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Columbia University, Department of Economics

When the Message Meets the Moment

State-Dependent Effects of Monetary Policy Surprises on the Term Structure of Inflation Expectations*

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Abstract

How an FOMC announcement moves inflation expectations depends on what is driving inflation when it arrives, and on whose expectations are measured. I estimate state-dependent local projections of the Jarociński–Karadi monetary policy and information shocks on the Cleveland Fed expected-inflation term structure, on nominal and TIPS yields and breakevens, and on the Michigan and professional-forecaster surveys, conditioning on Shapiro's decomposition of core PCE inflation into demand- and supply-driven contributions, over 1990 to 2025. Averaged across states a policy surprise leaves every measure unchanged. Conditioned on the state, a 25 basis point tightening raises the model-based five-year expectation by two thirds of a percentage point when demand factors dominate and lowers it by a third when supply factors dominate, and moves nominal and real yields the same way, more strongly, and already in the pre-TIPS decade. But breakevens show the pattern only on impact, professional forecasters do not revise inflation forecasts after policy surprises, and households lower their one-year expectations a year after a tightening delivered during supply-driven inflation and not otherwise. The model's demand-regime rise is a decomposition of a yield movement, not a change in beliefs. Information shocks raise every measure that responds, and more so when demand is the story.

JEL Codes: C32, E31, E43, E44, E52, E58

Keywords: inflation expectations, term structure, monetary policy shocks, information effect, supply-driven inflation, state dependence, local projections, breakeven inflation, household expectations

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1 Introduction

Central banks manage inflation expectations with announcements, and announcements are read in context. A surprise tightening delivered while inflation is being pushed up by strong demand tells the audience one thing about the central bank's assessment and resolve; the same surprise delivered while inflation is being pushed up by supply disruptions tells it something else. The Federal Reserve's own communication has drawn the distinction explicitly: policy can act on demand and cannot do much about supply. If that distinction matters to the people whose expectations the announcement is meant to move, then the effect of a given surprise on expected inflation should depend on which kind of inflation the surprise meets. This paper asks whether it does, and finds that the answer depends on whose expectations one looks at, in a way that a single measure would have hidden.

I combine three ingredients and apply them to five measures of expected inflation. The treatments are the two components of FOMC announcement surprises identified by Jarociński and Karadi (2020): a monetary policy shock, in which interest rates and stock prices move in opposite directions, and a central bank information shock, in which they move together. The state is the decomposition of core PCE inflation into demand-driven and supply-driven contributions proposed by Shapiro (2026). The outcomes are the term structure of expected inflation at maturities from one to thirty years estimated monthly by the Federal Reserve Bank of Cleveland from the model of Haubrich et al. (2012); the nominal and TIPS yield curves that model is fitted to; the breakeven inflation rates they imply; the Michigan survey's household expectations; and the Survey of Professional Forecasters. I estimate local projections in the spirit of Jordà (2005) in which each signed shock is interacted with the inflation environment, following the design that Boissay et al. (2025) use to study financial stress, and I report the responses in demand-dominant and supply-dominant months together with the difference between them and its standard error.

Four findings emerge. First, averaged across states, a monetary policy surprise leaves every measure of expected inflation unchanged, at every maturity and horizon. Second, the average is a mix of opposite responses. In months in which demand factors account for more of core inflation than supply factors, a 25 basis point tightening raises the model-based five-year expectation by 0.65 percentage points within two months and by about 0.7 a year later; in months in which supply

factors dominate, it lowers the same expectation by 0.3 percentage points over the first half year. The difference is significant at every horizon from one to twelve months, holds from the one-year to the thirty-year maturity, and survives leaving out any single year, dropping the largest surprises, excluding the crisis episodes, and replacing the shock with the surprise series of Bauer and Swanson (2023b) or the event-study database of Acosta et al. (2025).

Third, the nominal and real yield curves reprice the same way, more strongly, and over the whole sample. Two months after a tightening in a demand-dominant month the five-year Treasury yield is 1.5 percentage points higher and the two-year forward 1.6 higher, while in a supply-dominant month both are slightly lower; the TIPS real yield does the same from 1999. This is the pattern that Najjar and Shapiro (2025) document with daily changes in forward rates on FOMC days and interpret as markets learning about a reaction function that targets demand. I recover it at monthly frequency, over a twelve-month horizon, and in the 1990 to 2003 decade their TIPS-based sample cannot reach, and I show that the implied response evaluated at observed states is negative in the supply-driven disinflations of 2001 to 2003, 2009, and 2020 and positive in the demand-led years since 2021.

