

Readme for code accompanying "A composite likelihood approach for dynamic structural models" by Fabio Canova & Christian Matthes

All codes were tested on a 2019 MacBook Pro running MacOS version 11.0.1 and Matlab R2020b. The datafiles are already included in mat format so that the estimation codes can be run directly, but we also include the matlab .m files that create these mat files for completeness.

This folder contains three subfolders:

1. examples_section_3 creates the figures in section 3
2. PC_for_EJ contains codes for the empirical application dealing with the Phillips curve
3. labor_share_for_EJ contains codes for the empirical application dealing with the labor share across countries

Below is more detail on the second and third sets of codes.

The Phillips Curve Application

1. codes to run:

- to estimate each individual model (BGG, CK, JPT, RRR,RRR_small), run run_ind_models.m in PC_for_EJ folder. (122 minutes runtime)
- for composite likelihood estimation, run main_PC_EJ in folder PC_for_EJ /estimated_weights_dirichlet_RW (57 minutes)

2. creating figures (after having estimated the various models):

- run files figure_5.m (1.5 seconds), figure_6.m (15 seconds), and figure_7.m (186 seconds) in PC_for_EJ/estimated_weights_dirichlet_RW to create the corresponding figures.

3. creating table 1 (after having estimated the various models):

- run table1.m in PC_for_EJ/estimated_weights_dirichlet_RW folder (output will be displayed in the matlab window, runtime 35 seconds)

4. datasets: To create the mat file for the JPT model data, run data_for_JPT.m (0.06 seconds) in the PC_for_EJ /Data folder. To create the data for the RRR and CK models, run data_for_RRR_CK.m in the PC_for_EJ /Data folder (0.12 seconds). To create the data for the RRR_small and BGG models, run data_for_RRRsmall_BGG.m in the PC_for_EJ /Data folder (0.12 seconds). To create the data for the CL estimation, run data_CL.m in the data folder. All data series in the excel files loaded in the m files are taken from the dataset accompanying

Smets, Frank, and Rafael Wouters. 2007. "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach." *American Economic Review*, 97 (3): 586-606.

which can be downloaded at

<https://www.aeaweb.org/articles?id=10.1257/aer.97.3.586>

The Labor Share Application

1. codes to run:

- to estimate models with one country at a time, run `main_KN.m` in folder `labor_share_for_EJ /code_ind_models` (35 minutes runtime)
- to estimate CL with fixed weights, run `run_KN.m` in folder `labor_share_for_EJ /code_CL` (43 minutes)
- to estimate CL with estimated weights, run `run_KN.m` in folder `labor_share_for_EJ /estimated weights` (note that this requires the fixed weights results as starting values) (68 minutes)

2. creating figures (after having estimated the various models):

- to create figure 8, run `figure_8.m` in the `labor_share_for_EJ` folder (7 seconds)
- to create figure 9, run `figure_9.m` in the `labor_share_for_EJ` folder (188 seconds)

3. creating data

- run `data_work.m` in the `labor_share_for_EJ` folder (0.2 seconds). Original data is from

The Global Decline of the Labor Share

Loukas Karabarbounis, Brent Neiman

The Quarterly Journal of Economics, Volume 129, Issue 1, February 2014, Pages 61–103

The original data can be downloaded from

<https://sites.google.com/site/loukaskarabarbounis/research>