

The Heterogeneous Effects of Forward Guidance Under Imperfect Central Bank Credibility Across the U.S., U.K., Japan, and Germany

Stephen J. Cole Enrique Martínez-García
Marquette University Federal Reserve Bank of Dallas

**All remaining errors are ours alone. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Dallas or the Federal Reserve System.*

Motivation

“forecasts, and policy, should not be based solely on forecasts from a model that assumes full credibility in the stated policy path”

-Goodfriend and King (2016)

- **Background:** Forward guidance has been an essential tool for central banks worldwide
→ However, its efficacy rests on the perceived credibility of the central bank
- **Purpose of Paper:** Study the effects of forward guidance with imperfect central bank credibility across countries

Model

Standard New Keynesian model with price stickiness, price indexation, and habit formation in consumption (Woodford, 2003 and Cúrdia et al., 2015) augmented by:

1. Forward guidance shocks following Del Negro et al. (2012)

$$\dot{i}_t = \rho \dot{i}_{t-1} + (1 - \rho)(\chi_\pi \pi_t + \chi_x x_t) + \varepsilon_t^{MP} + \sum_{l=1}^L \varepsilon_{l,t-l}^R$$

- $\varepsilon_{l,t-l}^R$: central bank announcement in period $t-l$ that interest rate will change in period t
2. Credibility: fraction of agents who add forward guidance into expectations (τ) and those that do not ($1-\tau$)

$$\mathbb{E}_t Y_{t+1} = \tau \mathbb{E}_t^C Y_{t+1} + (1 - \tau) \mathbb{E}_t^D Y_{t+1},$$

- Y_t : vector of macro observables.
- \mathbb{E}_t^C : central bank expectations
– Follows full information rational expectations (FIRE) → contains forward guidance
- \mathbb{E}_t^D : private sector forecasting model; same as \mathbb{E}_t^C but w/o forward guidance
- $0 \leq \tau \leq 1$: credibility parameter
– $\tau \rightarrow 1$: all private agents believe forward guidance statements to be credible
– $\tau \rightarrow 0$: monetary authority not considered credible; forward guidance statements ignored

Data & Priors

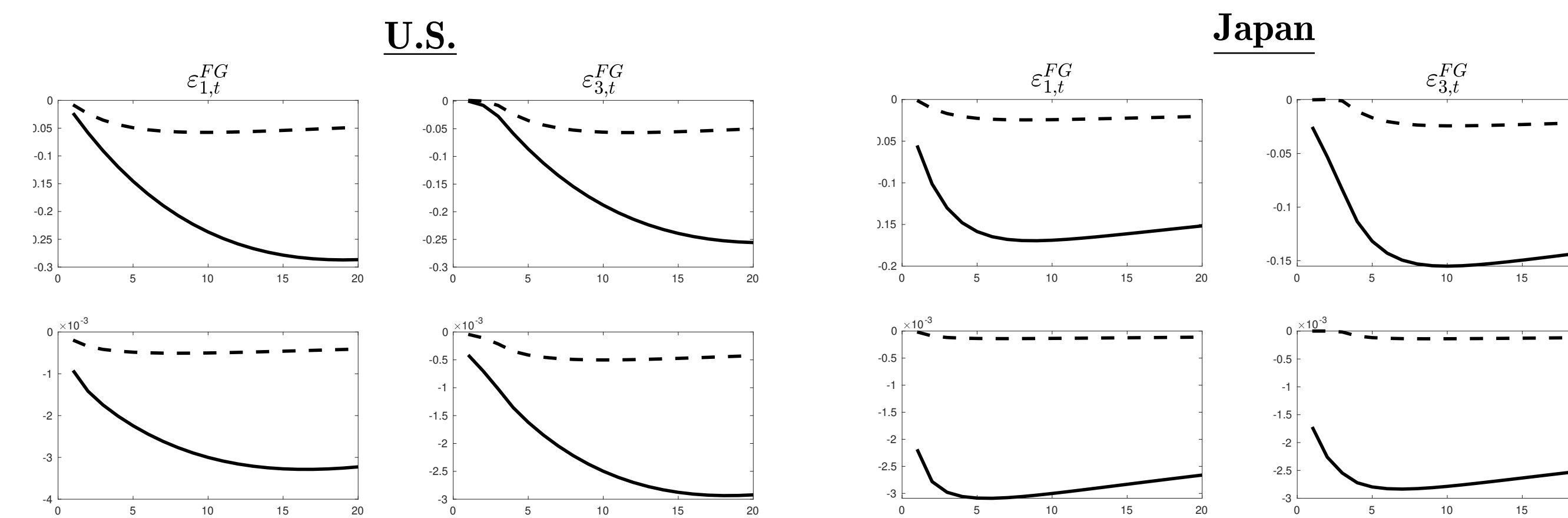
- Countries:
 - Baseline: U.S., U.K., Germany, & Japan
 - Extension: France, Spain, Italy, & Canada
- Observed Variables (1991:Q2 - 2019:Q3):
 - Real GDP Growth, CPI Inflation, Short-Term Interest Rate
 - Expectations Data from Consensus Economics
 - * Expectations of output growth, inflation, and interest rates one to five periods ahead
- Priors:
 - Largely follow previous studies
 - τ : diffuse prior across countries, $U(0,1)$

