 57x2) aggregation of the pre-release of the relevant version of the GTAP data base; and
    ii. a complete version of the final release of the relevant version of the GTAP data base.
b. Is this still appropriate? We would like to suggest that contributors are given access to:
    i. all pre-, interim and final releases for a period of one year from contributing.
c. This change reflects the following observations:
    i. The way in which the GTAP data base is now released is much more complex, with pre-, interim and final releases.
    ii. The ***quality*** of IO tables can only be improved by giving contributors the opportunity to use, comment upon and improve the full GTAP data base.

References:

Huff, K. R. Mcougall and T. L. Walmsley, 2000, "Contributing Input-Output Tables to the GTAP Data Base" GTAP Technical Paper No 1.

McDonald, S. and K. Thierfelder, 2003, "Deriving a Global Social Accounting Matrix from GTAP version 5 Data", mimeo.

## APPENDIX 3. Working Committees

| Committee Name | Chairperson | GTAP Center | Terms of Reference |
|---|---|---|---|
| Services | Philippa Dee | Robert McDougall, with input from Joseph Francois | 1. Oversee assembly of Services data on GTAP web site.<br>2. Evaluate alternative measures of protection.<br>3. Possibly organize a special session at the Fifth Annual Conference in Taiwan. |
| Technical Barriers to Trade | Frank van Tongeren | Thomas Hertel | 1. Explore the possibility of using the Hummels method to identifying ad valorem tariff equivalents associated with TBTs.<br>2. Try to identify a graduate student or other researcher to implement this scheme on a prototype basis. |
| Agricultural Support | Soren Frandsen | Betina Dimaranan | 1. Collect feedback on the treatment of agricultural support in the version 5 data base.<br>2. Explore alternative approaches to the measurement and incorporation of domestic support in the data base.<br>3. Identify links with primary factor splits in agriculture<br>4. Propose a "patch" to version 5 designed to improve on this aspect of the data base. |
| UN-SNA | Sherman Robinson | Channing Arndt | 1. Explore possible links with the UN Statistical Office.<br>2. Advise GTAP staff on SNA guidelines that will improve quality of country submissions. |
| Russia/Eastern Europe | Robert Koopman | Robert McDougall | 1. Initiate contacts with potential data base contributors for this region.<br>2. Explore funding possibilities with the US Dept. of Commerce for work on Eastern Europe<br>3. Encourage increased collaboration in region. |
| Baseline | Dominique van der Mensbrugghe | Terrie Walmsley | 1. Update material presented by Terrie at 2001 board meeting to reflect most recent GEP forecasts.<br>2. Update baseline to reflect version 5 data base.<br>Post revised baseline inputs on web site for 211 countries and 66 GTAP regions. |
| Energy | John Reilly | Jean-Marc Burniaux | 1. Evaluate version 5 data base with respect to energy quality.<br>2. Explore links with IEA and US DOE for future supply of volume and price data. |
| Primary Factor Splits | Member from CPB | Thomas Hertel | 1. Explore possibilities for removing self-employed labor payments from capital in contributed data bases.<br>2. Explore possibilities for improving the skilled/unskilled split within labor payments. |
| Open-sourcing | Thomas Hertel | | Work with GTAP board to identify potential funding sources for the open-source/free data idea. |

## APPENDIX 4. Specifications for Release 6 of the GTAP Data Base

We have a wish list, or a candidate projects catalogue, to be refined with stakeholders' advice into a work list. In the list, the labels identify current or proposed status: 0 for *done*, 1 *to be done*, 2 *to be done if circumstances are favorable*, 3 *not to be done*.

- release arrangements:

  **2** release date: February 2004

  **0** more frequent prereleases

  **1** pre-release roadmap maintained

  **3** prerelease aggregation facility for non-board data contributors

  **0** in consultation with contributors, make selected data inputs publicly available for download

- reference year: 2000

- pilot studies:

  **1** gtap-m: domestic margins

  **3** gtap-l: multiple land classes (we shall definitely act on this, but it will flow through to the standard data base in time for GTAP 6)

- ancillary programs:

  **3** generalized data base adjustment program (altertax++)

  **1** single-region SAM extraction program

- ancillary tables:

  **1** time-series macro data

  **1** projections baseline

  **1** foreign direct investment

  **1** services trade barriers

  **2** technical barriers to trade

  **2** anti-dumping measures

  **3** greenhouse gases other than carbon dioxide

**3** carbon dioxide sinks and sources other than fossil fuel combustion

**3** reports on detailed data sourcing, e.g., for tariff rates

**1** reports on data adjustments, e.g., in fitting I-O tables

- integrated into data base and model:

**2** new external account items, including foreign property income receipts and payments

**3** separate accounts for government and household sectors

- improvements to existing data arrays:

**1** direct taxes

**1** data-based bilateral structure for services trade

**2** data-based apportionment of travelers' expenditures across commodities

**3** better data support for international margins (in current data set, US is sole reporter)

**2** "miscellaneous" protective measures for agriculture

**1** target not only rates but also money values for assistance to agriculture

**1** balance commodity tax totals against government financial statistics

**3** revise treatment of gas (current procedure neglects distribution costs)

**3** revise treatment of energy usage in transport (current apportionment across households and industries is crude)

**3** make more use of I-O data in estimating energy costs; convert from process to establishment basis

**1** identify and adjust I-O tables with non-standard treatment of government consumption

**2** identify and adjust I-O tables with non-standard treatment of ownership of dwellings

**3** identify and adjust I-O tables with non-standard treatment of domestic mark-ups

**2** make use of labor splits data contributed with I-O tables

**2** separate owner-operator labor from capital

- data procurement:

**1** procure preferential tariff data

**2** review and rationalize energy price data sourcing

**1** review miscellaneous data anomalies with I-O table contributors

**3** advise I-O table contributors on SNA conformity requirements

**3** with assistance from ERS, review commodity tax data in table contributed for USA

**0** procure new tables for south-east Asian countries from JETRO/IDE

**1** procure new I-O tables for CIS member and eastern European countries

**3** seek I-O tables for oil exporting countries

- invisibles:

**1** true regional flexibility in agricultural disaggregation (currently, the preferred disaggregation procedure works only for a fixed set of regions)

**1** true regional flexibility for energy (currently, it is hard to add regions in the IEA-based cost totals)

**2** complete automation of the selection of proxy regions for composite I-O tables

**3** use simplified file format in all I-O table processing procedures not just in disaggregation (rationale: reduced development costs for new I-O table adjustment procedures)

**1** update developers' guide

**1** separate program and data directory trees (to facilitate support of multiple release streams)

**3** establish program and data version archive servers (to facilitate remote collaboration)

- GTAP 5 completion

**0** documentation

**2** patch for land-based agricultural subsidies

**3** facility to convert from current to USDA-recommended treatment of assistance to agriculture

**0** flexagg facility for time-series trade data

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Robert A. McDougall

## APPENDIX 5. 2001-2002 Budgets

# APPENDIX 6. Site Statistics Summary

Preliminary Definitions
This report is based on two sources of activity statistics, 1) the raw Web server logs, and 2) statistics collected in the on-line GTAP Network.

Server logs: Record every Web page or file requested, when the file was accessed, where it was requested from, the originating IP address, the time it took for the request to complete, etc. The purpose of this is to monitor server performance, record unauthorized requests and provide an audit trail of server activity. Information from the server logs is not nominal, i.e. the logs do not tell who visited the site. In the present statistics we excluded from the server logs all requests originating from Purdue University, and all requests from crawlers, search engines, and other automated indexing services.

GTAP Network: The GTAP Network is a repository of registered members, i.e. users who took the time to create a profile on the GTAP Web site. Most of the information available on the GTAP site does not require users to register. A visitor would typically register to submit an order, apply to a course or conference, subscribe to the GTAP-L mailing list, contribute a new GTAP application, or just because they deem worthwhile to be listed in our on-line database. All members of the GTAP Directory are also members of the GTAP Network. Members of the GTAP Network who never contributed to the GTAP Project are listed on the Web site as "other members".

GTAP Directory: A directory of GTAP contributors, i.e. members who purchased a version of the GTAP data base, attended a course or a conference, past and current Advisory Board Members, Research Fellows, data contributors, and project team members.

