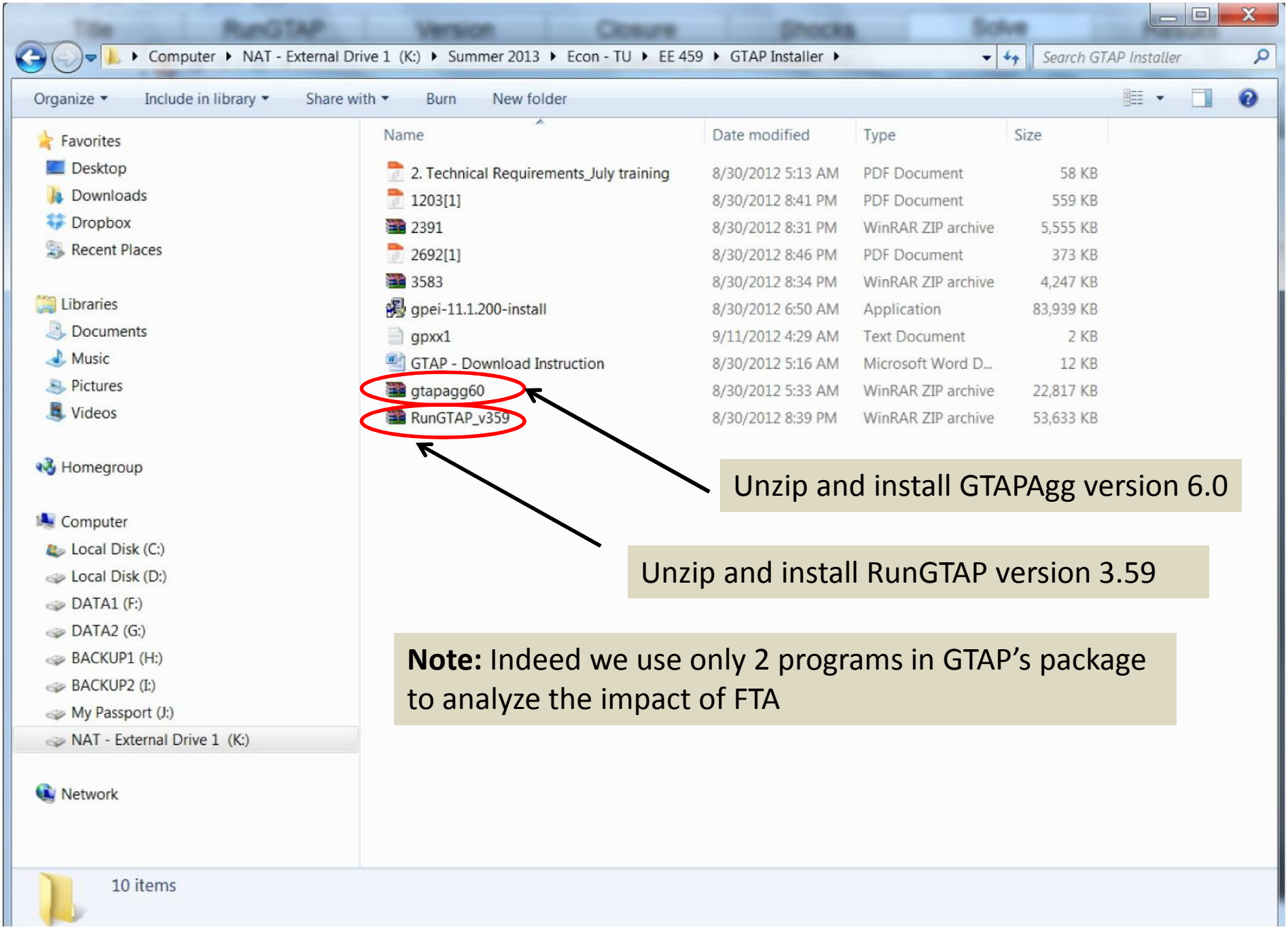
Tutorial on Using GTAP

Nattapong Puttanapong, Ph.D.

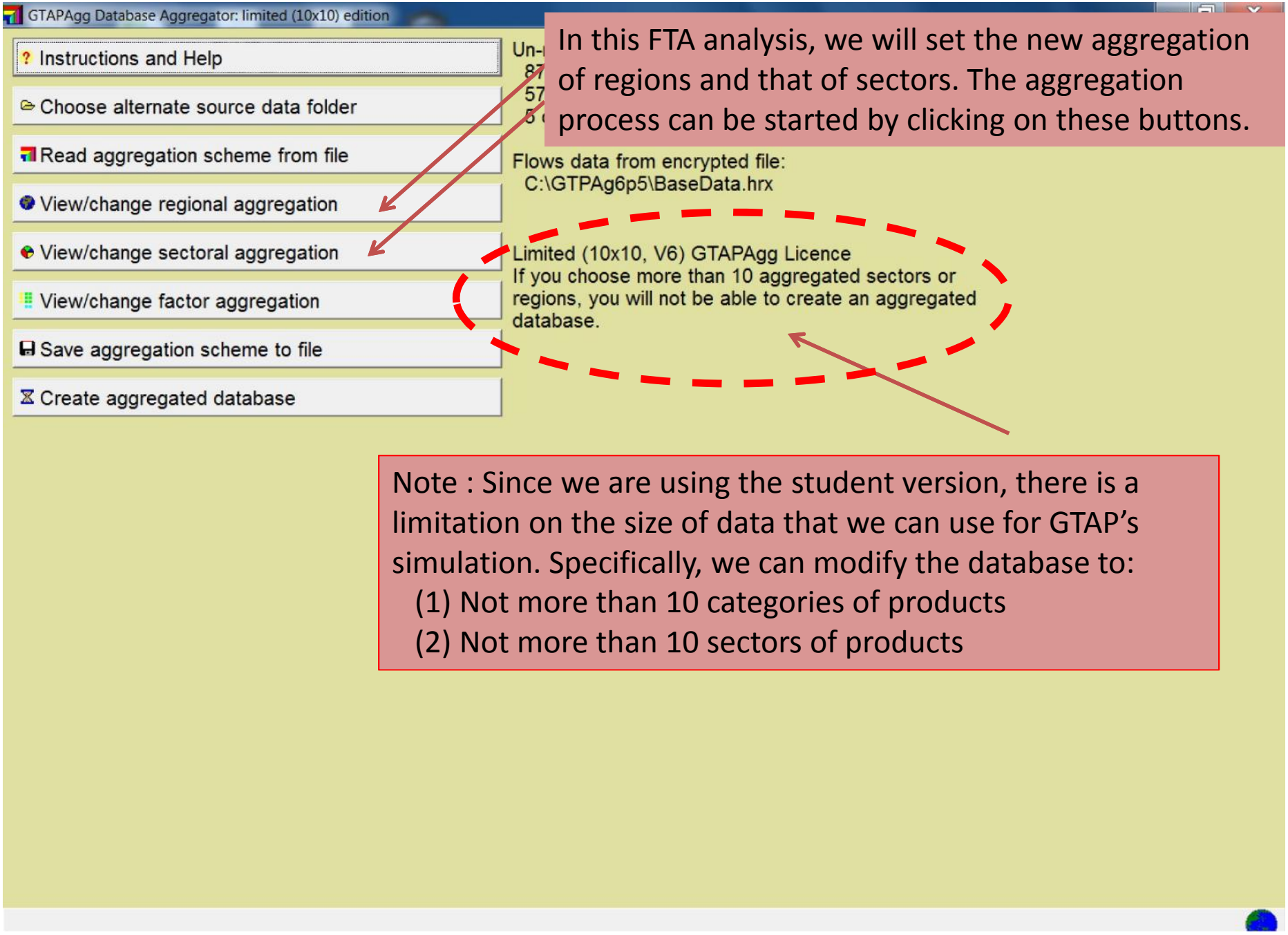
EE 459

Semester 1 / 2013

STEP 1 : GTAP - Installation


Computer ▸ NAT - External Drive 1 (K:) ▸ Summer 2013 ▸ Econ - TU ▸ EE 459 ▸ GTAP Installer ▸
Search GTAP Installer
Organize
Include in library
Share with
Burn
New folder
Favorites
Desktop
Downloads
Dropbox
Recent Places
Libraries
Documents
Music
Pictures
Videos
Homegroup
Computer
Local Disk (C:)
Local Disk (D:)
DATA1 (F:)
DATA2 (G:)
BACKUP1 (H:)
BACKUP2 (I:)
My Passport (J:)
NAT - External Drive 1 (K:)
Network
Name
Date modified
Type
Size
2. Technical Requirements_July training 8/30/2012 5:13 AM PDF Document 58 KB
1203[1] 8/30/2012 8:41 PM PDF Document 559 KB
2391 8/30/2012 8:31 PM WinRAR ZIP archive 5,555 KB
2692[1] 8/30/2012 8:46 PM PDF Document 373 KB
3583 8/30/2012 8:34 PM WinRAR ZIP archive 4,247 KB
gpei-11.1.200-install 8/30/2012 6:50 AM Application 83,939 KB
gpxx1 9/11/2012 4:29 AM Text Document 2 KB
GTAP - Download Instruction 8/30/2012 5:16 AM Microsoft Word D... 12 KB
gtapagg60 8/30/2012 5:33 AM WinRAR ZIP archive 22,817 KB
RunGTAP_v359 8/30/2012 8:39 PM WinRAR ZIP archive 53,633 KB
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

