Discussion: Uncertainty, Real Activity, and Risk Aversion During the Great Recession by Pellegrino, Caggiano and Castelnuovo

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Research Questions

- The contribution of uncertainty during the Great Recession (both recession and recovery phases)
- The importance of non-linearities

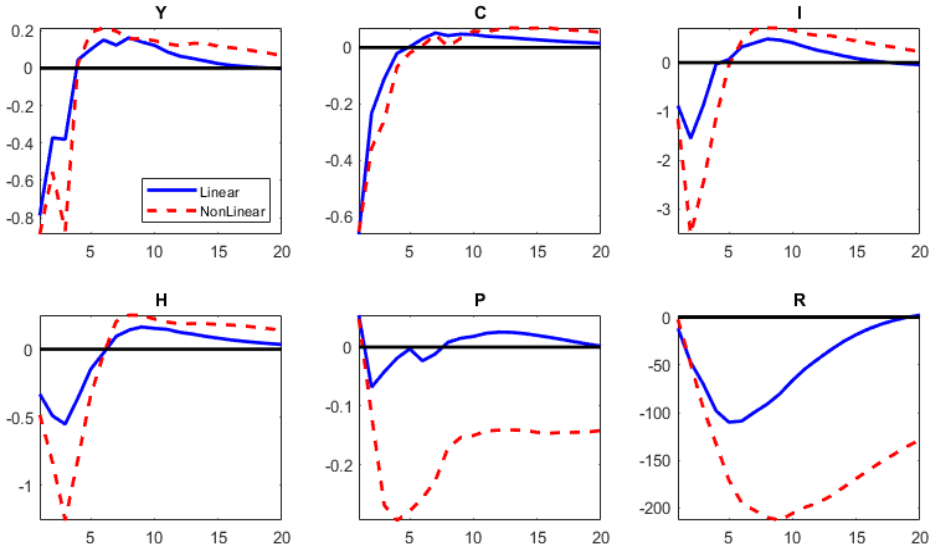
How These Questions Are Approached

- Use an identified non-linear VAR (IVAR) to estimate the effects of the shock
  - Identification is achieved using both sign and narrative restrictions (Antolin-Diaz and Rubio-Ramirez (2018), Ludvigson and Ng (2019))
- Use a (quasi) Bayesian (limited information) estimated non-linear DSGE to understand the transmission of the shock
  - IRF and counterfactual analysis

Results

- The linear VAR underestimates the effects of the uncertainty shock
- A higher degree of risk-aversion is required to explain difference between the linear and TVAR responses when they are approximated via an estimated non-linear DSGE model

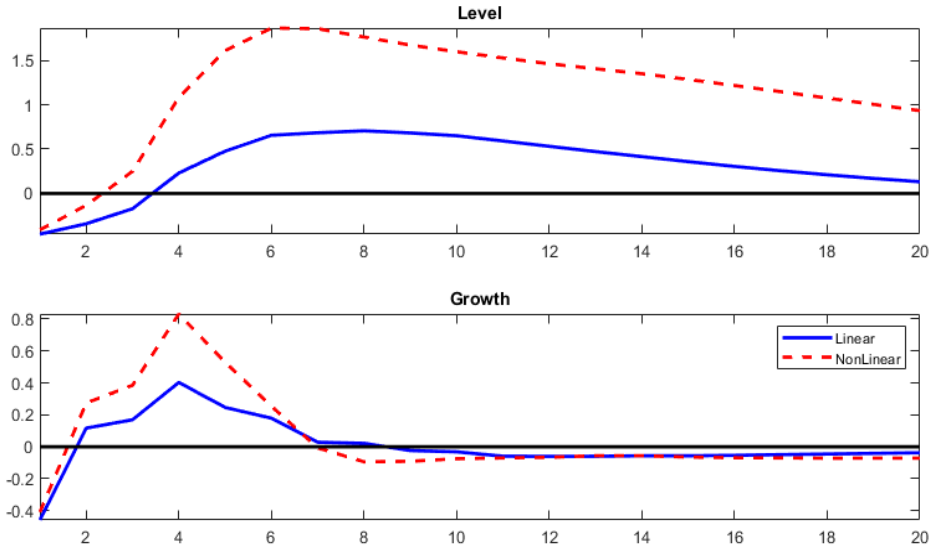
IRFs expressed in Growth Terms



Observations

- The IVAR model predicts an even more pronounced V-Shaped recovery than the linear model:
  - Growth returns to its steady-state in a year and the economy expands by more than its steady-state growth rate for the next 3 to 4 years
- A protracted inflation fall
  - Annualized inflation decreases by about 1pps below its steady-state for more than 4 years
  - This is despite the 200bps reduction in the policy rate