## Composition of the GTAP Network

The following statistics are extracted from the on-line GTAP Network as of April 29th 2003.

| | |
|---|---|
| Total number of members in GTAP Network | 2,073 |
| New Network members since 2002 Board Meeting | 635 |
| Total number of contributors in GTAP Directory | 764 |
| New Directory members since 2002 Board Meeting | 113 |
| Average new Network members/week | 12 |
| Total number of countries represented | 101 |

Table 1. Top 25 Countries in the GTAP Network (in absolute terms and per capita)

| Country | | Members (absolute terms) | Percent of Total | Country | Members per capita (per million) |
|---|---|---|---|---|---|
| 1 | United States | 466 | 22.5% | St. Kitts & Nevis | 25.0 |
| 2 | Japan | 156 | 7.5% | New Zealand | 7.2 |
| 3 | Australia | 113 | 5.4% | Australia | 5.7 |
| 4 | United Kingdom | 87 | 4.2% | Denmark | 5.4 |
| 5 | Germany | 86 | 4.1% | Switzerland | 5.2 |
| 6 | Taiwan (ROC) | 82 | 4.0% | Singapore | 4.1 |
| 7 | France | 72 | 3.5% | The Netherlands | 4.0 |
| 8 | The Netherlands | 64 | 3.1% | Taiwan (ROC) | 3.6 |
| 9 | China | 60 | 2.9% | Iceland | 3.6 |
| 10 | Canada | 57 | 2.7% | Belgium | 3.5 |
| 11 | India | 50 | 2.4% | Finland | 3.3 |
| 12 | Korea | 45 | 2.2% | Maldives | 3.0 |
| 13 | Italy | 41 | 2.0% | Malta | 2.5 |
| 14 | Brazil | 41 | 2.0% | Norway | 2.0 |
| 15 | Switzerland | 38 | 1.8% | Botswana | 1.9 |
| 16 | Belgium | 36 | 1.7% | Hong Kong | 1.9 |
| 17 | Indonesia | 32 | 1.5% | Trinidad and T. | 1.8 |
| 18 | Denmark | 29 | 1.4% | Ireland | 1.8 |
| 19 | South Africa | 27 | 1.3% | Canada | 1.8 |
| 20 | New Zealand | 27 | 1.3% | United States | 1.6 |
| 21 | Argentina | 25 | 1.2% | Sweden | 1.6 |
| 22 | Turkey | 25 | 1.2% | Costa Rica | 1.5 |
| 23 | Bangladesh | 20 | 1.0% | Uruguay | 1.5 |
| 24 | Singapore | 19 | 0.9% | United Kingdom | 1.4 |
| 25 | Spain | 18 | 0.9% | Japan | 1.2 |

Table 2: Composition of the GTAP Directory

| Role in the GTAP Directory | Members |
|---|---|
| Short Course Participants | 369 |
| 1993 Short Course Participant | 22 |
| 1994 Short Course Participant | 23 |
| 1995 European Short Course Participant (Frankfurt) | 23 |
| 1995 Short Course Participant | 23 |
| 1996 Advanced Course in Global Trade Analysis | 10 |
| 1996 Short Course Participant | 24 |
| 1997 Advanced Course in Global Trade Analysis | 10 |
| 1997 Short Course Participant | 29 |
| 1998 African Short Course Participant | 22 |
| 1998 Short Course Participant (The Netherlands) | 20 |
| 1999 Short Course Participant | 30 |
| 2000 Dynamic GTAP Short Course | 14 |
| 2000 Short Course Participant | 27 |
| 2001 Short Course Participant | 28 |
| 2002 Short Course Participant (Sheffield, UK) | 25 |
| 2002 Web-Based Course Participant | 5 |
| Course Instructor | 34 |
| Conference Participants | 335 |
| Alan A. Powell Award Recipients | 8 |
| Research Fellows | 22 |
| 1996 Research Fellows | 8 |
| 1997 Research Fellows | 2 |
| 1999 Research Fellows | 3 |
| 2000 Research Fellows | 3 |
| 2001 Research Fellows | 3 |
| 2002 Research Fellows | 3 |
| Advisory Board Members | 48 |
| Current Members | 21 |
| Past Members | 27 |
| Data Base Contributors | 25 |
| EPA Project Members | 3 |
| Data Base Subscribers | 379 |
| V2 Data Base Subscribers | 41 |
| V3 Data Base Subscribers | 49 |
| V4 Data Base Subscribers | 118 |
| V5 Data Base Subscribers | 171 |
| Conference Organizing Committee Members | 8 |
| Conference Reviewers | 25 |
| GTAP Staff and Research Assistants | 13 |

## Activity Statistics for the GTAP Network (Authenticated Users)

These statistics are not extracted from the server logs, but from users signing in to the GTAP Web site. As a reminder, signing in is not required on the GTAP Web site, unless a member wishes to edit his/her profile, or make new contributions.

| | |
|---|---|
| Total number of authenticated visits since 2002 Board Meeting | 47,072 |
| Total number of authenticated visitors since 2002 Board Meeting | 1,203 |
| Average number of authenticated visits/week | 905 |
| Average number of authenticated visitors/week | 23 |

* Note: visits from GTAP Staff members were excluded.

