REASSESSING THE EFFECTIVENESS AND TRANSMISSION OF MONETARY POLICY

Changing Perceptions and Post-Pandemic Monetary Policy

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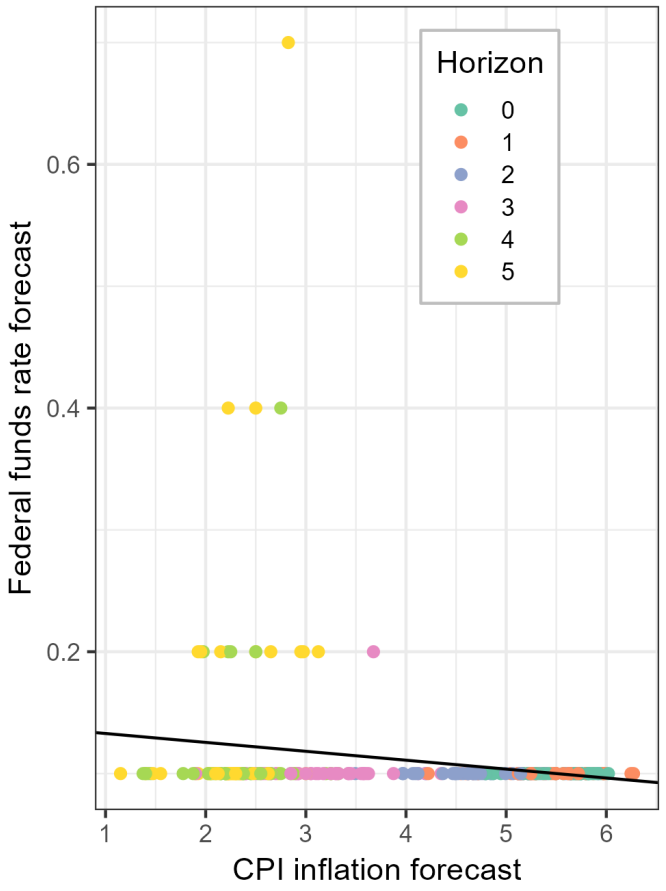
- Policy effectiveness depends crucially on public *perceptions* of monetary policy framework
  - Well-understood framework accelerates transmission and shortens lags of monetary policy
  - Credibility: If central bank perceived to respond strongly to inflation, inflation can be brought down with less economic cost (Clarida, Gali and Gertler (1999))
- **How did perceptions of Fed's response to inflation change during recent tightening cycle?**
  - Perceived policy response to inflation rose substantially, but only *after* liftoff in March 2022
  - Estimate *forward-looking* policy response to inflation on rich professional surveys *each month*
  - Consistent results from high-frequency market responses to inflation news surprises
- **Implications:**
  - Timing of increase in perceived Fed's response to inflation suggests liftoff itself shaped perceptions
  - Even sophisticated forecasters and markets learn about framework from policy actions
  - Rate hikes during times of high inflation, and inflation-dependent easings can shape perceptions of inflation-responsive policy

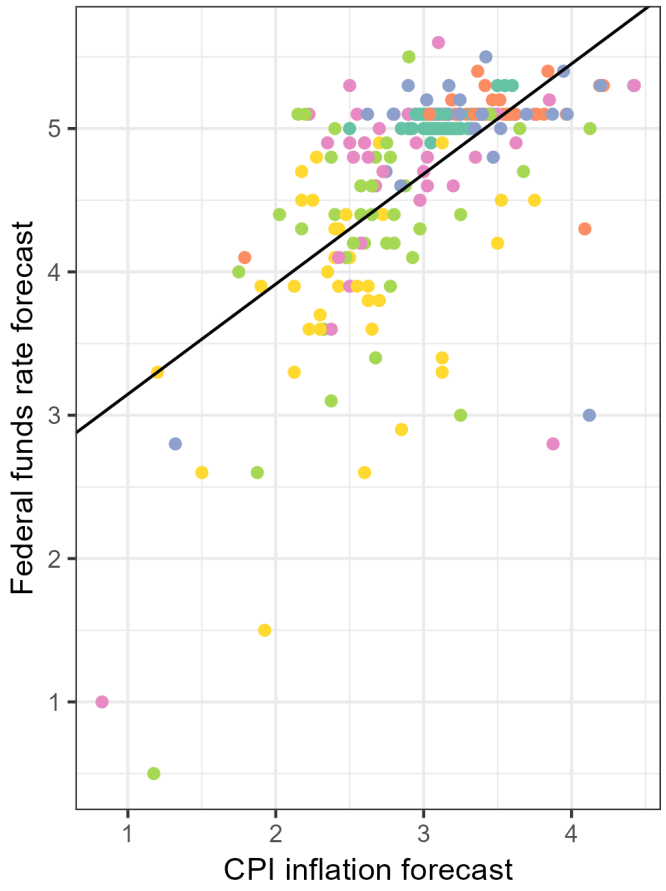
Result 1: Increase in Inflation Response Perceived by Panel of Professional Forecasters