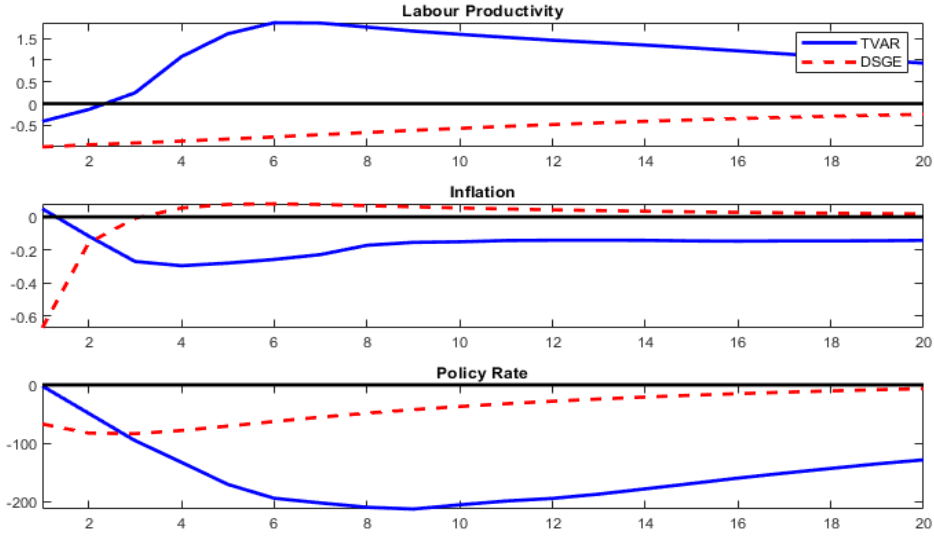
Labour Productivity Response



Labour Productivity Response

- Given that wages are rigid (in the data), the labour productivity expansion pushes down inflation
- This is the case for both linear and non-linear empirical models
- The interpretation of the shock is not obvious (hard to reconcile it with the data)
- The DSGE model might struggle to replicate these features

DSGE versus TVAR



DSGE Model

- The DSGE model interprets the VAR responses as a pure demand shock and it finds hard to replicated the TVAR responses of hours, inflation and policy rate:
  - The flat Phillips Curve makes inflation less sensitivity to demand (inflation is back on target in a couple of quarter). This is true for both models but more pronounced for the second model
  - Given the low policy response to inflation, the estimation uses the policy response to output gap to match the policy responses. Both models struggle to replicate the empirical policy rate responses but this feature is again more pronounced for the second model
- Does the set of structural parameters selected for the estimation determines (to a great extend) the conclusion about the degree of risk aversion?

Minor Comments

- Given that the focus is the Great Recession, I would compare the IRFs between two set of IVAR responses. Those conditional on the Great Recession history against the average responses conditional on all available histories excluding the Great Recession

- The assumption used for the DSGE counterfactual output (i.e. stochastic steady-state 2008Q3) sounds a bit strong. If the assumption is relaxed then I would expect the results to be stronger. This could imply something about estimation/calibration of the DSGE model

- Perhaps the TVAR model is more "suitable" for this type of counterfactual exercises

Summing-up

- It a very interesting paper and I learned a lot
- The authors use an empirical non-linear model and state of art identification techniques to assess the effects of uncertainty during the Great Recession
- They employ a non-linear DSGE model and state of art estimation techniques to understand the transmission of the shock
- The authors illustrate that uncertainty played an important role during the financial turmoil and this effect could be underestimated if non-linearities are ignored

Antolin-Diaz, J. and J. F. Rubio-Ramirez (2018): "Narrative Sign Restrictions for SVARs," *American Economic Review*, 108, 2802–2829.

Ludvigson, S. C. and S. Ng (2019): "Uncertainty and Business Cycles: Exogenous Impulse or Endogenous Response?" *American Economic Journal: Macroeconomics*, forthcoming.