Comments on Gust/Lopez-Salido/Smith's "The Empirical Implications of the Interest-Rate Lower Bound"

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What the paper sets out to do

- Handle the lower bound properly, incorporating it into the policy rule. Agents in the model are aware of the bound, and it affects their behavior even when it is not binding.

- Display methods for handling the hard modeling problems that arise when the bound is handled properly.

- Assess whether this approach makes the model behave differently, ideally better, in prediction and counterfactual exercises.

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- Missing goal: Assessing whether it fits better than alternatives.

Reasons to do this

- To make use of all the data. As the ZLB era gets longer, and reappears on more countries, it becomes more embarrassing to fit models that ignore the bound to periods when the ZLB does not bind, then model the ZLB as a change in the policy rule or as a sequence of disturbances to it.

- To recognize anticiption of the ZLB. The ZLB surely affects policy and market expectations before it actually binds, and if these effects were small before 2008, they will no doubt be larger in the future. For policy making near the ZLB, accounting for these effects could be important.

- Computer power and expertise in using it continue to grow. Modeling the ZLB right may have been prohibitively difficult in the past, but shouldn't be now.

Tradeoffs

- Despite the innovative numerical approach, a model like this remains hard to solve and estimate, with the result that the model is extremely spare.

- There is no capital, and there are only two shocks other than the monetary policy shock. Labor is supplied perfectly elastically.

- We are required, therefore, to exercise our imaginations rather strenuously in imagining what a "discount rate shock" and a "technology shock" might correspond to in the real world.

- The price in extreme assumptions of convenience in modeling the rest of the economy could undermine any substantive conclusions from the model, despite its more realistic treatment of the policy rule.

Does it "explain" the Great Recession?

- The best "explanation" would be one that tracks the path of the data without a pattern of shocks that the model implies are extremely unlikely.

- 2008 was a big surprise, though, and no model seems to explain it without big shocks. The question is how big, relative to the model's probablility distributions.

- A small number of large shocks, with little persistence or cross-dependence, would be best. E.g., a model might need an initial big shock or two, then track well from 2009:II onward.

- We see a plot of the time path of shocks in the paper, but no indication of where they lie in the model's probability distribution for them. Are there 6-σ shocks? Series of persistent shocks? Simultaneous large shocks in disturbances the model assumes independent?

Is it better than a linearized DSGE?

- In Figure B.1 we see that the linearized DSGE is better than this model at predicting the length of the ZLB period from 2009:II initial conditions.

- On output and inflation, this model is too optimistic, while the DSGE is too pessimistic.

- And the DSGE projections are done by modeling the ZLB as *fully anticipated* shocks to the policy rule. Fully anticipated policy shocks that lie far in the future are both unrealistic, and often extremely powerful in rational expectations DSGE's.

Euler equation residuals, posterior odds

- We see that the Euler equation errors are far worse for the linearized DSGE.

- This shows that *as an approximate solution to the full nonlinear model* the linearized solution is much worse than what is produced by this paper's methods.

- But if we think of the linearized model as just another model of the time series, it could still have a better fit.

- As could a VAR, or a time-varying-parameter VAR.

- This paper's methods could fairly easily make these comparisons of fit via posterior odds ratios.

Ignoring the other solution

- The model has two minimum state variable solutions.

- The paper ignores the deflationary one.

- But when there are two, it is likely that there are solutions that switch, or that drift from one to the other.

- These are not MSV solutions. They have an extra state that indexes where the economy is on the path from one solution to the other.

- The policy implications are potentially important. This aspect of the model should be explored.

Are there better policies?

- The methods in the paper could be used to explore the effects of alternative policies.

- This is much easier than fitting the model, since it requires only solution of the model, not thousands of MCMC solutions.

- The model does explore the effects of a higher real rate of interest, which might be similar, at least in its implications for the frequency and severity of ZLB episodes, to a higher inflation target.

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- Our data are certainly imperfect, but i.i.d. measurement error, independent of everything else, is not a good model of the imperfection.

- It is also an embarrassment in a policy model, since it can imply, e.g., that "true GDP" is going up even though the data say the opposite.

- In this paper, the measurement error is estimated as pretty small, so the embarrassment is modest.

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- Not time yet to put away the machetes.