

Description of the files in the replication package

The replication package allows one to replicate all results in the paper.

I Data

The Stata file `master.dta` contains the data used in the main specification. All variables are labeled with their content in a self explanatory way—e.g., importer and exporter names, isocode, GDP in US\$, and per capita GDP in US\$, and value of trade flows in US\$, common official language, etc. Negative trade flows imply missing data.¹ The Fortran programs used for estimation read the data from `.dat` files, through the program `readata_un2000.f90`. These “.dat” files are `agreement.dat`, `contiguity.dat`, `dist.dat`, `languageo.dat`, `percgdp.dat` and `trade-flow.dat`. Each of these contains only one variable, the corresponding variable from the master data, and the order of observations follows the variable index in the master data.

The files `masterun1999.dta`, `masterun2001.dta`, `masterimf2000.dta`, `master_feenstra1999` contain, respectively, data from the UNComtrade from the years 1999 and 2001, from the International Monetary Fund (2008), Feenstra et al. (2005). To estimate the model using these alternative data sets, one needs to create the corresponding “.dat” files, and change the number of countries in the entry `.f90` file for each program (whose name begins with “main_” and “EKmain”). I have checked that the results from the new model with specification 1 and from the EK model hold qualitatively for all these alternative data sets.²

II Estimation programs

Below is the list of empirical specifications and robustness checks in the paper. Under each item is an explanation of how to use the files in the replication package to attain the results in the paper. All main specifications have a program ready to run, while some of the robustness checks require small modifications to the existing programs.

1. Specification 1 (equation (12))

The Fortran program `newmodel_specification1.dsw` estimates the parameters under specification 1 in the paper. The program makes 10 initial guesses of the parameters, and it runs a simplex algorithm and records the results for each initial guess. Fortran program `specification1_stderrors.dsw` delivers the standard errors.

2. Specification 2 (equation (14))

The Fortran program `newmodel_specification2.dsw` estimates the parameters under specification 1 in the paper. The program makes 10 initial guesses of the parameters, and it runs

¹ The Fortran programs are written to recognize negative trade flows as missing data, and to ignore them in calculating the sum of squared errors to be minimized.

² I used the year 1999 for the Feenstra et al. (2005) data set because India was missing from the year 2000 when I downloaded the data.

a simplex algorithm and records the results for each initial guess. Fortran program specification2_stderrors.dsw delivers the standard errors.

Program specification2_demand.dsw estimates the demand parameters in specification (15).

3. EK model

The EK model with the full sample of countries is estimated in the Fortran program EKmodel.dsw, and its standard errors in EKmodel_stderrors.dsw.

The EK model with the OECD sample is estimated in the Fortran program EKmodel_OECD.dsw, and its standard errors in EKmodel_OECDerrors.dsw.

4. Counterfactuals

The program counterfactual_Tshock.dsw experiments with a technology shock in each of the 10 largest countries (including China and the USA cases described in the paper). The program records its output to “.csv” files. The Stata program master_counterfactuals.do compiles these “.csv” files into a user friendly data file in Stata (with labeled variables, names and characteristics of countries, utility, nominal and real wages before and after each shock).

The program counterfactual_tradecosts.dsw experiments with (i) a move to frictionless trade and (ii) to autarky. Again, the output is recorded in “.csv” files and the Stata program master_counterfactuals.do compiles these files into a user friendly Stata file.

5. New model with different values for θ_A and σ_A (appendix 7.3.2, table 3)

For specification 1, the Fortran programs are still newmodel_specification1.dsw (parameter estimates) and specification1_stderrors.dsw (standard errors). Parameters θ_A and σ_A are specified on lines 35 and 36 of file mycalc_obj.f90. These lines need to be changed to get the parameter estimates of table 3. To get their standard errors one needs to change lines 42 and 43 of file main_stdNLLS.f90, and the optimal parameters in file optimal_paramun.dat

Analogously, for specification 2, the Fortran programs are still newmodel_specification2.dsw and specification2_stderrors.dsw. Parameter θ_A is defined on line 46 of mycalc_FE.f90 (for parameter estimates) and on line 42 of main_stdFE.f90 (for standard errors). Optimal parameters in file optimal_paramFE.dat also need to be changed.

6. Weighting of observations (appendix 7.3.1)

The programs to estimate the new and the EK models with a different weighting of observations are the same as those of points 1, 2 above: newmodel_specification1.dsw and EKmodel_stderrors.dsw. One needs only to change the objective functions at the end of files mycalc_obj.f90 (new model) and EKcalc_obj.f90 (EK model).

I have not experimented with different weights in specification 2, but the objective function that would need to be changed is at the end of file mycalc_FE.f90. Programs to recover standard errors would also need to be changed in a self explanatory way.

7. New model with OECD countries

To estimate the new model with the OECD sample one needs to modify the program `newmodel_specification1.dsw` as follows. (i) Change the number of countries in line 16 of file `main_new1.f90` from `NN = 162` to `NN = 19`. (ii) replace file `readata_un2000.f90` with `readata_un2000oecd.f90`.

To get standard errors use program `specification1_stderrors.dsw` and make the following changes: (i) Change the number of countries in line 16 of file `main_stdNLLS.f90` from `NN = 162` to `NN = 19`; (ii) replace file `readata_un2000.f90` with `readata_un2000oecd.f90`; (iii) fill in the list of parameter estimates in file `optimal_paramun.dat`.

8. New model with income inequalities

To estimate the new model with income inequalities within countries in specification 1 use program `specification1_inequality.dsw`. To compare the results to those without income inequalities within countries using the same set of countries, activate the last five lines of the program `readata_inc distr.f90`, as indicated.

To estimate the demand parameters with income inequalities within countries in specification 2 (equation (15)), use program `demand_inequality.dsw`. Again to remove income inequalities within countries for comparison, activate the last five lines of program `readata_inc distr2.f90`

9. New model with three types

The Fortran program `specification1_3types.dsw` estimates the new model, under specification 1 with three types of goods, instead of just two types. Self explanatory changes are needed to change the program to estimate 4 types.

10. Monte Carlo simulations

The Fortran program `specification1_montecarlo.dsw` performs the Monte Carlo simulations.