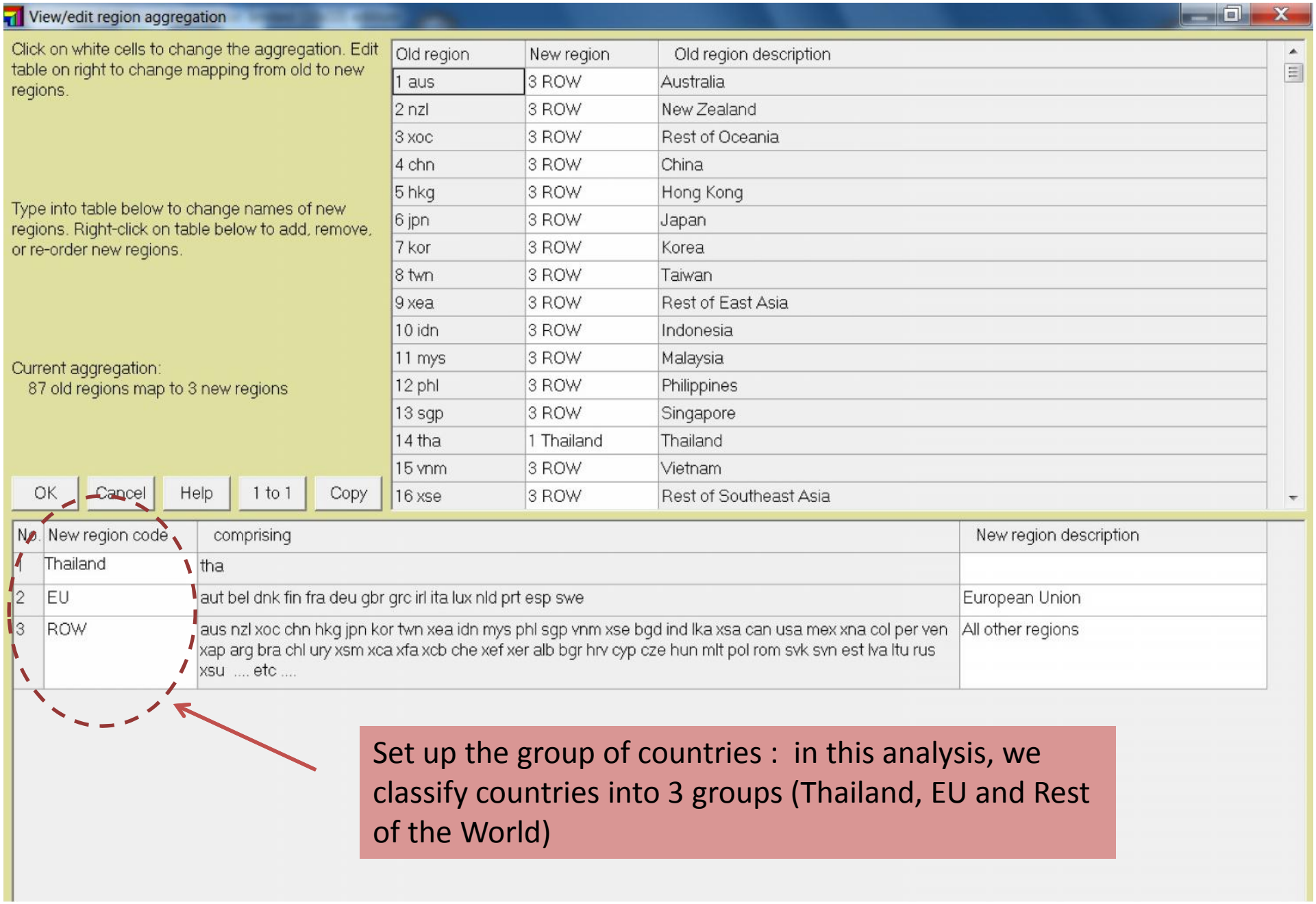


In this FTA analysis, we will set the new aggregation of regions and that of sectors. The aggregation process can be started by clicking on these buttons.

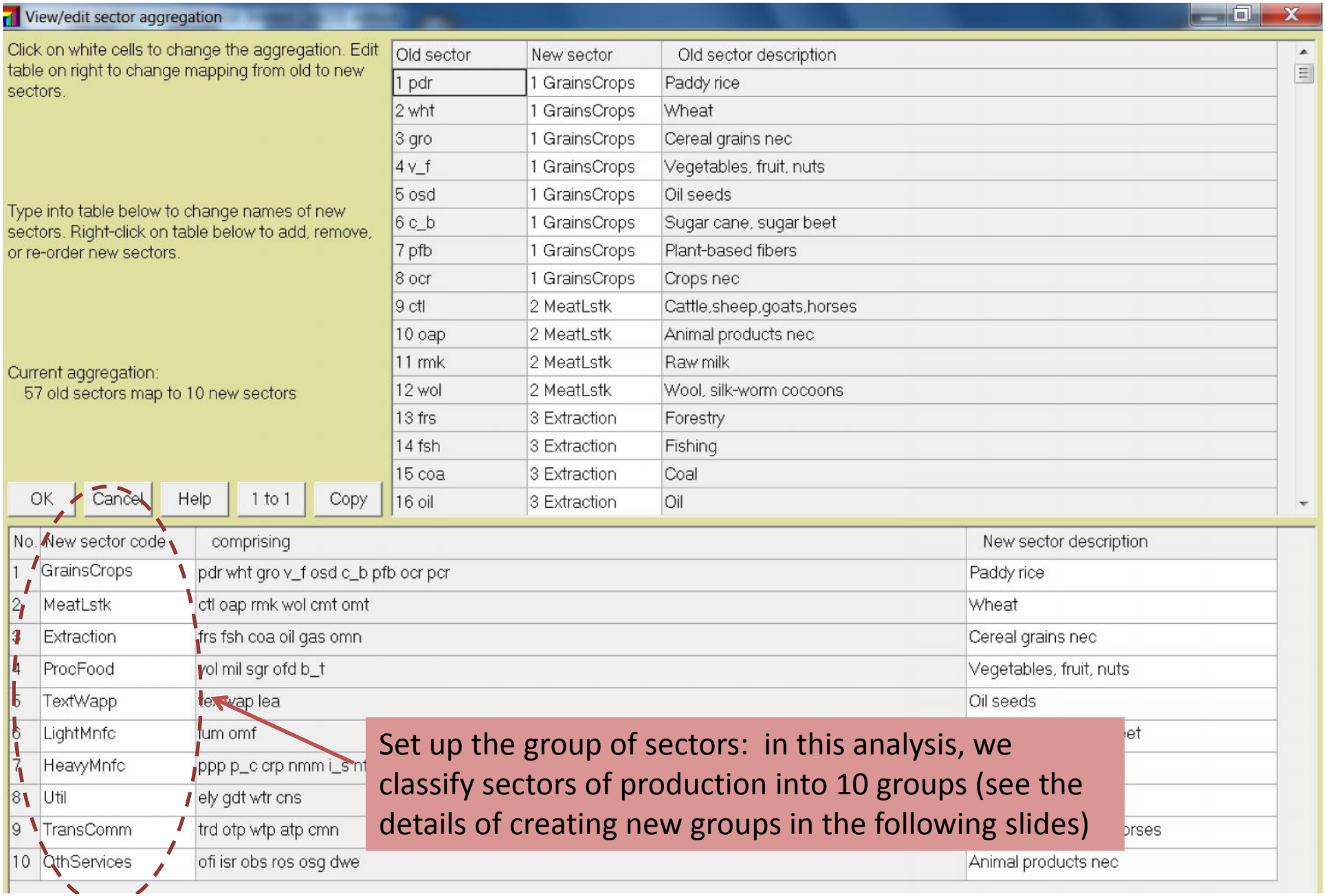
Note : Since we are using the student version, there is a limitation on the size of data that we can use for GTAP's simulation. Specifically, we can modify the database to:

(1) Not more than 10 categories of products

(2) Not more than 10 sectors of products



Set up the group of countries : in this analysis, 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
OK
Cancel
Help
1 to 1
Copy
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
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 | lum omf
7 | HeavyMnfc | ppp p_c crp nmm i_s nf
8 | Util | ely gdt wtr cns
9 | TransComm | trd otp wtp atp cmn
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

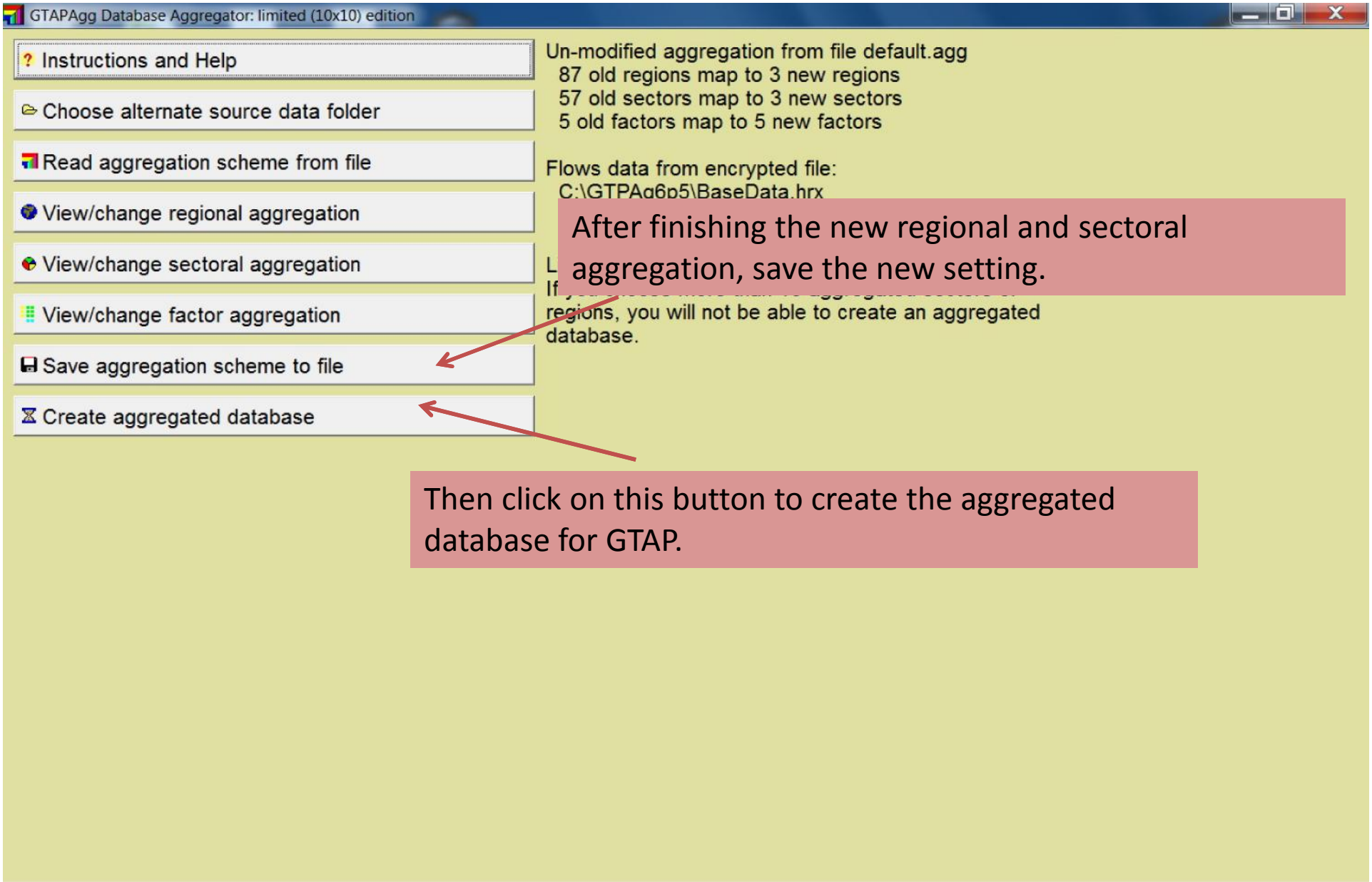
Original List of Sectors		New List of Sectors	
Number	Name of Sector	Number	Name of Sector
1	Paddy rice	1	Grains and Crops
2	Wheat	1	Grains and Crops
3	Cereal grains nec	1	Grains and Crops
4	Vegetables, fruit, nuts	1	Grains and Crops
5	Oil seeds	1	Grains and Crops
6	Sugar cane, sugar beet	1	Grains and 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

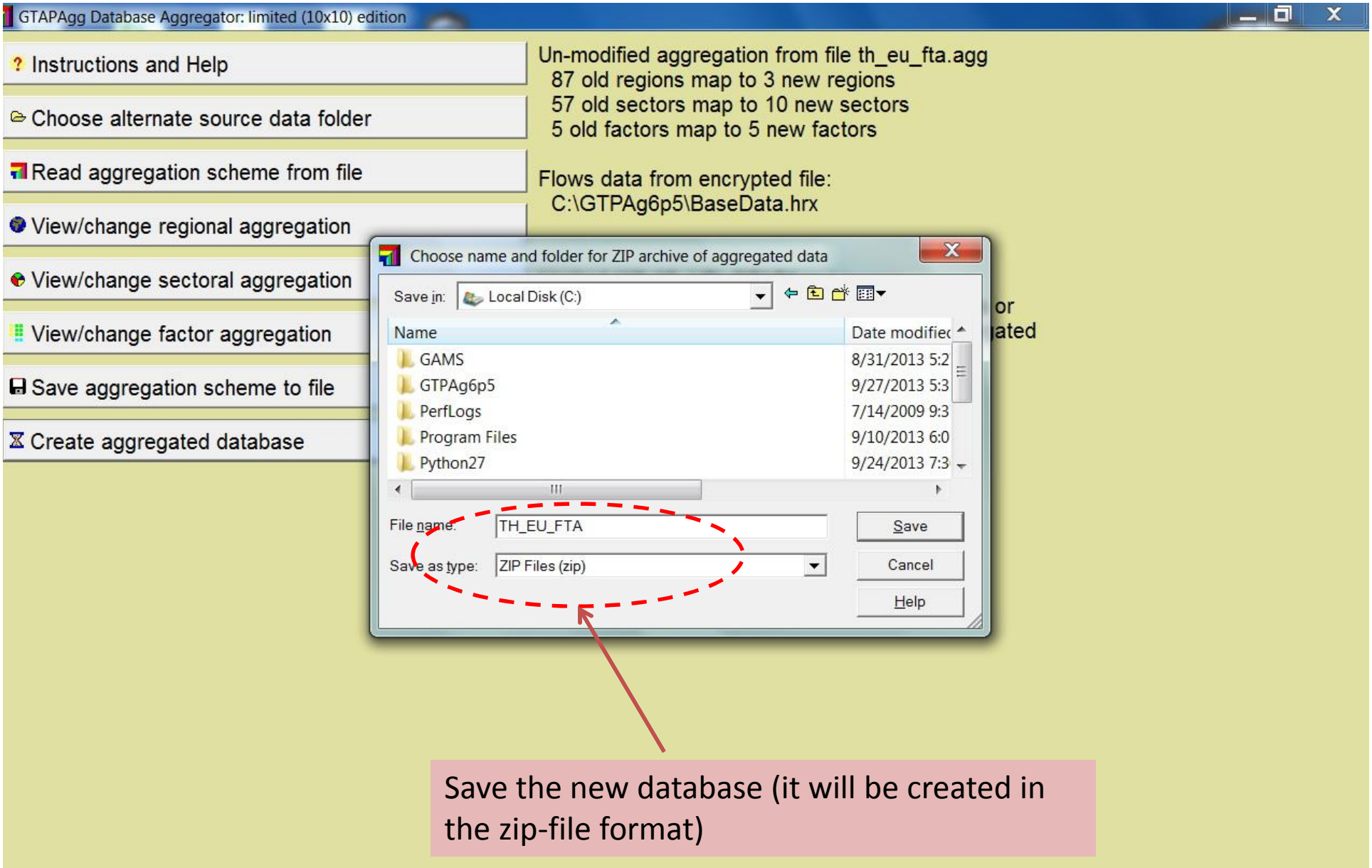
Sector Aggregation (Cont'd)