Fourth, the measures that record beliefs rather than prices do not show the demand-regime rise. Breakeven inflation shows the pattern only in the announcement month and nothing after a quarter. Professional forecasters do not revise their inflation forecasts after a policy surprise in either regime. Households do revise, but the other way around: a year after a tightening delivered during supply-driven inflation, the Michigan median one-year expectation is a percentage point lower per 25 basis points, and after a tightening during demand-driven inflation it is unchanged. The five-year household expectation never moves. The demand-regime rise in the model-based curve is therefore what the Cleveland Fed model makes of a state-dependent nominal-yield movement, and not evidence that anyone expects more inflation after a tightening. Information shocks behave differently: good news about the economy raises the model measure, nominal yields, breakevens at longer horizons, household one-year expectations, and professional forecasts, and does so more when demand is driving inflation.

The paper contributes to three literatures. To the work on high-frequency identification and the information effect (Bauer & Swanson, 2023a; Jarociński & Karadi, 2020; Miranda-Agrippino & Ricco, 2021; Nakamura & Steinsson, 2018), it adds evidence that the two components of an

announcement propagate with different state dependence and to different measures. To the literature on the term structure of expectations (Crump et al., 2023), it adds a well-identified shock traced across thirty maturities and across model, market, and survey measures of the same object, and a demonstration that the measures disagree in a systematic way. And to the literature that conditions monetary transmission on the source of inflation (Boissay et al., 2025; Najjar & Shapiro, 2025), it adds the expectations side of the ledger, the information shock, the dynamics, and the pre-TIPS decade.

The rest of the paper proceeds as follows. Section 2 situates the contribution. Section 3 describes the data. Section 4 sets out the local projections and the two ways I condition on the state. Section 5 presents the results for the Cleveland Fed term structure. Section 6 takes the same design to yields, breakevens, households, and professional forecasters. Section 7 reports the robustness checks and the limitations of the design. Section 8 concludes.

2 Related Literature

Monetary Surprises and the Information Effect. The identification of monetary policy shocks from asset-price movements in a narrow window around FOMC announcements goes back to Gürkaynak et al. (2005), and the practice of using those surprises as external instruments or as regressors in local projections follows Gertler and Karadi (2015) and Stock and Watson (2018). A central complication is that announcements convey information about the economy as well as about policy. Campbell et al. (2012) document that forecasters revise their outlook after FOMC statements, and Nakamura and Steinsson (2018) show that a tightening surprise can raise, rather than lower, expected output growth. Jarociński and Karadi (2020) separate the two components with a sign restriction on the co-movement of interest rates and stock prices, and I adopt their decomposition and its updated series as my shock measures. Miranda-Agrippino and Ricco (2021) instead purge the surprise of the central bank's forecast revisions, while Bauer and Swanson (2023a) and Bauer and Swanson (2023b) argue that the predictability of surprises reflects markets underestimating the Fed's response to public news rather than private information, and propose an orthogonalized surprise. Andrade and Ferroni (2021) give the distinction a vocabulary, Delphic versus Odyssean, that I use when interpreting the information shock. I take no stand on the origin

of the information component; I treat it as a distinct announcement-day signal and show separately how each component moves expected inflation, reporting the Bauer and Swanson (2023b) surprise as a robustness check for the policy component.

The Term Structure of Inflation Expectations. The object I study is the curve of expected inflation across maturities estimated by the Federal Reserve Bank of Cleveland from the model of Haubrich et al. (2012), which combines nominal Treasury yields, inflation swap rates, and professional forecasts. Crump et al. (2023) review the term structure of expectations as a summary of how agents extrapolate from current conditions, and Coibion and Gorodnichenko (2015) and Coibion et al. (2018) document that expectations adjust sluggishly and heterogeneously to news. D'Acunto et al. (2023) survey the household evidence. My contribution to this strand is to measure how one specific, well-identified piece of news, an FOMC announcement, shifts the entire curve, and to show that the shift depends on the inflation environment in which the announcement arrives.

State-Dependent Transmission. That the effects of monetary policy depend on the state of the economy is an old idea with a modern local-projection toolkit (Auerbach & Gorodnichenko, 2012; Tenreyro & Thwaites, 2016). The state I condition on is new to this literature: the decomposition of inflation into supply- and demand-driven components proposed by Shapiro (2026). Boissay et al. (2025) interact high-frequency monetary surprises with those components and find that tightening raises financial stress when inflation is supply-driven. Najjar and Shapiro (2025), in daily event-study regressions on nominal and TIPS forward rates, find that a tightening surprise passes through to two- to five-year forwards far more when demand-driven inflation is elevated and hardly at all when supply-driven inflation is elevated, and interpret the pattern as markets learning about a reaction function that targets demand. Their breakeven estimates, although imprecise, point to market-implied expected inflation falling by more in demand-driven episodes. My specification follows Boissay et al. (2025) closely. Relative to Najjar and Shapiro (2025), I use the same decomposition and the same question but a different instrument set and a wider lens: monthly local projections over twelve months rather than daily changes, the information shock as well as the policy shock, a sample that begins in 1990 rather than with TIPS, and the model-based, market-based, household, and professional-forecaster measures of expected inflation side by side. Their forward-rate result reappears in my data in every subsample; their tentative breakeven result

and my model-based result disagree on sign, and Section 6 is built around resolving that.

