Roadmap to Replication Package of "Putting Quantitative Models to the Test: An Application to the US-China Trade War"

This file outlines the roadmap of the codes to replicate the figures and tables reported in Sections 4 and 5.

1) Data

This folder contains the primary data used in simulations and estimation. It contains two files with variables extracted from FGKK's replication package. The file "model_data_fgkk.mat" contains the main variables used in our analysis, and the file "estimation_data_fgkk.mat" contains additional variables used to account for estimation uncertainty in Table 1.

2) Codes

The folder "Codes" contains the scripts used to generate the results in Sections 4 and 5, with the subfolder "Functions" containing all the scripts used by them.

We now describe the order in which one should run the scripts in this folder, along with a brief description of what each script implements.

2.1) Codes for simulations in Section 4 in subfolder "Simulation"

All the codes for simulation use as input "model_data_fgkk.mat" to produce the figures in the paper.

2.1.1) The script "simulation_shares.m" computes the adjustment vectors that we need to build the share matrices used for the construction of the different versions of the instrumental variables for simulations, as described in Appendix B.4. This script must be run before all other simulation scripts below.

- Server specifications: run with 10 cores and 250GB of memory

2.1.2) The script "simulation_Fig_2_3.m" runs the simulations for Figures 2 and 3.

- Server specifications: run with 10 cores and 1000GB of memory

2.1.3) The script "simulation_Fig_B1_B2.m" runs the simulations for Figures B.1 and B.2.

- Server specifications: run with 3 cores and 1000GB of memory

2.1.4) The script “simulation_Fig_4_B4.m” runs the simulations for Figure 4 and B.4.

- Server specifications: run with 4 cores and 1000GB of memory

2.1.5) The script “simulation_Fig_B3.m” runs the simulations for Figure B.3.

- Server specifications: run with 2 cores and 1000GB of memory

2.1.6) The script “simulation_Fig_5.m” runs the simulations for Figure 5.

- Server specifications: run with 20 cores and 720GB of memory

2.2) Codes for estimation in Section 5 in subfolder “Estimation”

All the codes for estimation use as input “model_data_fgkk.mat.” The code “estimation_parestFGKK.m” also uses the additional variables in “estimation_data_fgkk.mat.” This script must be run in the order in which they are described below.

2.2.1) The script “estimation_shares.m” computes the adjustment vectors that we need to build the share matrices used for the construction of the different versions of the instrumental variables for estimation, as described in Appendix B.4.

- Server specifications: run with 10 cores and 250GB of memory

2.2.2) The script “estimation_parestFGKK.m” organizes the estimation moments from FGKK for accounting for parameter uncertainty in the test.

2.2.3) The script “estimation_Tab1a.m” implements the test ignoring estimation uncertainty that is reported in Table 1.

- Server specifications: run with 250GB of memory

2.2.4) The script “estimation_Tab1b_TabC1.m” implements the test accounting for estimation uncertainty that is reported in Tables 1 and C.1.

- Server specifications: run with 250GB of memory

2.2.5) The script “estimation_shares_Fig_6.m” computes the adjustment vectors that we need to build the share matrices used for the construction of the different versions of the instrumental variables for estimation of each calibration in Figure 6, as described in Appendix B.4.

- Server specifications: run with 10 cores and 250GB of memory

2.2.6) The script “estimation_Fig_6.m” implements test under the assumption that researcher has a different model calibration to produce Figure 6.

- Server specifications: run with 250GB of memory

2.2.7) The script “estimation_Fig_7.do” uses the output of “estimation_Tab1a_TabC1.m” to build Figure 7.

2.3) Functions

The folder “Functions” contains scripts that are called by the codes described above.

2.3.1) “set_local_paths.m” sets local paths for all files

2.3.2) “simulation_preliminary_steps.m” implements preliminary steps that are shared by all simulation codes.

2.3.3) “estimation_preliminary_steps.m” implements preliminary steps that are shared by all estimation.

2.3.4) “invert_param_full.m” implements the inversion of model parameters using observed variables

2.3.5) “compute_equilibrium_foa_full.m” computes the Jacobian matrix of the model predictions with respect to changes in tariffs

2.3.6) “compute_equilibrium_nonlinear.m” computes the non-linear predictions of the model for a given set of tariffs

2.3.7) “implement_test.m” implements simplified version of the test used in simulations

2.3.8) “implement_jointtest.m” implements simplified version of the joint procedure for estimation and test used in simulations

2.3.9) “implement_test_cluster.m” implements the test used in estimation (allowing for clusters of shifters)

2.3.10) “implement_jointtest_app_cluster.m” implements the joint procedure for estimation and test used in our empirical application (allowing for clusters of shifters)

3) Output

The folder “Output” contains all the output produced by the codes described above. The subfolders “Figures” and “Tables” contain the figures and tables reported in the paper. The folders “Simulation” and “Estimation” contain the output of the codes described in the above Sections 2.1 and 2.2, respectively. The subfolder “IV_share” contains the vectors used to build the IVs used in simulation and estimation.