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

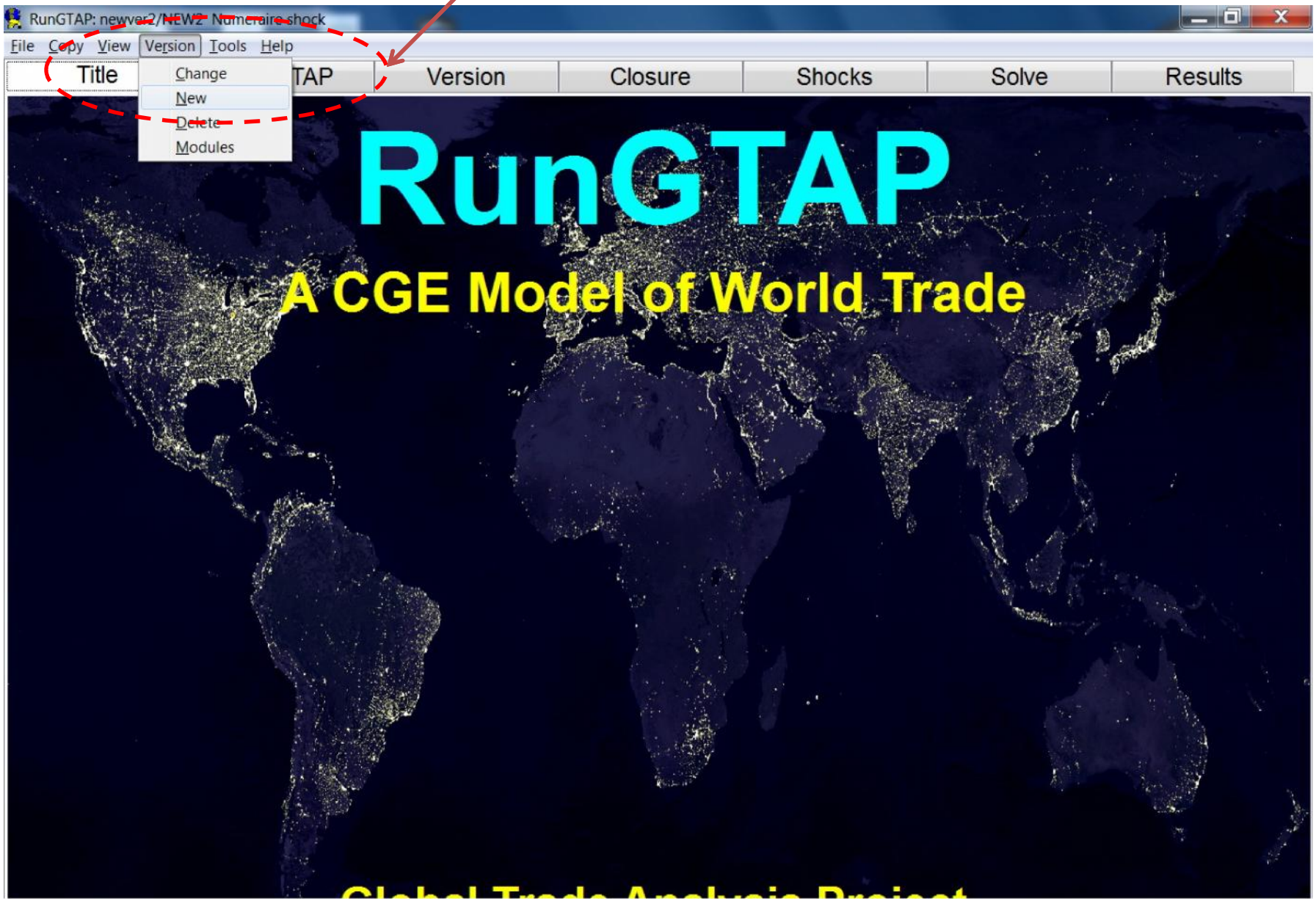

GTAPAgg Database Aggregator: limited (10x10) edition
Instructions and Help
Choose alternate source data folder
Read aggregation scheme from file
View/change regional aggregation
View/change sectoral aggregation
View/change factor aggregation
Save aggregation scheme to file
Create aggregated database
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:\GTPAg6p5\BaseData.hrx
regions, you will not be able to create an aggregated
database.
After finishing the new regional and sectoral aggregation, save the new setting.
Then click on this button to create the aggregated database for GTAP.

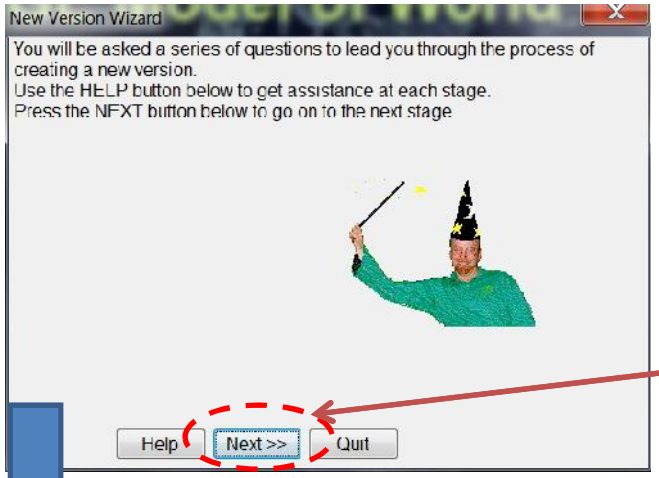


Save the new database (it will be created in the zip-file format)

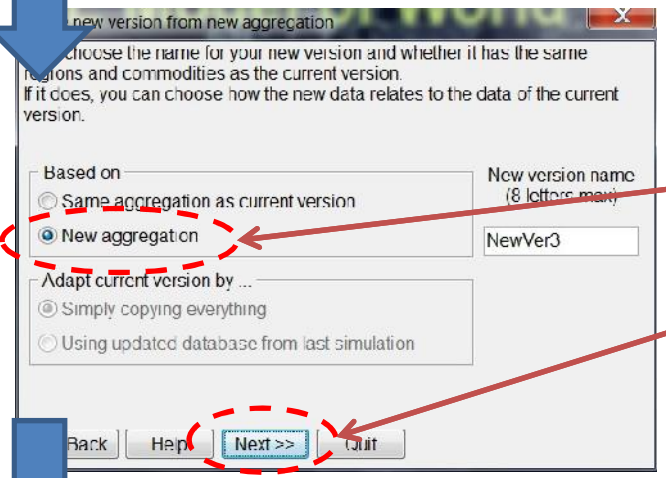
STEP 3 : Opening the New Database in RunGTAP

On the top menu, select “Version → New”

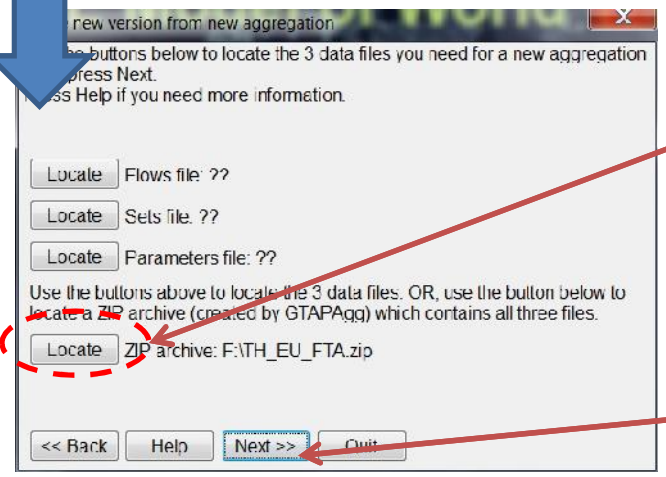




To start this process, click on “Next”