Closest Antecedent. Pasqualotto (2025) estimates the average and sign-dependent response of the Cleveland Fed term structure to the Jarociński and Karadi (2020) shocks. I extend that design in three directions: I condition the response on the source of inflation, I confront the puzzling positive response of expected inflation to a tightening with the model's own real-rate output and with the yields it is fitted to, and I ask the same question of the surveys and market prices the model does not use. The state dependence is the paper's contribution; the confrontation is what keeps it honest about what a yield-based measure of expectations can and cannot say.

3 Data

The estimation uses a monthly panel from February 1990, the first month with an identified announcement shock, to August 2025, the last month with a published inflation decomposition, for 427 months. Table 1 reports summary statistics for the main variables and Appendix A gives sources, vintages, and definitions.

Table 1: Summary Statistics, February 1990 to August 2025

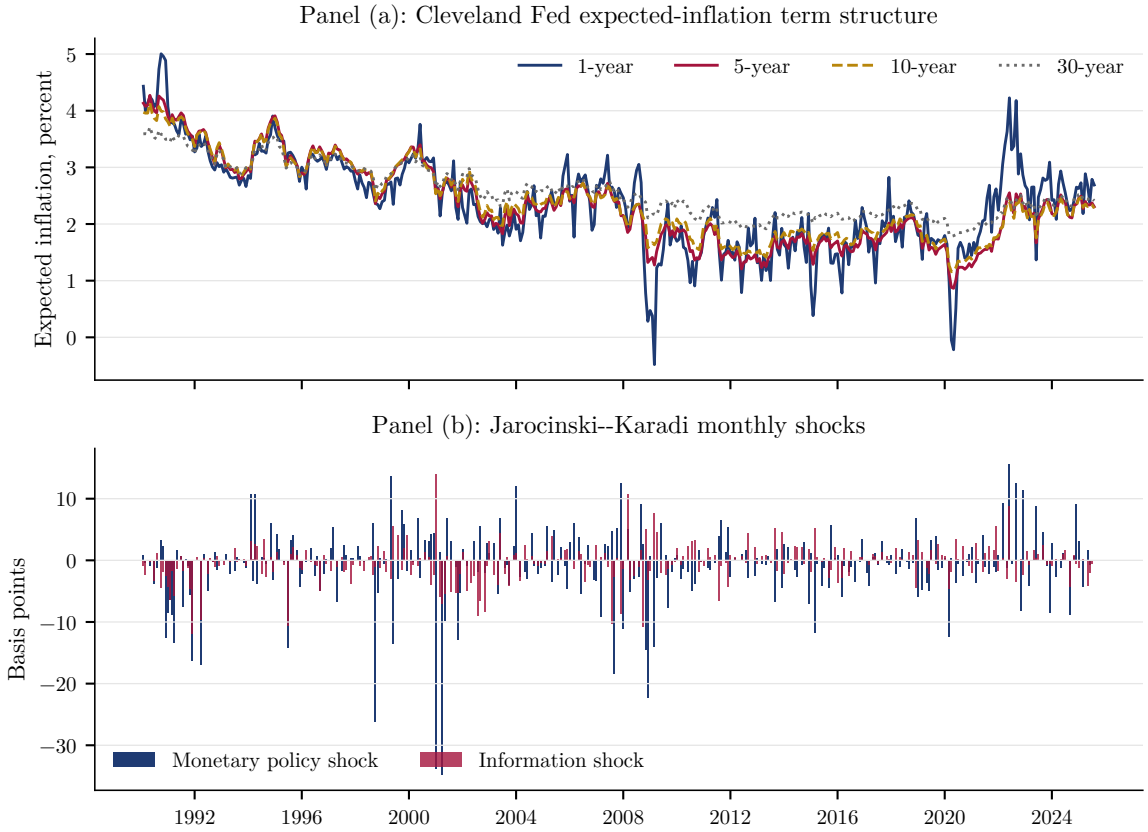
	Mean	SD	Min	Max	*N*
1-year expected inflation (pct)	2.38	0.83	-0.48	5.00	427
5-year expected inflation (pct)	2.36	0.75	0.86	4.27	427
10-year expected inflation (pct)	2.42	0.69	1.16	4.14	427
30-year expected inflation (pct)	2.58	0.47	1.78	3.71	427
Monetary policy shock, FOMC months (bp)	-0.87	5.98	-34.78	15.63	293
Information shock, FOMC months (bp)	-0.44	3.04	-11.96	13.92	293
Demand-driven core PCE contribution (pp)	0.94	0.55	-0.51	2.77	427
Supply-driven core PCE contribution (pp)	1.24	0.61	0.14	3.11	427
Supply-dominant month indicator	0.68	0.47	0.00	1.00	427

