

Tutorial on Using GTAP

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EE 459

STEP 1 : GTAP - Installation

RunGTAP Version Close Refresh Help

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Unzip and install GTAPAgg version 6.0

Unzip and install RunGTAP version 3.59

Note: Indeed we use only 2 programs in GTAP's package to analyze the impact of FTA

10 items

STEP 2 : Using GTAPAgg to Re-arrange Global Trade Data

GTAPAgg Database Aggregator: limited (10x10) edition

Un-
87
57
5

In this FTA analysis, we will set the new aggregation of regions and that of sectors. The aggregation process can be started by clicking on these buttons.

Flows data from encrypted file:
C:\GTPAg6p5\BaseData.hrx

Limited (10x10, V6) GTAPAgg Licence
If you choose more than 10 aggregated sectors or regions, you will not be able to create an aggregated database.

Instructions and Help

Choose alternate source data folder

Read aggregation scheme from file

View/change regional aggregation

View/change sectoral aggregation

View/change factor aggregation

Save aggregation scheme to file

Create aggregated database

Note : Since we are using the student version, there is a limitation on the size of data that we can use for GTAP's simulation. Specifically, we can modify the database to:

- (1) Not more than 10 categories of products
- (2) Not more than 10 sectors of products

Click on white cells to change the aggregation. Edit table on right to change mapping from old to new regions.

Type into table below to change names of new regions. Right-click on table below to add, remove, or re-order new regions.

Current aggregation:
87 old regions map to 3 new regions

Old region	New region	Old region description
1 aus	3 ROW	Australia
2 nzl	3 ROW	New Zealand
3 xoc	3 ROW	Rest of Oceania
4 chn	3 ROW	China
5 hkg	3 ROW	Hong Kong
6 jpn	3 ROW	Japan
7 kor	3 ROW	Korea
8 twn	3 ROW	Taiwan
9 xea	3 ROW	Rest of East Asia
10 idn	3 ROW	Indonesia
11 mys	3 ROW	Malaysia
12 phl	3 ROW	Philippines
13 sgp	3 ROW	Singapore
14 tha	1 Thailand	Thailand
15 vnm	3 ROW	Vietnam
16 xse	3 ROW	Rest of Southeast Asia

OK Cancel Help 1 to 1 Copy

No.	New region code	comprising	New region description
1	Thailand	tha	
2	EU	aut bel dnk fin fra deu gbr grc irl ita lux nld prt esp swe	European Union
3	ROW	aus nzl xoc chn hkg jpn kor twn xea idn mys phl sgp vnm xse bgd ind lka xsa can usa mex xna col per ven xap arg bra chl ury xsm xca xfa xcb che xef xer alb bgr hrv cyp cze hun mlt pol rom svk svn est lva ltu rus xsu etc	All other regions

Set up the group of countries : in this example, we classify countries into 3 groups (Thailand, EU and Rest of the World)

View/edit sector aggregation

Click on white cells to change the aggregation. Edit table on right to change mapping from old to new sectors.

Type into table below to change names of new sectors. Right-click on table below to add, remove, or re-order new sectors.

Current aggregation:
57 old sectors map to 10 new sectors

Old sector	New sector	Old sector description
1 pdr	1 GrainsCrops	Paddy rice
2 wht	1 GrainsCrops	Wheat
3 gro	1 GrainsCrops	Cereal grains nec
4 v_f	1 GrainsCrops	Vegetables, fruit, nuts
5 osd	1 GrainsCrops	Oil seeds
6 c_b	1 GrainsCrops	Sugar cane, sugar beet
7 pfb	1 GrainsCrops	Plant-based fibers
8 ocr	1 GrainsCrops	Crops nec
9 ctl	2 MeatLstk	Cattle,sheep,goats,horses
10 oap	2 MeatLstk	Animal products nec
11 rmk	2 MeatLstk	Raw milk
12 wol	2 MeatLstk	Wool, silk-worm cocoons
13 frs	3 Extraction	Forestry
14 fsh	3 Extraction	Fishing
15 coa	3 Extraction	Coal
16 oil	3 Extraction	Oil

