

The Limits of Forward Guidance

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Clarity and credibility

- ▶ New modeling framework of imperfect central bank communications
- ▶ The central bank sends **noisy signals** about its future intentions
- ▶ **Noise** reflects two key challenges in communication
 1. **Lack of clarity**: The words used by the central bank may confuse the public
 2. **Lack of credibility**: The central bank does not know its future intentions

What we do

- ▶ Embed imperfect communication into empirical DSGE model
- ▶ Estimate model using a large dataset including FFR futures
- ▶ Use model to address:
 1. Has the Fed communicated clearly and credibly?
 2. If not, what are the consequences of failures in communication?

Main findings

1. Seemingly hard to move expectations at long horizons
2. Imperfect communications influences shock propagation
 - ▶ Effects of forward guidance are delayed
 - ▶ Greater amplitude of the response to forward guidance
3. While imperfect, FG brings forward the effects of policy
 - ⇒ forward guidance still a valuable stabilization tool
4. Unintended communications spur sizable macro volatility

Central bank communications

$$R_t = g_t(R_{t-1}, \pi_t^{gap}, y_t^{gap}) + \theta_t,$$

- ▶ Date t **forward guidance**: $(H + 1) \times 1$ vector of noisy signals $s_t = [s_t^h]$ about future deviations θ_{t+h}

$$s_t = \theta_t + v_t$$

- ▶ $\theta_t = [\theta_{t+h}]$: mean zero, serially correlated up to H lags
- ▶ $v_t = [v_t^h] \sim IID \mathcal{N}(\mathbf{0}, \Xi_v)$

Optimal learning

- ▶ Agents use the signals and the Kalman filter to update their beliefs about the future policy deviations θ_t

$$\begin{aligned} E_t \theta_t &= E_{t-1} \theta_t + \kappa \cdot (s_t - E_{t-1} \theta_t) \\ &= E_{t-1} \theta_t + \kappa \cdot (v_t + \theta_t - E_{t-1} \theta_t) \end{aligned}$$

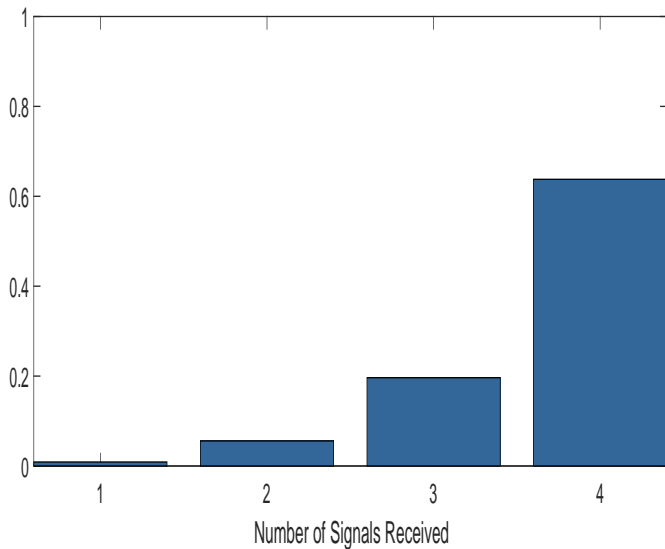
where

$$\kappa = \Xi_\theta [\Xi_\theta + \Xi_v]^{-1}$$

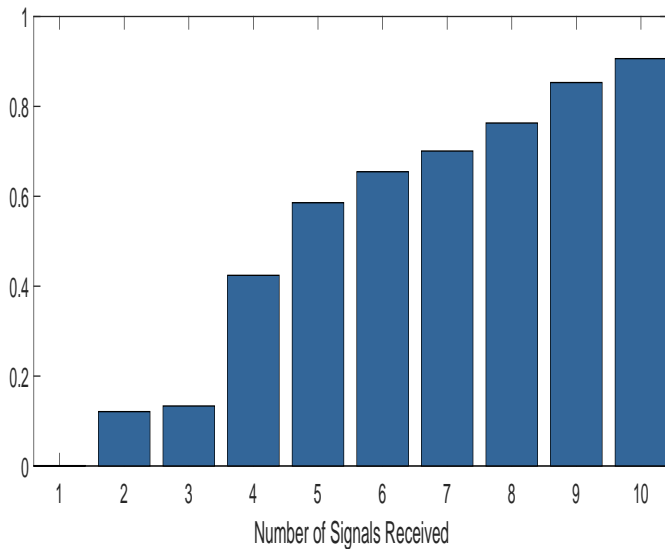
Embed in familiar medium-scale DSGE model

