GTAP Summary in Excel version 1.0: *samag3x3.zip*

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Alexandra Strzelecki

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Publications Inquiries:
Media and Publications
Productivity Commission
Locked Bag 2 Collins Street East
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Tel: (03) 9653 2244
Fax: (03) 9653 2303
Email: maps@pc.gov.au

General Inquiries:
Tel: (03) 9653 2100 or (02) 6240 3200

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GTAP Summary in Excel version 1.0 — Program Documentation for samag3x3.zip[1]

By Alexandra Strzelecki, Productivity Commission, Australia.

GTAP (Global Trade Analysis Project) is a global network of researchers and policymakers that conduct quantitative analysis of international policy issues. Due to its complexity, it is not easy to obtain a quick overview of the main characteristics of the GTAP database.

The 'GTAP Summary Programs in Excel' is a suite of programs designed to improve access to the GTAP database for non-GEMPACK users. It has been developed by the Productivity Commission, building on previous work by GTAP. It enables the generation of Excel workbooks containing a summary of each country's economic statistics in individual worksheets.

It is hoped that improved access to a summary of the GTAP database will enable non-GTAP specialists to provide feedback on the database, thereby improving its quality.

This suite of programs produces 20 country-specific summaries of the GTAP database.[2] The summaries consist of:

- a Social Accounting Matrix;
- 13 tables that describe key macroeconomic and aggregate industry characteristics for each country; and
- 6 tables that describe bilateral trade flows of aggregated commodities.

1 The results reported here were obtained using the GTAP summary in Excel software (Strzelecki 2007).

2 The facility must be run five times to obtain a summary for all the countries included in the version 6 Data Base. The aggregated GTAP Data Base must have 10 commodities or less.

The system was designed to facilitate access to summarised GTAP data for non-GEMPACK users, and therefore facilitate checking the characteristics of the data included in the GTAP database.

The procedure is automated. It uses a combination of batch files, GEMPACK programs and Microsoft Excel Visual Basic macros. The system builds on two existing GEMPACK programs: SAM.tab and GTPVEW.tab.

- The program SAM.tab was developed by Vitaly Kharitonov and Terrie Walmsley (Center for Global Trade Analysis, Purdue University). It was renamed SAM_GXL6.tab and extended by Alexandra Strzelecki (Productivity Commission, Australia) for the purpose of creating an Excel version of the Global Social Accounting Matrix.
- The program GTPVEW.tab was developed initially at the Center for Global Trade Analysis, Purdue University. It was renamed GTAPVEWX.tab and extended by Alexandra Strzelecki (Productivity Commission, Australia) for the purpose of creating an Excel version of the GTAP VIEW summary matrices.

The complete system is described in the remainder of this document.

1 Overview

This is a documentation file for a GEMPACK version of a program SAM_GXL6.tab that derives a Global Social Accounting Matrix from version 6 of the aggregated GTAP Data Base.[3] The Global Social Accounting Matrix produced as a separate header for each region of interest is then copied into an Excel workbook and formatted using a Visual Basic macros file.

- SAM_GXL6.tab is a complement to: McDonald, Scott and Thierfelder, Karen 2004, *Deriving a Global Social Accounting Matrix from GTAP version 5 data,* GTAP Technical paper 22, Center for Global Trade Analysis, Purdue University, https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=1645.

This is also a documentation file for a GEMPACK version of a program GTAPVEWX.tab that derives GTAP VIEW summary files from version 6 of the aggregated GTAP Data Base.[4] The summary files produced as a separate header for each region of interest are then copied into an Excel workbook and formatted using a Visual Basic Macros file.

[3] It will also be possible to use it with future versions of the GTAP Data Base.

[4] For those familiar with the GTAPView program in RunGTAP, this is a slightly modified version of that file.