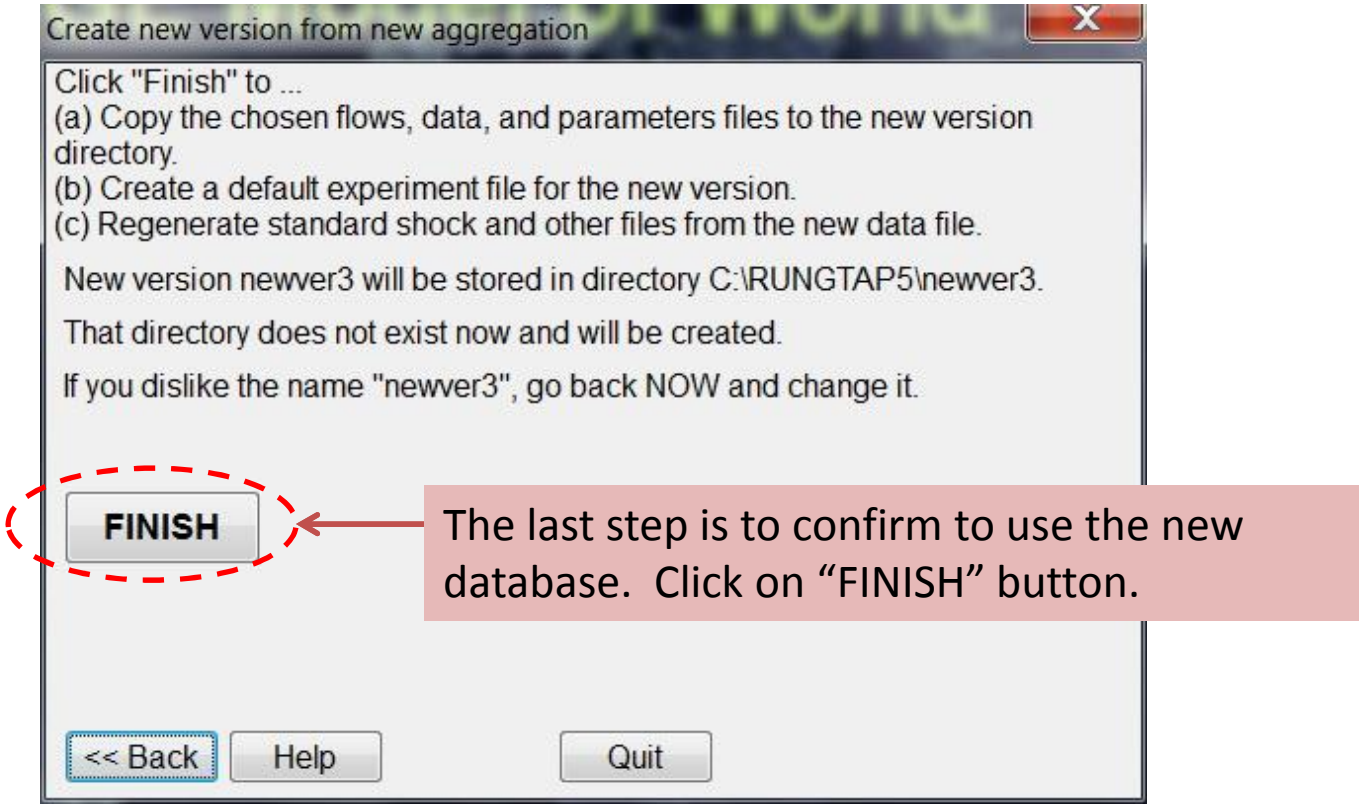


Then, select “New aggregation” and click “Next”



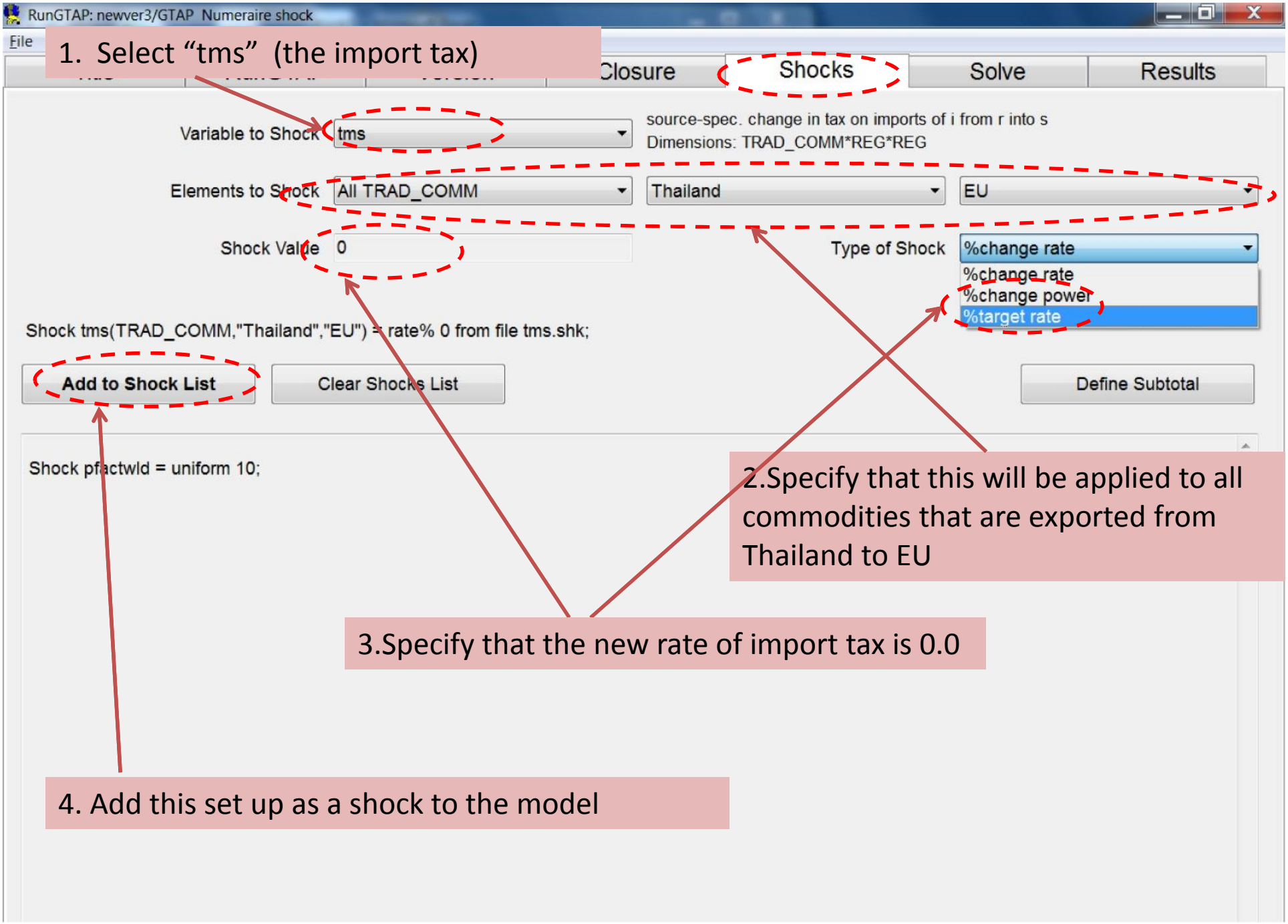
Click on “Locate ZIP” to identify the location of the new aggregated database which we have just create.