Results

- Full Sample Estimates of τ

U.S.: 0.6740 | Japan: 0.7970 | Germany: 0.5110 | U.K.: 0.7121

- IRFs to Positive FG Shock Across Subsamples

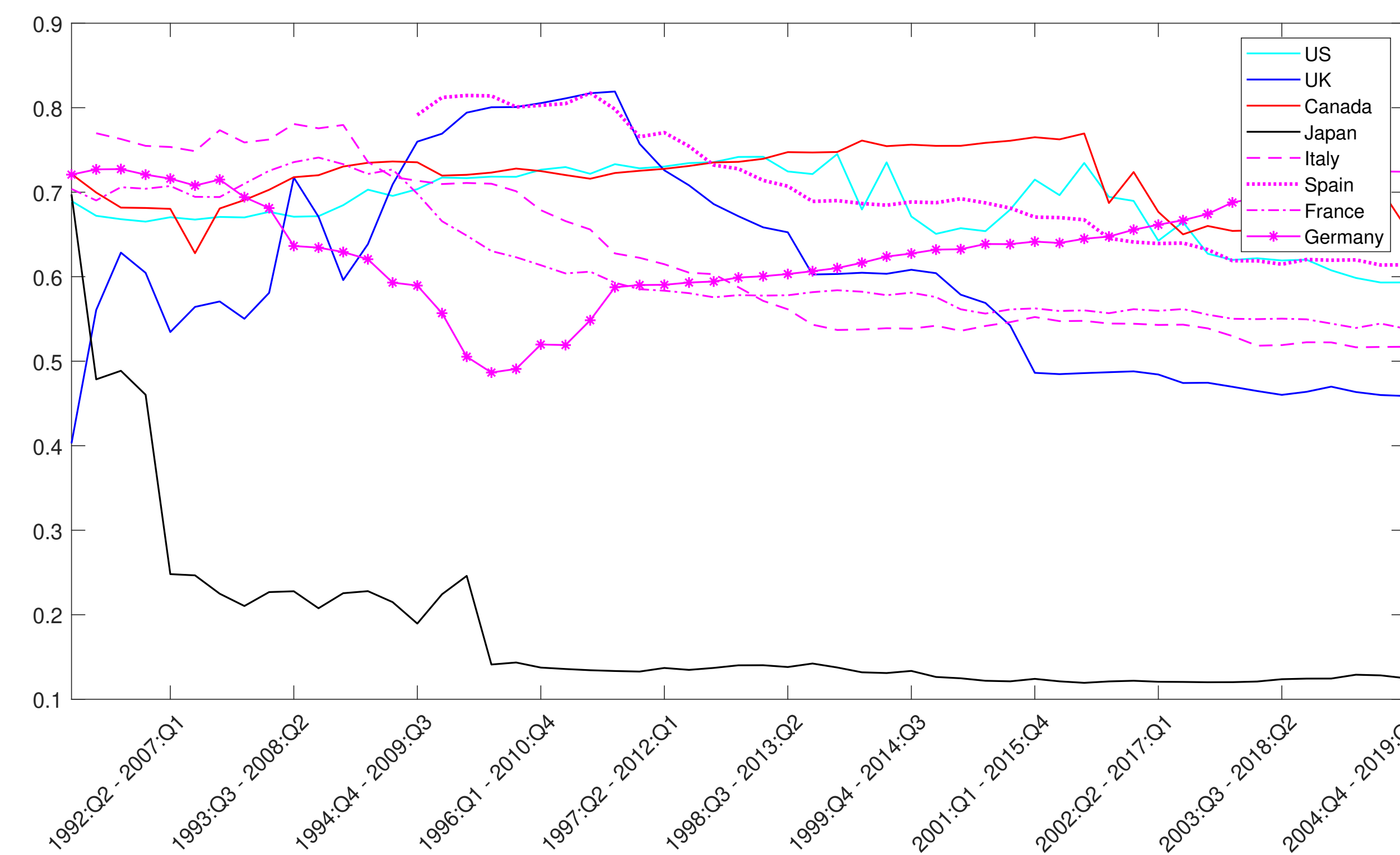


Solid Line: 1991:Q2 - 2007:Q3 ($\hat{\tau} = 0.6959$)
Dashed Line: 2001:Q4 - 2019:Q3 ($\hat{\tau} = 0.5575$)

Solid Line: 1991:Q2 - 2007:Q3 ($\hat{\tau} = 0.8565$)
Dashed Line: 2001:Q4 - 2019:Q3 ($\hat{\tau} = 0.1826$)

- Time-Varying Credibility (Preliminary)