Notes: Expected inflation is the Federal Reserve Bank of Cleveland's model-based estimate at the stated maturity, in percent. The shocks are the monthly Jarociński–Karadi monetary policy and central bank information shocks in basis points of the policy indicator, summarized over the 293 months with an FOMC announcement; they are zero in the remaining months. The contributions are the demand- and supply-driven components of year-over-year core PCE inflation from the Shapiro decomposition, in percentage points. The indicator equals one in months in which the supply contribution exceeds the demand contribution.

Expected Inflation. The dependent variables are the Cleveland Fed's estimates of expected inflation at each maturity from one to thirty years. The estimates come from the term-structure

model of Haubrich et al. (2012), which fits nominal Treasury yields, inflation swap rates, and the Blue Chip and Survey of Professional Forecasters inflation forecasts with an affine model of real rates, expected inflation, and inflation risk premia. The measure has three properties that matter for what follows. It is available monthly at every maturity back to 1982, which no survey offers. It is model-based: the entire curve at a point in time is a set of loadings on a few state variables, so differences across maturities reflect the model's factor structure as well as independently measured beliefs. And it is fitted to market prices, so a shock that moves nominal yields on the announcement day enters the model's inputs directly. The last property is the reason I later examine the model's real-rate output alongside its expected-inflation output. Panel (a) of Figure 1 plots the one-, five-, ten-, and thirty-year series. The curve was steep and high in the early 1990s, flattened around two percent by the mid-2000s, dipped at the short end in 2009 and 2020, and rose sharply at the short end in 2021 and 2022 while the long end barely moved.

FIGURE 1: EXPECTED INFLATION AND ANNOUNCEMENT SHOCKS



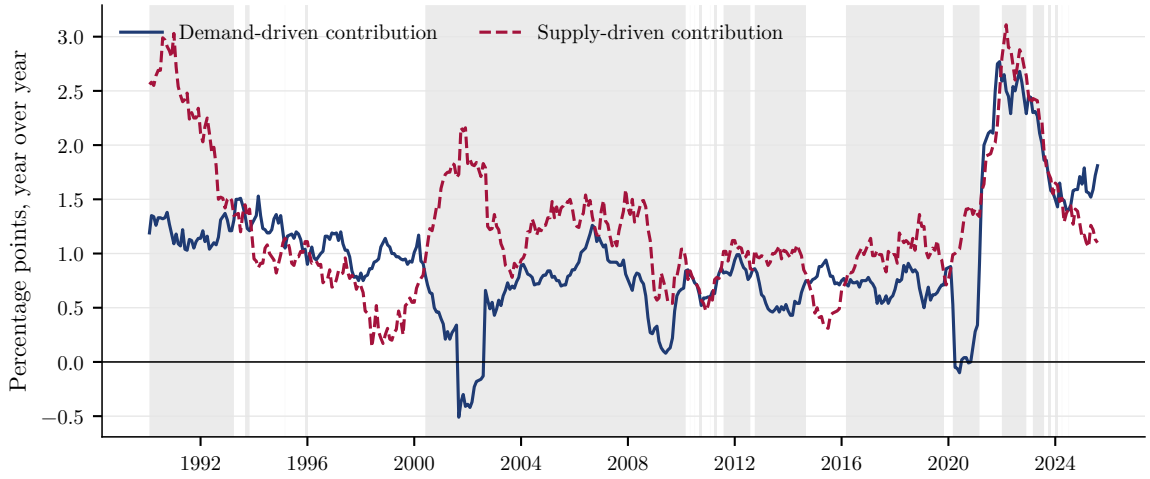
Notes: Panel (a) plots the Cleveland Fed model-based expected inflation at one, five, ten, and thirty years, in percent, February 1990 to August 2025. Panel (b) plots the monthly Jarociński–Karadi monetary policy and central bank information shocks in basis points of the policy indicator; months without an FOMC announcement are zero.