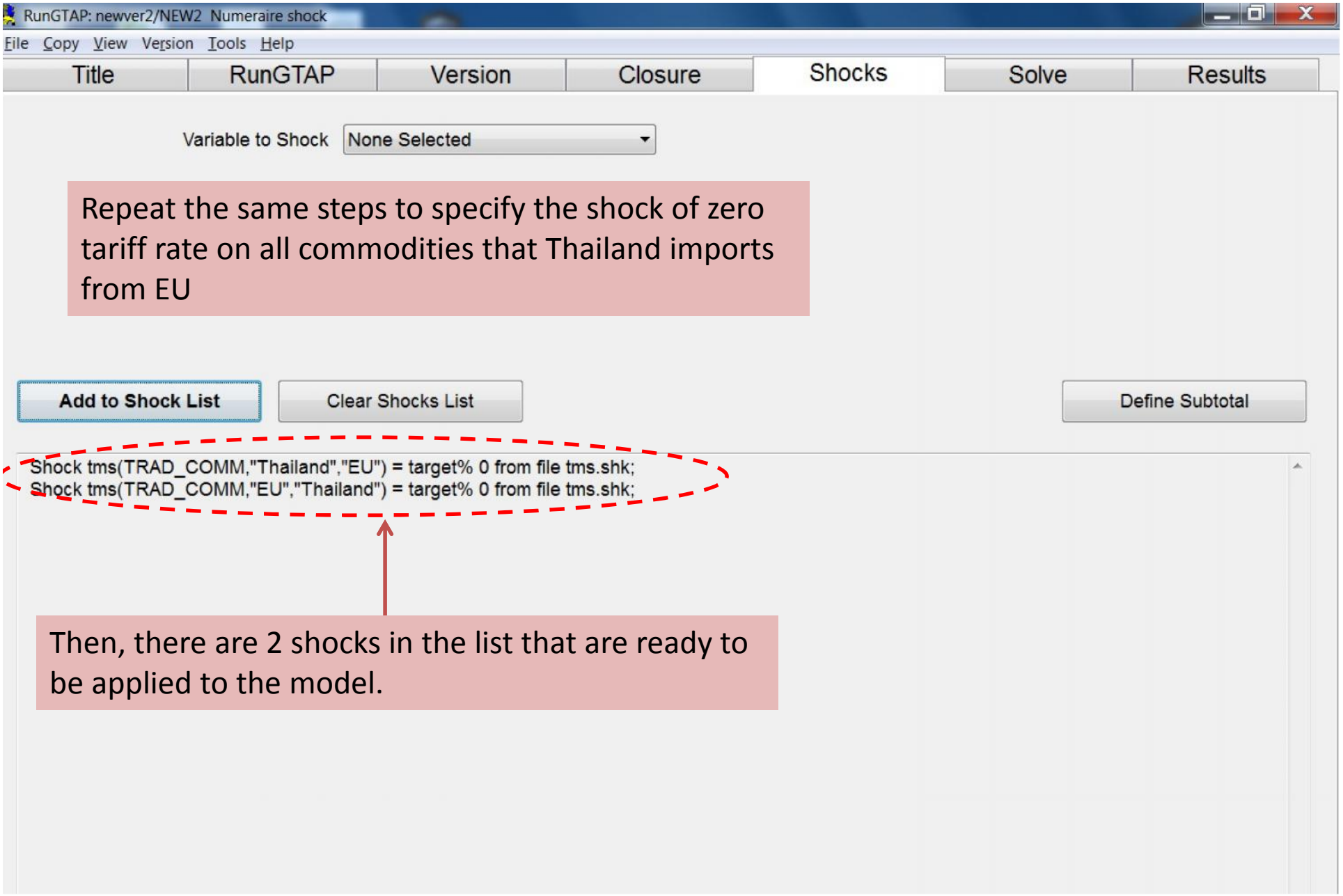
Then, click on “Next”



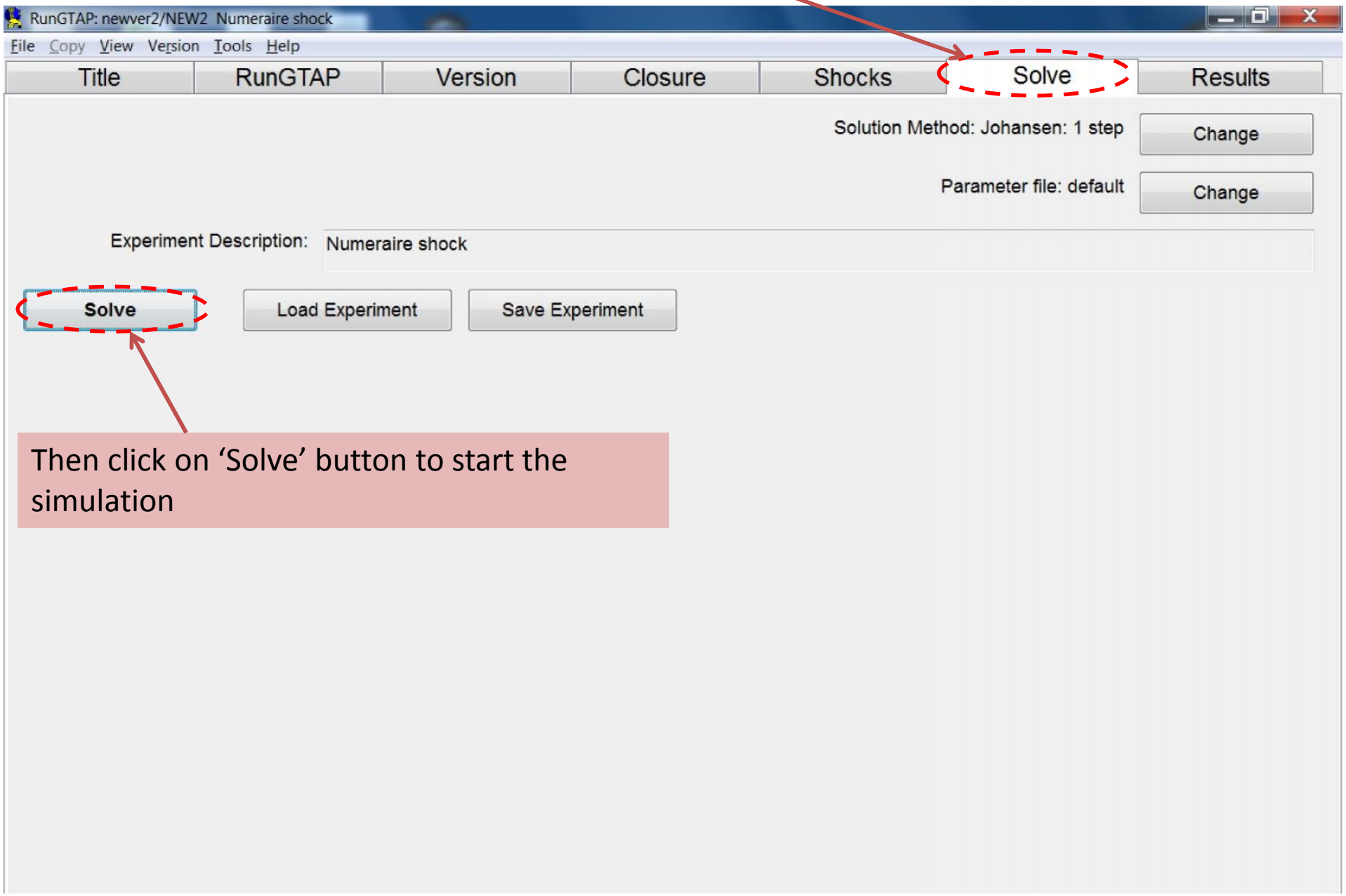
The last step is to confirm to use the new database. Click on “FINISH” button.

STEP 4 :Running the Simulation


RunGTAP: newver3/GTAP Numeraire shock
File
1. Select “tms” (the import tax)
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;
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

