

A Ricardian Trade Structure in CGE: Modeling Eaton-Kortum Based Trade with GTAP (Replication Instructions)

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This document accompanies the paper “A Ricardian Trade Structure in CGE: Modeling Eaton-Kortum Based Trade with GTAP” published in the Journal of Global Economic Analysis. The detailed instructions in this document are divided into four main sections. Section 1 explains the folder structure of the supplementary zip file, gtapv7-ek.zip. Section 2 provides instructions on how to run the model using batch files. Section 3 details an optional step to generate post-simulation results using STATA software (this step can be skipped if the user does not have a STATA license). Finally, Section 4 explains how to update the Excel file used to generate the figures reported in the paper.

1. Supplementary File Directory Structure

Step 1.1 Unzip file, gtapv7-ek_JGEA.zip, into your preferred directory, say c:\gtapv7-ek_JGEA

- Double-click on the folder “gtapv7-ek_JGEA” to show all sub-folders (see Figure 1)
 - Batch – contains 8 batch files for running individual simulations reported in the paper and 1 batch file (RunSims.bat) to run all 8 aforementioned batch files consecutively.
 - cmf – contains all the cmf files for running all simulations
 - code – contains 6 STATA do-files to summarize results, and 1 do-file (RunAllDoFiles.do) to run all 6 aforementioned do-files consecutively.
 - data – contains all GTAP data input (sets.har, basedata.har and default.prm)files and a shock file (shocksv7.har) which includes percentage changes in the power of taxes to eliminate tax wedges in the accompanying GTAP database.
 - out – contains all files which summarizes results and figures reported in the paper
 - results – contains summary, volume and welfare results (*_SUM.har, *_VOL.har and *_WEL.har) obtained from running gtapv7-ek model simulations
 - sol – contains all solution files (*.sl4, *.slc) and a csv folder which is used by the STATA code to summarize the results reported in the paper
 - tab – contains the model files for standard gtapv7 model and the Eaton_kortum model, gtapv7-ek
 - Updated – contains the updated database created after a model run
 - working – contains all intermediate STATA files to process and summarize simulation results
 - gtapv7-ek_Replication_Instructions.pdf – User guide to replicate results.

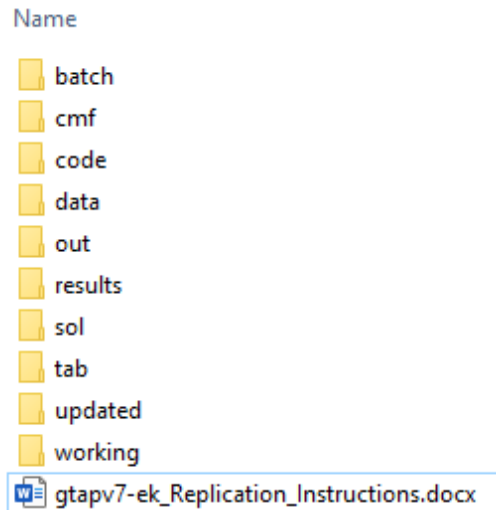


Figure 1. gtapv7-ek folder structure

2. Instructions to Run the models and Replicate Results

Follow these detailed step-by-step instructions to run simulations and replicate the results reported in the paper.

2.1 Step 1: Run standard GTAP model and GTAP Eaton-Kortum model simulations

- Double-click on the folder “batch” (left-hand side of Figure 2) to see all the batch files stored in the folder (right-hand side of Figure 2).

