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Abstract

Data and replication instructions for *Robust Predictions for DSGE Models with Incomplete Information*, published in American Economic Journal: Macroeconomics.

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Data availability and Provenance:

1. Aggregate macroeconomic data were dowloaded from the FRED database maintained by the Federal Reserve Bank of St. Louis (https://fred.stlouisfed.org). The variables used are gross domestic product (FRED code GDP), the GDP deflator (GDPDEF), non-institutional population over 16 (CNP16OV), hours worked in the non-farm business sector (HOANBS), and the Federal Funds interest rate (FEDFUNDS).

   The data were downloaded in Matlab using the DataStream toolbox, using the program `Section5_estimation/get_FredData.m`. A copy of this data is included in this archive.

Dataset List:

Folder / Data file	Source	Notes	Provided?
data/fred_data.mat	St. Louis FRED	Basic aggregates	Yes

Instructions for Replication of All Results:

The replication code is organized according to sections of the paper. Helper functions that are reused several times across directories are stored in the directory labeled `helper_functions`.

- To reproduce figures and tables from saved results, call:

  ```
  >> make_all_outputs
  ```

  from the root directory. This takes less than a minute.

- All computational steps for the results in the paper can be performed at once by calling:

  ```
  >> run_all
  ```

  from the root directory. Re-computing all results takes around 8 hours on an 8-core computer.

Software:

This code was last run/tested in Mac OSX 11.5 using Matlab R2020a and in Matlab R2020b in Windows 10. The code requires Matlab's Symbolic Toolbox, Optimization Toolbox, and Parallel Computing Toolbox. A recent change in the symbolic toolbox means that the code may not run properly using Matlab versions from 2021 (or later, presumably.)

Original download of FRED data also used Matlab's Datafeed toolbox. No additional toolboxes are needed to replicate the results here.

Hardware:

These programs have no special hardware requirements. Running the full replication code takes about eight hours on an 8-core 2019 Macbook Pro.

Detailed replication instructions for each section

- To reproduce the results just for Section 4, call:

```
>> cd Section4
>> setup
```

  The `setup` command loads the parameters used in the quantitive exercises and defines the various information bounds described in the paper. Now, call:

```
>> main_prog
```

  The `main_prog` command uses symbolic math to generate the equilibrium solutions to model dynamics and saves these files to `auto_generated/`. It then performs the maximization behind figures 1 and 2 and saves the results to `Section4/output_files/`. Finally, call

```
>> cd final_figures
>> make_fig1
>> make_fig2
```

  to construct the figures from the saved results.

- To reproduce the results just for Section 5, call:

```
>> cd Section5_estimation
>> main_prog
```

  The `main_prog` command here performs the wedge estimation routine and saves the necessary results to `Section5/input_files`. Now, call:

```
>> cd ../Section5
>> setup
>> main_prog
```

  These steps follows the same structure as the Section 4 code. The `setup` command again loads the parameters used in the quantitive exercises. And the `main_prog` command uses symbolic math to generate the equilibrium solutions to model dynamics and saves these files to `auto_generated/`. It then performs the maximization behind table 2 and figure 3 and saves the results to `Section5/output_files/`. Finally, call

```
>> cd final_figures
>> make_tab1
>> make_tab2
>> make_fig3
```

  to construct the figures from the saved results.

- To reproduce Figure 4 in the online appendix from scratch, call

```
>> cd Section5_estimation
>> main_prog
>> make_fig4
```

- To reproduce Figure 5 in the online appendix from scratch, you must change line 23 of `Section4_ex1comp.m` following the comment there. Then, call

```
>> cd Section4
>> main_prog
```

```
>> cd final_figures
>> make_fig5
```