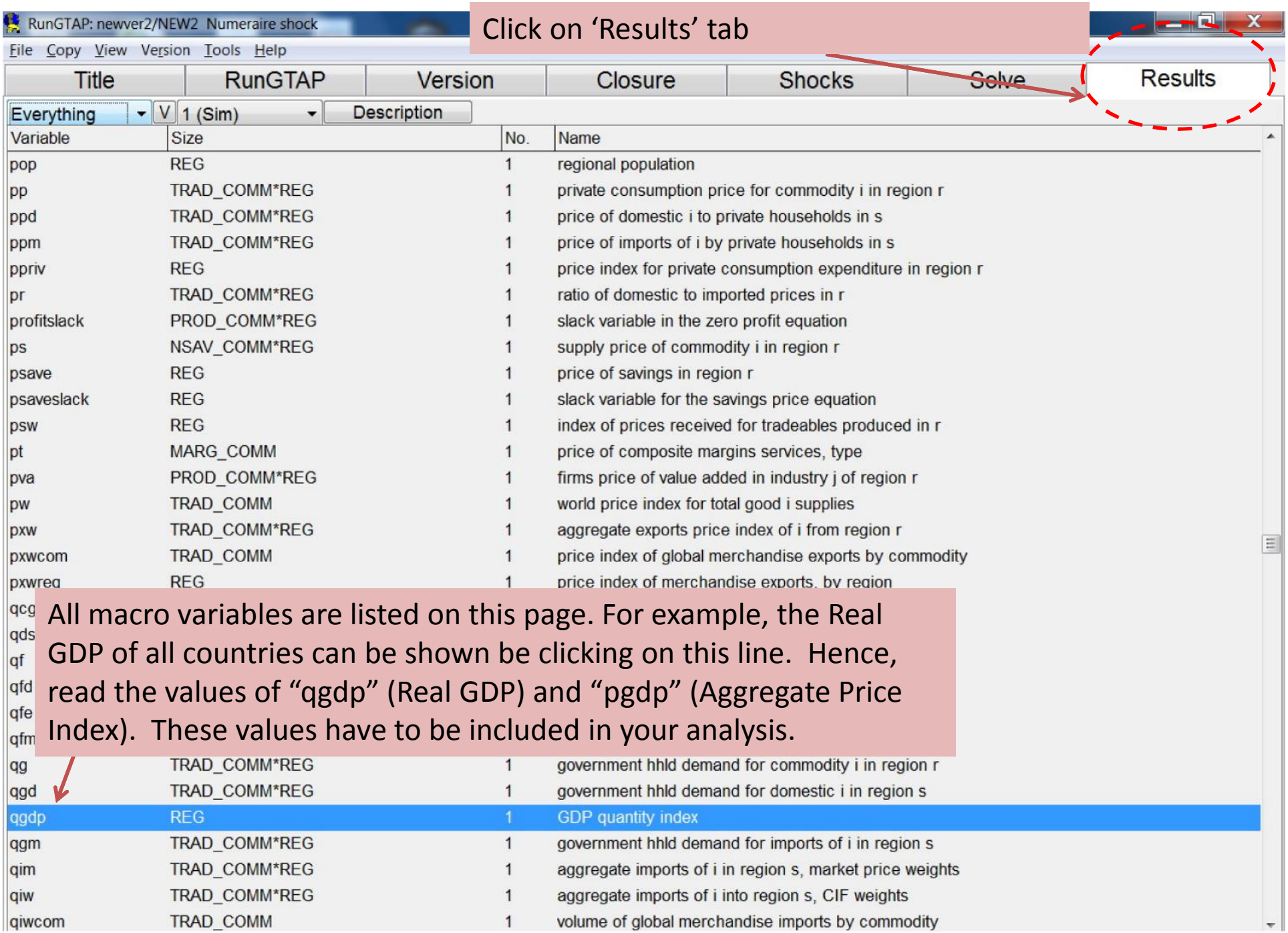

RunGTAP: newver2/NEW2 Numeraire shock
File Copy View Version Tools Help
Title
RunGTAP
Version
Closure
Shocks
Solve
Results
Variable to Shock
None Selected
Repeat the same steps to specify the shock of zero tariff rate on all commodities that Thailand imports from EU
Add to Shock List
Clear Shocks List
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.

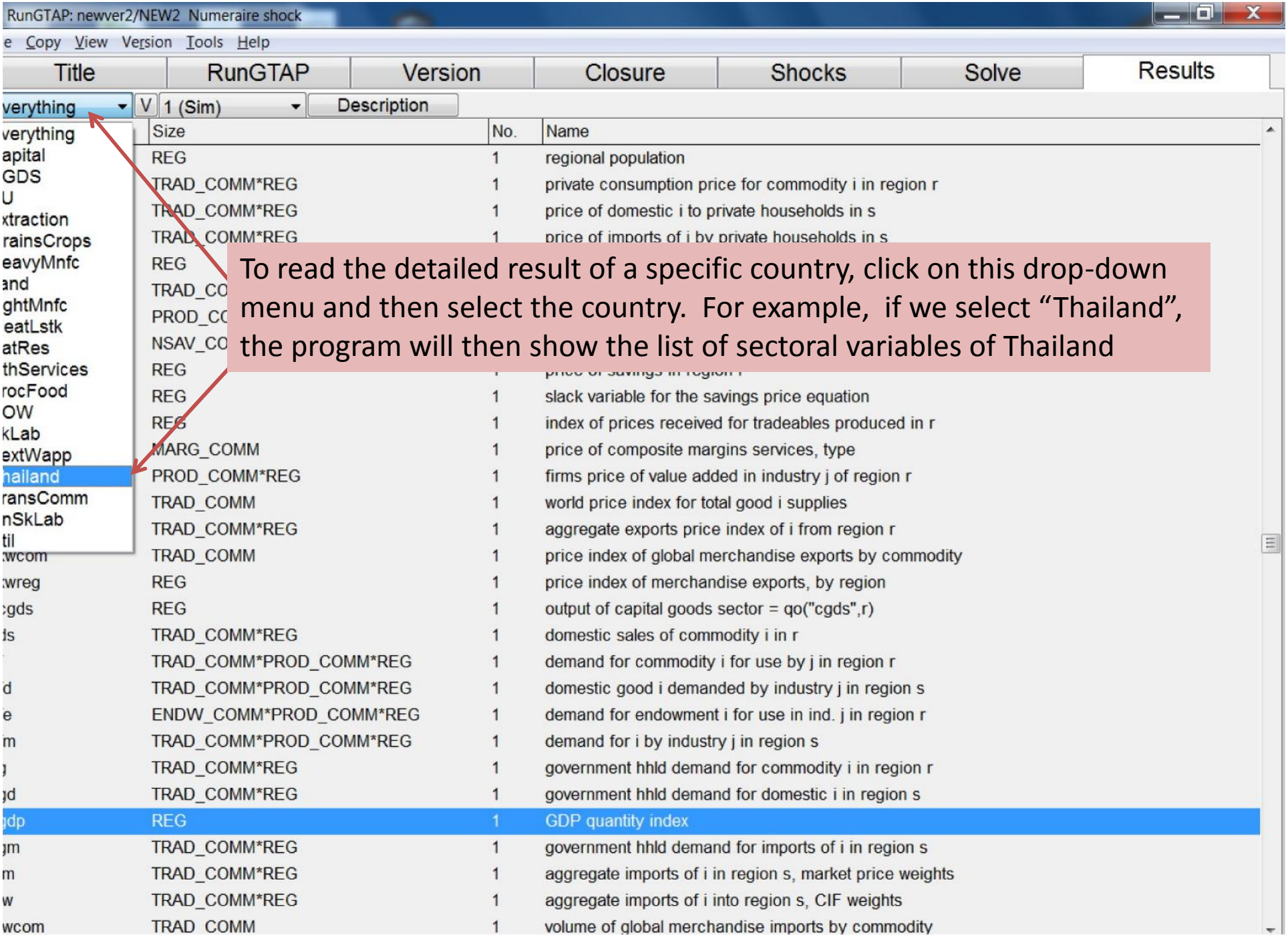
Click on ‘Solve’ tab



Then click on ‘Solve’ button to start the simulation

STEP 5 : Reading the Simulation Results


RunGTAP: newver2/NEW2 Numeraire shock
Click on 'Results' tab
File Copy View Version Tools Help
Title
RunGTAP
Version
Closure
Shocks
Solve
Results
Everything
V
1 (Sim)
Description
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
pxwreg 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 be 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.
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


