

The Forward Guidance Puzzle: Discussion

Ferre De Graeve

Sveriges Riksbank

November 13, 2014

DGP in the literature

- Laseen-Svensson (2011)/Carlstrom-Fuerst-Paustian (2012)/Blake (2012): strange equilibria, non-sensible IRF after interest rate pegs (FG) in NK DSGE
- Potential conclusion: NK DSGE fails
- DGP:
 - **Why:** clearly counterfactual long rate implications. Path of forward rates is way off of what one would call the intended FG
 - **Solution:** constrain the policy experiment to look reasonable
 - **Conclusion:** Strange IRF are not necessarily an inherent failure of NK, rather an issue of odd experiments

⇒ Paper rightfully draws a lot of attention

DGP in the literature (cont'd)

Paper caused ample subsequent research

- Alternative ways to consider reasonable scenarios:
 - State-dependent FG: Coenen and Warne (2013), De Graeve, Ilbas and Wouters (DIW, 2014)
 - Modest interventions: Harrison (2014)
 - Alternative post-peg policies: Blake (2014)
- DIW (2014): understand long rate implications of FG in NK models
- ...

Discussion: outline

- Pick up on particularities of the approach
- Or: things to consider before applying **the method** more generally
- Contributions stand irrespective!

Method: Part 1 - Implementing a path

- Sequential approach (Del Negro and Schorfheide, 2013)
 - Solve for the anticipated shocks that implement a path for a given state
 - Given the shocks, compute the evolution of the state
 - State \implies endogenous/observable variables
- Extremely useful procedure to implement e.g. ZLB scenarios
 - with possibly substantial consequences for analysis of current period

Method: Part 2 - Picking a reasonable scenario

$$\min_{\bar{e}^R} \bar{e}^{R'} M'_{40} W M_{40} \bar{e}^R - \lambda \left(N_{40} \bar{e}^R - \Delta R_{T+1}^{40} \right)$$

- In words: choose anticipated shocks to
 - (not) deviate from current path of forward rates (W)
 - deliver a long rate response close to event-study data (λ)
- Discussion:
 - 1 ΔR_{T+1}^{40}
 - 2 $N_{40} \bar{e}^R$
 - 3 $\lambda \left(N_{40} \bar{e}^R - \Delta R_{T+1}^{40} \right)$
 - 4 $\bar{e}^{R'} M'_{40} W M_{40} \bar{e}^R$

I. The long rate impact: Empirically complex

ΔR_{T+1}^{40} : Change in long rate at the time of a policy announcement

- Term premia
- Simultaneous alternative policies (QE)
- Informational content of an announcement? Disentangling shocks (exogenous policy) from endogenous response to new information about state

⇒ event-window restriction may rightfully focus attention on the policy announcement ... but cannot easily disentangle the channels

II. The long rate impact: Model-wise complex

- $N_{40}\bar{e}^R$: long rate model response to FG
 - DIW (2014): For forward guidance to be successful, a reduction in the nominal long rate is:
- ① **Not necessary:** many models (e.g. Smets-Wouters) imply (nominal) long rate rises following FG
 - ② **Not sufficient:** imperfect information about policy announcement may cause a model with a positive long rate response to exhibit a negative one, which signals a lack of success of FG

III. Model = event-window response

$$\lambda \left(N_{40} \bar{\epsilon}^R - \Delta R_{T+1}^{40} \right)$$

- ① DIW (2014): fall in long rate **not necessary**: $N_{40} \bar{\epsilon}^R > 0$
 - ② Recall: $\Delta R_{T+1}^{40} < 0$
- Adopting the exact same approach as DGP, but in say Smets-Wouters, would:
 - Require Smets-Wouters model to generate a negative long rate response
 - Can probably do so:
 - Restrictive anticipated policy shocks/sign reversals
 - But that implies the exact opposite of what the policy/method is looking to do (generate a recession/the Carlstrom-style equilibria)

IV. Method

- Is effectively combination likelihood based DSGE estimation with a **(GMM) IRF matching** step

$$\min_{\bar{\epsilon}^R} \bar{\epsilon}^{R'} M'_{40} W M_{40} \bar{\epsilon}^R - \lambda \left(N_{40} \bar{\epsilon}^R - \Delta R_{T+1}^{40} \right)$$

- Detail: not entirely clear why not fully quadratic, rather than quadratic + Lagrangian
- Does IRF-matching not come with its usual problems?
Identification?

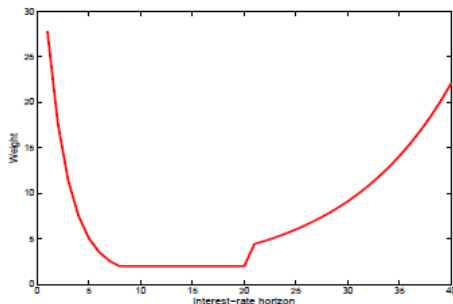
IV. Method

- **Identification?**

- A (hypothetical?) example: $\bar{\epsilon}^{R'} M'_{40} W M_{40} \bar{\epsilon}^R$

- Recall the short restriction in W : (almost) no change in path for immediate quarters (argument pro: ZLB)

Figure 4: Penalty for interest rate deviations from baseline path at various horizons



IV. Method

A (hypothetical?) example

- One way to satisfy the criterion is to place a lot of action on horizons far out (within FG period). Why?
 - In many models this postpones the peak of the boom (e.g. Fig 3), and will thus reduce endogenous short rate changes in the immediate quarters
 - \implies Criterion may favour late horizon FG (say, 17-20) at the cost of early horizons (7-10)
 - \implies Can give rise to weird time-profile of anticipated shocks
- The absence of anticipated shocks in the intermediate quarters is perhaps hard to defend
 - Is opposite of what CBs do:
 - Starting with early horizons, extending if deemed necessary

IV. Method: Suggestion

- Suggestion: Document/study paths of anticipated shocks
 - Not only the one that minimizes the criterion
 - Also alternatives
 - To rule out odd optima over more reasonable alternatives
- In other words:
 - While identification issues with other shocks (e.g. productivity, mark-ups, demand, ...) are not a concern due to the sequential nature of the algorithm (the GMM step does not involve these other shocks)
 - Identification problems can arise within the FG period since one allows anticipated shocks at different horizons to operate
- Not a problem for the method: reasonability can always be formalized and incorporated in the criterion
 - E.g. by restricting sign of anticipated shocks, smoothness, ...