GTAP Summary in Excel version 1.0: *samgemxl6.zip*

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GTAP Summary in Excel version 1.0 — Program Documentation for samgemxl6.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 — samgemxl6.zip.
2. No GTAP data are provided. 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 samgtap6.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).
      - Five alternative versions of the REG_SETI**?**.har files are provided ('**?**' ranges from 1 to 5). Each selects a different set of the 87 regions available (4 X 20 + 7).
      - ***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 files, 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 files that map 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 files must be accompanied by equivalent changes to the REG_SET.xls files. The short names **must** correspond to the header 'H1' in REG_SETI.har. Do **NOT** change 'Sheet2' in this file.
      - Five alternative versions of the REG_SET**?**.xls files are provided ('**?**' ranges from 1 to 5, corresponding to the digits in the REG_SETI**?**.har files). Each selects a different set of the 87 regions available (4 X 20 + 7).
      - Steps 2–5 outlined in section 3 below need to be run consecutively for one of the REG_SETI.har, REG_SET**.**xls pair combinations, before running them for another set of regions (using another REG_SETI.har,

REG_SET.xls combination). Because the programs read files with the names REG_SETI.har and REG_SET.xls, the user should rename the pair of files chosen to REG_SETI.har and REG_SET.xls (ie the digit extension on the name should be removed).

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 samgtap6.agg should be copied into the same directory.
2. As mentioned above the programs read files with the names REG_SETI.har and REG_SET.xls, hence the user should rename the pair of files chosen to REG_SETI.har and REG_SET.xls (i.e., the digit extension on the name should be removed).
3. 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 56 Mb) and the file transferred to Excel, SAM6_XL.har**,** which is about 1.6 Mb 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.
4. 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 4 Mb of disk space.

5. 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 samgtap6.txt)[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.
6. 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**.
   - 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**.
7. Repeat the above steps using another REG_SETI.har and REG_SET.xls file combination if data from additional countries are required.

5 Note that this file is created by GTAPAgg when constructing a new version.

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:

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5 List of files

REQUIRED

GTAPsamx.bat	Batch file to run SAM extraction program
Sam_gxl6.tab	SAM extraction GEMPACK files
Sam_gxl6.exe	
Sam_gxl6.axs	
Sam_gxl6.axt	
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	GTAP View GEMPACK files
Gtapvewx.exe	
Gtapvewx.axs	
Gtapvewx.axt	
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	Sends GTAPView HAR output by commodity to CSV file
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	
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 produced by the GTAPAgg program; the user can also construct this file by running the GTAPAgg program

TEMPLATES WHICH CAN BE EDITED

COMM_AGG.xls	Commodity/industry sector aggregation mapping
REG_SET1.xls	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SETI1.har	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SET2.xls	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SETI2.har	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SET3.xls	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SETI3.har	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SET4.xls	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SETI4.har	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SET5.xls	Alternative list of 20 regions and longnames for producing xls files for all countries
REG_SETI5.har	Alternative list of 20 regions and longnames for producing xls files for all countries

YOU MUST PROVIDE

Basedata.har	Output from GTAPAgg.

FOR YOUR ASSISTANCE ONLY

Samgtap6.agg	Mapping file created by GTAPAgg. Used to create Comm_agg.xls via comm._agg.txt
Comm_agg.txt	Commodity/industry sector aggregation mapping – used to create comm._agg.xls
GTAP_SAM_c1.xls	Sample output files
GTAP_VEWX_c1.xls	Sample output files

DOCUMENTATION

GTAP Summary in Excel Documentation
samgemxl6.pdf

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	0.031250
totexpend	357,365		

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

	fob	trans
agri	7,656	758
ming	14,886	2,593
food	9,373	653
mnfc	18,057	952
mnfi	8,906	249
govt	1,581	0
serv	12,574	0
dwel	0	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
ming	14,886	-1,993	12,893
food	9,373	-2,494	6,880
mnfc	18,057	-22,976	-4,919
mnfi	8,906	-31,814	-22,908
govt	1,581	-1,124	456
serv	13,474	-11,906	1,568
dwel	0	0	0
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
ming	31,875	414	32,289
food	33,241	188	33,429
mnfc	84,852	1,020	85,872
mnfi	34,659	458	35,117
govt	77,990	638	78,629
serv	324,508	7,691	332,199
dwel	34,966	2,043	37,010
Total	644,900	12,421	657,321

Table 6: Components of value added

	agri	ming	food	mnfc	mnfi	govt	serv	dwel	CGDS
Land	2,789	0	0	0	0	0	0	0	0
UnSkLab	6,421	2,937	3,868	10,269	4,925	17,074	66,980	315	0
SkLab	352	924	1,310	4,341	2,334	32,273	38,154	0	0
Capital	3,719	9,356	4,450	11,082	4,142	6,572	55,447	29,329	0
NatRes	0	5,414	0	0	0	0	0	0	0
Total	13,281	18,631	9,628	25,692	11,402	55,918	160,581	29,644	0

Table 7: Capital stock

935,617

Table 8: Domestic Sales composition

	domabsorb	trans	expfob
agri	15,121	0	7,656
ming	17,406	0	14,882
food	24,056	0	9,373
mnfc	68,014	0	17,858
mnfi	26,327	0	8,790
govt	77,048	0	1,581
serv	318,725	901	13,474
dwel	37,010	0	0

