Overview of files and folders in .\gmm_estimation

Files in this folder are used to create tables of estimation results from the GMM procedure, as well as tables of results regarding direct estimation.

All folder references below begin with root folder: .\FINAL_Replication_CLMP_JPE

All scripts in this folder should be run assuming .\code\estimation\gmm_estimation is the working directory.

Code

- *scripts\run_estimation.jl*
  - Performs clustering routine using .\data\data_derived\MotherPanelCDS and saves output .\data\data_derived\wage_types.csv
  - Merges type classifications with the main estimation file .\data\data_derived\psid_fam.csv and sets up data for estimation.
  - Runs GMM using production and relative demand moments, as well as just relative demand, following specifications outlined in the paper. This produces:
    - *Table 5: Joint GMM Estimation with Demand and Production Moments*
    - *Table G-17: Joint GMM Estimation of Relative Demand Moments*
    - *Table G-18: Joint GMM Estimation – No Borrowing/Saving (κ = 1)*
    - *Table G-19: Joint GMM Estimation – Unconstrained (κ = 0)*
    - *Table G-20: Joint GMM Estimation Relaxing Some Parameters Across Relative Demand and Production – Unconstrained (κ = 0)*
    - *Table G-21: Joint GMM Estimation Relaxing Some Parameters Across Relative Demand and Production – No Borrowing/Saving (κ = 1)*
    - *Table G-22: Joint GMM Estimation Allowing Time Productivity Share for Mothers to Differ Across Relative Demand and Production – No Borrowing/Saving (κ = 1)*
    - *Table G-23: Joint GMM Estimation Allowing Time Productivity Share for Mothers to Differ Across Relative Demand and Production – Unconstrained (κ = 0)*
  - *This file also runs specifications not reported in the paper, such as when the sample is restricted to children 8-12, estimates using relative demand moments only, and estimates using only instruments for price variation.*
- *scripts\direct_estimation.jl*
  - Runs the direct estimation routine in the paper and saves the interquartile range for each parameter from a bootstrap to illustrate poor performance.
  - NOTE: this script fixes the simulation seed on line 74, which ensures consistency across trials on the same machine, but does not ensure the same results across machines.
  - This script produces *Table G-24: Direct GMM Estimation of Production Parameters using Relaxed Relative Demand*
- *scripts\monte_carlo.jl*
  - Runs the Monte Carlo routine that evaluates the performance of direct estimation under different sample sizes and levels of relative price variation.

    - NOTE: this script fixes the simulation seed on line 145, which ensures consistency across trials on the same machine, but does not ensure the same results across machines.
    - This script creates the following tables:
        - *Table F-1: Results for Monte Carlo Simulation of Direct vs. Demand-based Production Estimation*
        - *Table F-2: Results for Monte Carlo Simulation with Substantially More Relative Price Variation*
- *scripts/run_estimation_alt_clustering.jl*
    - This script does not produce any of the results found in the paper, but runs estimation assuming a different set of controls in the clustering routine. It verifies the claim in Appendix E, footnote 10.

Dependencies

The scripts and source code rely on the following Julia packages:

- Parameters.jl – For creating, storing, and manipulating the set of model parameters.
- CSV.jl – For reading in .csv data files
- DataFrames.jl – For basic data frame operations
- Distributions.jl – A set of distribution objects for simulation
- Optim.jl – For optimization.
- Clustering.jl – For an initial clustering of mothers
- ForwardDiff.jl – For automatic differentiation of the GMM objective. Used by Optim.jl
- LineSearches.jl – To customize the line search algorithm in the minimization routines used by Optim.jl

All other packages imported by the source code are part of Julia's standard library.

Other folders

- .\code\estimation\gmm_estimation\scripts – Contains the scripts to create all output.

- .\code\estimation\gmm_estimation\src – Contains all source code for the analysis.

Important data sources

- ./data/data_derived/psid_fam.csv
    - Main estimation sample.

- ./data/data_derived/MotherPanelCDS.csv
    - panel of mothers in PSID

Data created counterfactual analysis

- ./data/data_derived/wage_types.csv
    - Data file with mothers' classified types and ID variable.