Rolling Regression Estimates of τ Across Countries



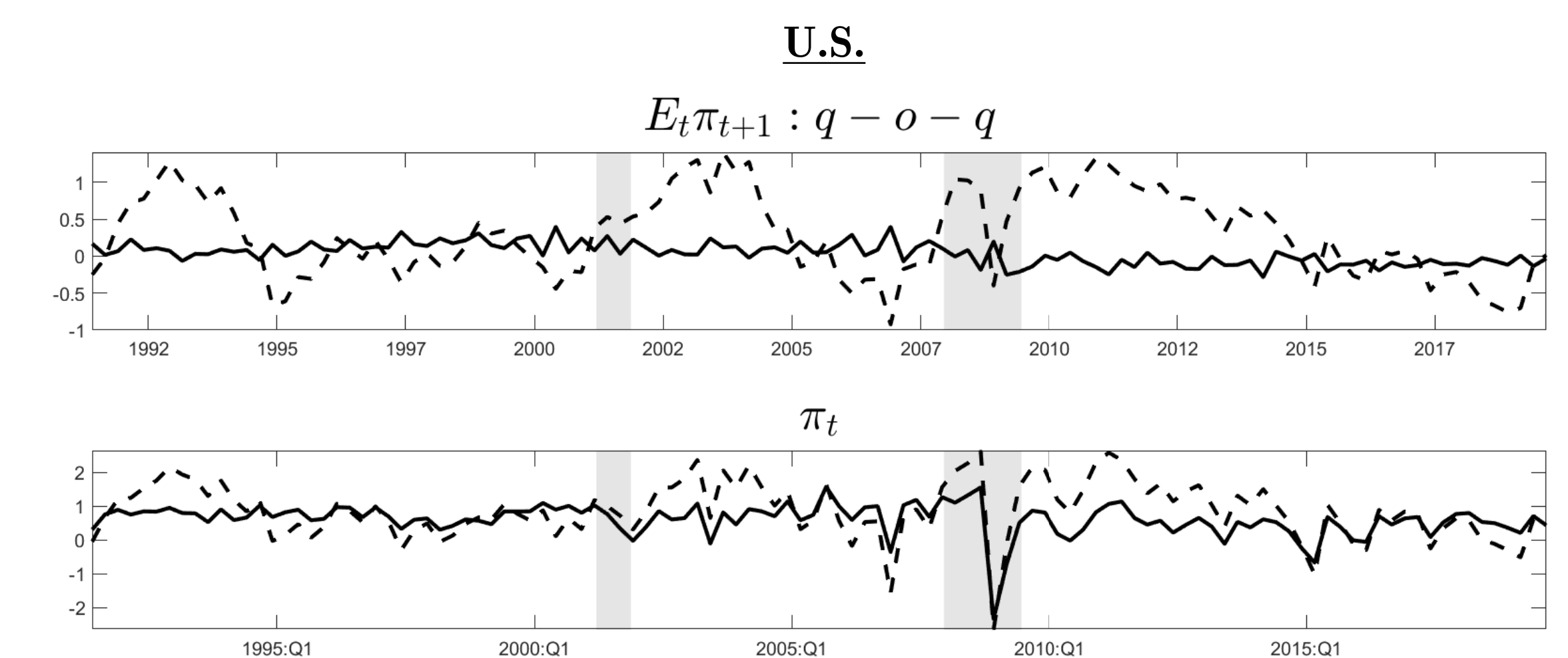
Takeaways

1. Forward guidance is a powerful tool but depends on credibility
→ Higher credibility, higher effects on output and inflation
2. Credibility is time-varying
→ Central banks can lose it (credibility erosion)
→ Credibility should not be taken for granted. High credibility central banks need to maintain credibility so that forward guidance remains powerful

Missing Inflation Episode

- **Question:** Do historical missing inflation episodes (e.g., U.S. inflation in 2010s) stem from lack of forward guidance credibility?
- **Counterfactual Exercise:** What if a central bank had been perfectly credible?

1. Estimate model to recover smoothed shocks
2. Simulate at the posterior mean with smoothed shocks (Solid Line)
3. Simulate as in 1) BUT with $\tau = 1$ (Dashed Line)



- **Result:** U.S. predicted to achieve higher inflation if Federal Reserve was fully credible

Conclusions

- **Background:** Efficacy of forward guidance depends on the credibility channel.
- **Our Contribution:** Study forward guidance with imperfect central bank credibility across major world economies.
- **Main Takeaway:** Accounting for imperfect credibility is important to model the power of forward guidance on the economy.

References

- Cúrdia, V., A. Ferrero, G. C. Ng, and A. Tambalotti (2015). Has U.S. Monetary Policy Tracked the Efficient Interest Rate? *Journal of Monetary Economics* 70, 72–83. <https://doi.org/10.1016/j.jmoneco.2014.09.004>.
- Del Negro, M., M. P. Giannoni, and C. Patterson (2012). The Forward Guidance Puzzle. *FRB of New York Staff Report No. 574*. <http://dx.doi.org/10.2139/ssrn.2163750>.
- Goodfriend, M. and R. G. King (2016). Review of the Riksbank's Monetary Policy 2010-2015. *Sveriges riksdag*. <https://data.riksdagen.se/dokument/RFR-201516-RFR7.pdf>.
- Woodford, M. (2003). *Interest and Prices. Foundations of a Theory of Monetary Policy*. Princeton, New Jersey: Princeton University Press.