Readme RDC Replication Files – Antras, Fort, and Tintelnot May 2017

1. Baseline_Estimation:

In order to run the code for the estimation of the baseline model, first change line 35 in setup_struct_aft.m to include the directory ``bs.” In this directory the files 'emp2_data_for_matlab_fe_2007_bs1' and 'parameters_2007_bs1' are saved.

Depending on whether requesting 12 or 4 cores on the Census served, submit Main_est_combined.m or Main_est_combined_4cpu.m .

This will run the estimation code and print the table with the parameter estimates (ParameterEstimatesStep3.tex).

Below we describe each file in greater detail:

- setup_struct_aft.m

This file reads in the files 'emp2_data_for_matlab_fe_2007_bs1.out' and 'parameters_2007_bs1.out' (note that the files with bs1 contain the original sample), set other parameter and fixes the starting values. Parameters, productivity and fixed cost draws are saved inside the structure ``m." This structure is used as an input in the other Matlab functions called in the following programs.

- Main_est_combined.m / Main_est_combined_4cpu.m

These files are the main estimation files. Whether to use the one or the other depends who many cores one requests on the Census server. The files first execute the script setup_struct_aft.m. Then the code initializes the file statistics_jia.mat in which stores the cardinality of differences in bounds obtained by the Jia algorithm. The files then execute the estimation for 10 different starting values, pick the estimation point with the lowest objective value, execute the function est_outcomes.m and print the key tables in the file print_estimation_results_to_latex.m. Finally the script counterfactual_run_script_reverse_shock.m is executed.

- gmm_objective.m

This file reads in the current parameter guess and calculates the objective value. The file consists of four main steps:

a. A (parallelized) loop to solve the firm-level problem [this is where the multiple cores are useful]

b. Calculating statistics on the Jia algorithm performance

c. Calculating the moments

d. Calculating the objective value

- lower_bound_iteration_optimized.m and upper_bound_iteration_optimized.m

A short and highly optimized function (in terms of computational speed) that calculates the lower and upper bound the firm's problem using the Jia algorithm described in the main text.

- est_outcomes.m

This file produces key model outcomes given an estimation parameter guess. The steps inside this file are very similar to gmm_objective.m, but instead of calculating the objective value at the end the function, it outputs various model outcomes.

- est_outcomes_fixed_sourcing_strategy.m

Very similar to est_outcomes.m. The only difference is that this file reads in the sourcing strategies obtained under the estimated parameter values (see line 26: Z_mat = m.Z_mat;) instead of using the Jia algorithm to solve the firms' problems. This enables us to calculate model outcomes for counterfactual parameter values but with fixed sourcing strategies.

- print_estimation_results_to_latex.m

Prints estimation results to latex tables and saves figures as .eps files.

The file mean_fc_versus_sourcing_potential.eps corresponds to **Figure 3**.

The file agg_importer_model_data_share_of_total_sourcing.eps corresponds to **Figure 4b**

The file share_importers_by_country.eps corresponds to **Figure 4a**

The file Table4replica.tex corresponds to **Table 6**

- counterfactual_run_script_reverse_shock.m

This script executes the counterfactual exercise in the paper. The first step is to calibrate the magnitude of the counterfactual change of the Chinese sourcing potential. Given the change to the Chinese sourcing potential, the remainder of the script calculates various counterfactual outcomes either with fixed or flexible sourcing strategies.

- calibration_objective.m

This function yields the objective value of the calibration of the counterfactual change to the Chinese sourcing potential (the squared difference between the increase in the import share from China in data and model).

- eqm_system_free_entry.m / eqm_system_free_entry_fixed_sourcing_strategy

These functions contain the free entry condition. The difference between the two functions is that one calls est_outcomes.m, the other est_outcomes_fixed_sourcing_strategy.m

- eqm_system_fixed_entry

(not used for any published results) Allows for a fixed mass of firms and is used to solve for a fixed point in B.

- get_fixed_point_for_B.m / local_optimality_check

(not used for any published results)

- print_counterfactual_results_to_latex.m

This script is used to print latex files of tables and .eps figures related to the counterfactual

The file sales_growth_dist.eps corresponds to **Figure 5a**

The file sales_growth_dist_fixed_sourcing.eps corresponds to **Figure 5b**

The file third_country_effects_table.tex corresponds to **Table 7, Panel A**

The file third_country_effects_table_fixed_sourcing.tex corresponds to **Table 7, Panel B** (for the other panels of Table 7 see the public replication files)

The files US_sourcing_outcomes.tex and US_sourcing_outcomes_fixed_sourcing.tex contain the output shown in **Table 8**

(for Appendix and Online Appendix tables see the public replication files)

- net_versus_gross.m

This script calculates net and gross changes in US sourcing

Auxiliary files:

- fminsearchbnd.m

This file is an optimization file that uses fminsearch.m but with bounds on the eligible parameters. Author: John D'Errico

- lscatter.m

This file produces a scatter plot with labels instead of uniform markers. Author: Yvan Lengwiler

- histwc.m

Weighted histogram count given number of bins. Author: mehmet.suzen

-corput.m

Calculates van der Corput sequence of numbers

2. Bootstrap

In order to run the code to calculate bootstrap standard errors for the estimation, one first needs to change line 20 of Master_bootstrap.m and add the directory in which the baseline estimation code is stored. Also, change line 35 in setup_struct_aft_boot.m to include the directory "bs", where the files "emp2_data_for_matlab_fe_2007_bs" and "parameters_2007_bs" are stored. Then execute Master_bootstrap. Then submit all 25 bootstrap estimation codes (note: need to change directory in which results are stored in .bash files). Finally, after the estimation results for all bootstrap sample are finished, run Calculate_standard_errors.m

- Master_bootstrap.m

This code copies and pastes the matlab files from Baseline_estimation in 25 different bootstrap folders (_b2 - bs_26). Note that _bs1 represents the full sample.
Two files differ from the baseline estimation files: setup_struct_aft_boot.m and Main_estimation_combined_bootstrap.m

- setup_struct_aft_boot.m

This function differs from setup_struct_aft.m in two ways:

(A) The seeds for random numbers are varied across the bootstrap runs to account for simulation noise;

(B) the files emp2_data_for_matlab_fe_2007_bs"X".out , parameters_2007_bs"X".out are read in, where "X" represents the bootstrap run number.

- Main_estimation_combined_bootstrap.m

This function is very similar to Main_est_combined.m, but instead executes setup_struct_aft_boot.m and does not do counterfactuals.

- Calculate_standard_errors.m

This script reads in the results from the individual bootstrap runs and calculates standard errors for the parameter estimates. This file writes a file ParameterEstimatesStep3_withSE.tex that corresponds to **Table 5** in the paper.