Referee Report on "Journal of Monetary Economics"

1 Executive Summary

The paper compares two approaches for estimating structural parameters in macroeconomic models when the objective is to match estimated impulse responses. There are two pieces to this: the first is how you generate the impulse response functions–LP vs. VAR–and the second is how you do the estimation–IRF matching vs indirect inference. Since LPs and VARs generally will estimate the same impulse responses in population, the focus here is on finite sample issues. The heart of the paper is a Monte Carlo exercise using the Smets-Wouters model for a data generating process. The key finding is that local projections, despite being more variable, tend to yield less biased impulse responses in small samples, which benefits IRF matching. Conversely, VARs, which produce lower-variance IRFs, are more effective when used in indirect inference, where the binding function benefits from tighter estimates of auxiliary parameters.

2 Comments

1. **Generalization**. While the Smets and Wouters (2007) model is a widely used benchmark in applied macroeconomics, it remains an open question how general the conclusions drawn from it are. In particular, the structural and statistical properties of the SW model are well understood—see Morris (2016)

for a derivation of its exact VARMA(3,2) representation—which may make it unusually well-behaved in simulation studies like this one. It is not clear whether the properties of IRF matching or indirect inference documented here would carry over to settings with richer nonlinearities, model uncertainty, or incomplete shock identification.

2. In Section 3.1, you write

> Any economic model, including the Smets and Wouters model, can be represented as a function, $M(\cdot)$, that for a given vector of parameters Θ maps a sequence of endogenous states $\{y_{t-1}\}$, exogenous variables $\{x_t\}$, and shocks $\{\varepsilon_t\}$, into a sequence of endogenous variables $\{y_t\}$.

This statement is not true and rules out multiple equilibria (i.e., M is a correspondence) et cetera. Please rewrite.

References

Morris, S. (2016): "VARMA representation of DSGE models," *Economics Letters*, 140, 50–53.

Smets, F. and R. Wouters (2007): "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach," *American Economic Review*, 97, 586–608.