Figure 1: Monthly Authenticated Visits (January 2001 - May 2003)

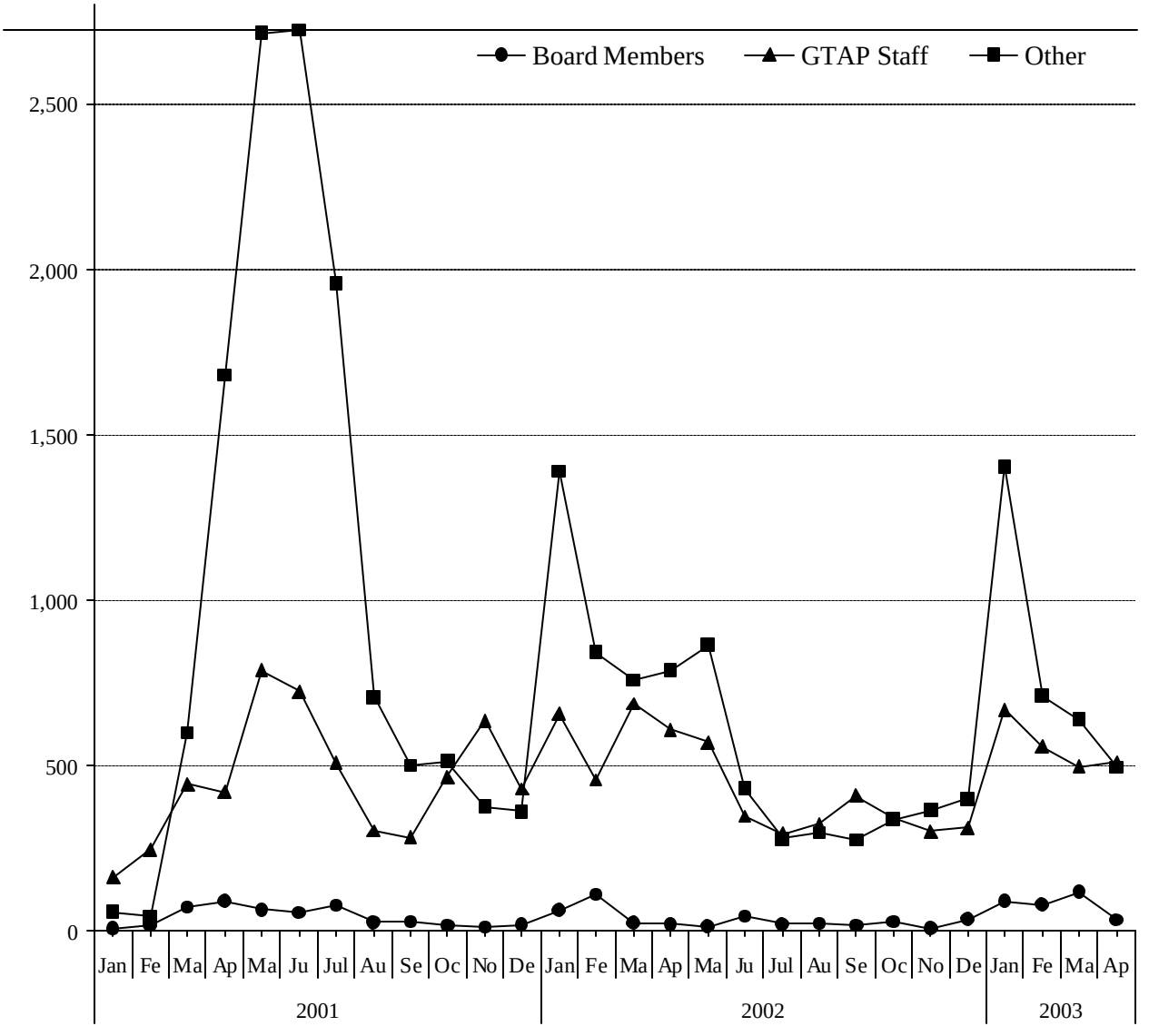

Table 3. Yearly Visits by Advisory Board Members

| | 2001 | 2002 | 2003 | Total |
|---|---|---|---|---|
| Adkins, Liwayway (United States) | - | 30 | 12 | 42 |
| Bagnoli, Philip (France) | - | 16 | 6 | 22 |
| Bohman, Mary (United States) | - | 22 | 18 | 40 |
| Brockmeier, Martina (Germany) | 49 | 62 | 14 | 125 |
| Dee, Philippa (Australia) | 25 | 2 | - | 27 |
| Devlin, Robert (United States) | - | - | - | - |
| Francois, Joseph (The Netherlands) | 49 | 6 | 18 | 73 |
| Frandsen, Soren E. (Denmark) | 94 | 20 | 2 | 116 |
| Jean, Sébastien (France) | 4 | 50 | 60 | 114 |
| Kawasaki, Kenichi (Japan) | 46 | 50 | 26 | 122 |
| Koopman, Robert (United States) | 34 | 38 | 6 | 78 |
| Lejour, Arjan (The Netherlands) | 12 | - | 30 | 42 |
| Low, Patrick (Switzerland) | - | - | - | - |
| Martin, Will (United States) | 55 | 6 | 32 | 93 |
| Omori, Takashi (Japan) | - | 4 | - | 4 |
| Pant, Hom (Australia) | 4 | 26 | 20 | 50 |
| Powell, Alan (Australia) | 63 | 34 | - | 97 |
| Reilly, John M. (United States) | 18 | 12 | - | 30 |
| Robinson, Sherman (United States) | 10 | 2 | - | 12 |
| van Tongeren, Frank (The Netherlands) | 28 | 34 | 68 | 130 |
| Vanzetti, David (Switzerland) | 14 | 14 | 16 | 44 |

Table 4. Top 25 Visiting Countries (past 12 months in absolute terms and per capita, GTAP Staff Excluded)