RunGTAP: newver2/NEW2 Numeraire shock
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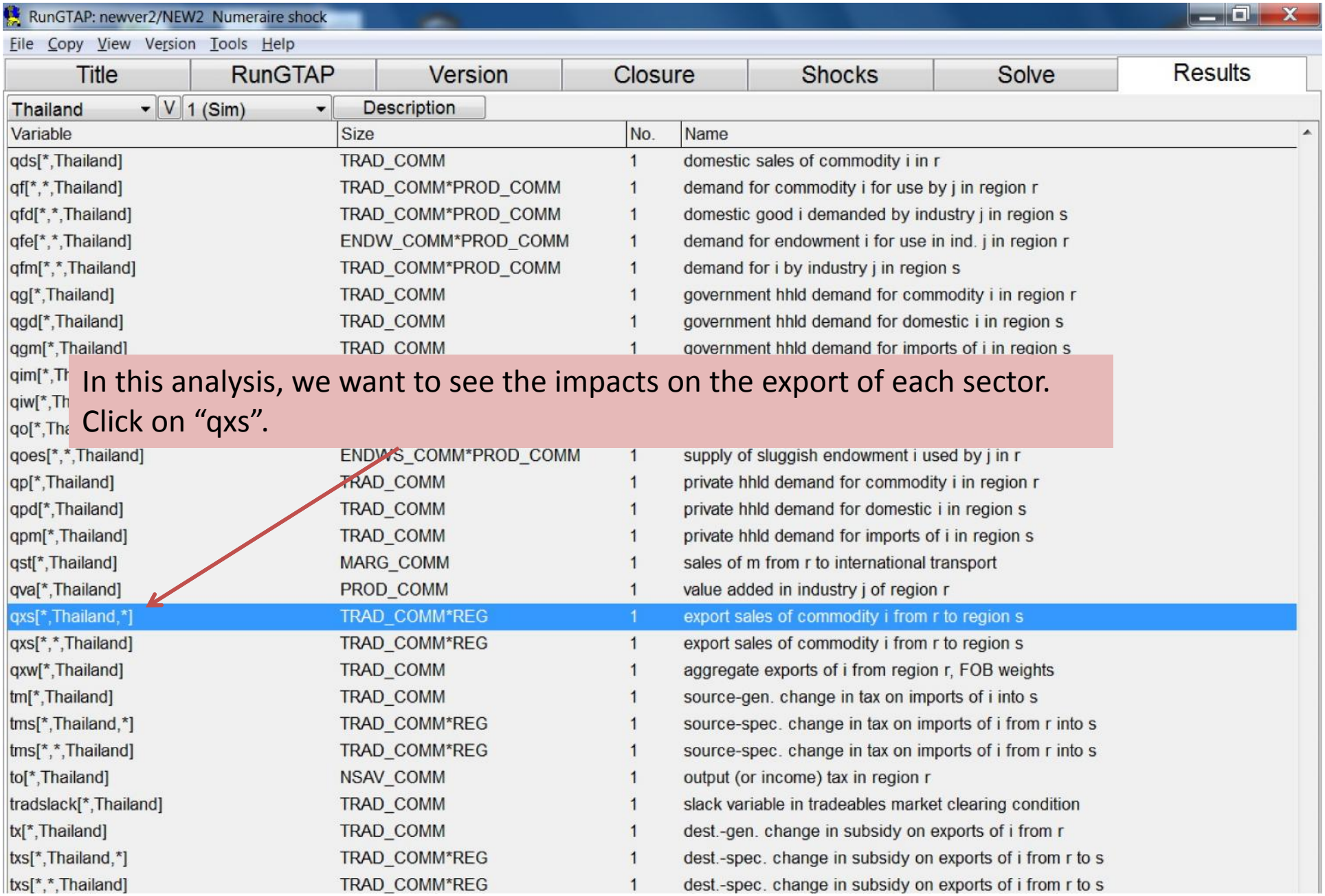
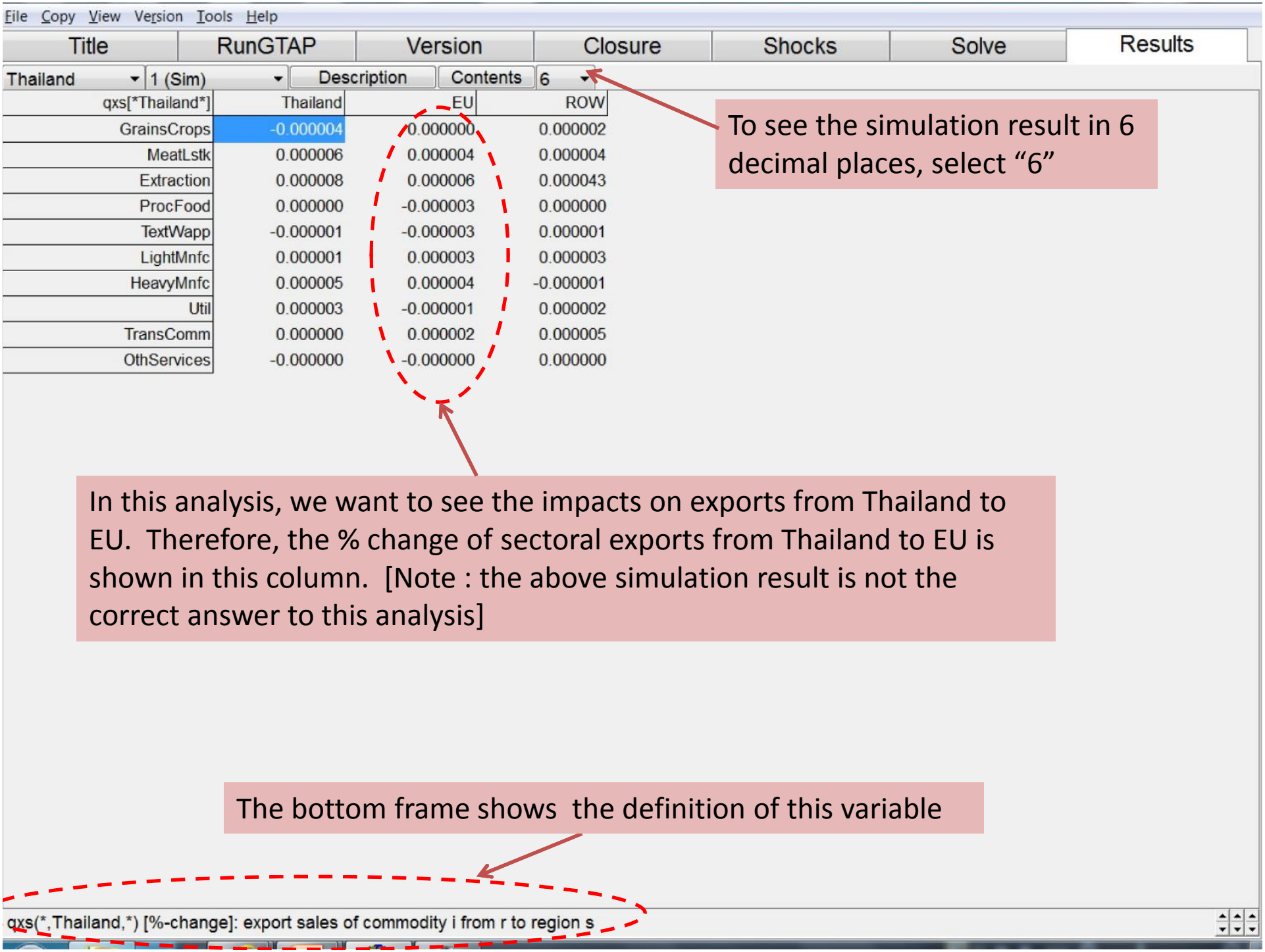
rainsCrops
eavyMnfc
and
ghtMnfc
eatLstk
atRes
thServices
rocFood
OW
kLab
extWapp
hailand
ransComm
nSkLab
til
Size
No.
Name
REG 1 regional population
TRAD_COMM*REG 1 private consumption price for commodity i in region r
TRAD_COMM*REG 1 price of domestic i to private households in s
TRAD_COMM*REG 1 price of imports of i by private households in s
REG
TRAD_CO
PROD_CO
NSAV_CO
REG
REG 1 slack variable for the savings price equation
REG 1 index of prices received for tradeables produced in r
MARG_COMM 1 price of composite margins services, type
PROD_COMM*REG 1 firms price of value added in industry j of region r
TRAD_COMM 1 world price index for total good i supplies
TRAD_COMM*REG 1 aggregate exports price index of i from region r
TRAD_COMM 1 price index of global merchandise exports by commodity
wreg REG 1 price index of merchandise exports, by region
gds REG 1 output of capital goods sector = qo("cgds",r)
ds TRAD_COMM*REG 1 domestic sales of commodity i in r
TRAD_COMM*PROD_COMM*REG 1 demand for commodity i for use by j in region r
d TRAD_COMM*PROD_COMM*REG 1 domestic good i demanded by industry j in region s
e ENDW_COMM*PROD_COMM*REG 1 demand for endowment i for use in ind. j in region r
m TRAD_COMM*PROD_COMM*REG 1 demand for i by industry j in region s
TRAD_COMM*REG 1 government hhld demand for commodity i in region r
gd TRAD_COMM*REG 1 government hhld demand for domestic i in region s
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


RunGTAP: newver2/NEW2 Numeraire shock
File Copy View Version Tools Help
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[*,Th
qiw[*,Th
qo[*,Tha
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”.


File Copy View Version Tools Help
Title
RunGTAP
Version
Closure
Shocks
Solve
Results
Thailand
1 (Sim)
Description
Contents
6
qxs[*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
qxs(*,Thailand,*) [%-change]: export sales of commodity i from r to region s