

Readme

The Matlab code provided here was tested in Matlab 2015. The code includes the followings: (1) standalone Matlab program for semiparametric dynamic impulse-response estimation and (2) collection of data and executable code to replicate the table 4 and figure 4 of Angrist, Jorda, and Kuersteiner (2016). To begin with, extract zip file into a folder of your choice and add the location to Matlab library by, for example, typing “addpath [your directory path]”.

How to replicate the table and figure

Replication data are stored in “CEE_Macro Data_2012.mat” (outcome variables to estimate impulse functions and policy variables) and “OPF2_PScore_RepData.mat” (covariates for policy score estimation). You may execute the estimation process by running “MasterFile_VerifyJBES.m”. Every result is stored in a structured output variable named “Ds” (please refer the help menu in the standalone version for more details). Key results will be automatically visualized in the following two formats:

1. Table: Cumulative impulse-responses of macroeconomic variables to policy changes will be printed as a numeric table written in LaTeX format (should be compatible with, for example, plain LaTeX or the pdfLaTeX compiler). The file is named as “MasterFile_tab_IRF.tex”. This table should replicate Table 4 in the paper.
2. Figure: Plot of impulse-response functions are saved in pdf format and named “MasterFile_fig_IRF.pdf”. The code automatically draws the response of four macro variables to -0.25 and $+0.25$ policy changes in a 4x2 panel. The shape of IRFs should be compared with corresponding panels in Figure 4 of the paper.

Standalone version of semiparametric dynamic causal effect estimation

The standalone version consists of the following m-files:

1. DynamicHTE.m is the wrap function to run the semiparametric estimation process. It takes raw data in the form of Matlab vectors and matrices, such as “y” (outcome variables), “D” (discrete policy variable), “X” (covariates), and a number of optional inputs to produce estimates and their standard errors. Results are stored in a single structured outcome variable which contains the following three sub-structures: “Inp” (input parameters), “Cont” (control parameters), “Out” (program output). For more details, refer to the built-in manual by typing “help DynamicHTE.”
2. Subroutines called within DynamicHTE.m: genLeads, MATLAB_Ordered_Probit_Estimate, Oprob_derivatives, MNLogit_SieveEstimate, PScore_Predict, PScore_Truncate, PScore_Trimm, IRF_breakdown, IRF_Residual, IRFCov_White, IRFCov_breakdown, NeweyWest.
3. TabImpulseResponse.m produces estimates as tables in ready-to-compile LaTeX format. It provides a flexible user interface to adjust the number of variables and policy choices to be included in the table. To see detailed information on feasible options, type “help TabImpulseResponse.”

4. PlotImpulseResponse.m generates a panel of graphs of impulse-response functions in pdf format. The user can easily choose, for example, the number of figures, set of response functions, and size of confidence intervals. For more information, type "help PlotImpulseResponse."

Notice

The code is provided free of charge and without warranty or any guarantee of its functionality. Any form of liability is explicitly excluded. The code may only be used for academic purposes. By downloading the codes you agree to these terms.

The ordered probit ML estimation routines are open source code written and distributed by Ian Gregory. The ordered probit toolbox is available here: <https://sourceforge.net/projects/moptb/>

May require Matlab version higher than R2006a.

Reference

Angrist, Joshua D., Oscar Jorda, Guido M. Kuersteiner, "Semiparametric Estimates of Monetary Policy Effects: String Theory Revisited", *Journal of Business & Economic Statistics*, forthcoming