| | Country | Visits | Percent of Total | Country | Visits per capita (per million) |
|---|---|---|---|---|---|
| 1 | United States | 9,758 | 51.3% | The Netherlands | 46.7 |
| 2 | The Netherlands | 2,970 | 6.5% | Finland | 36.2 |
| 3 | Japan | 1,742 | 6.0% | Australia | 23.5 |
| 4 | Australia | 1,070 | 3.7% | New Zealand | 22.3 |
| 5 | Finland | 824 | 3.3% | Denmark | 22.3 |
| 6 | Taiwan (ROC) | 772 | 3.1% | United States | 22.2 |
| 7 | France | 686 | 3.0% | Costa Rica | 17.5 |
| 8 | Germany | 642 | 1.8% | Taiwan (ROC) | 16.9 |
| 9 | India | 454 | 1.6% | Singapore | 13.9 |
| 10 | United Kingdom | 440 | 1.5% | Switzerland | 12.3 |
| 11 | Korea | 322 | 1.5% | Greece | 10.1 |
| 12 | Denmark | 282 | 1.0% | Belgium | 8.0 |
| 13 | Italy | 282 | 1.0% | France | 6.9 |
| 14 | New Zealand | 216 | 1.0% | Japan | 6.4 |
| 15 | Switzerland | 172 | 0.9% | Ireland | 5.1 |
| 16 | China | 162 | 0.8% | Germany | 4.8 |
| 17 | Bangladesh | 148 | 0.8% | Austria | 3.9 |
| 18 | Canada | 144 | 0.7% | United Kingdom | 3.4 |
| 19 | Brazil | 130 | 0.7% | Italy | 3.3 |
| 20 | Kenya | 122 | 0.7% | Norway | 3.1 |
| 21 | Belgium | 106 | 0.7% | Uzbekistan | 2.8 |
| 22 | Greece | 106 | 0.7% | Canada | 2.7 |
| 23 | Argentina | 94 | 0.7% | Botswana | 2.5 |
| 24 | Indonesia | 88 | 0.6% | Argentina | 2.4 |
| 25 | Turkey | 82 | 0.6% | Korea | 2.4 |