Announcement Shocks. The shocks are the monthly series of Jarociński and Karadi (2020), updated by the authors through December 2025. For each FOMC announcement the surprise in a policy indicator, the first principal component of changes in fed funds and Eurodollar futures at maturities up to a year in a thirty-minute window, is split into a monetary policy shock and a central bank information shock by the sign of its co-movement with the S&P 500 in the same window: a surprise in which rates rise and stocks fall is attributed to policy, one in which both rise to information. I use the median of the rotations consistent with the sign restriction, which allows both shocks to be present in a single announcement, and the monthly aggregate, which sums the announcements in a month and is zero in months without one. Panel (b) of Figure 1 plots both series. The policy shock has a standard deviation of six basis points across announcement months

and the information shock of three; the largest policy surprises are the easing of January 2001 and the tightening of December 2015, and the largest information surprises cluster in 2008 and 2020. I scale both shocks so that one unit is a 25 basis point surprise. That is a large surprise, roughly four standard deviations, and I return to the question of magnitudes when presenting the results.

Sources of Inflation. The state variable is the decomposition of year-over-year core PCE inflation into demand-driven and supply-driven contributions of Shapiro (2026), published monthly by the Federal Reserve Bank of San Francisco. For each of roughly one hundred PCE categories, Shapiro regresses the category's price and quantity on their own lags and labels the month demand-driven if the two residuals have the same sign, which is a movement along the supply curve, and supply-driven if they have opposite signs. The expenditure-weighted inflation of the categories in each group is that group's contribution. I use the core series, as Boissay et al. (2025) do, so that energy and food, which are supply-driven almost by construction, do not dominate the classification. Figure 2 plots the two contributions. Their sample means are 0.94 and 1.24 percentage points, they are positively correlated at 0.43 because both rise with total inflation, and supply factors account for the larger share in 68 percent of months. The composition varies over time in ways that do not track the level: the late 1990s were low-inflation and supply-dominant, the mid-2000s and 2018 to 2019 demand-dominant, 2008 and 2011 supply-dominant, and 2021 to 2023 saw both contributions above two percentage points, with demand leading in 2021 and supply in 2022. The regime indicator I_t used in the second specification of Section 4 is one in the shaded months.

FIGURE 2: DEMAND- AND SUPPLY-DRIVEN CONTRIBUTIONS TO CORE PCE INFLATION



Notes: Contributions of demand-driven and supply-driven categories to year-over-year core PCE inflation, in percentage points, from the Federal Reserve Bank of San Francisco's implementation of the Shapiro decomposition. Shaded months are supply-dominant, meaning the supply contribution exceeds the demand contribution.

Other Measures of Expected Inflation. Section 6 takes the same design to five other measures. From the Federal Reserve Board's daily yield-curve estimates I take the nominal zero-coupon yields and instantaneous forwards of Gürkaynak et al. (2007) and the TIPS real yields and breakeven inflation rates from the companion curve of Gürkaynak et al. (2010), at the last trading day of each month; the nominal series run over the whole sample and the TIPS series from 1999. From the Michigan Survey of Consumers microdata I compute the weighted median and mean of the one-year and five-year expected-inflation questions each month, excluding responses outside ±95 percent, from 1990 onward for both horizons. From the New York Fed Survey of Consumer Expectations microdata I compute the weighted median one-year and three-year point forecasts from June 2013 to June 2024. From the Survey of Professional Forecasters I take the median forecast of CPI inflation over the next calendar year and over the next ten years, quarterly. As an alternative to the Jarociński–Karadi policy shock I also use the next-meeting fed funds futures surprise from the U.S. Monetary Policy Event-Study Database of Acosta et al. (2025), which is the surprise Najjar and Shapiro (2025) use, aggregated to months from February 1994.

Controls. The control set follows Boissay et al. (2025): log industrial production, the unemployment rate, the Chicago Fed National Financial Conditions Index, the log S&P 500 index, and the

policy rate, for which I use the Wu and Xia (2016) shadow federal funds rate through February 2022 and the effective federal funds rate afterward. The two inflation contributions enter the control set as well, contemporaneously and with six lags, and each projection also includes six lags of its own dependent variable.

4 Empirical Framework

Average Responses. Let $y_{n,t}$ denote expected inflation over the next n years as of month t, in percentage points, and let s_t denote one of the two announcement shocks in month t, scaled so that one unit is a 25 basis point surprise in the policy indicator. Following Jordà (2005), I estimate for each maturity n and each horizon $h = 0, 1, \ldots, 12$ the local projection

$$y_{n,t+h} - y_{n,t-1} \;=\; \alpha_h^n \;+\; \beta_h^n \, s_t \;+\; \gamma_h^{n\prime} \, \pi_t \;+\; \sum_{j=1}^{L} \left(\rho_{h,j}^n \, y_{n,t-j} + \delta_{h,j}^{n\prime} \, Z_{t-j} \right) \;+\; \varepsilon_{n,t+h}, \tag{1}$$

where $\pi_t = (\pi_t^d, \pi_t^s)'$ collects the contemporaneous demand- and supply-driven contributions to core PCE inflation, and Z_t collects log industrial production, the unemployment rate, the Chicago Fed National Financial Conditions Index, the log S&P 500 index, the shadow federal funds rate, and the two inflation contributions. I set $L = 6$. The dependent variable is the change from the month before the announcement, so the impact response at $h = 0$ is a genuine within-month change and the sequence $\{\beta_h^n\}_{h=0}^{12}$ traces the impulse response of the n-year expectation. Including lags of the dependent variable makes the estimator lag-augmented in the sense of Montiel Olea and Plagborg-Møller (2021).