Perceived monetary policy inflation coefficient rose substantially between mid-2021 and mid-2023

Sept 2021: $\hat{\beta}_t \approx 0$



June 2023: $\hat{\beta}_t$ large



- Blue Chip Financial Forecasts (BCFF): Interest rate forecasts and underlying *assumptions* about macroeconomy
- Current quarter to 5 quarters in the future
- Each dot = forecaster-horizon combination
- Example September 2021:

CPI forecast	FFR forecast
2%	0.1%
4%	0.1%

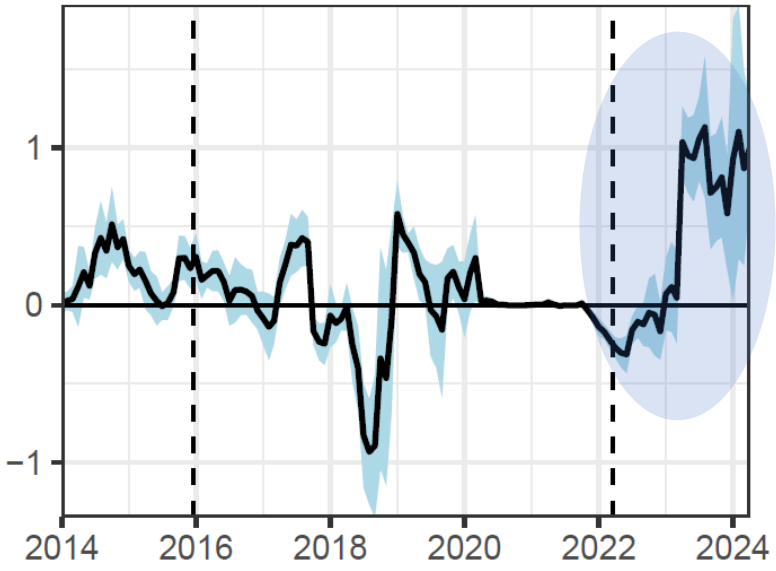
- Example June 2023:

CPI forecast	FFR forecast
2%	3.9%
4%	5.5%

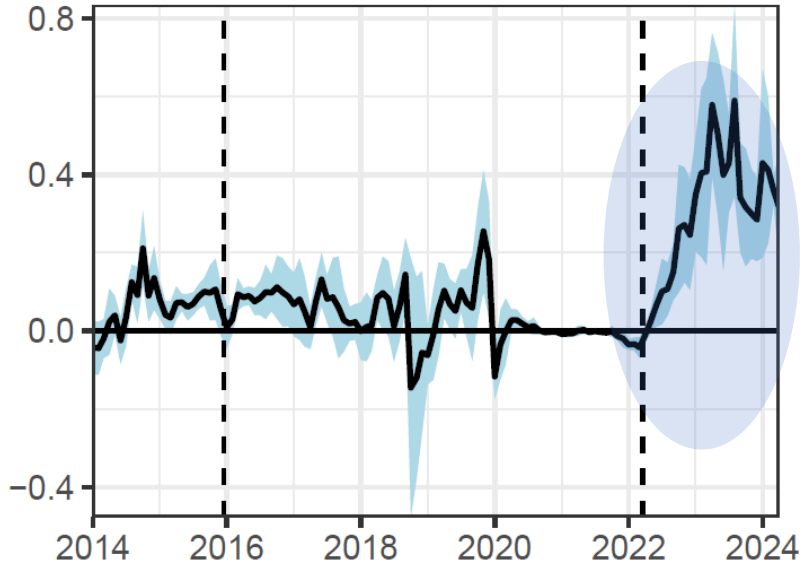
Result 1: Increase in Inflation Response Perceived by Panel of Professional Forecasters

Perceived monetary policy inflation coefficient rose *after* March 2022 liftoff

Baseline rule inflation coefficient



Inertial rule inflation coefficient



$$E_t^{(j)} i_{t+h} = \hat{\beta}_t E_t^{(j)} \pi_{t+h} + \hat{\gamma}_t E_t^{(j)} x_{t+h} + e_{th}^{(j)}$$