- ▶ Representative household
- ▶ Sticky wages and prices
- ▶ Investment adjustment costs, variable capacity utilization
- ▶ Balanced growth: neutral and investment-specific technology
- ▶ Monetary policy rule, **communications and learning**
- ▶ Non-monetary structural shocks: discount rate, liquidity preferences, two technologies, marginal efficiency of investment, “government” spending, wage and price markups
- ▶ Estimate with 16 quantity and price series, Fed funds rate, overnight interest rate futures

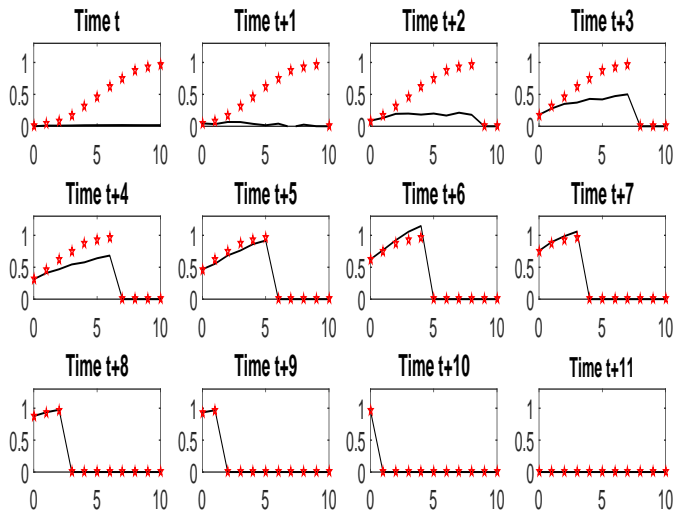
Information gains: 1993q1-2008q3



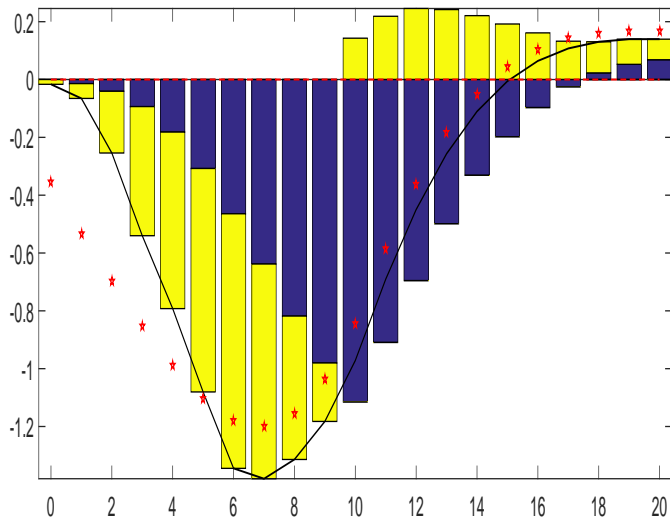
Information gains: 2008q4-2016q4



Evolution of beliefs about θ_t (2nd Sample)



Response of hours to FG shock (2nd Sample)



Conclusion

- ▶ Develop an empirical model to study central bank communication
- ▶ Imperfect communication limits the Fed's ability to affect beliefs
 - ⇒ challenges empirical relevance of the *forward guidance puzzle*
- ▶ While imperfect, FG pulls forward the effects of policy
 - ⇒ forward guidance still a valuable stabilization tool
- ▶ Unintended communications spur macroeconomic volatility