

Readme file for Matlab(r) simulation programs

“Risk management for monetary policy near the zero lower bound”

by Charles Evans, Jonas Fisher, François Gourio, Spencer Krane

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Please report any issue to the authors, e.g. francois.gourio@chi.frb.org or jonas.fisher@chi.frb.org

These programs (and any updated version) are posted at: <https://sites.google.com/site/fgourio/>

How to use the programs to reproduce our results

- Running the program “optpol_forwardlooking” produces table 2 and figure 1.
- Running the program “optpol_backwardlooking” produces table 3 and figures 3 and 4.
- The appendix comparative statics are produced by running the file “print_comparative_statics.m”

More generally, you can change the parameters for both models in the file `basicparam.m`; the parameters specific to the backward-looking model are set in the file `basicparamBL.m`.

Notes on the programs

The online appendix to the paper details the computational method. Briefly, both models are solved by backward induction from a period T where there is no uncertainty and the natural rate has reached its steady-state. The solution to the forward model is easily obtained in semi-closed form. The backward-looking model is solved using standard dynamic programming, by discretizing the interest rate choices, and interpolating the value function over a grid over output gap and inflation.

Before time T , the uncertainty that is represented through Markov chains. The natural real rate path from $t=1$ to $t=T$ is a linearly increasing function of time from a starting value ρ_0 to a final value ρ_{final} . There is date T_3 after which the uncertainty is reduced. We set $T_3=T=T+1$ for simplicity.

The backward-looking model may exhibit a “deflation trap” for some parameter values and some shock realizations as explained in the appendix. Some results (e.g. the loss function for various policies) can then be affected by this risk of falling in the deflation trap. Some caution should hence be used in interpreting results for some “extreme” parameters.

The calculation of the counterfactual policy where the central bank does not take into account the uncertainty is somewhat slow in the backward-looking model; hence there is an option to not calculate this policy.