

ECB FORUM ON CENTRAL BANKING

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TARGETING
INFLATION
EXPECTATIONS?



EUROPEAN CENTRAL BANK
EUROSYSTEM

Targeting Inflation Expectations?

Monetary Policy and Expectations

- Open debate on the appropriate Monetary Policy framework: Average Inflation Targeting? Price Level Targeting?
- Common thread amongst all: (Anchoring) Inflation Expectations.
- Inflation Targeting (IT) adopted in approximately 60 economies (including the Eurozone).
- The adoption of IT led to a decline in inflation in most countries
- Lacuna in the literature regarding the impact of a change in monetary policy on expectations.

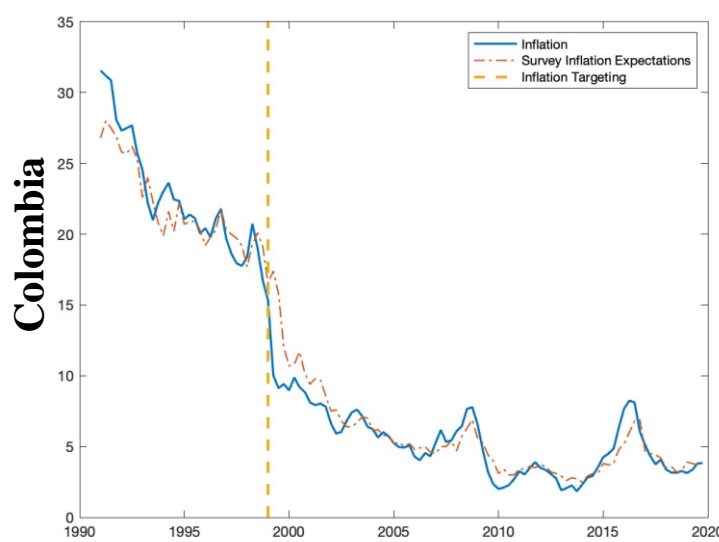
Research Questions

- Do agents adjust their expectations (mean and variance of priors) at the time of the implementation/announcement of the policy?
- Do agents incorporate the inflation target in their rule for forming expectations?

What I do

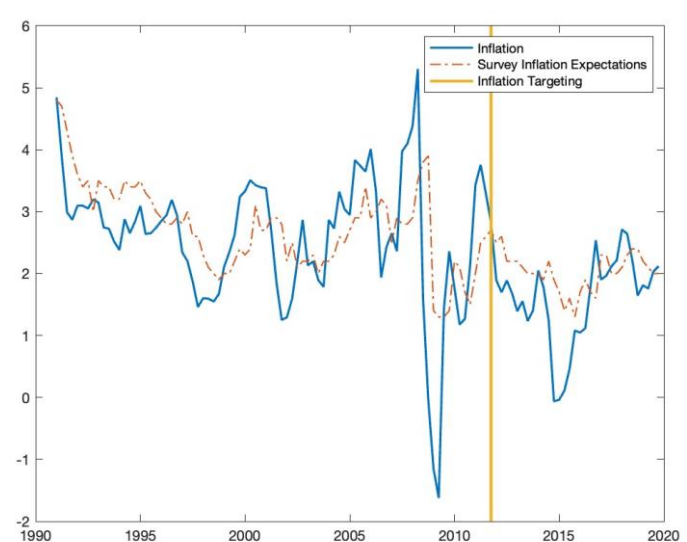
- Survey data (professional forecasters) Inflation Targeting Economies.
- Subjective Expectations → Adaptive Learning.
- Event Study Methodology + Agents' Expectations + Simulated Method of Moments

How Do Expectations Evolve?



Key takeaway

Unclear if inflation expectations respond to the introduction of IT.



United States of America

Ifo World Economic Survey

Six Month Ahead Inflation Forecasts from professional forecasters

1991Q1 – 2019Q4
32 IT economies
(US, Germany, India, Ukraine)

Rational Expectations Hypothesis doesn't hold.
(Forecast errors are predictable.)

Theoretical Framework

- Agents do not know the underlying process of inflation.
- Agents behave as econometricians.
- Optimal updating based on the Kalman Filter implies,

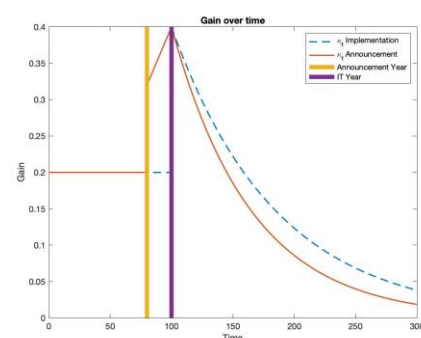
$$\hat{\beta}_t = \hat{\beta}_{t-1} + \kappa(\pi_t - \hat{\beta}_{t-1})$$
- With the distribution for expectations given by $\beta_t | \mathcal{I}_t \sim \mathcal{N}(\hat{\beta}_t, \tilde{\sigma}_{\beta_t}^2)$
- After the **introduction of IT** the mean or the variance of the priors can change.