2 What is needed to run these programs

1. The program files are made available in a WinZip archive — samag3x3.zip.
2. A 3-commodity by 3-region aggregation of the GTAP 6 Data Base is provided (Sets.har and Basedata.har). If the user wishes to change the aggregations in the files provided, a licensed version of the GTAP Data Base with the GTAPAgg program will be needed. The GTAPAgg program uses an input aggregation file like ag3gtap6.agg to produce the Sets.har and Basedata.har files.
3. All the sets required to use the two GEMPACK programs with a GTAP database are provided from five files (the table in section 5 provides a comprehensive list of all files needed to run the entire suite of programs).
   (a) *Sets.har* — standard set file produced by the GTAPAgg program.
   (b) *Common.har* — contains sets that are included in a Global Social Accounting Matrix *no matter which aggregation is used*.
   (c) *REG_SETI.har* — specifies sets for a subset of regions of interest (up to 20).
      - ***IMPORTANT***: The user can change these data (they need to be changed if the aggregation or subset of regions of interest is changed), but the file must be structurally identical to the REG_SETI.har files provided and named REG_SETI.har.
      - To modify the REG_SETI.har file, select the 'Use advanced, editing menu' option under File in ViewHAR. Selecting this option provides more tools in the menu including 'Edit'. Under 'Edit' you will see an option 'change size' which allows you to change the size of an array. New data can then be pasted into the array from Excel.
   (d) *REG_SET.xls* — input Excel file that maps the names of the countries/regions of interest from short to long names. These are then used in the final Excel output files. Any changes to the REG_SETI.har file must be accompanied by equivalent changes to the REG_SET.xls file. The short names **must** correspond to the header 'H1' in REG_SETI.har. Do **NOT** change 'Sheet2' in this file.

3 How to use the programs

1. All files from the WinZip archive should be extracted to one directory. Files Basedata.har and sets.har created by the GTAPAgg program using an input aggregation file like ag3gtap6.agg should be copied into the same directory.

2. Run the DOS batch file **GTAPSAMX.bat** which selects TG executable file sam_gxl6.exe and runs file sam6_xl.sti together with 20 regional SEEHAR.exe program input SEE_SX*.sti files.
   - Running this .bat file produces a Global Social Accounting Matrix and a set of 21 CSV files. It creates one additional labelling CSV file from running SEEHAR.exe with SEE_LABS.sti.
     - Depending on computer configuration, it takes 1–2 minutes to create output files sam.har (about 26 Mb) and the file transferred to Excel, SAM6_XL.har**,** which is about 140 Kb for the full GTAP 6 Data Base. Unlike the full unaggregated matrix which occupies 300 Mb and does not fit into Excel, the size of 1.6 Mb does not cause it to open slowly in ViewHAR. The user must, however, have enough free space available before running the program.
     - The structure of the file SAM6_XL.har may appear to be slightly different from the one produced by the GAMS program developed by McDonald and Thierfelder. The differences are related to the fact that GAMS does not carry zeros.
3. Then run the DOS batch file **GTAPXV.bat** which selects TG executable file gtapvewx.exe and runs file gtpvewx.sti, together with 20 regional SEEHAR.exe program input SEE_MC*.sti files and 10-sector SEEHAR.exe program input SEE_BI*.sti files.
   - Running this .bat file produces GTAP VIEW summary matrices and a set of 30 CSV files.
     - Depending on computer configuration, it takes 2 minutes to create output file GTPXVEW.har and a dummy output file GTPXTAX.har, which together occupy about 274 Kb of disk space.
4. If using a different sectoral aggregation of the GTAP Data Base, then before performing step 5, the user should update COMM_AGG.xls. This can be done by copying the commodity/industry sector aggregation mapping part of the input text file for aggregation (see ag3gtap6.agg)[5] into a new file like COMM_AGG.txt and then converting it into an Excel file, which **must** be called COMM_AGG.xls. An example of these files is provided in the WinZip archive.
5. The final step is to create the SAM matrix and summary tables in Excel. To do this, the user must do the following.
   - First, open the VBA files **GTAP_SAMMAC.xls**

5 Note that this file is input to GTAPAgg when constructing a new version.

- Second, begin opening a file in the directory that contains the input and output files, then cancel out of the opening process.
  - The VBA programs save the Excel output files containing the summary matrices to the folder specified by this process. If the user does not set up the directory in this way, the program will be unable to locate the input files.
- Finally, run Module 1 — by selecting Tools | macro | macros | run — first in GTAP_SAMMAC.xls.
  - The programs run for approximately 1 minute and 2 minutes respectively.
  - If an error message arises, it is likely to be due to problems with the GTAP input files created by the user. Please ensure that the REG_SETI.har and the REG_SET.xls files are consistent with the files produced by the GTAPAgg program (see point 3 in section 2).
  - The hard-wired output files produced by these Visual Basic macros files are called GTAP_SAM_a1.xls and GTAP_VEWX_a1.xls. These should be saved with different names, otherwise they will be overwritten in subsequent runs.
- Repeat for **GTAP_MAC.xls**

4 Feedback

Comments and suggestions about this documentation and/or the program suite are welcome. They can be forwarded to the author of this paper:

Alexandra Strzelecki,
Productivity Commission,
Locked Bag 2,
Collins Street East Post Office
Melbourne, Vic, Australia, 8003.