Sign Asymmetry. Announcement effects need not be symmetric. Replacing $\beta_h^n s_t$ with $\beta_h^{n+} s_t^+ + \beta_h^{n-} s_t^-$, where $s_t^+ = \max(s_t, 0)$ and $s_t^- = \min(s_t, 0)$, allows a tightening and an easing, or good and bad news, to have different effects. Because $s_t^- \leq 0$, a positive β_h^{n-} means that a negative shock lowers expectations.

State Dependence. The paper's question is whether the response depends on why inflation is high when the announcement arrives. I use two specifications. The first follows Boissay et al.

(2025) and interacts each signed shock with the continuous contributions,

$$\begin{aligned} y_{n,t+h} - y_{n,t-1} \;&= \alpha_h^n + \beta_h^{n+}\, s_t^+ + \beta_h^{n+d}\, s_t^+ \pi_t^d + \beta_h^{n+s}\, s_t^+ \pi_t^s \\ &\quad + \beta_h^{n-}\, s_t^- + \beta_h^{n-d}\, s_t^- \pi_t^d + \beta_h^{n-s}\, s_t^- \pi_t^s \\ &\quad + \gamma_h^{n\prime}\, \pi_t + \sum_{j=1}^{L} \left(\rho_{h,j}^n\, y_{n,t-j} + \delta_{h,j}^{n\prime}\, Z_{t-j} \right) + \varepsilon_{n,t+h}. \end{aligned} \tag{2}$$

Two features of equation (2) matter for interpretation. First, β_h^{n+} is the response of a tightening when both contributions are zero, a state that never occurs in the sample; the response at a given state (π^d, π^s) is $\beta_h^{n+} + \beta_h^{n+d}\pi^d + \beta_h^{n+s}\pi^s$, and I report it with delta-method standard errors that use the full covariance matrix of the three coefficients. Second, the hypothesis of interest is not that the interactions are nonzero but that they differ: the object I test is the *differential* $\beta_h^{n+d} - \beta_h^{n+s}$, the change in the response from shifting one percentage point of inflation from the supply to the demand side. The main effects $\gamma_h^{n\prime}\pi_t$ and the lags of π_t in Z_{t-j} ensure that the interactions do not absorb the direct effect of the inflation environment on expectations.

The second specification replaces the continuous interactions with a regime indicator, $I_t = \mathbf{1}\{\pi_t^s > \pi_t^d\}$, equal to one in months in which supply factors account for more of core inflation than demand factors:

$$\begin{aligned} y_{n,t+h} - y_{n,t-1} \;&= \alpha_h^n + \beta_h^{n+}\, s_t^+ + \beta_h^{n+S}\, s_t^+ I_t + \beta_h^{n-}\, s_t^- + \beta_h^{n-S}\, s_t^- I_t \\ &\quad + \theta_h^n\, I_t + \gamma_h^{n\prime}\, \pi_t + \sum_{j=1}^{L} \left(\rho_{h,j}^n\, y_{n,t-j} + \delta_{h,j}^{n\prime}\, Z_{t-j} \right) + \varepsilon_{n,t+h}. \end{aligned} \tag{3}$$

Here β_h^{n+} is the response to a tightening in a demand-dominant month, $\beta_h^{n+} + \beta_h^{n+S}$ the response in a supply-dominant month, and $-\beta_h^{n+S}$ their difference. The two specifications are complementary. Equation (2) uses all of the variation in the contributions but asks the data to separate two regressors that are highly collinear, since both contributions rise and fall with overall inflation. Equation (3) discards the level of inflation and keeps only its composition, which is the dimension the hypothesis is about, at the cost of treating a month with a narrow supply margin the same as one with a wide one.

