

# Forward Guidance without Common Knowledge

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- Background: theory
- Background: data
- Summary of the paper
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# Background: theory

- It makes a big difference whether all agents have the same (imperfect) information or they have different pieces of information.
- Standard example: Price setting

$$p_{it} = E_{it} [p_t + \gamma c_t] \quad c_t = m_t - p_t \quad p_t = \int p_{it} di \quad m_t \sim N(0, \sigma_m^2)$$

- Case 1: All agents have the same information (e.g.,  $s_t = m_t + \psi_t$ )

$$\begin{aligned} p_{it} &= E_t [(1 - \gamma) p_t + \gamma m_t] \\ &= (1 - \gamma) p_t + \gamma E_t [m_t] \end{aligned}$$

Hence

$$p_t = E_t [m_t]$$

# Background: theory

- Case 2: Agents have different pieces of information ( $s_{it} = m_t + \psi_{it}$ )

$$p_{it} = E_{it} [(1 - \gamma) p_t + \gamma m_t]$$

Solving for the unique linear REE using guess & verify yields

$$p_t = \frac{\gamma \frac{\sigma_m^2}{\sigma_m^2 + \sigma_\psi^2}}{1 - (1 - \gamma) \frac{\sigma_m^2}{\sigma_m^2 + \sigma_\psi^2}} m_t$$

The last equation can be written as

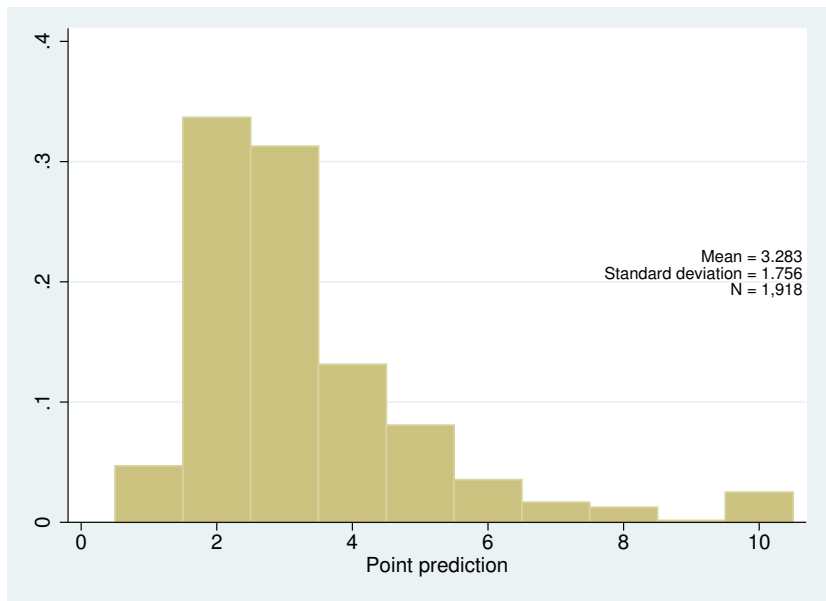
$$p_t = \underbrace{\frac{\gamma}{1 - (1 - \gamma) \frac{\sigma_m^2}{\sigma_m^2 + \sigma_\psi^2}}}_{\equiv \phi} \bar{E}_t [m_t]$$

- Main results:
  - Lack of common knowledge  $\Rightarrow$  Uncertainty about endogenous variables
  - If actions are strategic complements ( $1 - \gamma > 0$ ), then  $\phi < 1$ .
  - For any degree of information friction:  $\phi \rightarrow 0$  as  $(1 - \gamma) \rightarrow 1$ .

- Link to the paper:
  - Title of the paper is “Forward Guidance *without Common Knowledge*.”
  - At lower bound for nominal interest rates, *strategic complementarity in actions* is all over the place.

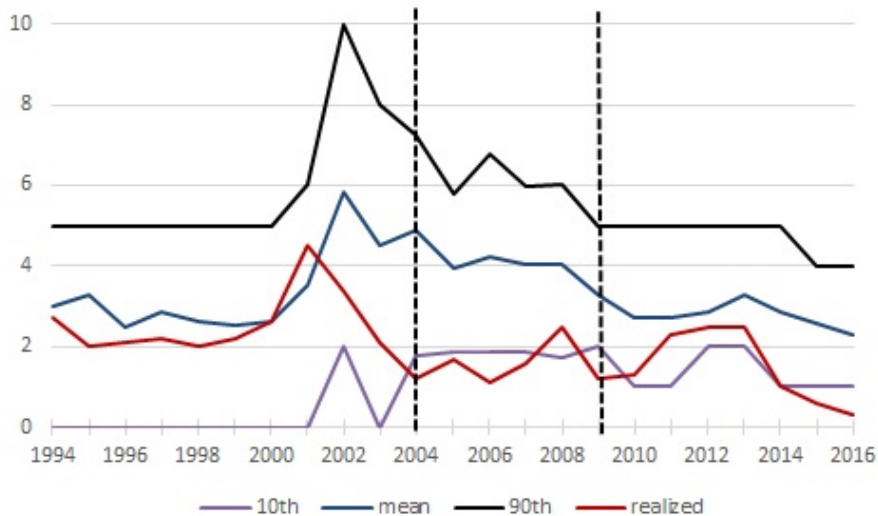
- Properties of inflation expectations in any model with complete information and rational expectations:
  1. All agents have the same expectation of aggregate inflation.
  2. This inflation expectation responds instantly to realized shocks to future inflation.
- Properties of survey data on inflation expectations:
  1. Individuals report heterogeneous inflation expectations.
  2. The average inflation expectation responds slowly to realized shocks to future inflation (e.g., Coibion-Gorodnichenko, 2012).

## Fact 1: Large cross-sectional heterogeneity



Source: Vellekoop and Wiederholt (2017)

Fact 2: Cross-sectional mean moves to some extent with realized inflation.



Source: Vellekoop and Wiederholt (2017)



- To study the effects of forward guidance, it seems natural to use a model that is consistent with survey data on expectations.
- This requires deviating from the benchmark of complete information and rational expectations.

# Summary of the paper

- Context: A NK economy at the ZLB
- Policy question: Effects of forward guidance?
- Forward guidance puzzle: According to benchmark models, effects of forward guidance are very large & explode with horizon.
- The authors remove common knowledge (CK).
- Main result 1: lack of CK  $\Rightarrow$  anchored expectations of  $y$  and  $\pi \Rightarrow$  GE attenuation
- Main result 2: GE attenuation increases with horizon.
- Formally:

$$y_0 = -\phi(\lambda_c, \lambda_f, T, \kappa) \bar{E}_0 [R_T]$$

# Main comment and suggestions

- Great paper! Highly relevant for thinking about forward guidance.
- Occasionally, make even clearer the differences to Wiederholt (2015) and Farhi and Werning (2016).
- In one single occasion, I recommend developing intuition even more: What is the role of incomplete markets in the model?