

Discussion of:
“The Power of Long-Run Structural
VARs” by Christopher Gust and Robert
Vigfusson

Marek Jarociński

European Central Bank, DG-Research

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1. What the paper does

Are long-run SVARs useful for discriminating between macro models?

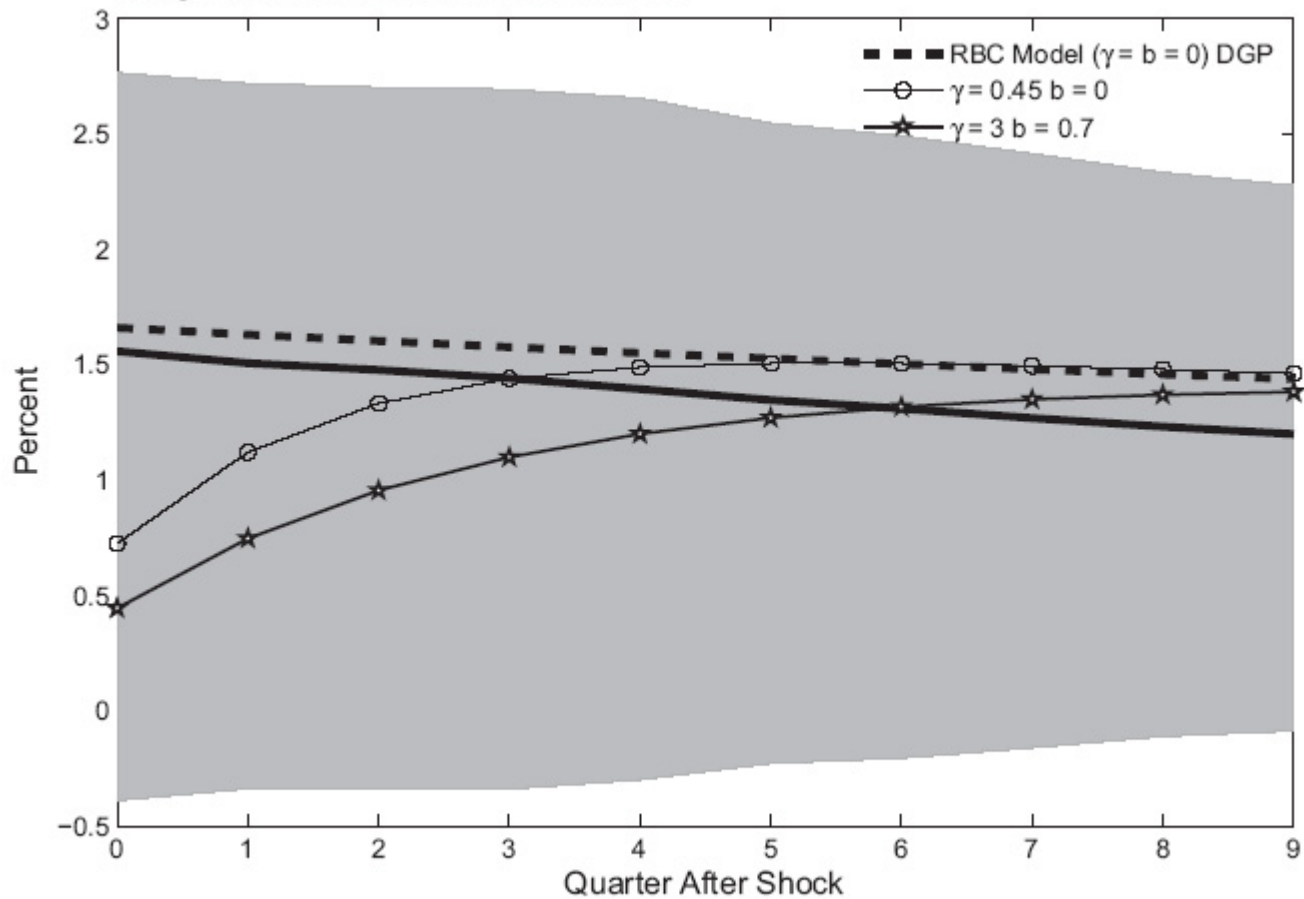
CKM2008 - No: IRF *biases* or/and *wide error bands*

Faust and Leeper 1997 - No: when DGP unrestricted, tests of IRF have power \leq size

This paper: when DGP is restricted to their DSGEs, IRFs from SVARS are useful!

