Knittel and Metaxoglou 2014 Replication Files

Overview

A space of about 6GB is required to run the code and produce the various files. The space requirement is driven by the size of the files produced during the merger simulation.

The codes are organized in several folders for each dataset. The BLP folders refer to the automobile dataset. The Nevo folders refer to the cereals data set. The "tight" folders pertain to the results associated with the tight tolerance for the inner loop of the contraction mapping as described in the paper. The "e06" folders pertain to the results associated with the tight tolerance for the outer loop of the non-linear search as described in the online appendix. The "KNITRO" folder pertains to the estimation of the cereal demand model using the KNITRO optimization routine. The "paper" folders contain the codes for the analysis in the main body of the paper and the online Appendix including figures and tables.

The demand estimation and merger simulation codes are in MATLAB. The codes for the figures and tables and the various statistics reported in the paper and the online Appendix are in STATA. In the case of the STATA scripts, we have incorporated several global variables that the user can tweak to reflect the folder structure in her computer. The codes are written to give the user quite a bit of flexibility (e.g., choice of optimization settings, loops for optimization routines and starting values). Some of the MATLAB codes utilize functions that require additional toolboxes (e.g., Optimization toolbox, GADS toolbox, KNTIRO, etc.) The MATLAB code should be run without a problem as long as the subfolders Merger results, Optimization logs, Optimization results, and Optimization routines are present.

It is important to run the scripts in the 2014.06.04 Nevo KNITRO folder before you proceed with the scripts optimization_diagnostics.m, merger_analysis.m, and hessian_diagnostics.m in the folder 2014.06.04 Nevo. You also have to rename the mat and log files in the Optimization Results and Optimization Logs subfolders as follows: knitro_1 to nevo_12_data_optim; knitro_2 to nevo_13_data_optim; knitro_3 to nevo_14_data_optim; knitro_4 to nevo_15_data_optim; knitro_5 to nevo_16_data_optim. Once you have renamed the files as described above, you should copy them in the corresponding subfolders of the 2014.06.04 Nevo folder.

The data files for automobiles are BLP data.xls and v.mat. The first file contains automobile characteristics, market size, etc. The second file contains random draws utilized by the random-coefficient Logit model. The data files for cereals are iv.mat and ps2.mat and were obtained from Aviv Nevo's website. To the best of our knowledge, there are no restrictions in the use of these data.

Code Execution for Automobile Data

In all cases, run the code following the order in the tables provided below.

Folder: 2014.06.04 BLP	
File Name	**File Description**
main.m	Demand estimation
optimization_diagnostics.m	Optimization diagnostics
merger_analysis.m	Merger simulation
01. read optimization diagnostics.do	Optimization diagnostics for analysis
02. read merger results.do	Merger simulation results for analysis

Folder: 2014.06.04 BLP tight inner	
File Name	**File Description**
main.m	Demand estimation
optimization_diagnostics.m	Optimization diagnostics
hessian_diagnostics.m	Hessian diagnostics
merger_analysis.m	Merger simulation
elast_boot.m	Elasticities bootstrap
01. read optimization diagnostics.do	Optimization diagnostics for analysis
02. read merger results.do	Merger simulation results for analysis

Folder: 2014.06.04 BLP tight inner e06	
File Name	**File Description**
main.m	Demand estimation
optimization_diagnostics.m	Optimization diagnostics
merger_analysis.m	Merger simulation
01. read optimization diagnostics.do	Optimization diagnostics for analysis
02. read merger results.do	Merger simulation results for analysis

Folder: 2014.06.04 BLP paper	
File Name	**File Description**
01. Code BLP fval estim.do	Objective function value/demand estimates analysis
02. Code BLP fval estim e06.do	Objective function value analysis
03. Code BLP merger.do	Analysis of merger-related variables
04. Code BLP elast_boot.do	Analysis of bootstrapped elasticities
05. Code BLP kdensity.do	Kernel density plots of bootstrapped elasticities
06. results_for_paper.do	Various statistics discussed in the paper
07. results_for_paper_apx.do	Various statistics discussed in the appendix of the paper

Code Execution for Cereal Data

Folder: 2014.06.04 Nevo KNITRO	
File Name	**File Description**
rc_dc_knitro_repets.m	Demand estimation

Folder: 2014.06.04 Nevo	
File Name	**File Description**
main.m	Demand estimation
optimization_diagnostics.m	Optimization diagnostics
merger_analysis.m	Merger simulation
01. read optimization diagnostics.do	Optimization diagnostics for analysis
02. read merger results.do	Merger simulation results for analysis

Folder: 2014.06.04 Nevo tight inner	
File Name	**File Description**
main.m	Demand estimation
optimization_diagnostics.m	Optimization diagnostics
hessian_diagnostics.m	Hessian diagnostics
merger_analysis.m	Merger simulation
01. read optimization diagnostics.do	Optimization diagnostics for analysis
02. read merger results.do	Merger simulation results for analysis

Folder: 2014.06.04 Nevo tight inner e06	
File Name	**File Description**
main.m	Demand estimation
optimization_diagnostics.m	Optimization diagnostics
merger_analysis.m	Merger simulation
01. read optimization diagnostics.do	Optimization diagnostics for analysis
02. read merger results.do	Merger simulation results for analysis

Folder: 2014.06.04 Nevo paper	
File Name	**File Description**
01.Code NEVO fval estim.do	Objective function value/demand estimates analysis
02.Code NEVO fval estim e06.do	Objective function value analysis
03. Code NEVO merger.do	Analysis of merger-related variables