OK Cancel Help 1 to 1 Copy

No.	New sector code	comprising	New sector description
1	GrainsCrops	pdr wht gro v_f osd c_b pfb ocr pcr	Paddy rice
2	MeatLstk	ctl oap rmk wol cmt omt	Wheat
3	Extraction	frs fsh coa oil gas omn	Cereal grains nec
4	ProcFood	vol mil sgr ofd b_t	Vegetables, fruit, nuts
5	TextWapp	tex wap lea	Oil seeds
6	LightMnfc	tum omf	et
7	HeavyMnfc	ppp p_c crp nmm i_s mt	
8	Util	ely gdt wtr cns	
9	TransComm	trd otp wtp atp cmn	orses
10	OthServices	ofi isr obs ros osg dwe	Animal products nec

Set up the group of sectors: in this analysis, we classify sectors of production into 10 groups (see the details of creating new groups in the following slides)

Sector Aggregation

Original List of Sectors		New List of Sectors	
Number	Name of Sector	Number	Name of Sector
1	Paddy rice	1	Grains and Crops
2	Wheat	1	Grains and Crops
3	Cereal grains nec	1	Grains and Crops
4	Vegetables, fruit, nuts	1	Grains and Crops
5	Oil seeds	1	Grains and Crops
6	Sugar cane, sugar beet	1	Grains and Crops
7	Plant-based fibers	1	Grains and Crops
8	Crops nec	1	Grains and Crops
9	Bovine cattle, sheep and goats, horses	2	MeatLstk
10	Animal products nec	2	MeatLstk
11	Raw milk	2	MeatLstk
12	Wool, silk-worm cocoons	2	MeatLstk
13	Forestry	3	Extraction
14	Fishing	3	Extraction
15	Coal	3	Extraction
16	Oil	3	Extraction
17	Gas	3	Extraction
18	Minerals nec	3	Extraction
19	Bovine meat products	2	MeatLstk
20	Meat products nec	2	MeatLstk

Sector Aggregation (Cont'd)

Original List of Sectors		New List of Sectors	
Number	Name of Sector	Number	Name of Sector
21	Vegetable oils and fats	4	ProcFood
22	Dairy products	4	ProcFood
23	Processed rice	1	Grains and Crops
24	Sugar	4	ProcFood
25	Food products nec	4	ProcFood
26	Beverages and tobacco products	4	ProcFood
27	Textiles	5	TextWapp
28	Wearing apparel	5	TextWapp
29	Leather products	6	LightMnfc
30	Wood products	6	LightMnfc
31	Paper products, publishing	6	LightMnfc
32	Petroleum, coal products	7	HeavyMnfc
33	Chemical, rubber, plastic products	7	HeavyMnfc
34	Mineral products nec	7	HeavyMnfc
35	Ferrous metals	7	HeavyMnfc
36	Metals nec	7	HeavyMnfc
37	Metal products	7	HeavyMnfc
38	Motor vehicles and parts	7	HeavyMnfc
39	Transport equipment nec	7	HeavyMnfc
40	Electronic equipment	7	HeavyMnfc

Sector Aggregation (Cont'd)

Original List of Sectors		New List of Sectors	
Number	Name of Sector	Number	Name of Sector
41	Machinery and equipment nec	7	HeavyMnfc
42	Manufactures nec	6	LightMnfc
43	Electricity	8	Util
44	Gas manufacture, distribution	8	Util
45	Water	8	Util
46	Construction	10	Util
47	Trade	9	TransComm
48	Transport nec	9	TransComm
49	Water transport	9	TransComm
50	Air transport	9	TransComm
51	Communication	9	TransComm
52	Financial services nec	10	OthServices
53	Insurance	10	OthServices
54	Business services nec	10	OthServices
55	Recreational and other services	10	OthServices
56	Public Administration, Defense, Education, Health	10	OthServices

? Instructions and Help

Choose alternate source data folder

Read aggregation scheme from file

View/change regional aggregation

View/change sectoral aggregation

View/change factor aggregation

Save aggregation scheme to file

Create aggregated database

Un-modified aggregation from file default.agg
87 old regions map to 3 new regions
57 old sectors map to 3 new sectors
5 old factors map to 5 new factors

Flows data from encrypted file:
C:\GTPAd6b5\BaseData.hrx

After finishing the new regional and sectoral aggregation, save the new setting.

L
If
regions, you will not be able to create an aggregated database.

Then click on this button to create the aggregated database for GTAP.