Table 5 Top 50 Visitors (past 12 months, GTAP Staff Excluded)

| Network Member | Visits | Network Member | Visits |
|---|---|---|---|
| van Leeuwen, Nico (The Netherlands) | 150 | Alpay, Savas (Turkey) | 44 |
| Dagoumas, Athanasios (Greece) | 98 | Ingram, Kevin (United States) | 44 |
| Jean, Sébastien (France) | 92 | Maliszewska, Maryla (United Kingdom) | 42 |
| van Tongeren, Frank (The Netherlands) | 88 | van Meijl, Hans (The Netherlands) | 40 |
| Krijgsman, Karlijn (The Netherlands) | 86 | Wang, Zhi (United States) | 38 |
| Huang, Chung-Huang (Taiwan (ROC)) | 78 | Liu, Xiaohe (Australia) | 38 |
| Muradova, Khusnia (Uzbekistan) | 70 | Teeuwen, Colinda (The Netherlands) | 38 |
| Kawasaki, Kenichi (Japan) | 66 | Pohit, Sanjib (India) | 38 |
| Tsigas, Marinos (United States) | 66 | Pant, Hom (Australia) | 38 |
| Li, Jennifer Chung-i (United States) | 64 | Fhseoi, Dfefgegr (Japan) | 38 |
| Ban, Kanemi (Japan) | 60 | Kohlhaas, Michael (Germany) | 36 |
| Wu, Chia-Hsun (Taiwan (ROC)) | 60 | Martin, Will (United States) | 36 |
| Kurzweil, Marianne (Germany) | 58 | Nielsen, Chantal Pohl (Denmark) | 36 |
| Saracoglu, Durdane Sirin (United States) | 58 | Wang, Lars (Germany) | 36 |
| Bernard, Alain (France) | 54 | Vaittinen, Risto (Finland) | 36 |
| Hossain, Sharif Mosharraf (Bangladesh) | 54 | van Tuijl, Bas (The Netherlands) | 34 |
| Pohjola, Johanna (Finland) | 52 | van Schaaijk, Marein (The Netherlands) | 34 |
| Lips, Markus (The Netherlands) | 52 | Zhongyuan, Shen (Japan) | 34 |
| Rigatti Luchini, Silio (Italy) | 50 | Pratap, Devender (India) | 34 |
| Kancs, d'Artis (United States) | 48 | Kerkela, Leena (Finland) | 34 |
| Femri, Ronny (Indonesia) | 46 | Kainuma, Mikiko (Japan) | 34 |
| Chadha, Rajesh (India) | 46 | Kim, Kunhong (New Zealand) | 32 |
| Roland-Holst, David (United States) | 46 | Butler, Inés (Argentina) | 32 |
| Liu, Chun-Chu (Taiwan (ROC)) | 46 | Saito, Katsuhiro (Japan) | 32 |
| Segura, Oswaldo (Costa Rica) | 44 | Yueying, Mu (Japan) | 32 |

## Composition of the GTAP Resource Center

The statistics below are extracted from the on-line GTAP Resource Center as of April 29th 2003.

| | |
|---|---|
| Total number of resources | 937 |
| New resources since last Board Meeting | 127 |
| Total number of GTAP Applications | 539 |
| New GTAP Applications since last Board Meeting | 64 |
| Total number of full-text resources | 586 |
| Average number of new resources/month | 12 |

Table 6. Composition of the GTAP Resource Center

| Category | Total |
|---|---|
| GTAP Applications | 539 |
| Technical papers | 21 |
| Working papers | 25 |
| Documentation | 153 |
| Model file (.TAB) | 8 |
| Utilities | 10 |
| Product Updates | 3 |
| Aggregations | 20 |
| 2003 Conference Papers | 32 |
| 2002 Conference Papers | 144 |

Table 6. GTAP Applications by Country (to be updated)

| Country | GTAP Applications | Country | GTAP Applications |
|---|---|---|---|
| United States | 177 | Italy | 2 |
| Australia | 82 | Canada | 3 |
| Denmark | 23 | Ethiopia | 2 |
| Netherlands | 27 | Switzerland | 2 |
| Germany | 21 | Argentina | 1 |
| Japan | 25 | Norway | 1 |
| New Zealand | 18 | South Africa | 1 |
| United Kingdom | 13 | Zimbabwe | 1 |
| Finland | 6 | Belgium | 1 |
| Brazil | 6 | Colombia | 1 |
| France | 5 | Croatia | 1 |
| Taiwan (ROC) | 5 | Kuwait | 1 |
| Turkey | 3 | Korea, Republic of | 1 |
| India | 4 | **Total** | **435** |
| Indonesia | 2 | | |

## General Access Statistics

This is a brief summary of the Web site statistics for 2002-2003. All hits originated from a user on the Purdue network have been filtered out. These statistics are extracted from the raw Web server logs.

