

Discussion of “Monetary Policy Forecasting in a DSGE Model with Data that is Uncertain, Unbalanced, and About the Future”

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FRB Atlanta, May 15, 2009

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Outline

- About the Future
- Unbalanced
- Uncertain

About the Future I: Anticipated Shocks

- “News shocks” (Schmidt-Grohe and Uribe 2008)
- Technology, taxes, government spending . . .

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- Standard law of motion for exogenous process (say, government spending):

$$g_t = \rho g_{t-1} + \epsilon_t^g$$

About the Future I: Anticipated Shocks

- “News shocks” (Schmidt-Grohe and Uribe 2008)
- Technology, taxes, government spending ...
- Standard law of motion for exogenous process (say, government spending):

$$g_t = \rho g_{t-1} + \epsilon_t^g$$

- Schmidt-Grohe and Uribe’s anticipated shocks:

$$g_t = \rho g_{t-1} + \epsilon_t^g + \epsilon_{t-1}^{g,1} + \epsilon_{t-2}^{g,2} + \dots$$

Anticipated Shocks

Incorporate into the canonical form for linear RE models (Sims 2001):

$$\Gamma_0 \mathbf{s}_t = \Gamma_1 \mathbf{s}_{t-1} + \Psi \epsilon_t + \Pi \eta_t \quad (1)$$

- Extend the vector of shocks known to agents in period t from ϵ_t^g to $\epsilon_t^g, \epsilon_t^{g,1}, \epsilon_t^{g,2}, \dots$
- and augment the vector of states with placeholders $v_t^{g,1}, v_t^{g,2}, \dots$ such that

$$\begin{aligned} v_t^{g,1} &= \epsilon_t^{g,1} \\ v_t^{g,2} &= v_{t-1}^{g,1} \\ &\vdots \end{aligned}$$

so that:

$$g_t = \rho g_{t-1} + \epsilon_t^g + v_{t-1}^{g,1} + v_{t-1}^{g,2} + \dots$$

Anticipated Policy Shocks (Laséen and Svensson 2009)

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- Unanticipated policy shocks (Leeper and Zha “Modest Policy Interventions”)
- A sequence of deviations from the policy rule:

$$R_{t+1} = \rho^R R_t + (1 - \rho^R)(\psi_1(\pi_{t+1} - \pi^*) + \psi_2 y_{t+1}) + \epsilon_{t+1}^R$$

$$R_{t+2} = \rho^R R_{t+1} + \dots + \epsilon_{t+2}^R$$

...

where ϵ_t^R , ϵ_{t+2}^R , .. are “surprises”.

Anticipated Policy Shocks

- Anticipated policy shocks (T periods):

$$\begin{aligned}R_{t+1} &= \rho^R R_t + (1 - \rho^R)(\dots) + \epsilon_{t+1}^R + \epsilon_t^{R,1} + \epsilon_{t-1}^{R,2} + \dots + \epsilon_{t-T+1}^{R,T} \\R_{t+2} &= \rho^R R_{t+1} + \dots + \epsilon_{t+2}^R + \epsilon_{t+1}^{R,1} + \epsilon_t^{R,2} + \dots + \epsilon_{t-T+2}^{R,T} \\&\dots,\end{aligned}$$

where $\epsilon_t^R, \epsilon_t^{R,1}, \dots, \epsilon_t^{R,T}$ is the menu of shocks available to the policymaker (and known to the public).

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where $\epsilon_t^R, \epsilon_t^{R,1}, \dots, \epsilon_t^{R,T}$ is the menu of shocks available to the policymaker (and known to the public).

- Setup is same as before
- After solving the linear RE model, the sequence $\epsilon_t^R, \epsilon_t^{R,1}, \dots, \epsilon_t^{R,T}$ that implements a given path can be found recursively.

Unanticipated Shocks vs Unanticipated Regime Change

- No anticipated policy deviations in the estimated model?
- How credible is the regime change?

About the Future II: Using Measured Expectations as Observables

Measured expectations (say, SPF output/inflation expectations) can be helpful in:

- **Model comparison:** Expectations help discriminate across models.

About the Future II: Using Measured Expectations as Observables

Model Comparison:

The Information from Measured Inflation Expectations

	Erceg & Levin	Perfect Information	Fixed π^*
Dataset w/o Expectations	-715.465	-728.498	-725.465

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Dataset w Expectations	-816.232	-801.934	-816.914

About the Future II: Using Measured Expectations as Observables

Measured expectations (say, SPF output/inflation expectations) can be helpful in:

- **Model comparison:** Expectations help discriminate across models.
- **Signal extraction:** Agents in the economy have more information than the econometrician, which can be exploited for forecasting (Monti 2008).

Unbalanced Data

- There are attempts to combine factor and DSGE models with the goal of incorporating as much of the available data as possible:
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Issues:

- Unbalanced data
- Lack of correspondence between measurement and theory → Bridge equations (Schorfheide, Sill, and Kryshko 2009).

Uncertain Data

- Sargent's "Two models of measurement" 1989.

Uncertain States

- Sims and Zha's "Does Monetary Policy Generate Recessions" 2006.