Instructions and Help

Choose alternate source data folder

Read aggregation scheme from file

View/change regional aggregation

View/change sectoral aggregation

View/change factor aggregation

Save aggregation scheme to file

Create aggregated database

Un-modified aggregation from file th_eu_fta.agg

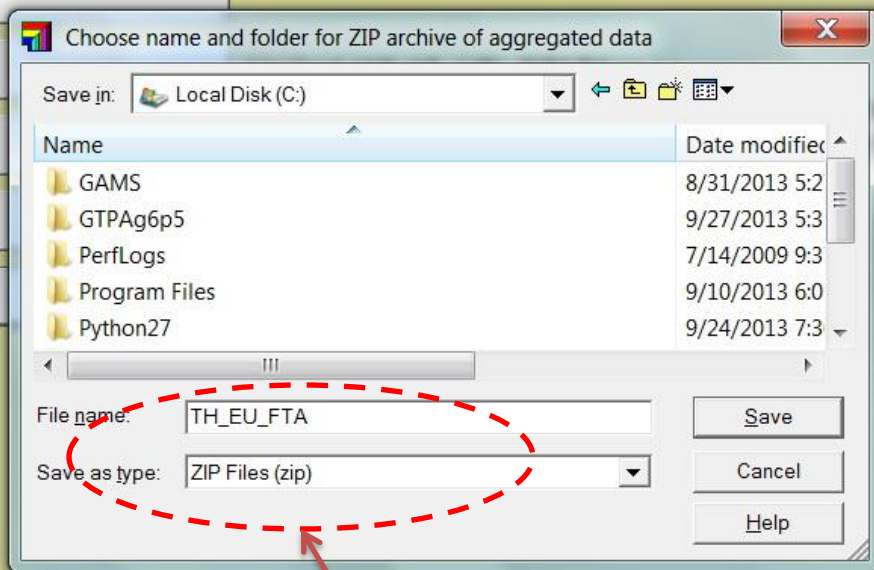
87 old regions map to 3 new regions

57 old sectors map to 10 new sectors

5 old factors map to 5 new factors

Flows data from encrypted file:

C:\GTPAg6p5\BaseData.hrx



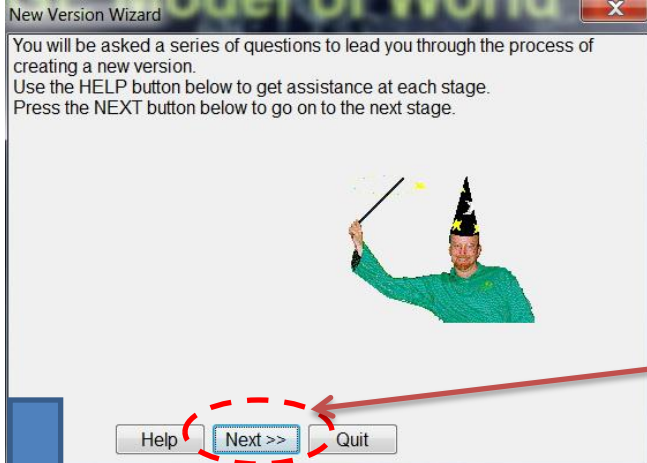
or
ated

Save the new database (it will be created in the zip-file format)

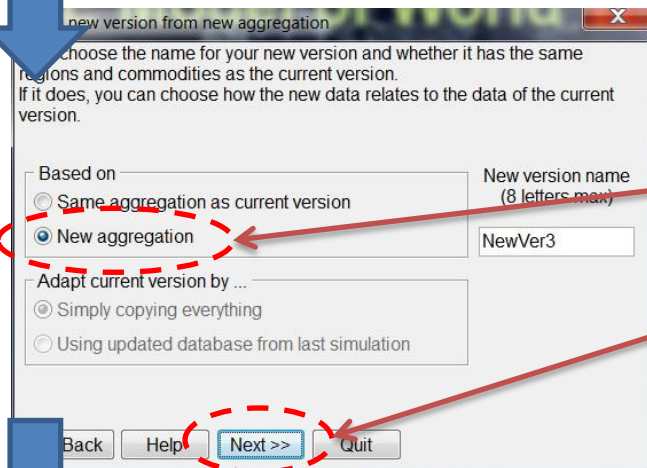
STEP 3 : Opening the New Database in RunGTAP

On the top menu, select “Version → New”