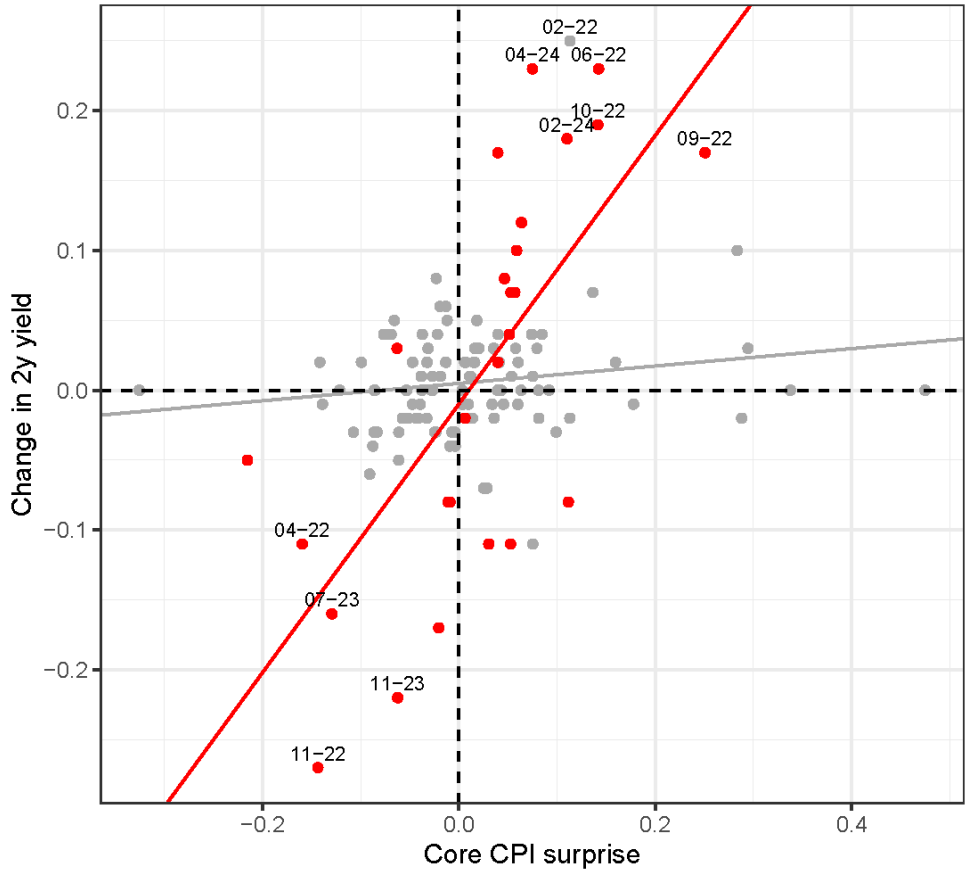
$$E_t^{(j)} i_{t+h} = \hat{\beta}_t E_t^{(j)} \pi_{t+h} + \hat{\gamma}_t E_t^{(j)} x_{t+h} + \hat{\rho}_t E_t^{(j)} i_{t+h-3} + e_{th}^{(j)}$$

i_t =fed funds rate, π_t=inflation, x_t =output gap,
h =forecast horizon, j =forecaster

- Separate panel regression with forecaster fixed effects for each survey wave *t*
- Vertical lines: Fed lift-offs in Dec 2015 and March 2022
- Shaded areas: 95% confidence intervals (standard errors clustered by forecaster and horizon)
- Inertial rule inflation coefficient reflects short-term perceived response, naturally smaller but otherwise broadly similar
- **Perceived inflation coefficient rose from *zero* to *one*, but only *after* March 2022**

Result 2: Increase in Inflation Response in High-Frequency Market Data

Two-year yield substantially more sensitive in narrow windows around core CPI news surprises after March 2022 liftoff



- Each dot = one core CPI release date
- "Market-perceived monetary policy rule" (Hamilton, Pruitt and Borger (2011), Swanson and Williams (2014))

