

Replication Files – README

These notes describe how to replicate the results in Johri, Khan, and Sosa-Padilla’s “*Interest Rate Uncertainty and Sovereign Default Risk*” (2022) – 2nd round RR at the *JIE*.

1 Quantitative Model

All the files to compute and simulate the quantitative model in Section 3 are in the folder “codes_model.”

a. Computation of the different economies.

- **jks_long_dss.f90**: Fortran file that solves and simulates the model.
- **moments_JKS_2022.m**: Matlab file that generates business cycle statistics from the simulations and reproduces Table 3 in the paper (Model Fit).
- **plots_JKS_2022.m**: Matlab file that reproduces Figures 1, 2 and 3 in the draft, as well as Figure A2 in the Appendix.
Figure A1 can be produced using the lines used in creating Figure 1, but first changing the underlying parameters and re-running the model accordingly (following Appendix B).
- **Compute_Slopes_Simu.R**: R script that loads simulated data (pre-processed by the file `moments_JKS_2022.m`) and uses it to compute the average spread and issuance slopes reported in the paper.

b. Other files that are needed to run the Fortran codes.

- **param_calib_XX.txt**: where XX can be {beta, d0, d1, kappa, kappa_rw}. These files contains the parameter values.
- **solve_and_sim.sh**: (Optional) Bash script to run all files from the command line.

1.1 How to run the codes

The “full” model (with both level and volatility shocks to the world interest rate) can be computed by simply running the file `jks_long_dss.f90`. This Fortran code does not use any proprietary library and the user only needs a working Fortran compiler (we used GCC).

The parameters governing the grid configuration are specified in the “module param” at the beginning of the Fortran code. The files with the calibration parameter values must be saved in the same directory that `.f90` files are saved.

The commentary near the top of the `.f90` file explains which parameters to change (and how) in order to solve the “basic” model.

The sequence for successfully running the codes is:

1. First, run **jks_long_dss.f90**,
2. Second, run **moments_JKS_2022.m**,
3. Third, run **plots_JKS_2022.m**, and
4. Fourth, run **Compute_Slopes_Simu.R**.

File **solve_and_sim.sh** runs steps 1 and 2 all in one call from the command line (Optional).

2 Data

We also provide a folder called “data_files”. The R script **JKS_data_editorial.R** takes our dataset (contained in **JKS_dataset.Rdata** and located in the same folder) and computes (i) the averages used as our targeted moments, and (ii) the correlation matrix plot found in Figure A3 of the Appendix.