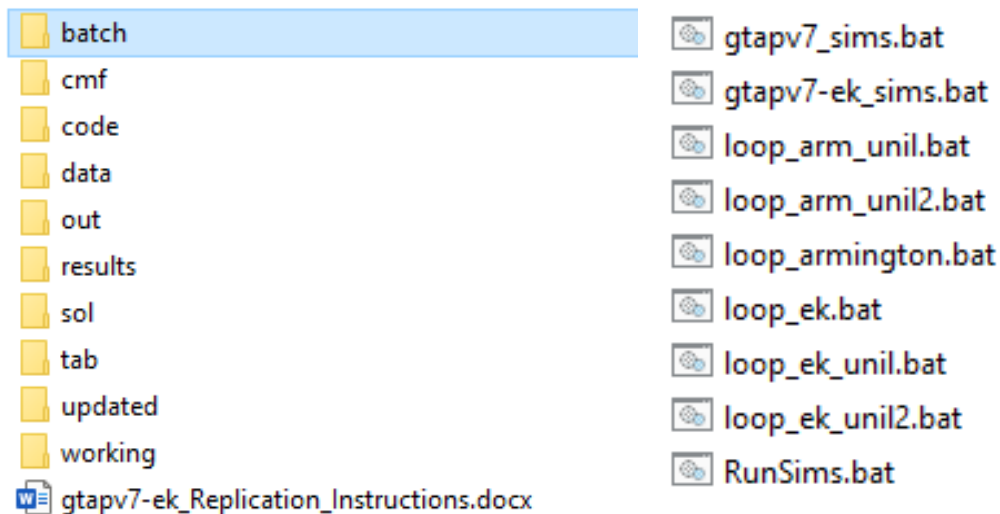


Figure 2. batch sub-folder

2.2 Step 2: Run simulations

2.2.1 Open a DOS-box: In Windows Explorer, type cmd in the address bar, then hit ENTER.

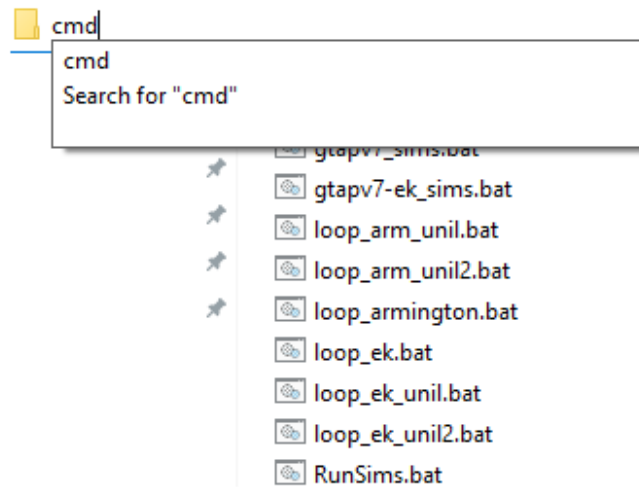


Figure 3. Opening a DOS-box in Windows Explorer

2.2.2 In the DOS-box, type RunSims.bat, then hit ENTER.

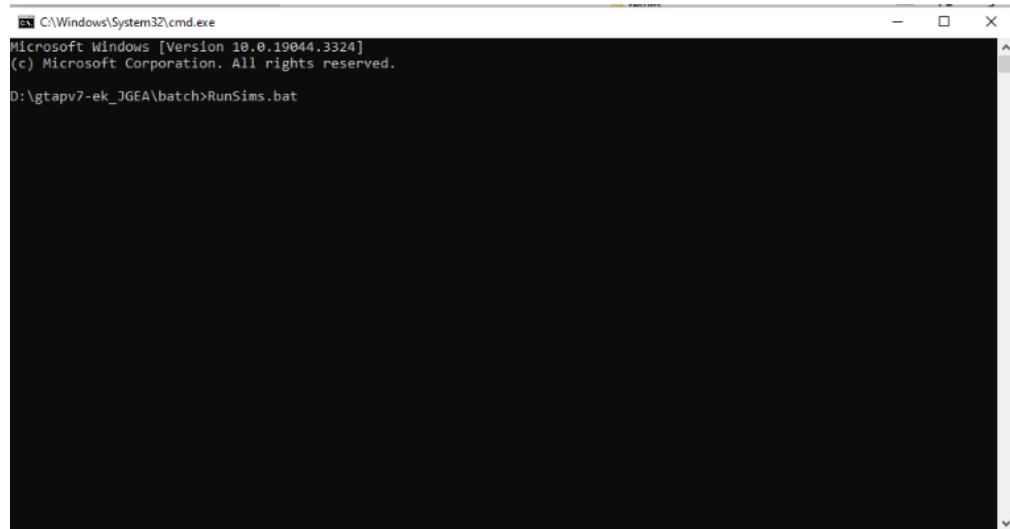


Figure 4. Run all simulations

2.2.3 Alternatively, double-click on RunSims.bat, to run all simulations.

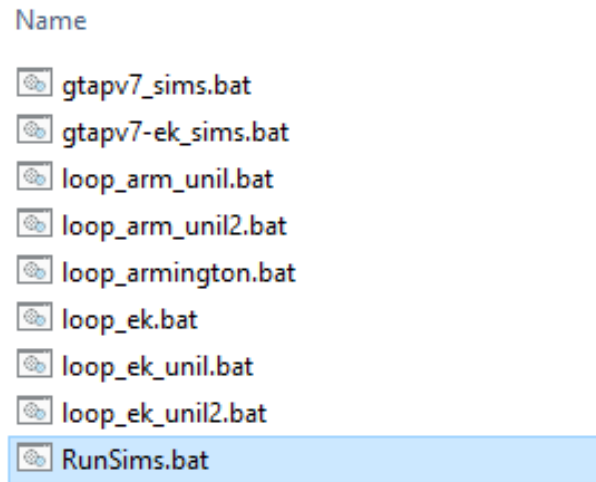


Figure 5. Double-click on RunSims.bat

2.2.4 Once all simulations and preliminary processing of GTAP simulation results have finished (roughly 1 hour), a message “goto endbat” will appear in the DOS-box.

```
C:\Windows\System32\cmd.exe
cd ..\sol
sltohta -sss -map=u.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_u.csv 1>nul
sltohta -sss -map=ggdp.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_ggdp.csv 1>nul
sltohta -sss -map=psw.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_psw.csv 1>nul
sltohta -sss -map=pdw.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_pdw.csv 1>nul
sltohta -sss -map=tot.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_tot.csv 1>nul
sltohta -sss -map=qxwreg.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_qxwreg.csv 1>nul
sltohta -sss -map=qmwreg.map ek_unil2_RestofWorld_9.s14 csv\ek2_RestofWorld_9_qmwreg.csv 1>nul
