Discussion of "Anchored Inflation Expectations"

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New Approaches for Modelling Expectations in Economics

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Overview

- The authors develop a model of firm expectations of inflation with a state-dependent learning rule
- Explains key features of both short-run and long-run inflation expectations data across different surveys and countries
- Generates endogenous time-variation in long-run inflation mean
- Provides a measure of anchoring of inflation expectations
- Very well-executed paper with parsimonious and intuitive description of expectation formation
- Clever use of marginalized particle filter for nonlinear estimation - could be useful in many other situations!

Key Ingredients

- Price stickiness
- Deviation from full-information: uncertainty about long-run mean of inflation
- Deviation from rational expectations: adaptive expectations
- Self-referentiality: forecast errors today $\rightarrow$ beliefs about long-run inflation $\rightarrow$ prices today $\rightarrow$ inflation tomorrow $\rightarrow$ beliefs tomorrow...

Model

- Partial equilibrium model of price-setting with adjustment costs - real marginal costs are exogenous
- Perceived law of motion for inflation

$$\pi_t = \gamma\pi_{t-1} + (1-\gamma)\bar{\pi}_t + \rho\varphi_{t-1} + f_t$$

- True law of motion for inflation

$$\pi_t = \gamma\pi_{t-1} + (1-\gamma)\Gamma\bar{\pi}_t + \rho\varphi_{t-1} + \eta_t$$

- Γ: degree of self-referentiality
- Γ measures feedback of beliefs into inflation - implicitly a function of discount factor and price stickiness

Key Mechanism: Time-Varying Gain

- Firms learn about the long-run mean of inflation

$$\bar{\pi}_t = \bar{\pi}_{t-1} + \boldsymbol{k}_t^{-1} \times f_{t-1}$$

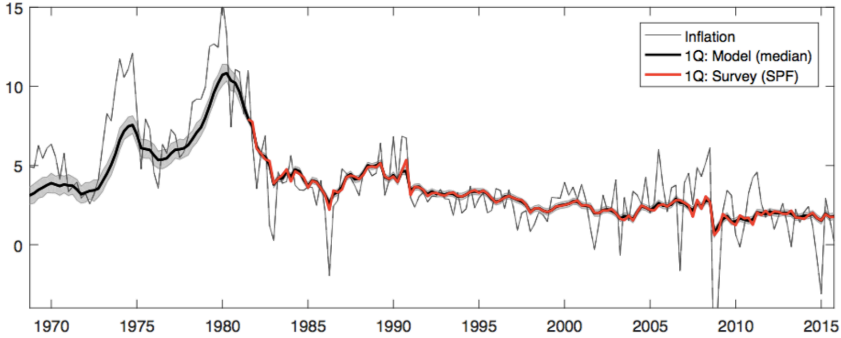
- The gain follows an endogenous switching process

$$\boldsymbol{k}_t = I_{(\theta_t \leq \bar{\theta})} \times (\boldsymbol{k}_{t-1} + 1) + [1 - I_{(\theta_t > \bar{\theta})}] \times \bar{g}^{-1}$$

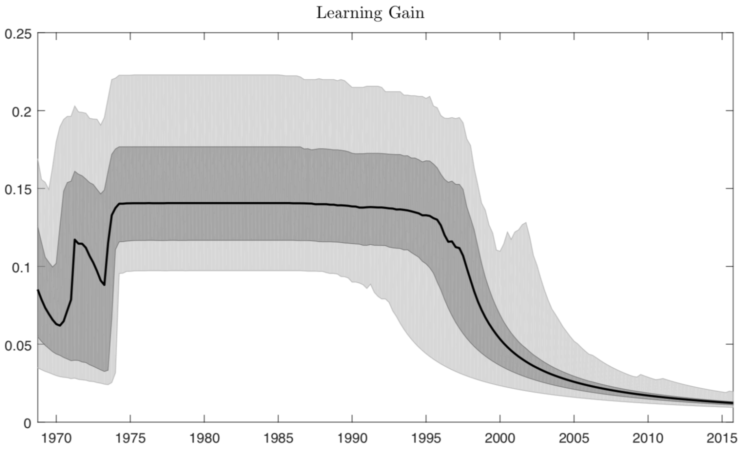
- θ_t is reduced form stand-in for model selection criterion - captured by discrepancy between objective and subjective inflation expectations
- $\theta_t \leq \bar{\theta}$: decreasing gain $\rightarrow$ stable “anchored" expectations
- $\theta_t > \bar{\theta}$: constant gain $\rightarrow$ volatile “unanchored" expectations which discount past information

Short-Term Expectations

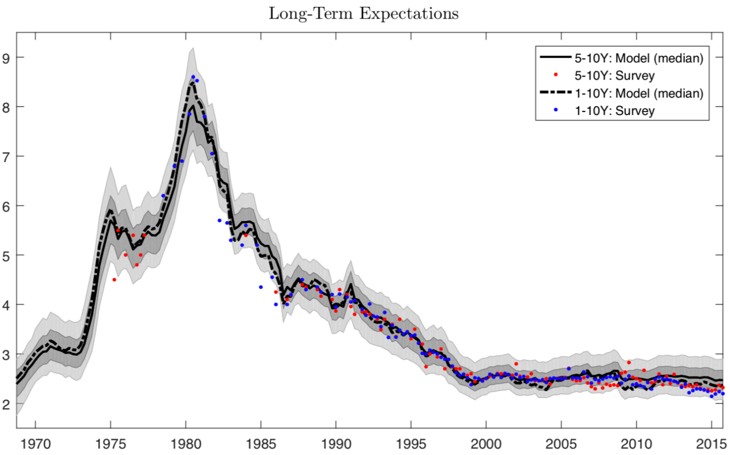
One-quarter ahead (SPF)



Estimated Gain



Long-Term Expectations



Comment 1

- Difficult to immediately distinguish your story from other explanations.

1. Empirical literature on sticky information and noisy information explanations of inflation expectations: Coibion and Gorodnichenko (2011, 2012, 2015)

- State-dependence in information rigidities - firms pay closer attention when they are consistently surprised

Comment 1

2. Passive vs. active monetary policy and switches across equilibria: Lubik and Schorfheide (2004), Davig and Leeper (2006), Farmer, Waggoner, and Zha (2009), Bianchi (2013), Bianchi and Ilut (2017)

- Paper repeatedly links self-referentiality to strength of monetary policy response to inflation.
- Model is linearized around the deterministic steady state. Is the indeterminate steady state learnable?

3. Rational Bayesian agents but parameter or model uncertainty?

- Known persistence and volatility of marginal cost process.

Comment 2

- General equilibrium model will have implications for other macro aggregates: consumption, GDP, interest rates, etc.
- Do impulse responses look sensible? Perhaps this provides a way to separate stories?
- Transmission of shocks likely different across different sources of state-dependent learning.
- Is the proposed learning rule a good description of other survey data on expectations? Or is it really just about inflation?

Comment 3

- Difficult to think about interpretation of $\bar{\theta}$ as real-time decision rule threshold.
- How to think about $\bar{\theta}$? Tolerance for risk/uncertainty?
- What does θ_t look like in baseline model?
- Small variations in θ_t can lead to huge changes in expectations - estimation with survey data will pick threshold so it is “just right" for switching between volatile and stable expectations in the data.