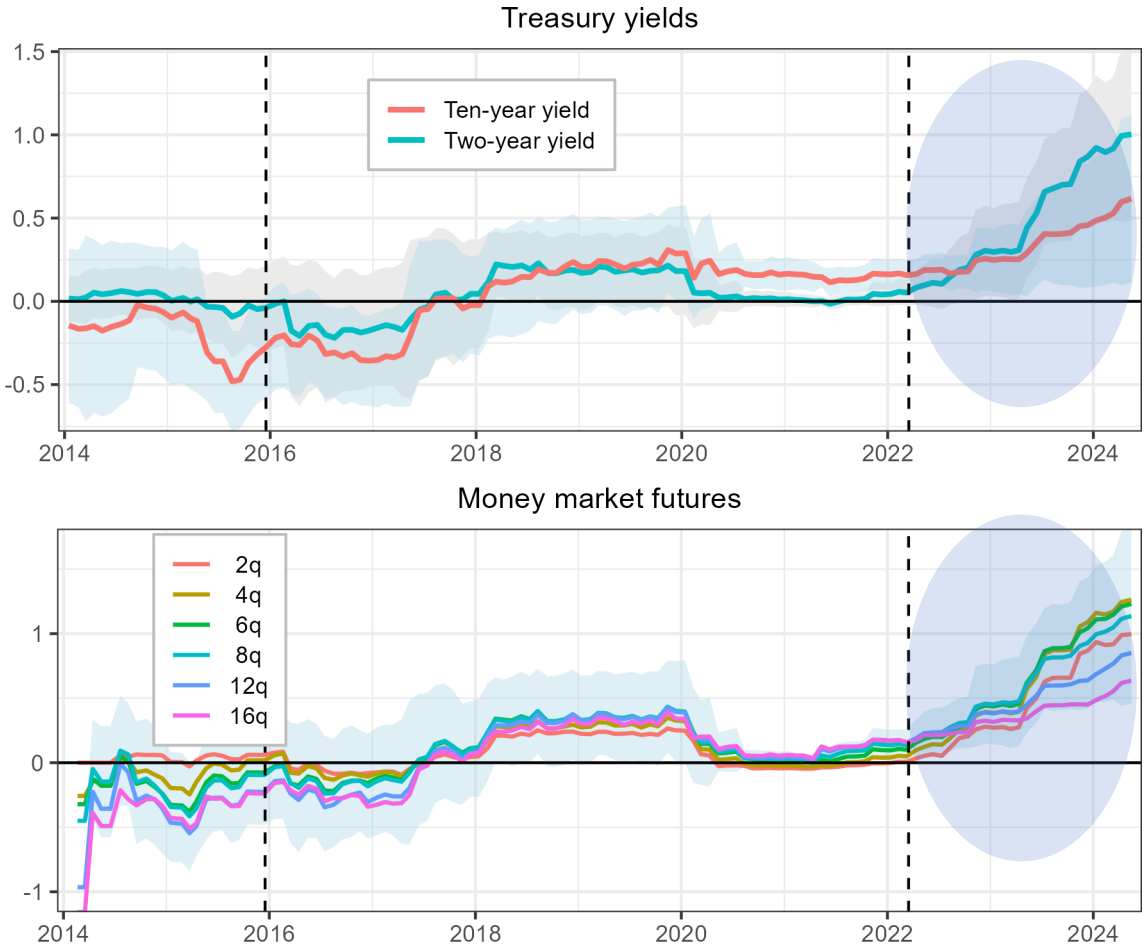
$$\Delta y_t = \alpha + \theta s_t + \varepsilon_t$$

	Treasuries		Money Market Futures			
	2y	10y	4q	8q	12q	16q
Panel A: Pre-liftoff, 2014:01 to 2022:03						
CPI surprise coefficient (θ)	0.06	0.11***	0.08*	0.14**	0.13**	0.13**
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)
Observations	97	97	93	93	93	93
R^2	0.02	0.06	0.03	0.07	0.06	0.06
Panel B: post-liftoff, 2022:04 to 2024:05						
CPI surprise coefficient (θ)	0.96***	0.57***	1.22***	1.11***	0.82***	0.59***
	(0.21)	(0.21)	(0.25)	(0.28)	(0.23)	(0.21)
Observations	26	26	26	26	26	26
R^2	0.48	0.27	0.50	0.43	0.35	0.26

grey (pre-liftoff): 2014:01 –2022:03, red (post-liftoff): 2022:04 – 2024:04

Result 2: Increase in Inflation Response in High-Frequency Market Data

High-frequency sensitivity of short- and long-term yields to CPI news surprises increased *after* March 2022 liftoff



