

Discussion of
“Generalized Exogenous Processes in DSGE:
A Bayesian Approach”
by Alexander Meyer-Ghode and Daniel Neuhoff

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- generalization of the dynamic structure of the shock process
- generally, shock processes are
 - AR(1)

$$z_{i,t} = \rho_{i,1}z_{i,t-1} + \gamma_{i,0}\epsilon_{i,t} \quad \text{with} \quad \epsilon_{i,t} \sim \mathcal{N}\left(0, \sigma_i^2\right) \quad (1)$$

- independent

- this paper:
 - allows for process to be ARMA(p,q)

$$\begin{aligned} z_{i,t} = & \rho_{i,1}z_{i,t-1} + \rho_{i,2}z_{i,t-2} + \dots + \rho_{i,p_i}z_{i,t-p_i} \\ & + \gamma_{i,0}\epsilon_{i,t} + \gamma_{i,1}\epsilon_{i,t-1} + \dots + \gamma_{i,q_i}\epsilon_{i,t-q_i} \end{aligned} \quad (2)$$

- technology shock process
 - AR(1) is rejected by the data
 - ARMA(3,0) is supported by the data (with uncertainty)
- impulse response functions
 - downward shift in most amplitudes
 - features hump-shaped responses
 - allows for a drop in hours
 - increase in the posterior uncertainty

Major contributions to the existing literature

- provide Bayesian framework for estimation of generalized shock processes
 - provides reliable point estimates of the orders of ARMA
 - provides credible sets derived from idiosyncratic model uncertainty
 - provides posterior distributions over parameters and model orders

- Can the approach be generalized to...
 - dependent shocks (Curdia and Reis, 2010)
 - volatility shocks (Fernandez-Villaverdey and Rubio-Ramirez, 2010)
 - rare disasters and GARCH effects (Andreasen, 2012)

- For the model builder...
 - introduction of intricate persistence structure through the shock
 - does it substitute for habit formation?
 - does it substitute for indexation?
 - can they be viewed as complementarities?

- For the convenient economist...
 - is there going to be a Dynare implementation?