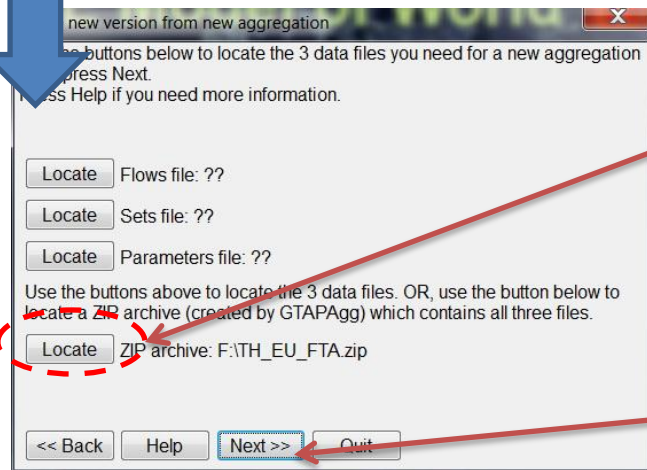




To start this process, click on “Next”



Then, select “New aggregation” and click “Next”



Click on “Locate ZIP” to identify the location of the new aggregated database which we have just create.

Then, click on “Next”

Create new version from new aggregation



Click "Finish" to ...

- (a) Copy the chosen flows, data, and parameters files to the new version directory.
- (b) Create a default experiment file for the new version.
- (c) Regenerate standard shock and other files from the new data file.

New version newver3 will be stored in directory C:\RUNGTAP5\newver3.

That directory does not exist now and will be created.

If you dislike the name "newver3", go back NOW and change it.

FINISH

The last step is to confirm to use the new database. Click on "FINISH" button.

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STEP 4 :Running the Simulation

Example : zero tax due to the free trade agreement between Thailand and EU

1. Select "tms" (the import tax)

2. Specify that this will be applied to all commodities that are exported from Thailand to EU

3. Specify that the new rate of import tax is 0.0

4. Add this set up as a shock to the model

RunG1AP: newer3/G1AP Numeraire shock

File Closure **Shocks** Solve Results

Variable to Shock **tms** source-spec. change in tax on imports of i from r into s
Dimensions: TRAD_COMM*REG*REG

Elements to Shock **All TRAD_COMM** **Thailand** **EU**

Shock Value **0** Type of Shock **%change rate**
%change rate
%change power
%target rate

Shock tms(TRAD_COMM,"Thailand","EU") = rate% 0 from file tms.shk;

Add to Shock List Clear Shocks List Define Subtotal

Shock pfactwld = uniform 10;

Example : zero tax due to the free trade agreement between Thailand and EU

RunGTAP: newer2/NEW2 Numeraire shock

File Copy View Version Tools Help

Title RunGTAP Version Closure Shocks Solve Results

Variable to Shock None Selected

Repeat the same steps to specify the shock of zero tariff rate on all commodities that Thailand imports from EU

Add to Shock List

Clear Shocks List

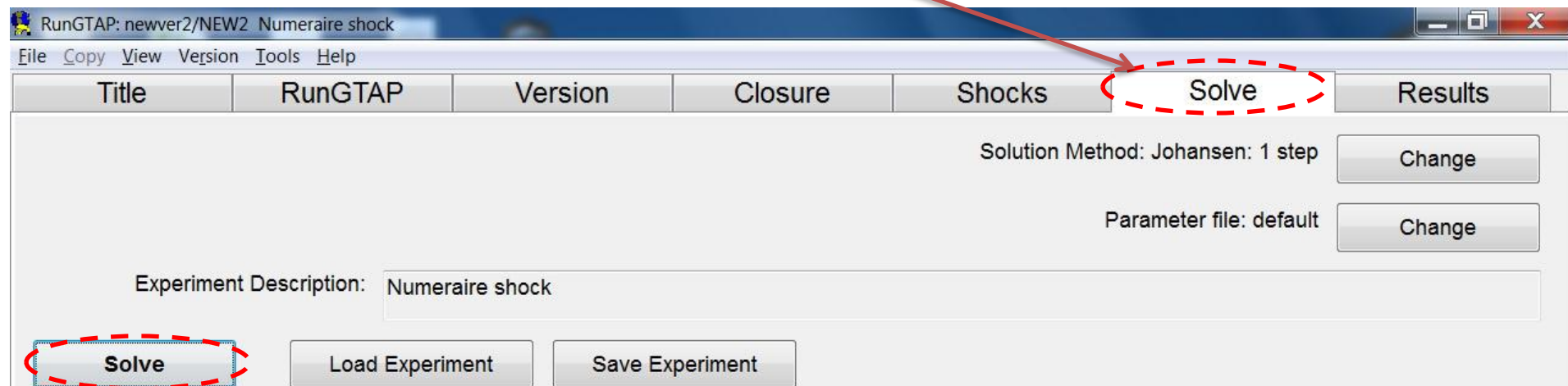
Define Subtotal

Shock tms(TRAD_COMM,"Thailand","EU") = target% 0 from file tms.shk;
Shock tms(TRAD_COMM,"EU","Thailand") = target% 0 from file tms.shk;

Then, there are 2 shocks in the list that are ready to be applied to the model.