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
ming	15,010	892	291	1,212	14,882	32,289
food	7,873	15,988	28	166	9,373	33,429
mnfc	56,223	9,730	1,128	933	17,858	85,872
mnfi	13,440	4,977	21	7,890	8,790	35,117
govt	6,668	16,796	53,324	260	1,581	78,629
serv	165,578	94,651	8,439	50,057	13,474	332,199
dwel	0	36,974	36	0	0	37,010
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
ming	2,059	21	0	8	0	2,089
food	596	1,980	0	1	0	2,578
mnfc	17,747	5,231	915	339	0	24,232
mnfi	14,856	5,423	8	13,237	0	33,524
govt	205	913	0	6	0	1,124
serv	7,022	4,689	0	195	0	11,906

dwel	0	0	0	0	0	0
Total	42,872	18,477	924	13,788	0	76,061

Table 11: Ratio of output to total usage

agri	1.45
ming	1.66
food	1.26
mnfc	0.93
mnfi	0.59
govt	1.01
serv	1.00
dwel	1.00

Table 12: Industry cost structures - Basic Values

	agri	ming	food	mnfc	mnfi	govt	serv	dwel	cons	gov	inv	expfob	tot_sal
Primary inputs													
Land	2,965	0	0	0	0	0	0	0	0	0	0	0	2,965
UnSkLab	6,165	2,820	3,714	9,859	4,729	16,393	64,311	302	0	0	0	0	108,294
SkLab	338	887	1,258	4,168	2,241	30,986	36,633	0	0	0	0	0	76,511
Capital	3,653	9,080	4,318	10,755	4,020	6,378	53,811	28,463	0	0	0	0	120,478
NatRes	0	5,254	0	0	0	0	0	0	0	0	0	0	5,254
Intermediate inputs													
d_agri	1,939	8	7,220	459	33	88	1,159	0	3,603	48	564	7,656	22,777
d_ming	66	2,260	197	8,106	65	61	4,226	27	892	291	1,212	14,882	32,289
d_food	688	220	3,962	336	39	280	2,345	4	15,988	28	166	9,373	33,429
d_mnfc	1,544	1,484	2,752	18,305	6,519	2,518	22,312	789	9,730	1,128	933	17,858	85,872
d_mnfi	109	910	157	655	3,389	1,182	6,951	87	4,977	21	7,890	8,790	35,117
d_govt	99	528	196	556	158	2,853	2,274	5	16,796	53,324	260	1,581	78,629
d_serv	4,609	5,993	7,574	18,557	5,378	12,353	106,975	4,139	94,651	8,439	50,057	13,474	332,199
d_dwel	0	0	0	0	0	0	0	0	36,974	36	0	0	37,010
m_agri	43	0	174	61	6	2	100	0	219	1	2	0	608
m_ming	2	11	4	2,009	19	0	12	0	21	0	8	0	2,089
m_food	18	8	355	39	4	32	141	0	1,980	0	1	0	2,578
m_mnfc	600	419	650	8,627	1,933	786	4,557	175	5,231	915	339	0	24,232

m_mnfi	79	1,133	193	719	5,506	1,269	5,899	58	5,423	8	13,237	0	33,524
m_govt	14	14	6	18	3	39	110	0	913	0	6	0	1,124
m_serv	150	170	159	398	205	607	5,295	38	4,689	0	195	0	11,906
m_dwel	0	0	0	0	0	0	0	0	0	0	0	0	0
tot_cost	23,082	31,198	32,890	83,628	34,246	75,829	317,112	34,088	202,088	64,239	74,870	73,615	1,046,884

Table 13: Industry cost structures - Taxes

	agri	ming	food	mnfc	mnfi	govt	serv	dwel	cons	gov	inv	expfob	tot_sal
Primary inputs													
Land	-176	0	0	0	0	0	0	0	0	0	0	0	-176
UnSkLab	256	117	154	409	196	681	2,670	13	0	0	0	0	4,495
SkLab	14	37	52	173	93	1,286	1,521	0	0	0	0	0	3,176
Capital	66	276	131	327	122	194	1,637	866	0	0	0	0	3,619
NatRes	0	160	0	0	0	0	0	0	0	0	0	0	160
Intermediate inputs													
d_agri	-102	0	0	0	0	0	0	0	9	0	0	0	-93
d_ming	-3	0	0	0	0	0	2	0	6	0	0	4	8
d_food	-31	0	0	0	0	0	0	0	3,188	0	0	0	3,157
d_mnfc	4	82	10	249	1	0	1,412	0	3,796	0	88	199	5,841
d_mnfi	-6	0	0	0	0	0	0	0	1,165	0	772	117	2,048
d_govt	-5	0	0	0	0	0	0	0	0	0	0	0	-5
d_serv	-243	-1	2	27	0	0	75	0	1,303	0	0	0	1,165
d_dwel	0	0	0	0	0	0	0	0	0	0	0	0	0
m_agri	-2	0	0	0	0	0	0	0	2	0	0	0	0
m_ming	0	0	0	0	0	0	0	0	0	0	0	0	0
m_food	-1	0	0	0	0	0	0	0	722	0	0	0	721
m_mnfc	-29	5	1	38	0	0	80	0	1,185	0	24	0	1,305
m_mnfi	-4	0	0	0	0	0	0	0	1,585	0	1,479	0	3,060
m_govt	-1	0	0	0	0	0	0	0	0	0	0	0	-1
m_serv	-8	0	0	0	0	0	0	0	-184	0	6	0	-186
m_dwel	0	0	0	0	0	0	0	0	0	0	0	0	0
tot_cost	-273	677	351	1,224	413	2,161	7,395	878	12,778	0	2,370	319	28,293

Produced by Productivity Commission, Australia