E-mail: astrzelecki@pc.gov.au

5 List of files

REQUIRED

ag3gtap6.agg	Input to GTAPAgg program facility which aggregates the full database in accordance with the aggregation specified in the .agg file
GTAPsamx.bat	Batch file to run SAM extraction program
Sam_gxl6.tab Sam_gxl6.exe Sam_gxl6.axs Sam_gxl6.axt	SAM extraction GEMPACK files
Sam6_xl.sti	Runs SAM extraction program
Common.har	Input required by SAM extraction program
GTAP_SAMMAC.xls	Visual basic file for running SAM extraction program

Gtapxv.bat	Batch file to run GTAPView
Gtapvewx.tab Gtapvewx.exe Gtapvewx.axs Gtapvewx.axt	GTAP View GEMPACK files
Gtapvewx.sti	Calls GTAPView cmf file to run GTAPView
Gtapvewx.cmf	CMF file for running GTAPView
GTAP_MAC.xls	Visual basic file for running GTAPView

See_labs.sti	Sends sets.har to CSV file
See_regs.sti	Sends reg_set.har output to CSV file
See_seti.sti	Sends reg_seti.har output to CSV file

See_BI01.sti See_BI02.sti See_BI03.sti See_BI04.sti See_BI05.sti See_BI06.sti See_BI07.sti See_BI08.sti See_BI09.sti See_BI10.sti See_BI11.sti See_BI12.sti See_BI13.sti See_BI14.sti See_BI15.sti See_BI16.sti See_BI17.sti See_BI18.sti See_BI19.sti	Sends GTAPView HAR output by commodity to CSV file

See_BI20.sti	
See_mc01.sti	Sends GTAPView HAR output by region to CSV file
See_mc02.sti	
See_mc03.sti	
See_mc04.sti	
See_mc05.sti	
See_mc06.sti	
See_mc07.sti	
See_mc08.sti	
See_mc09.sti	
See_mc10.sti	
See_mc11.sti	
See_mc12.sti	
See_mc13.sti	
See_mc14.sti	
See_mc15.sti	
See_mc16.sti	
See_mc17.sti	
See_mc18.sti	
See_mc19.sti	
See_mc20.sti	
See_sx01.sti	Sends SAM extraction HAR output to CSV file
See_sx02.sti	
See_sx03.sti	
See_sx04.sti	
See_sx05.sti	
See_sx06.sti	
See_sx07.sti	
See_sx08.sti	
See_sx09.sti	
See_sx10.sti	
See_sx11.sti	
See_sx12.sti	
See_sx13.sti	
See_sx14.sti	
See_sx15.sti	
See_sx16.sti	
See_sx17.sti	
See_sx18.sti	
See_sx19.sti	
See_sx20.sti	
Sets.har	Sample standard set file for 3x3 aggregation produced by the GTAPAgg program; the user can also construct this file by running the GTAPAgg program
Basedata.har	Sample 3x3 output from GTAPAgg. Example also provided.

TEMPLATES WHICH CAN BE EDITED

COMM_AGG.xls	Commodity/industry sector aggregation mapping
REG_SET.xls	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SETI.har	Alternative list of 20 regions and longnames for producing xls files for all countries

YOU MUST PROVIDE

FOR YOUR ASSISTANCE ONLY

Comm_agg.txt	Commodity/industry sector aggregation mapping – used to create comm._agg.xls
GTAP_SAM_ag3b1.xls	Sample output files
GTAP_VEWX_ag3b1.xls	Sample output files

DOCUMENTATION

GTAP Summary in Excel Documentation
samag3x3.pdf

1.6 Sample output tables for Australia from GTAP_VEWX_c1.xls

Table 1: GDP components

	Expenditure		Source
consumptn	214,866	factors	217,053
investment	77,240	taxes	102,887
government	64,239	depreciatn	37,425
exports	73,934	totsrc	357,365
imports	-72,913	diffe_s	0.000000
totexpend	357,365		