Example : zero tax due to the free trade agreement between Thailand and EU

Click on 'Solve' tab



Then click on 'Solve' button to start the simulation

STEP 5 : Reading the Simulation Results

Click on 'Results' tab

Title	RunGTAP	Version	Closure	Shocks	Solve	Results
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Everything	V	1 (Sim)	Description
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Variable	Size	No.	Name
pop	REG	1	regional population
pp	TRAD_COMM*REG	1	private consumption price for commodity i in region r
ppd	TRAD_COMM*REG	1	price of domestic i to private households in s
ppm	TRAD_COMM*REG	1	price of imports of i by private households in s
ppriv	REG	1	price index for private consumption expenditure in region r
pr	TRAD_COMM*REG	1	ratio of domestic to imported prices in r
profitslack	PROD_COMM*REG	1	slack variable in the zero profit equation
ps	NSAV_COMM*REG	1	supply price of commodity i in region r
psave	REG	1	price of savings in region r
psaveslack	REG	1	slack variable for the savings price equation
psw	REG	1	index of prices received for tradeables produced in r
pt	MARG_COMM	1	price of composite margins services, type
pva	PROD_COMM*REG	1	firms price of value added in industry j of region r
pw	TRAD_COMM	1	world price index for total good i supplies
pxw	TRAD_COMM*REG	1	aggregate exports price index of i from region r
pxwcom	TRAD_COMM	1	price index of global merchandise exports by commodity
pxwrea	REG	1	price index of merchandise exports. by region

All macro variables are listed on this page. For example, the Real GDP of all countries can be shown by clicking on this line. Hence, read the values of "qgdp" (Real GDP) and "pgdp" (Aggregate Price Index). These values have to be included in your analysis.

qcg			
qds			
qf			
qfd			
qfe			
qfm			
qg	TRAD_COMM*REG	1	government hhld demand for commodity i in region r
qgd	TRAD_COMM*REG	1	government hhld demand for domestic i in region s
qgdp	REG	1	GDP quantity index
qgm	TRAD_COMM*REG	1	government hhld demand for imports of i in region s
qim	TRAD_COMM*REG	1	aggregate imports of i in region s, market price weights
qiw	TRAD_COMM*REG	1	aggregate imports of i into region s, CIF weights
qiwcom	TRAD_COMM	1	volume of global merchandise imports by commodity

Title	RunGTAP	Version	Closure	Shocks	Solve	Results
everything	V	1 (Sim)	Description			
everything	Size	No.	Name			
capital	REG	1	regional population			
GDS	TRAD_COMM*REG	1	private consumption price for commodity i in region r			
U	TRAD_COMM*REG	1	price of domestic i to private households in s			
extraction	TRAD_COMM*REG	1	price of imports of i by private households in s			
rainsCrops	REG					
heavyMnfc	TRAD_CO					
and	PROD_CC					
ghtMnfc	NSAV_CO					
eatLstk	REG					
atRes	REG					
thServices	REG					
rocFood	REG					
OW	REG					
kLab	MARG_COMM					
extWapp	PROD_COMM*REG					
hailand	TRAD_COMM					
ransComm	TRAD_COMM*REG					
nSkLab	TRAD_COMM					
til	TRAD_COMM*REG					
wcom	TRAD_COMM					
wreg	REG					
cgds	REG					
ds	TRAD_COMM*REG					
	TRAD_COMM*PROD_COMM*REG					
d	TRAD_COMM*PROD_COMM*REG					
e	ENDW_COMM*PROD_COMM*REG					
m	TRAD_COMM*PROD_COMM*REG					
g	TRAD_COMM*REG					
gd	TRAD_COMM*REG					
gdp	REG	1	GDP quantity index			
gm	TRAD_COMM*REG	1	government hhld demand for imports of i in region s			
m	TRAD_COMM*REG	1	aggregate imports of i in region s, market price weights			
w	TRAD_COMM*REG	1	aggregate imports of i into region s, CIF weights			
wcom	TRAD COMM	1	volume of global merchandise imports by commodity			

