Guideline for the Replication Package of
"Trade Elasticities in General Equilibrium: Demand, Supply, and Aggregation"
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Our data and codes are grouped into three folders: "DataPrep", "Estimation" and "Quantitative". All the results can be reproduced in three steps, starting from the raw data to the final results:

- **Step 1.** The files in "DataPrep" extract information from the raw sources of data and clean/organize them.
- **Step 2.** Using the data from Step 1, the files in "Estimation" estimate the elasticity parameters of our model and report the results in Section 3 of the paper.
- **Step 3.** Using the data from Step 1 and estimates from Step 2, the files in "Quantitative" produce the quantitative results in Section 4 of the paper.

Generally, each folder is structured with subfolders "code", "input", "output" and "raw". Subfolder "code" consists of the codes (numbered in order of execution) needed to complete their corresponding steps. The codes will draw in data from "raw" and "input" in order to produce processed data, estimates of model parameters and quantitative results saved to "output". Data in "raw" are unprocessed data. Data in "input" are processed data coming from prior steps.

The main data which we use are trade values and quantities taken from the BACI-CEPII database augmented with information on gross output from the INDSTAT-UNIDO. We are not authorized to share these raw data directly. Researchers, however, can access these publicly available data sources by contacting the authorities that provide them. We, in turn, provide our codes and aggregated versions of these data as described in Appendix B of the online appendix, which are sufficient for replication. Finally, note that some of the steps take a long time to run. We have marked them below with a (*) sign. We use MATLAB and Stata (MATLAB version 2023b and Stata version 18).

Step 1. Folder "DataPrep"

This folder contains three sub-folders: (1) "code" where the codes are located, (2) "raw" where the raw data are located, (3) "output" where the intermediate results are saved.

Below, we provide a description of the codes in "DataPrep". You can run them on the bash files "000_run_all.sh" located in the "DataPrep/code" sub-folder. Alternatively, if you'd like to run the codes *manually*, you should set the path at: "~/FS_Replication/DataPrep" and run the files one by

one in Stata and MATLAB (in the order listed in the bash file, or listed below). These codes clean and organize the information from various sources and prepare them for estimation and quantitative analyses of the paper.

- "step0_preliminaries.do" … defines the sample of countries and industries and the crosswalks across datasets.
- "step1_organize_hs.do" … organizes HS-level BACI-CEPII data on trade and unit values for the estimation of within-industry love-of-variety elasticity parameter "eta" by origin-industry
- "step2_main_estimation_eta.m"… estimates "eta" for each origin-industry based on Reverse Weighting ("RW") estimation procedure. This step calls "function_estimation_RW.m" which calculates the objective function in the RW procedure.
- "step3_compute_price_index.m" … use trade data from step 1 and estimates of "eta" from step 2 to compute price indices by origin-destination-industry-year
- "step4_organize_trade.do" … organizes BACI-CEPII data on trade and unit values at the *aggregate* level of 2-digit ISIC industries (as listed in Table A.1 of the online appendix)
- "step5_adjust.do" … adjusts INDSTAT-UNIDO production data when required by comparing them to BACI-CEPII exports data
- "step6_merge.do" … merges bilateral trade data with modified production data from step 5 and computed price indices from step 3
- "step7_organize_otherdata" … organizes auxiliary information on national accounts
- "step8_maketables.do" … produces summary of statistics for our trade and production data reported in "Appendix B. Data" that are Table A.2 and Figures A.2 and A.3
- "step9_transfer.do" … transfers all required data in appropriate formats (e.g., csv, dta) from the above steps into "input" sub-folders located in "Estimation" and "Quantitative" folders.

Step 2. Folder "Estimation"

This folder contains four sub-folders: (1) "code" where the codes are located, (2) "raw" where the raw data are located, (3) "input" where the intermediate inputs are saved from the previous steps, and (3) "output" where the intermediate results are saved.