Tracked pages: http://www.gtap.agecon.purdue.edu/
Report range: May 1st, 2002 – May 1st, 2003 (12 months)

### Visits

| | |
|---|---|
| Total Hits | 2,219,467 |
| Average Hits per Day | 6,182 |
| Average Hits per Visitor | 20.67 |

### Visitors

| | |
|---|---|
| Total Visitors | 107,352 |
| Average Visitors per Day | 299 |

### Activity

| | |
|---|---|
| Busiest day of week: | Wednesday |
| Slowest day of week: | Saturday |
| Busiest hour of day: | 9am |
| Slowest hour of day: | 6pm |

Top 15 Popular Pages

- GTAP Home page
  http://www.gtap.agecon.purdue.edu/
- Data Bases
  http://www.gtap.agecon.purdue.edu/databases/
- Data Bases | Version 5
  http://www.gtap.agecon.purdue.edu/databases/v5/
- Data Bases | Version 5 | Documentation
  http://www.gtap.agecon.purdue.edu/databases/v5/v5_doco.asp
- Sign in
  http://www.gtap.agecon.purdue.edu/login/login.asp
- GTAP Network | Terrie Walmsley (photo)
  http://www.gtap.agecon.purdue.edu/network/photo_download.asp?RecordID=429
- GTAP Network | Channing Arndt (photo)
  http://www.gtap.agecon.purdue.edu/network/photo_download.asp?RecordID=15
- GTAP Resource Center
  http://www.gtap.agecon.purdue.edu/ resources/
- GTAP Resource Center | Technical Papers
  http://www.gtap.agecon.purdue.edu/resources/tech_papers.asp
- GTAP Resource Center | Working Papers
  http://www.gtap.agecon.purdue.edu/ resources/working_papers.asp
- My Account | My Profile
  http://www.gtap.agecon.purdue.edu/access_member/profile/profile_display.asp
- GTAP Data Bases | Special Projects
  http://www.gtap.agecon.purdue.edu/welcome/project.asp
- Resource Center | GTAP Applications
  http://www.gtap.agecon.purdue.edu/resources/res_list.asp?SearchField=Type&SearchValue=GTAP Application
- GTAP Products
  http://www.gtap.agecon.purdue.edu/products/
- Full-site Search
  http://www.gtap.agecon.purdue.edu/search/

