Unwinding Quantitative Easing: State Dependency and Household Heterogeneity

Replication package – README file

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This document provides an overview of the files and the process for replicating the main results of Cantore, C. & Meichtry, P. (2024). Unwinding quantitative easing: State dependency and household heterogeneity. *European Economic Review*, *170*, 104865.

Software requirements

The replication files require the following software:

- **MATLAB** version R2013a or later
- **Dynare** version 4.4 or later. See Adjemian et al. (2011) for more information. All releases are available at https://www.dynare.org/download/.
- **dynareOBC** and its dependencies. This toolbox is used to simulate the model with an occasionally binding constraint. See Holden (2016, 2022) for theoretical and computational details, Swarbrick (2021) for a practical guide to using the toolbox, and the dynareOBC README file in the folder *codes/dynareOBC* for further useful information. All releases are available at https://github.com/tholden/dynareOBC/releases.

To obtain accurate simulation results, it is recommended to install a mixed integer linear programming (MILP) solver, such as the **Gurobi Optimizer**. Other recommended installations are listed in the dynareOBC README file in the folder *codes/dynareOBC*.

The codes in this replication package have been written and tested using MATLAB R2021a, Dynare 4.5.7, dynareOBC v3.30.54.1968, and Gurobi Optimizer 10.0.3.

Main replication files

The replication codes are located in the folder ***codes***. This folder contains the MATLAB and Dynare codes to run the model simulations and to create figures and tables. The file **main_replication.m** is the master file that can be used to call all other subsidiary files. Auxiliary functions are included in the subfolder ***functions***, while ***dynareOBC*** contains the dynareOBC programs.

Model simulations:

- **run_simulations.m**: solves and simulates the various model and shock specifications, calling the files listed below. The simulation results are stored in .mat files within the folder ***simul_results***, which is organized according to the individual model specifications.
    - Please verify the paths to the MATLAB folder of Dynare and to the potential folder for the MILP solver in code lines 23 and 24.
    - To shorten the execution time of the program, please modify code lines 30 (spec.modelNames) and 37 (spec.shockLabels), which specify the desired simulations.

- **model_master.mod**: Dynare model file containing the basic model structure of the different specifications. It is incorporated into the individual .mod file for each shock specification.
- **model_QE.mod**, **model_QT.mod**, **model_QE_pref.mod**, **model_QT_pref.mod**, **model_pref.mod**: Dynare model files for the different shocks under study. Each file specifies the setup for the respective shock and sets up the model structure.
- **model_master_steadystate_base.m**: Base file for computing the steady state, which is called for each simulation of the various model and shock specifications.

Figures and table:

- **Figures_1_3_4_5.m**: replicates Figures 1, 3, 4, and 5.
- **Figure 2.m**: replicates Figure 2.
- **Table_2.m**: replicates Table 2 and shows the results in the MATLAB command window.

All figures and the table are stored in the folder ***outputs*** in .pdf or .txt format, respectively.

References

Adjemian, S., Bastani, H., Juillard, M., Karamé, F., Maih, J., Mihoubi, F., Mutschler, W., Perendia, G., Pfeifer, J., Ratto, M., & Villemot, S. (2021). *Dynare: Reference Manual Version 4* (Dynare Working Paper No. 1). CEPREMAP.

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