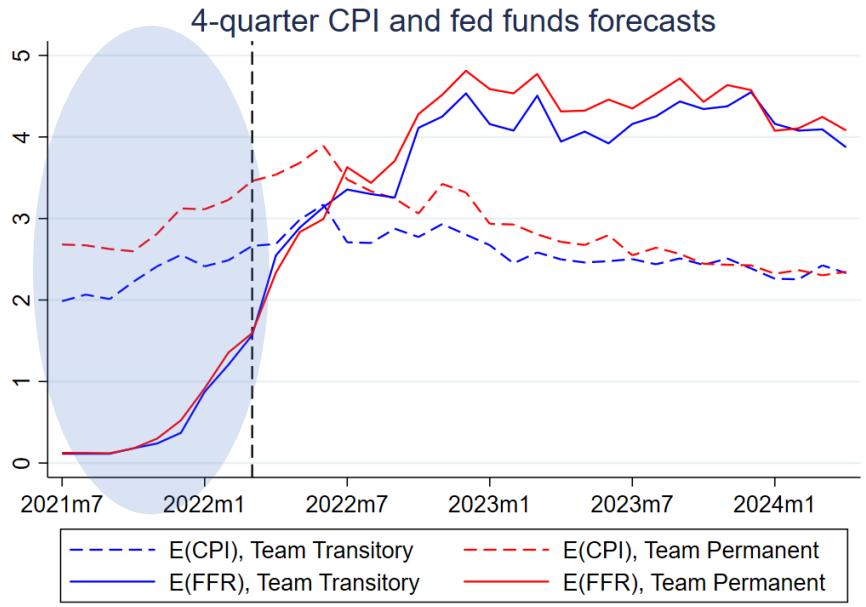
$$\Delta y_t = \alpha + \theta s_t + \varepsilon_t$$

- Run regressions over 24-month backward-looking rolling window
- Shaded areas are 95% confidence intervals based on robust (White) standard errors
- **Similarly to surveys, market-perceived inflation coefficient rose late**
- **True across maturities: Unlikely that markets priced delayed response to large 2021 inflation surprises**

What Explains Late Rise in Perceived Inflation Response?

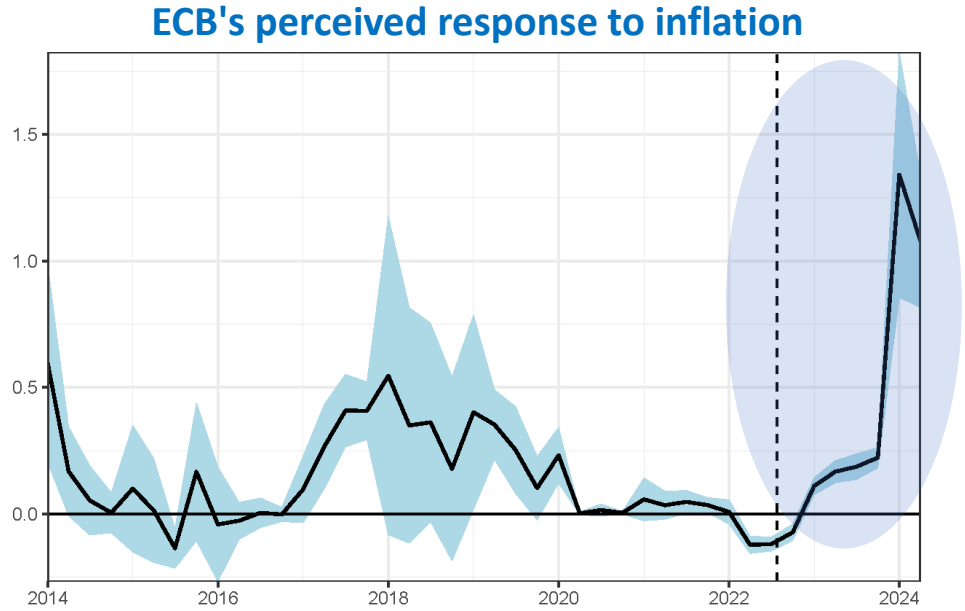
Two popular explanations seem unlikely

A) Transitory inflation expectations: Unlikely



- Identical pre-liftoff fed funds rate forecasts for ``team transitory'' and ``team permanent'' in BCFF despite substantially different medium-term inflation forecasts