)
D:\gtapv7-ek_JGEA\sol>(
cd ..\batch
..\tab\GTAPv7-ek -cmf ..\cmf\GTAPv7-ek_tms_unil2_loop.cmf -p1=RestofWorld -p2=10 1>nul
cd ..\sol
sltohta -sss -map=u.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_u.csv 1>nul
sltohta -sss -map=ggdp.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_ggdp.csv 1>nul
sltohta -sss -map=psw.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_psw.csv 1>nul
sltohta -sss -map=pdw.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_pdw.csv 1>nul
sltohta -sss -map=tot.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_tot.csv 1>nul
sltohta -sss -map=qxwreg.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_qxwreg.csv 1>nul
sltohta -sss -map=qmwreg.map ek_unil2_RestofWorld_10.s14 csv\ek2_RestofWorld_10_qmwreg.csv 1>nul
)
D:\gtapv7-ek_JGEA\sol>cd ..\batch
D:\gtapv7-ek_JGEA\batch>if errorlevel 1 goto error
D:\gtapv7-ek_JGEA\batch>goto endbat
D:\gtapv7-ek_JGEA\batch>_
```

Figure 6. Successful simulation runs and processing of simulation results

3. Optional Step 3: Generate post-simulation Results

3.1 Optional Step 3: Use STATA software to generate post-simulation summary tables, which underly Figures 1 to 5 reported in the paper (NB: This optional step can be skipped if the user does not have a STATA license).

3.1.1 Double click on the "code" sub-folder (left-panel of Figure 7) to see all the STATA Do-files (Right-panel of Figure 7).

