

Discussion of “The Transmission of Financial Shocks and
Leverage of Financial Institutions: An Endogenous Regime
Switching Framework”
by Hubrich and Waggoner

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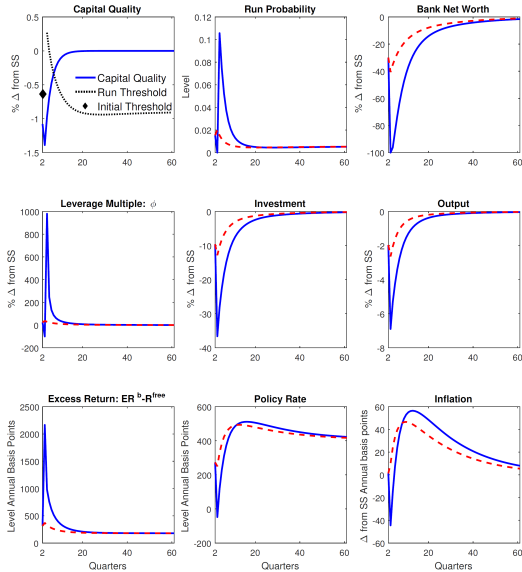
Summary of the Paper

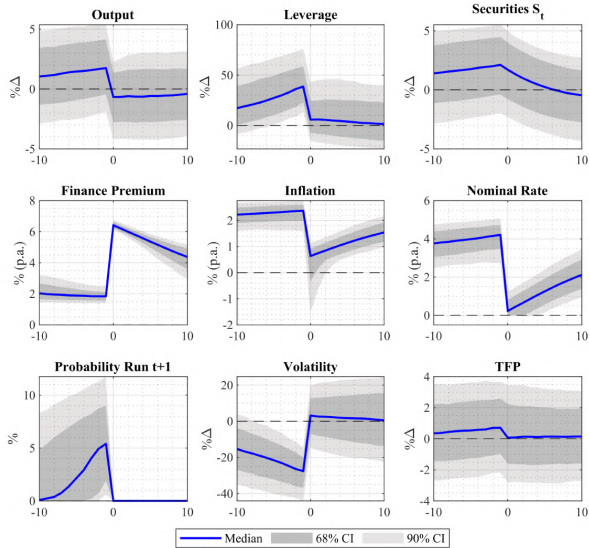
- Use an endogenous regime-switching VAR to investigate the effect of an adverse financial shock identified by sign restrictions.
- Measure leverage of various groups of financial institutions.
- Show the contribution of bank leverage (the deleveraging after a shock) to transmission of the financial shock to the economy.
- Extend the analysis in Hubrich and Tetlow (2015, JME). [similar model, recursive identification, no leverage, no time-varying transition probabilities]
- Leverage of financial institutions significantly amplify financial shocks.
- Heterogeneity of leverage across financial institutions and their effect on the transmission.

Comment 1 : Identification

- Both regimes and shocks need to be identified.
 - Financially-constrained regime identified as the regime that is highly likely 2008-2009.
 - A positive financial shock:
 - In financially-constrained regime : reduce output, inflation, short rate; increase FCI, leverage.
 - In normal regime: increase FCI.
 - The identification of the regime seems sensible. How about the shock? See figure from Gertler et al. (2020, REStud) and Rottner (2022) next.
 - Even with 68% bands, the bands seems quite large which make inference cloudy. Maybe the sign restrictions are a bit too weak to deliver something meaningful enough?

— RUN (Run Threshold Shock and Sunspot) - - NO RUN (Run Threshold Shock and No Sunspot)



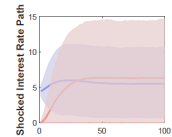
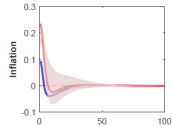
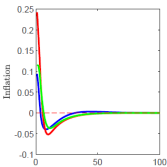
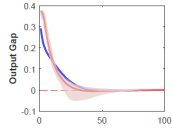
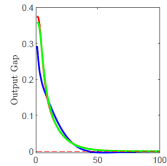
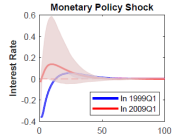
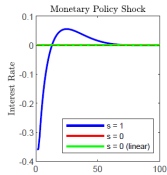


Comment 2 : Configuration of Regimes

- In empirical application have 4 regimes: coefficients are in constrained / unconstrained regime and volatility is in constrained / unconstrained regime.
- What does it mean for coefficients to be in one regime but the volatility be in the other one?
- More natural (similar to a DSGE model): $n > 1$ regimes based on how severe the financial constraints are. Then you can test which value of n works best.

Comment 3 : Regime Switching During IRF Experiments

- In IRFs presented, the economy stays in the regime it started for the duration of the IRF (12 months).
- This defeats the purpose of the endogenous regime switching introduced in this paper.
- For example: after a positive (adverse) financial shock in normal times, the IRFs are plotted assuming you stay in normal times. But doesn't / shouldn't the shock increase the likelihood of financial constraints binding? This seems to be the most interesting aspect of the paper but it is lacking.
- In Section 4.6 they show that if leverage was constant in 2009 at pre-crisis levels, the crisis would not be as deep. This again holds regime as constant. (I think)
- See related figure from Aruoba et al. (forthcoming, JoE) in a different context.
- As an aside, with the same shock, in normal times FCI goes up by 0.01 units while during crisis it goes up by 0.1 units. Isn't there a sense in which crisis are already times where FCI is high (and it cannot go up much higher)?



Comment 4 : An Extension / Cool Application

- A combination of Aruoba et al. (forthcoming, JoE) and this paper.
- 4 regimes: ZLB is binding or not / financial constraints are binding or not.
- In 2009-2015 (naturally) the ZLB is binding. In 2008-? the financial constraint is binding.
- How do transmission of shocks change as we go across regimes:
 - Pre-ZLB financial crises
 - Normal times (e.g. 2006)
 - GFC; both constraints bind
 - ZLB binds but financial constraints are slack (e.g. 2011)
 - Back to “normal” (e.g. 2017)