- Bias small (mean SVAR IRF \approx DSGE IRF)
- Wide error bands - but look closer: shapes are informative

Figure 6: The response of investment to a technology shock estimated using data simulated from a RBC Model



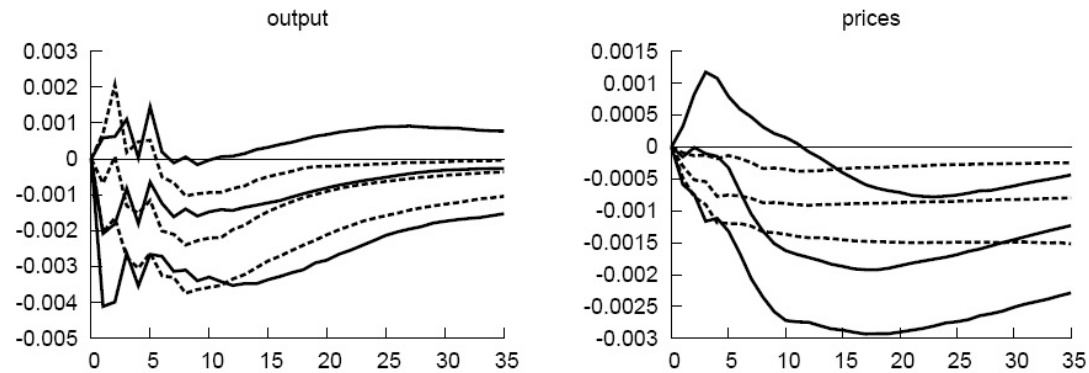
Note Thick solid line is average response over 2000 estimated responses using data simulated from a RBC model. Edges of grey area indicate 5th and 95th percentiles of all estimated responses to a technology shock

2. Other work on interpreting IRFs in spite of wide bands

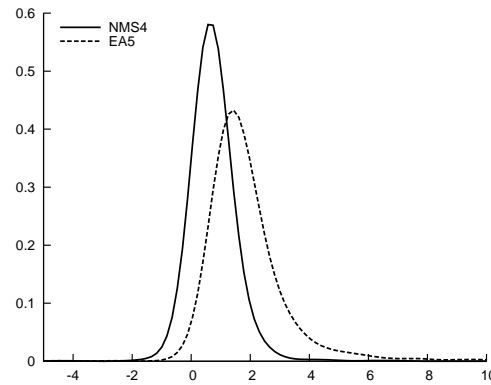
Sims and Zha (1999): methods to look at typical shapes of IRFs within error bands (based on principal components)

Beyond shapes (my work, JAE current issue)

IRFs overlap:



but output costs of disinflation differ:



3. Comments about SVAR-based tests of DSGE models

Literature: How to tell good DSGE models from bad ones?

1. take DSGE models seriously \Rightarrow estimate DSGE models, compare fit/forecasts (e.g. Smets, Wouters 2007)
2. calibration: compare selected few DSGE model predictions to data
3. **estimate SVAR, compare SVAR IRFs to DSGE IRFs**

SVARs attractive when we worry about DSGE misspecification

but authors are confident about their DSGE model! why not estimate it directly?

Let

θ_i = structural parameters of the DSGE model i , $i = 1, 2, \dots$

Y = hypothetical realization of the data for 200 periods

\bar{Y} = actual data (e.g. US data for 200 periods)

Framework:

$$\theta_i \rightsquigarrow p(Y|\theta_i)$$
$$\rightsquigarrow p(s(Y)|\theta_i) \quad s: \text{autocorrelation}$$
$$\rightsquigarrow p(\xi(Y)|\theta_i) \quad \xi\text{- SVAR: 4 lags, ML, ident., IRF, bootstr.}$$

$$\theta_i \rightsquigarrow p(Y|\theta_i) \quad \rightsquigarrow p(s(Y)|\theta_i)$$

$$\rightsquigarrow p(\xi(Y)|\theta_i)$$

- Bayesian approach: evaluate $p(\bar{Y}|\theta_i)$
- calibration: assess closeness of $E(s(Y)|\theta_i)$ to $s(\bar{Y})$
- **this paper:** evaluate $p(\xi(\bar{Y})|\theta_i)$
 - authors find: $p(s(\bar{Y})|\theta_i)$ much simpler and often works well
 - Remark: $\xi(Y)$ or $s(Y)$ cannot be better than Y , at best, hope not to lose info

Summary

- Lesson about interpretation of IRFs - look at shapes of IRFs realizations (not just the band)
- When DGP = DSGE, long-run SVARs work!
 - simpler tests often work too
 - the main appeal of SVARs is potential DSGE misspecification → when DGP=DSGE we can estimate DSGE directly

Thank you!