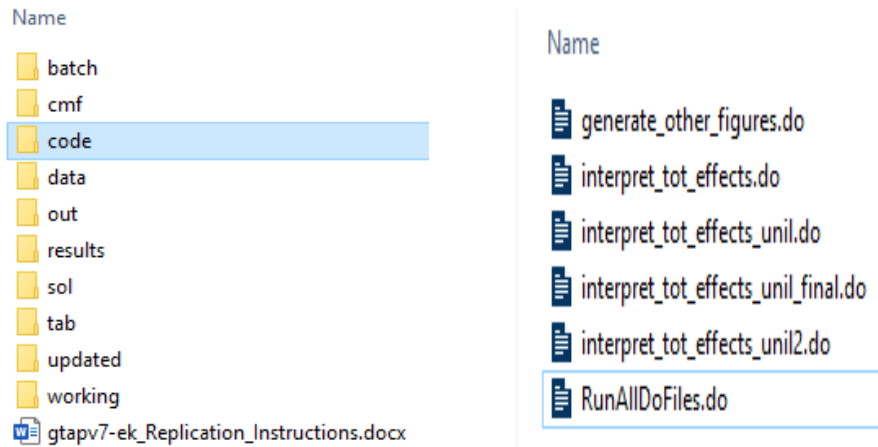


Figure 7. Code sub-folder and STATA do-files

3.1.2 Double-click on the file "RunAllDoFile.do" to launch STATA's interface and Do-file Editor as shown in Figure 8.

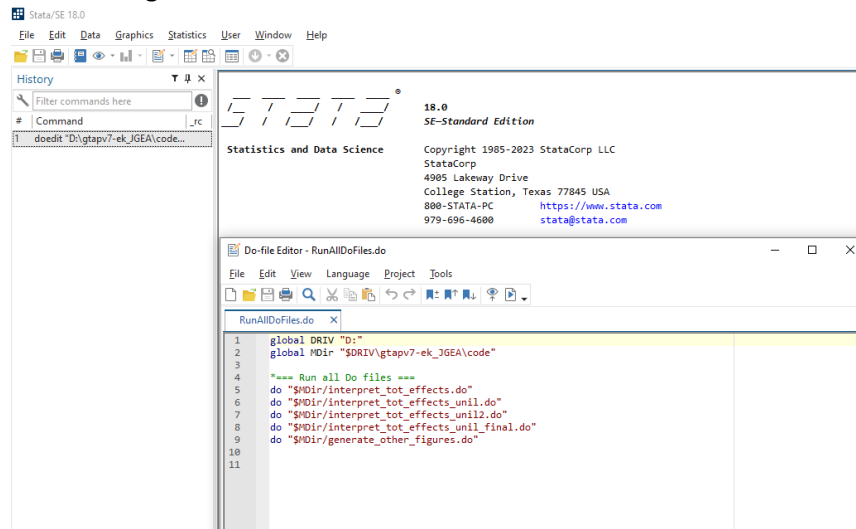



Figure 8. STATA interface and Do-file editor

3.1.3 In the Do-file editor, modify the macro command **global DRIV "D:"** to match the disk drive where the folder gtapv7-ek_JGEA is located.

- If the folder is saved in c:\gtapv7-ek_JGEA then directory "D:" must be replaced by "C:" (e.g., from **global DRIV "D:"** to **global DRIV "C:"**)
- Alternatively, if the folder is saved as d:\temp\gtapv7-ek_JGEA then directory "D:" in **global DRIV "D:"** must be replaced by **global DRIV "D:\temp"**

- 3.1.4 Save the file, then execute RunAllDoFiles.do by pressing CTRL + D or by clicking on the “play” () button as shown in the blue arrow in Figure 9.

