README for code

MATLAB code for “Limited (Energy) Supply, Monetary Policy, and Sunspots” by N. Gornemann, S. Hildebrand, K. Kuester.

The code has was tested with MATLAB R2022b / Matlab R2023b & Dynare 5.1.

The main file is *mainboard.m.*

Here, adjust line 6 to your own local path of Dynare.

mainboard.m runs all the experiments in the main text of the paper and the paper’s appendix, all at once. So allow it some time to run. The computationally intense part are the experiments related to the figures in Appendix G. We include a switch to leave these out (Opt.*run_appendixG*).

In a first step, the computations for the two data figures Figure 1 and 2 are done. *wrapper_data.m* loads the excel sheets with the raw data and cleans them. For information about the raw data, see the respective folder and the README there. The two files *Figure1.m* and *Figure2.m* then load the cleaned data, produce the figures and save them as pdf-files.

In a second step, all computations in relation to the quantitative exercises in Section 4 and the corresponding appendices are performed and the figures produced. *wrapper_quantitative.m* contains all the computations. For the calibration of Table 1, we compare first the fixed-price (baseline) calibration and the fixed-quantity (shortage) calibration. For both, we calibrate the model, compute the steady state, run a determinacy analysis and compute the impulse response functions. Underlying is the dynare mod-file *dyn_model_GHK.mod*. Additionally, we do the same steps for the crisis calibration, for which we also run an extensive sensitivity analysis for several parameters (Appendix G). After all these computations, the figures 3 to 7 and G1 to G3 are produced.

The dynare file is documented directly in the file and follows closely the Appendix B. Importantly, at the end of the file, there is an algorithm to find the determinacy cutoff for the model.

In a third step, the paper-pencil slope of the New Keynesian Phillips curve is computed in *wrapper_paperpencil.m* and the Figure F1 is produced.