B) Framework and intentional inflation overshooting: Unlikely

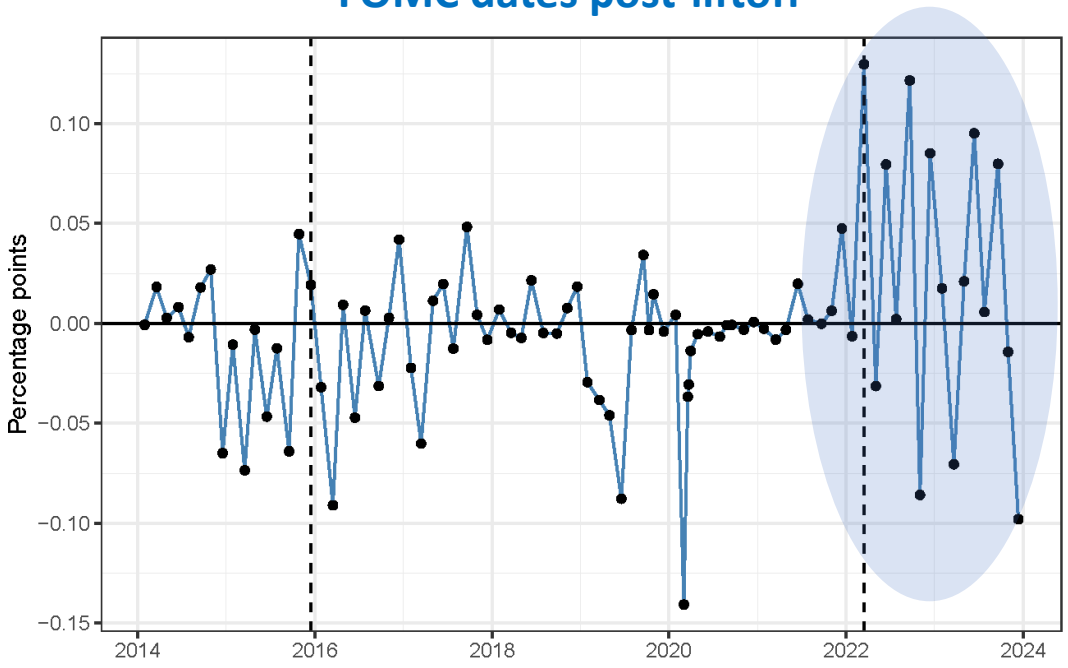


- In that case, long-term yields should have responded more strongly to large inflation surprises in 2021

What Explains Late Rise in Perceived Inflation Response?

C) "Learning from actions" and uncertainty potentially quantitatively important

Large monetary policy surprises on FOMC dates post-liftoff



First principal component of 30-minute changes around FOMC announcements in money market futures rates up to four quarters

- Monetary policy surprises reflect misperceptions about policy rule

$$mps_t = (\beta_t - \hat{\beta}_t)(\pi_t - \pi^*) + u_t$$

β_t =actual rule, $\hat{\beta}_t$ =perceived rule, π_t =inflation, π^*=infl. target, u_t =shock

- Learning from surprises: $\hat{\beta}_{t+1} - \hat{\beta}_t = \omega_t \frac{mps_t}{\pi_t - \pi^*}$
- When inflation is high ($\pi_t > \pi^*$), hawkish surprise ($mps_t > 0$) lifts perceived inflation coefficient ($\hat{\beta}_{t+1} > \hat{\beta}_t$)
  - Signal-to-noise ratio $\omega_t \approx 1$ when uncertainty high
- Monetary policy surprises $mps_t > 0$ key, as anticipated actions do not enter learning
- Back-of-envelope calculation: $\hat{\beta}_{2023:09} - \hat{\beta}_{2022:01} \approx 0.5$
- **Lift-off and repeated monetary policy hikes likely shaped perceived policy response to inflation**

Findings

- Monetary policy inflation response, as perceived by professionals, increased from roughly zero in mid-2021 to one in mid-2023
- But perceived inflation responsiveness rose late, and only after lift-off in March 2022
- "Learning from Fed actions" plausibly played quantitatively important role in raising perceived monetary policy inflation coefficient

Relevance for Transmission

- Perceived monetary policy inflation coefficient allows "market to do the Fed's work for it" (Woodford (2005)), accelerating transmission from macro news to relevant rates even before fed funds rate announcements
- High perceived monetary policy inflation coefficient often thought key for achieving disinflation at low economic cost (Clarida, Gali, and Gerter (1999))

Policy Implications

1. Track perceptions about monetary policy rule: Can be measured using survey- and market-based methodologies
2. "Learning from actions": Raise perceived inflation reaction coefficient with (i) monetary policy hikes when inflation is high and (ii) inflation-dependent easings
3. "Connect the dots": Connecting rate and macroeconomic projections in SEP would allow professionals to apply our methodology to Fed's own forecasts, improving understanding of Fed's reaction function and framework