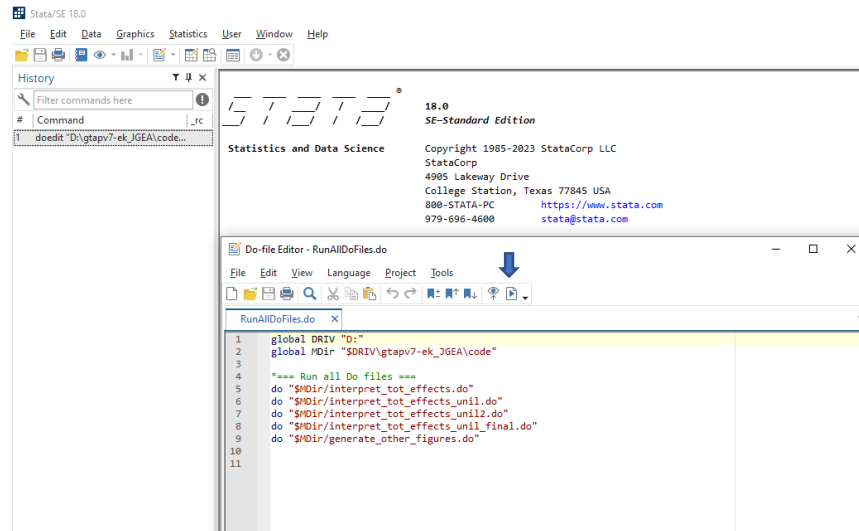


Figure 9. Execute RunAllDoFiles.do

- 3.1.5 STATA's interface will show “export excel ../out/all_results.xlsx” (Figure 10) once all the Do-files have been executed.

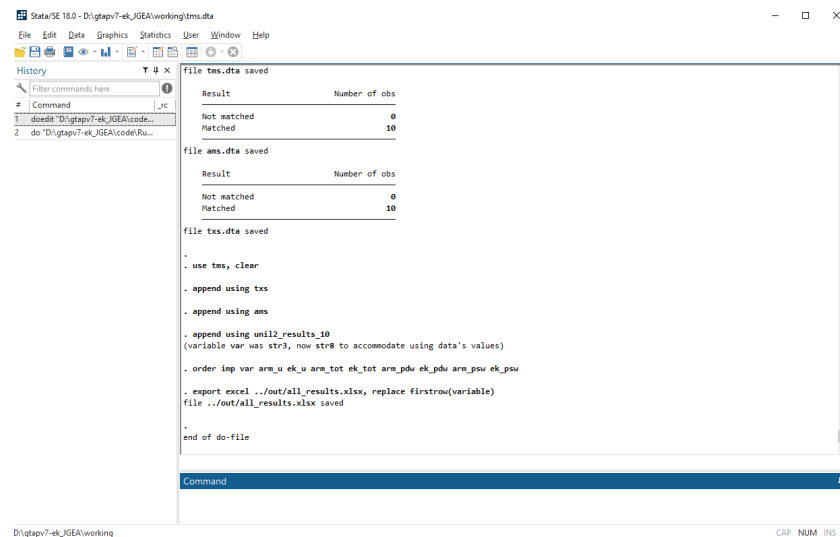


Figure 10. Simulation Results Summary

3.1.6 Double-click on the folder “out” (left-hand panel of Figure 11) to see the 7 Excel files generated by STATA and 4 picture files used in the paper.