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## Top 40 Popular Downloads

- Applied General Equilibrium Analysis of Agricultural and Resource Policies
  http://www.gtap.agecon.purdue.edu/resources/download/1053.doc
- China's Accession to the WTO: Timing is Everything
  http://www.gtap.agecon.purdue.edu/resources/download/548.pdf
- Concordances - four-digit SITC merchandise trade concordance to GTAP
  http://www.gtap.agecon.purdue.edu/resources/download/528.zip
- Assessing the Impact of China's WTO Accession on Foreign Ownership
  http://www.gtap.agecon.purdue.edu/resources/download/838.pdf
- GTAPAgg Demo Version
  http://www.gtap.agecon.purdue.edu/resources/download/312.pdf
- GTAP Data Base | Version 5 | Sets
  http://www.gtap.agecon.purdue.edu/databases/v5/v5_sets.xls
- Dynamic Effects of the "New Age" Free Trade Agreement between Japan and Singapore
  http://www.gtap.agecon.purdue.edu/resources/download/748.pdf
- New PhD Program in Applied International Economics
  http://www.gtap.agecon.purdue.edu/welcome/news/PhDbrochure.pdf
- V5 Documentation - Chapter 02: Data Base Summary, Macroeconomic Data
  http://www.gtap.agecon.purdue.edu/resources/download/238.txt
- V5 Documentation - Chapter 01: Introduction
  http://www.gtap.agecon.purdue.edu/resources/download/720.pdf
- V5 Documentation - Chapter 04: Data Base Summary, Protection and Support
  http://www.gtap.agecon.purdue.edu/resources/download/47.pdf
- V5 Documentation - Chapter 08: Guide to GTAP Data Base
  http://www.gtap.agecon.purdue.edu/resources/download/754.pdf
- V5 Documentation - Chapter 12: Food and Agricultural Data Base
  http://www.gtap.agecon.purdue.edu/resources/download/1161.pdf
- A Policy Simulation of Agriculture for Entering WTO
  http://www.gtap.agecon.purdue.edu/resources/download/881.pdf
- Options and Implications of FTA in Asia after China enter the WTO
  http://www.gtap.agecon.purdue.edu/resources/download/11.pdf
- An Introduction to Systematic Sensitivity Analysis via Gaussian Quadrature
  http://www.gtap.agecon.purdue.edu/resources/download/643.pdf
- Contributing Input-Output Tables to the GTAP Data Base
  http://www.gtap.agecon.purdue.edu/resources/download/758.pdf
- V4 Documentation - Chapter 14/4
  http://www.gtap.agecon.purdue.edu/resources/download/902.pdf
- V4 Documentation - Chapter 8
  http://www.gtap.agecon.purdue.edu/resources/download/857.pdf
- A General Welfare Decomposition for CGE Models
  http://www.gtap.agecon.purdue.edu/resources/download/623.pdf
- Theoretical Structure of Dynamic GTAP
  http://www.gtap.agecon.purdue.edu/resources/download/689.pdf
- 2003 Short Course Brochure
  http://www.gtap.agecon.purdue.edu/events/Short_Courses/2003/Brochure.pdf
- Extending the GTAP Database for Analysis of Climate Change
  http://www.gtap.agecon.purdue.edu/resources/download/94.pdf
- A Graphical Exposition of the GTAP Model
  http://www.gtap.agecon.purdue.edu/resources/download/22.pdf
- RunGTAP - Demo Version
  http://www.gtap.agecon.purdue.edu/resources/download/1104.zip

Continued

## Top 40 Popular Downloads (Continued)

- Trade Policy, Food Price Variability and the Vulnerability of Low-Income Households
  http://www.gtap.agecon.purdue.edu/resources/download/1130.pdf
- 2002 Short Course Brochure
  http://www.gtap.agecon.purdue.edu/events/short_courses/2002/brochure.pdf
- GTAP Model Version 6.1
  http://www.gtap.agecon.purdue.edu/resources/download/317.pdf
- A Note On Changes Since GTAP Book Model (Version 2.2a / GTAP94 )
  http://www.gtap.agecon.purdue.edu/resources/download/130.pdf
- The CEECs Accession to the Internal Market: Implications for Countries and Industries
  http://www.gtap.agecon.purdue.edu/resources/download/630.pdf
- V5 Documentation - Chapter 16.B: Sources of Merchandise Tariff Data
  http://www.gtap.agecon.purdue.edu/resources/download/795.pdf
- V5 Documentation - Chapter 19: Updating and Adjusting the Regional Input-Output Tables
  http://www.gtap.agecon.purdue.edu/resources/download/450.pdf
- V5 Documentation - Chapter 06: Data Base Summary, IO Multipliers
  http://www.gtap.agecon.purdue.edu/resources/download/631.pdf
- V5 Documentation - Chapter 07: Bilateral Time-Series Trade Data
  http://www.gtap.agecon.purdue.edu/resources/download/39.pdf
- V5 Documentation - Chapter 11.C: China
  http://www.gtap.agecon.purdue.edu/resources/download/723.pdf
- V5 Documentation - Chapter 11.D: Japan
  http://www.gtap.agecon.purdue.edu/resources/download/982.doc
- V5 Documentation - Chapter 16.A: Construction of the Protection Data Base
  http://www.gtap.agecon.purdue.edu/resources/download/943.doc
- V5 Documentation - Chapter 19 : Updating and Adjusting the Regional Input-Output Tables
  http://www.gtap.agecon.purdue.edu/resources/download/858.pdf
- A Graphical Exposition of the GTAP Model
  http://www.gtap.agecon.purdue.edu/resources/download/181.pdf
- V5 Documentation - Chapter 16.F: ATC Export Tax Equivalents
  http://www.gtap.agecon.purdue.edu/resources/download/415.doc