Mean of the Prior: $\hat{\beta}_t$

Variance of the Prior: $\tilde{\sigma}_{\beta_t}^2$

Two Possibilities

1. Process remains unchanged
 2. $\hat{\beta}_{IT} < \hat{\beta}_{IT-1} + \kappa(\pi_{IT} - \hat{\beta}_{IT-1})$
- Agents adjust expectations to lower inflation than previously experienced.



Empirical Framework

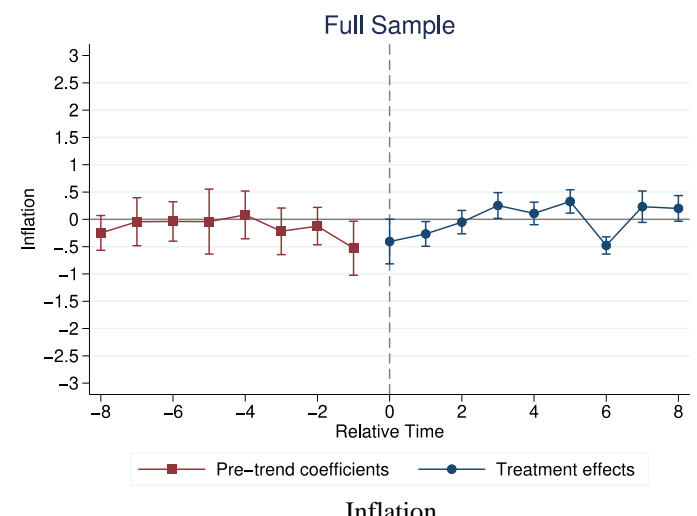
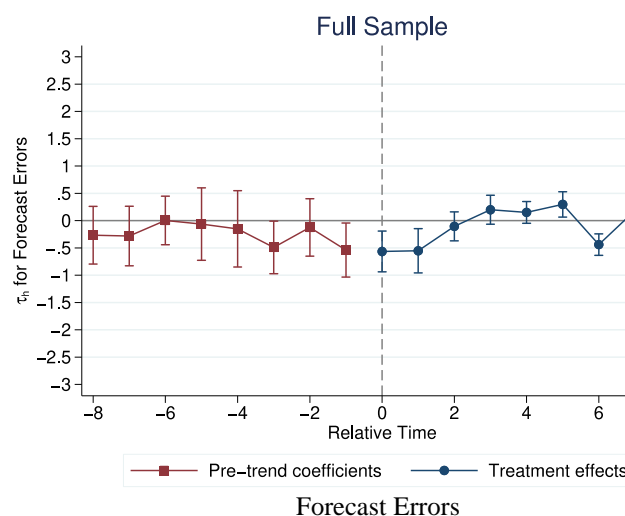
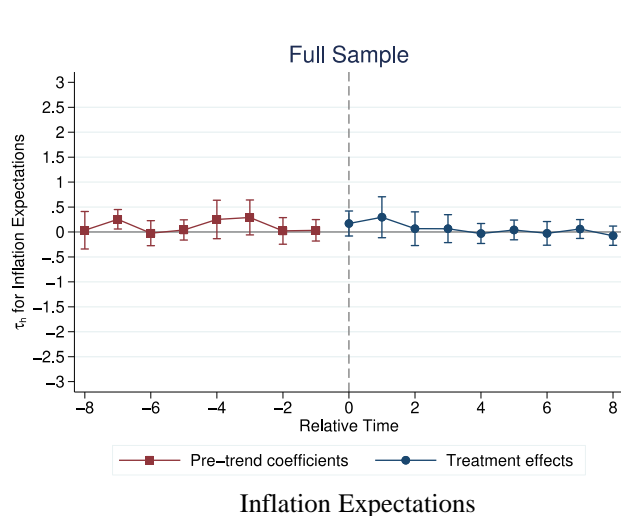
$$\beta_{it} = \underbrace{\delta_i}_0 + \beta_{it-1} + \kappa(\pi_{it} - \beta_{it-1}) + \gamma_1 t + D_{it}\tau_{it} + \epsilon_{it}$$

- δ_i : Unit fixed effects should be zero to achieve the REE.
- β_{it} : Inflation Expectations in country i at time t .
- κ : Speed of adjustment
- π_{it} : Inflation in country i at time t .
- D_{it} : Dummy variable which is equal to 1 if policy is announced, zero otherwise.
- τ_{it} : Treatment effect (jump in expectations)

- Implementation: Based on the day the mandate comes into effect.
- Announcement: Based on first discussion of interest based/Taylor based rules in the MPCs.

Do Inflation Expectations respond?

No! But...



- The level of Inflation Expectations do not respond to the introduction of Inflation Targeting.
 - Agents overpredict inflation after the introduction of IT.
 - Inflation leads inflation expectations.

What about the variance of the priors?

- Changing variance implies a time varying Kalman Gain.
 - High persistence in expectations.
- The Kalman Gain remains steady after the introduction of IT.
 - Agents attach some weight to the inflation target.

Table 1: Parameters

Parameters	Pre-IT	Post-IT		
		2 years	5 years	Full Sample
κ	0.0553	0.057	0.110	0.639
α	-	0.10	0.109	0.113

$$\tilde{\beta}_t = \tilde{\beta}_{t-1} + \kappa_t(\pi_t - \alpha\bar{\pi}^T - (1 - \alpha)\tilde{\beta}_{t-1})$$

Central banks can build credibility ex-post by reducing inflation.