To read the detailed result of a specific country, click on this drop-down menu and then select the country. For example, if we select "Thailand", the program will then show the list of sectoral variables of Thailand

Title	RunGTAP	Version	Closure	Shocks	Solve	Results
Thailand	V	1 (Sim)	Description			
Variable	Size	No.	Name			
qds[* ,Thailand]	TRAD_COMM	1	domestic sales of commodity i in r			
qf[* ,*,Thailand]	TRAD_COMM*PROD_COMM	1	demand for commodity i for use by j in region r			
qfd[* ,*,Thailand]	TRAD_COMM*PROD_COMM	1	domestic good i demanded by industry j in region s			
qfe[* ,*,Thailand]	ENDW_COMM*PROD_COMM	1	demand for endowment i for use in ind. j in region r			
qfm[* ,*,Thailand]	TRAD_COMM*PROD_COMM	1	demand for i by industry j in region s			
qg[* ,Thailand]	TRAD_COMM	1	government hhld demand for commodity i in region r			
qgd[* ,Thailand]	TRAD_COMM	1	government hhld demand for domestic i in region s			
qgm[* ,Thailand]	TRAD_COMM	1	government hhld demand for imports of i in region s			
qim[* ,Thailand]	TRAD_COMM	1	import sales of commodity i from r to region s			
qiw[* ,Thailand]	TRAD_COMM	1	import sales of commodity i from r to region s			
qo[* ,Thailand]	TRAD_COMM	1	import sales of commodity i from r to region s			
qoes[* ,*,Thailand]	ENDWS_COMM*PROD_COMM	1	supply of sluggish endowment i used by j in r			
qp[* ,Thailand]	TRAD_COMM	1	private hhld demand for commodity i in region r			
qpd[* ,Thailand]	TRAD_COMM	1	private hhld demand for domestic i in region s			
qpm[* ,Thailand]	TRAD_COMM	1	private hhld demand for imports of i in region s			
qst[* ,Thailand]	MARG_COMM	1	sales of m from r to international transport			
qva[* ,Thailand]	PROD_COMM	1	value added in industry j of region r			
qxs[* ,Thailand,*]	TRAD_COMM*REG	1	export sales of commodity i from r to region s			
qxs[* ,*,Thailand]	TRAD_COMM*REG	1	export sales of commodity i from r to region s			
qxw[* ,Thailand]	TRAD_COMM	1	aggregate exports of i from region r, FOB weights			
tm[* ,Thailand]	TRAD_COMM	1	source-gen. change in tax on imports of i into s			
tms[* ,Thailand,*]	TRAD_COMM*REG	1	source-spec. change in tax on imports of i from r into s			
tms[* ,*,Thailand]	TRAD_COMM*REG	1	source-spec. change in tax on imports of i from r into s			
to[* ,Thailand]	NSAV_COMM	1	output (or income) tax in region r			
tradslack[* ,Thailand]	TRAD_COMM	1	slack variable in tradeables market clearing condition			
tx[* ,Thailand]	TRAD_COMM	1	dest.-gen. change in subsidy on exports of i from r			
txs[* ,Thailand,*]	TRAD_COMM*REG	1	dest.-spec. change in subsidy on exports of i from r to s			
txs[* ,*,Thailand]	TRAD_COMM*REG	1	dest.-spec. change in subsidy on exports of i from r to s			

In this analysis, we want to see the impacts on the export of each sector.
Click on "qxs".

Thailand		1 (Sim)		Description	Contents	6
qx[*Thailand*]	Thailand	EU	ROW			
GrainsCrops	-0.000004	0.000000	0.000002			
MeatLstk	0.000006	0.000004	0.000004			
Extraction	0.000008	0.000006	0.000043			
ProcFood	0.000000	-0.000003	0.000000			
TextWapp	-0.000001	-0.000003	0.000001			
LightMnfc	0.000001	0.000003	0.000003			
HeavyMnfc	0.000005	0.000004	-0.000001			
Util	0.000003	-0.000001	0.000002			
TransComm	0.000000	0.000002	0.000005			
OthServices	-0.000000	-0.000000	0.000000			

To see the simulation result in 6 decimal places, select "6"

In this analysis, we want to see the impacts on exports from Thailand to EU. Therefore, the % change of sectoral exports from Thailand to EU is shown in this column. [Note : the above simulation result is not the correct answer to this analysis]

The bottom frame shows the definition of this variable

qx[*Thailand,*] [%-change]: export sales of commodity i from r to region s