You can run the estimation codes on the bash files "000_run_all.sh" located in the "Estimation/code" sub-folder. Alternatively, if you'd like to run the codes *manually*, you should set the path at: "~/FS_Replication/Estimation" and run the files one by one in Stata (in the order listed in the bash file or as outlined below). These codes execute our estimation procedure as presented in Section 3 and report the results.

- "step1_estimate.do" … estimates the elasticity parameters of omega1, omega2, and sigma by country-industry according to the estimation procedure presented in Section 3 of the paper (* the entire codes for

the total of 16 industries takes about three days to run. However, one can run the codes over individual industries separately.)

- "step2_backout.do" … organizes the estimates from step 1
- "step3_transfer.do" … transfers parameter estimates to create sum stats and for use in Matlab
- "step3_maketab2.do" … produces Table 2
- "step3_maketab3.do" … produces Table 3
- "step3_maketab4.do" … produces Table 4

Step 3. Folder "Quantitative"

The folder "Quantitative" contains three sub-folders: (1) "code" where the codes are located, (3) (2) "input" where the intermediate inputs are saved from the previous steps, and (3) "output" where the results are saved.

Files in "Quantitative/code" produce the quantitative results in Section 4 of the paper. You can run them from a single MATLAB file "aaa_run_all" or run them one by one in MATLAB. In any case, you should set the path at "~/FS_Replication/Quantitative/code".

Calibration

- "step1_main_prepare_data_1.m" … load data and parameter estimates and organize them for use in MATLAB
- "step2_main_prepare_data_2.m" … calibrate the model by purging data from trade imbalances

Quantitative exercises (Main body of the paper)

- "step3_main_Exercise_US_Tariff_Policy.m" … produce the data for Table 5 in Section 4 of the paper by simulating the general equilibrium effects of US tariff policy
- "step4_main_Exercise_Coverage.m" … produce Figure 1 in Section 4 of the paper by simulating the impact of US tariff policy as the coverage of tariffs gradually includes a wider range of industries (* takes about 30 minutes)
- "step5_main_Exercise_RCA.m" … create Figure 2 in Section 4 of the paper by simulating the impact of US tariff policy and correlating the outcome with baseline RCA
- "step6_main_Exercise_Decomposition.m" … produce the data for Table 6 and Figure 3 in Section 4 of the paper by simulating the impact of US tariff policy across various models
- "step7_main_Exercise_Homog_Param.m" … produce Figure 4 by simulating the impact of US tariff policy evaluated at heterogenous vs homogenous elasticity parameters.

Quantitative exercises (Online Appendix)

- "step8_apdx_Exercise_Decomposition_LL_BCDR.m" … produce the data for Table A.3 in the appendix by simulating the models of Bartelme et al (BCDR) and Lashkaripour and Lugovskyy (LL)

- "step9_apdx_Exercise_Simulation_123.m" … produce the three panels of Figure A.4 in the appendix by way of simulations as described in Appendix D
- "step10_apdx_Exercise_Simulation_4.m" … produces Figure A.7 by way of simulations as described in Appendix D
- "step11_apdx_Exercise_Coverage_Model_b.m" … produce Figure A.8 Panels (a) & (b) in the appendix by simulating the impact of US tariff policy as the coverage of tariffs gradually includes a wider range of industries (* takes about 30 minutes)
- "step12_apdx_Exercise_Coverage_Model_c.m" … produce Figure A.8 Panels (c) & (d) in the appendix by simulating the impact of US tariff policy as the coverage of tariffs gradually includes a wider range of industries

The above codes call the following functions:

- "Solve_Eqlbrm_Change.m" … computes the general equilibrium of our model in changes
- "Solve_Eqlbrm_Change_Armington.m" … computes the general equilibrium of the EK/Armington version of our model in changes
- "Solve_Eqlbrm_Level.m" … computes the general equilibrium of our model in levels
- "pass_through_rate_partial.m" … calculates partial equilibrium passthrough rates of tariffs

Make tables:

- "step13_maketables.do" … creates Tables 5 and 6 in the main text and Table A.3 in the appendix