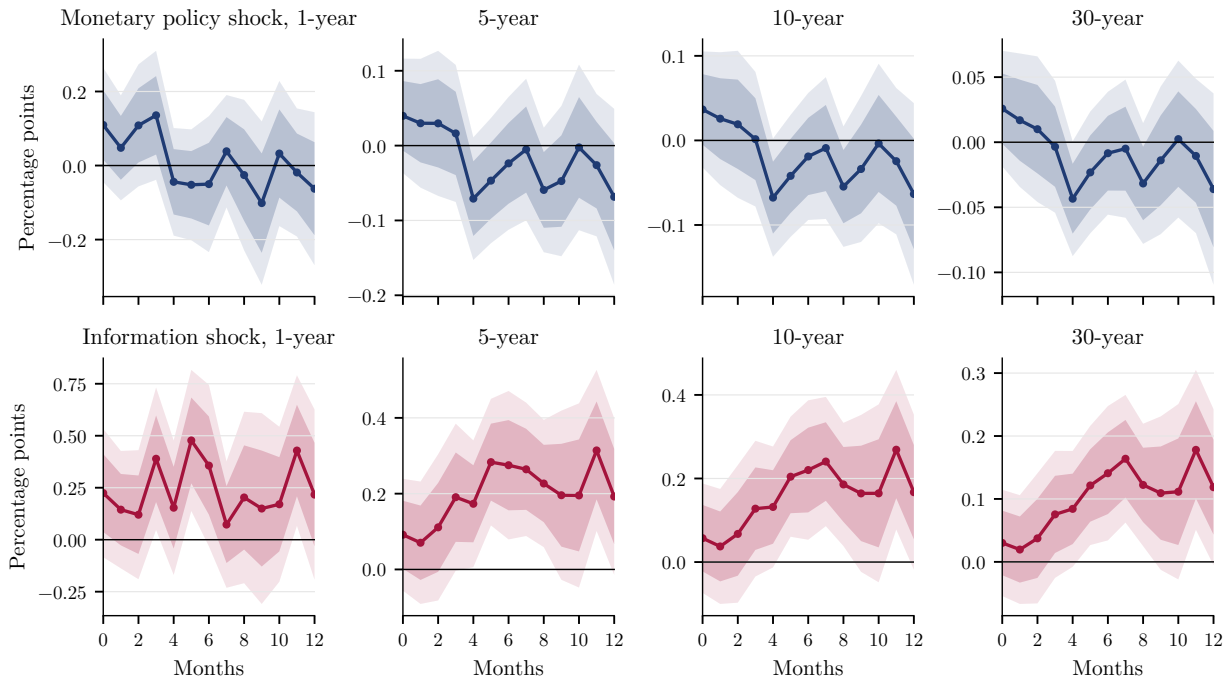
Inference. Because the dependent variable overlaps across adjacent months, the residuals in equations (1) to (3) follow a moving-average process of order h. I use Newey and West (1987) standard errors with bandwidth $h + 1$ and the usual small-sample correction, and I show 90 and 68 percent bands. The shocks are zero in months without an FOMC announcement; those months remain in the sample and help estimate the control coefficients but contribute nothing to the shock coefficients. The state variables are dated t because that is the inflation environment the announcement meets; since the PCE release for month t arrives about four weeks later, I also report the results with the state dated $t - 1$, which is what was in the public information set on the announcement day.

5 Results

All responses are in percentage points of expected inflation per 25 basis point surprise, with 90 percent bands in light shading and 68 percent bands in dark shading.

Average Responses. Figure 3 plots the responses from equation (1), which pools announcements regardless of sign or state. The policy shock does nothing. At five years the point estimates lie between -0.07 and $+0.04$ percentage points at every horizon, never more than 1.4 standard errors from zero, and the pattern is the same at one, ten, and thirty years. The information shock has a small positive effect that builds over the first half year: at five years the response is 0.28 percentage points (standard error 0.12) at six months and 0.23 (0.10) at eight, and it is proportionally smaller but still significant at thirty years. Read on their own, these figures would say that announcements move expected inflation only through the information they reveal, and only modestly.

