Readme for the Code for "Granular Comparative Advantage"

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Contents

1 Data

1.1 cdshares_v3.csv

This data file contains the Cobb-Douglas shares α_z for 119 4-digit manufacturing industries in France.

1.2 Data_Moments.csv

This file contains the target moment for the GMM estimation procedure, in particular, the 15 data moments from table 2.

1.3 Data_Moments_Explanation.csv

This file contains the same values as "Data_Moments.csv" plus explanations for which moment each line corresponds to.

1.4 cdshares_and_theta_v3.csv

This file contains the Cobb-Douglas shares α_z (as "cdshares_v3.csv") and the Pareto shapes κ_z for 119 4-digit manufacturing industries in France.

1.5 datamoments_56.csv

This file contains additional data moments beyond those used for the GMM estimation.

1.6 estimated_vmu_nopareto.mat

This file contains the results of the baseline estimation procedure.

2 Baseline

2.1 Auxiliary Functions

These functions will never have to be run individually. They will be called by the "Main Files" explained below.

2.1.1 vMU_markup.m

1. Purpose: Compute variable markup depending on the kind of competition (i.e. Bertrand or Cournot)/
2. Input: σ, market shares, kind of competition: BER==1 corresponds to Bertrand and BER==0 to Cournot competition.
3. Output: Variable Markups

2.1.2 moment_stats.m

1. Purpose: Compute mean and standard deviation of input
2. Input: vector
3. Output: mean and standard deviation of all vector elements

2.1.3 Inner_Loops.m

1. Purpose: Run the two innermost loops (Atkeson-Burstein and entry-exit loops)
2. Input: $\sigma, \theta, F, \tau, \alpha_z, \varphi_{z,j}, T_z, T_z^*, w, w^*, Y_0, Y_0^*$, indicator for variable markups, indicator for kind of competition
3. Output: A range of output variables that are needed in future code
4. Calls on: vMU_markup.m

2.1.4 PEreplication_vectorized.m

1. Purpose: Solves the model in partial equilibrium, that is run the two innermost loops separately for large and small sectors.
2. Input: $\sigma, \theta, F, \tau, \alpha_z, \{\varphi_{z,j}, T_z, T_z^*\}_{\text{small}}^{\text{large}}, w, w^*, Y_0, Y_0^*$, indicator for small sectors, indicator for variable markups, indicator for kind of competition

3. Output: A range of output variables that are needed in future code

4. Calls on: Inner_Loops

2.1.5 GEreplication_vectorized.m

1. Purpose: Solves the model in general equilibrium with $\frac{w}{w^*}$ fixed.

2. Input: $\sigma, \theta, F, \tau, \alpha_z, \{\varphi_{z,j}, T_z, T_z^*\}_{\text{small}}^{\text{large}}, w, w^*, Y_0, Y_0^*$, indicator for small sectors, indicator for variable markups, indicator for kind of competition

3. Output: Y, Y^*, L^* and some output needed to generate moments in future code

4. Calls on: PEreplication_vectorized.m

2.1.6 Moments.m

1. Purpose: Computes the 15 target moment from table 2 that are required for estimation.

2. Input: Some of the previous output

3. Output: vector of 15 target moments

4. Calls on: moment_stats

2.1.7 Loss_Function.m

1. Purpose: Computes the loss for the given set of input parameters.

2. Input: Parameters

3. Output: loss value

4. Calls on: GEreplication_vectorized.m and Moments.m

2.2 Main Files

These files will need to be run to fully estimate the model. In particular, one needs to run "Estimation.m" first, followed by "Grid_Optimization.m" and lastly "Local_Minimization.m".

2.2.1 Estimation.m

1. Purpose: This code performs the estimation routine as outlined in the appendix, steps 1-3.
2. Input: cdshares_v3.csv
3. Output: estimation_seed1_grid6: a file that includes both the chosen parameters and the 15 target moments at those parameters.
4. Calls on: GEreplication_vectorized.m, Moments.m

2.2.2 Grid_Optimization.m

1. Purpose: Find the 20 best points from the inputted data file as in steps 4-5 of the estimation procedure.
2. Input: Data_Moments.csv, estimation_seed1_grid6
3. Output: GridOptimization_seed1_grid6: a file that contains the final 20 best parameter vectors

2.2.3 Local_Minimization.m

1. Purpose: This code performs local minimization around the 20 best grid points as in step 6 of the estimation procedure.
2. Input: GridOptimization_seed1_grid6, Data_Moments.csv
3. Output: local˙min˙seed1˙grid6: Initial parameter vectors, locally minimized parameter vectors and loss values
4. Calls on: Loss_Function.m

3 Theta Heterogeneity

3.1 Auxiliary Files

3.1.1 vMU_markup.m

Exactly the same as the above file in the baseline model.

3.1.2 Inner_Loops_thetas.m

1. Purpose: Run the two innermost loops (Atkeson-Burstein and entry-exit loops) for the case of theta heterogeneity.

2. Input: $\sigma, F, \tau, \alpha_z, \theta_z, \varphi_{z,j}, T_z, T_z^*, w, w^*, Y_0, Y_0^*$, indicator for variable markups, indicator for kind of competition, and "paretobn", which is a bound for the computation of the Pareto shape.

3. Output: A range of output variables that are needed in future code

4. Calls on: vMU_markup.m

3.1.3 PEreplication_thetas.m

1. Purpose: Solves the model in partial equilibrium with heterogeneous thetas, that is it runs the two innermost loops separately for large and small sectors.

2. Input: $\sigma, \theta, F, \tau, \{\varphi_{z,j}, T_z, T_z^*\}_{\text{small}}^{\text{large}}, w, w^*, Y_0, Y_0^*$, indicator for small sectors, indicator for variable markups, indicator for kind of competition, "paretobn", a matrix containing α_z and θ_z

3. Output: A range of output variables that are needed in future code

4. Calls on: Inner_Loops_thetas

3.1.4 GEreplication_thetas.m

1. Purpose: Solves the model in general equilibrium with $\frac{w}{w^*}$ fixed for the case of theta heterogeneity.

2. Input: $\sigma, \theta, F, \tau, \{\varphi_{z,j}, T_z, T_z^*\}_{\text{small}}^{\text{large}}, w, w^*, Y_0, Y_0^*$, indicator for small sectors, indicator for variable markups, indicator for kind of competition, "paretobn", a matrix containing α_z and θ_z

3. Output: Y, Y^*, L^* and some output needed to generate moments in future code

4. Calls on: PEreplication_thetas.m

3.2 Main File

3.2.1 Het_Theta_Run.m

1. Purpose: This code needs to be executed to run the model for the case of theta heterogeneity and saves the results needed for table 3.

2. Input: estimated_vmu_nopareto.mat, cdshares_and_theta_v3.csv, data-moments_56.csv

3. Output: 5 mat-files containing the results for the 5 columns of table 3.

4. Calls on: GEreplication_thetas.m