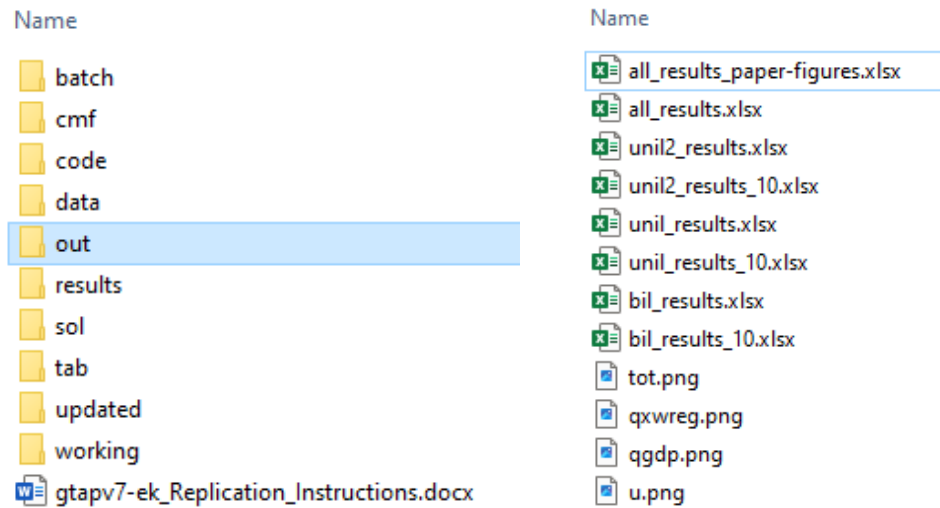


Figure 11. Inspecting Results

4. Compare Results and Figures Reported in the Paper

Step 4.1: Update Simulation Results

4.1.1 Open the following Excel Files in the “out” folder (left-hand panel of Figure 11):

- all_results.xlsx generated.xlsx
- all_results_paper-figures.xlsx

4.1.2 Copy all contents in Sheet 1 of the file “all_results.xlsx” (left-panel of Figure 12) to All_results worksheet in “all_results_paper-figures.xlsx” (right-panel of Figure 12).

FileHomeInsertPage LayoutFormulasDataReviewViewHelpAcrobatSASTeamΣ >

Figure 12. Post-Simulation Results

- 4.1.3 Click on worksheet **u** in “all_results_paper-figures.xlsx”, then update the results by clicking **Refresh All** icon (see blue arrow in Figure 13).
- 4.1.4 Compare Figures 1, 2, 3 and 4 in the paper with the figures found in worksheets u, qxwreg, qgdp and tot respectively.

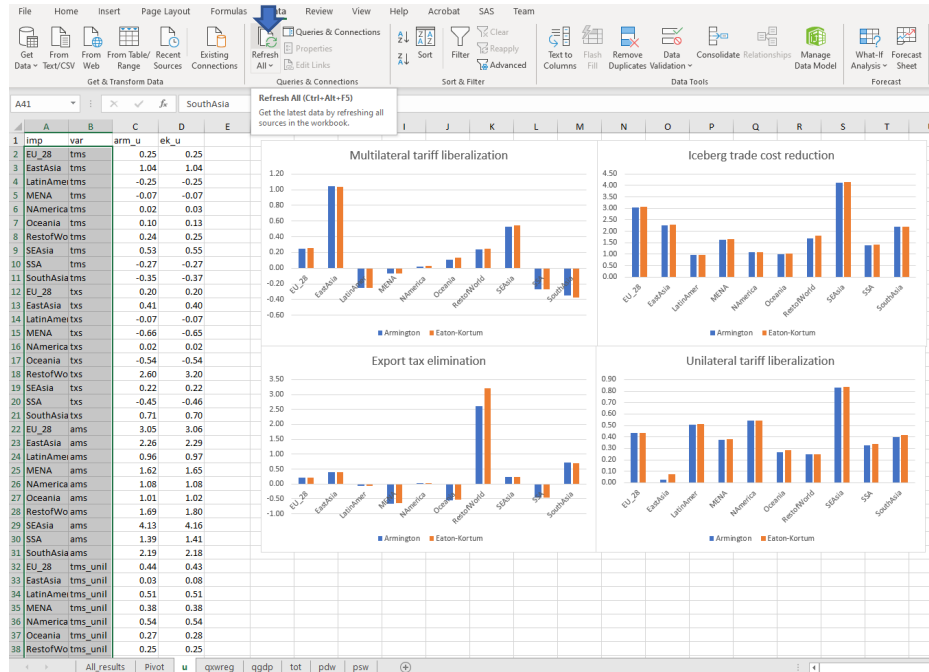


Figure 13. Refresh Results

-END-