Table 2: Value of tradables fob and International transport margins by commodity

	fob	trans
agri	7,656	758
mimf	51,222	4,448
serv	14,154	0
Total	73,033	5,206

Table 3: Saving and investment

save	40,836
inv	-39,815
tot_capacc	1,021
diff_capmcur	0

Table 4: Exports and imports by commodity

	exp	imp	tot_curacc
agri	7,656	-606	7,051
mimf	51,222	-59,276	-8,054
serv	15,055	-13,030	2,024

Total	73,934	-72,913	1,021

Table 5: value of output, including net production taxes

	prodrev	outtax	tot_out
agri	22,809	-32	22,777
mimf	184,626	2,080	186,706
serv	437,465	10,373	447,838
Total	644,900	12,421	657,321

Table 6: Components of value added

	agri	mimf	serv	CGDS
Land	2,789	0	0	0
UnSkLab	6,421	21,999	84,369	0
SkLab	352	8,909	70,426	0
Capital	3,719	29,030	91,348	0
NatRes	0	5,414	0	0
Total	13,281	65,352	246,143	0

Table 7: Capital stock

935,617

Table 8: Domestic Sales composition

	domabsorb	trans	expfob
agri	15,121	0	7,656
mimf	135,803	0	50,903
serv	432,783	901	15,055

Table 9: Use of domestically produced goods

	interuse	cons	gov	inv	expfob	tot_sal
agri	10,906	3,603	48	564	7,656	22,777
mimf	92,547	31,587	1,468	10,201	50,903	186,706
serv	172,246	148,421	61,799	50,317	15,055	447,838
Total	275,699	183,611	63,315	61,082	73,615	657,321

Table 10: Use of imports

	interuse	cons	gov	inv	expfob	tot_sal
agri	386	219	1	2	0	608
mimf	35,259	12,656	923	13,585	0	62,423
serv	7,227	5,602	0	202	0	13,030
Total	42,872	18,477	924	13,788	0	76,061

Table 11: Ratio of output to total usage

agri	1.45
mimf	0.94
serv	1.00

Table 12: Industry cost structures - Basic Values

	agri	mimf	serv	cons	gov	inv	expfob	tot_sal
Primary inputs								
Land	2,965	0	0	0	0	0	0	2,965
UnSkLab	6,165	21,122	81,007	0	0	0	0	108,294
SkLab	338	8,554	67,619	0	0	0	0	76,511
Capital	3,653	28,173	88,652	0	0	0	0	120,478
NatRes	0	5,254	0	0	0	0	0	5,254
Intermediate inputs								
d_agri	1,939	7,720	1,247	3,603	48	564	7,656	22,777
d_mimf	2,408	49,357	40,783	31,587	1,468	10,201	50,903	186,706
d_serv	4,707	38,939	128,600	148,421	61,799	50,317	15,055	447,838
m_agri	43	241	102	219	1	2	0	608
m_mimf	700	21,629	12,930	12,656	923	13,585	0	62,423
m_serv	164	972	6,090	5,602	0	202	0	13,030
tot_cost	23,082	181,961	427,030	202,088	64,239	74,870	73,615	1,046,884

Table 13: Industry cost structures - Taxes

	agri	mimf	serv	cons	gov	inv	expfob	tot_sal
Primary inputs								

Land	-176	0	0	0	0	0	0	-176
UnSkLab	256	877	3,363	0	0	0	0	4,495
SkLab	14	355	2,807	0	0	0	0	3,176
Capital	66	857	2,696	0	0	0	0	3,619
NatRes	0	160	0	0	0	0	0	160
Intermediate inputs								
d_agri	-102	0	0	9	0	0	0	-93
d_mimf	-37	343	1,414	8,155	0	860	319	11,054
d_serv	-248	28	75	1,303	0	0	0	1,159
m_agri	-2	0	0	2	0	0	0	0
m_mimf	-34	45	80	3,493	0	1,503	0	5,086
m_serv	-9	0	0	-184	0	6	0	-187
tot_cost	-273	2,665	10,435	12,778	0	2,370	319	28,293

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