Replication Code for *"Navigating by Falling Stars: Monetary Policy with Fiscally Driven Natural Rates"*

Ungated link to the paper.

This repository contains all the code required to replicate **all computations**, **simulations**, and **empirical estimations** in the paper and its online appendix. The replication package is organized to allow users to reproduce both the model-based results and the empirical evidence.

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1. Computational Requirements

Python

- Tested with **Python 3.10**
- Dependencies:
  - `pandas`
  - `numpy`
  - `matplotlib`
  - `jupyter` or `jupyterlab`
  - **Sequence-Jacobian (SSJ) toolkit v1.0.0**
    https://github.com/shade-econ/sequence-jacobian
    A frozen version of the SSJ toolkit is included in the folder `sequence_jacobian/` to ensure long-term reproducibility.

Stata

- Tested with **Stata 17**
- No special ado-file dependencies.

Matlab

- Tested with **Matlab R2021b**
- Requires:
  - **VAR Toolbox 3.0** (Ambrogio Cesa-Bianchi)
    https://sites.google.com/site/ambropo/MatlabCodes

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2. Data Availability

Main data

- All files required for the empirical estimation are located in `estimation/data/`.

Bundled tools

- A stable version of the **SSJ toolkit** used in the paper is stored in `sequence_jacobian/`.

Estimation results

- The estimation output used in the paper is stored in:
  `data/IRF_VAR_LP_paper.xlsx`

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3. Repository Structure

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├── 1_model_baseline.ipynb
├── 2_...
├── 3_...
├── ...
├── 8_empirical_evidence.ipynb
├── estimation/
│   ├── data/
│   ├── LP_Estimation.do
│   └── VAR_Estimation.m
├── data/
├── sequence_jacobian/
├── ss/        # steady-state results
├── irfs/      # IRFs from simulations
└── results/   # figures and outputs used in the paper
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4. Replication sequence

- Notebooks 1–7 reproduce the model and simulations.
- Notebook 8 reproduces the empirical evidence section of the paper.

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5. Replicating the Model Computations and Simulations

To reproduce the model-based results:

1. Open the Jupyter notebooks in this folder.
2. Run **notebooks 1 through 7 in numerical order**.
   Later notebooks rely on intermediate outputs (steady states and IRFs) generated by earlier ones.
3. Outputs:
   - Steady states → `ss/`
   - IRFs from simulations → `irfs/`
   - Final figures/results → `results/`

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6. Replicating the Empirical Evidence (Figure 3 and Appendix F)

1. Run `8_empirical_evidence.ipynb`
2. This notebook reads the estimation results in `data/IRF_VAR_LP_paper.xlsx` and produces:
   - **Figure 3** (main text)
   - **All figures in Appendix F**

To regenerate the underlying estimation results, follow Section 6 below.

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7. Instructions to Replicate the Estimation Results

A. Local Projections (Stata)

Run `estimation/LP_Estimation.do` This script generates LP-based IRFs. They have to be transferred manually to the Excel file used by the empirical notebook.

B. VAR Estimation (Matlab)

Run `estimation/code/VAR_Estimation.m` This script requires the VAR Toolbox and produces VAR-based IRFs. They have to be transferred manually to the Excel file.

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8. Results

The file `results_map.md` lists the reproducible outputs generated by each one of the replication notebooks.

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9. Citation

If you use this code, please cite the paper:

> Campos, R. G., Fernández-Villaverde, J., Nuño, G., & Paz, P. (2026).
> "Navigating by Falling Stars: Monetary Policy with Fiscally Driven Natural Rates." *Journal of Political Economy Macroeconomics*. Accepted for publication.