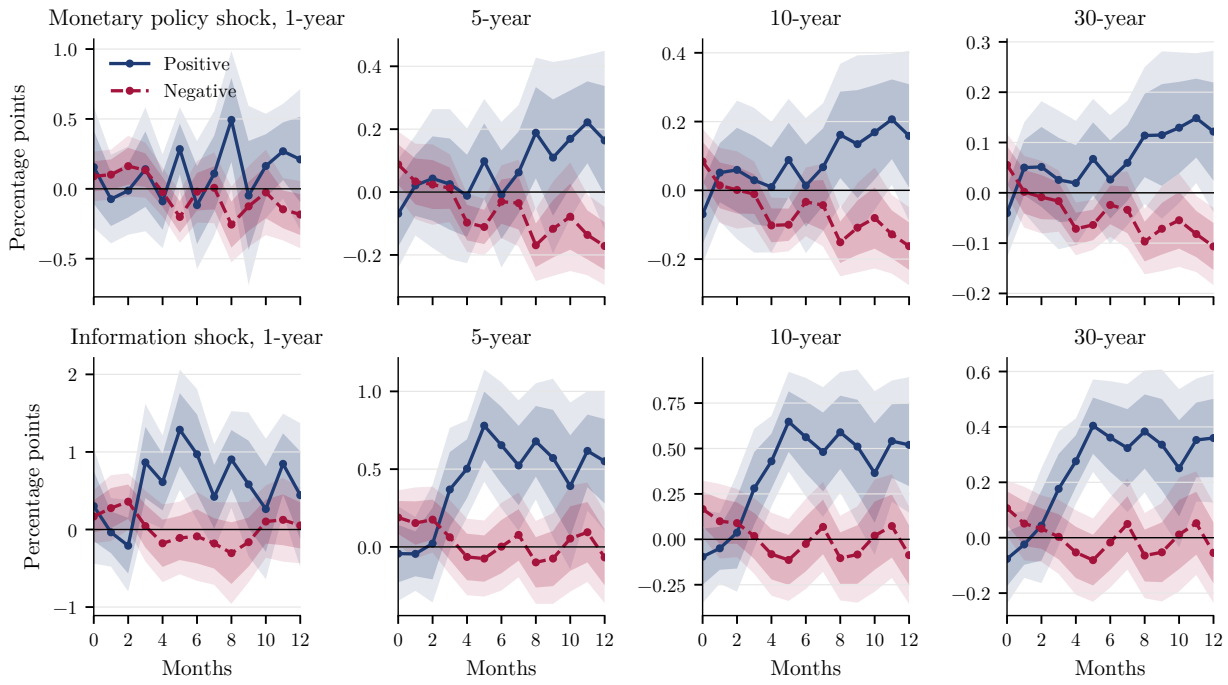
FIGURE 3: AVERAGE RESPONSES OF EXPECTED INFLATION TO ANNOUNCEMENT SHOCKS



Notes: Coefficients β_h^n from equation (1) for $h = 0, \ldots, 12$ months, in percentage points of expected inflation per 25 basis point shock. Top row: monetary policy shock; bottom row: central bank information shock; columns: one-, five-, ten-, and thirty-year maturities. Shaded areas are 68 and 90 percent Newey–West bands with bandwidth $h + 1$. Sample February 1990 to August 2025.

Sign Asymmetry. Splitting each shock by sign, Figure 4, changes the picture for the information shock and sharpens it for the policy shock. Good news raises expected inflation and bad news does not lower it: at five years a positive information shock raises expected inflation by 0.50 (0.19) percentage points at four months, 0.68 (0.23) at eight, and 0.55 (0.27) at twelve, while a negative shock of the same size has coefficients within a standard error of zero throughout. The same asymmetry appears at ten and thirty years. For the policy shock, tightenings have no average effect at any horizon, and easings have a conventional one that appears late: an easing surprise of 25 basis points raises five-year expected inflation by 0.17 (0.07) percentage points at eight and twelve months, and by 0.16 (0.07) at ten years. Expected inflation, on this evidence, responds to upside news and to accommodation, not to downside news or to tightening. The next subsection shows that the null for tightenings is an average of two responses of opposite sign.

FIGURE 4: RESPONSES TO POSITIVE AND NEGATIVE ANNOUNCEMENT SHOCKS



Notes: Coefficients on s_t^+ (solid) and s_t^- (dashed) from the sign-split version of equation (1), in percentage points of expected inflation per 25 basis point shock. Because s_t^- is negative, a negative coefficient on it means that an easing or a negative-news surprise raises expected inflation. Layout, bands, and sample as in Figure 3.

State Dependence of the Policy Shock. Table 2 reports the responses of five- and ten-year expected inflation to a tightening surprise in demand-dominant and supply-dominant months from equation (3), together with the difference between them, and Figure 5 plots the two responses at four maturities. The two regimes pull in opposite directions. In demand-dominant months a 25 basis point tightening raises five-year expected inflation by 0.42 (0.16) percentage points after one month, 0.65 (0.17) after two, and 0.71 (0.20) after twelve. In supply-dominant months the same surprise lowers it by 0.20 (0.10) after one month and by about 0.30 over months two through six, after which the response fades toward zero. The difference is 0.62 (0.20) at one month, 0.96 (0.23) at two, 0.79 (0.27) at four, and 0.84 (0.29) at twelve, significant at the one percent level at every horizon from one to twelve months and at the ten percent level on impact. The ten-year responses are slightly smaller and equally sharp. Figure 5 shows that the pattern holds from the one-year maturity, where the demand-regime response reaches 0.91 (0.27) at twelve months, to the

thirty-year maturity, where it is 0.41 (0.12); the supply-regime response is negative through the first half year at every maturity. The long end moves less than the short end, as it should if long-run expectations are better anchored, but it moves.

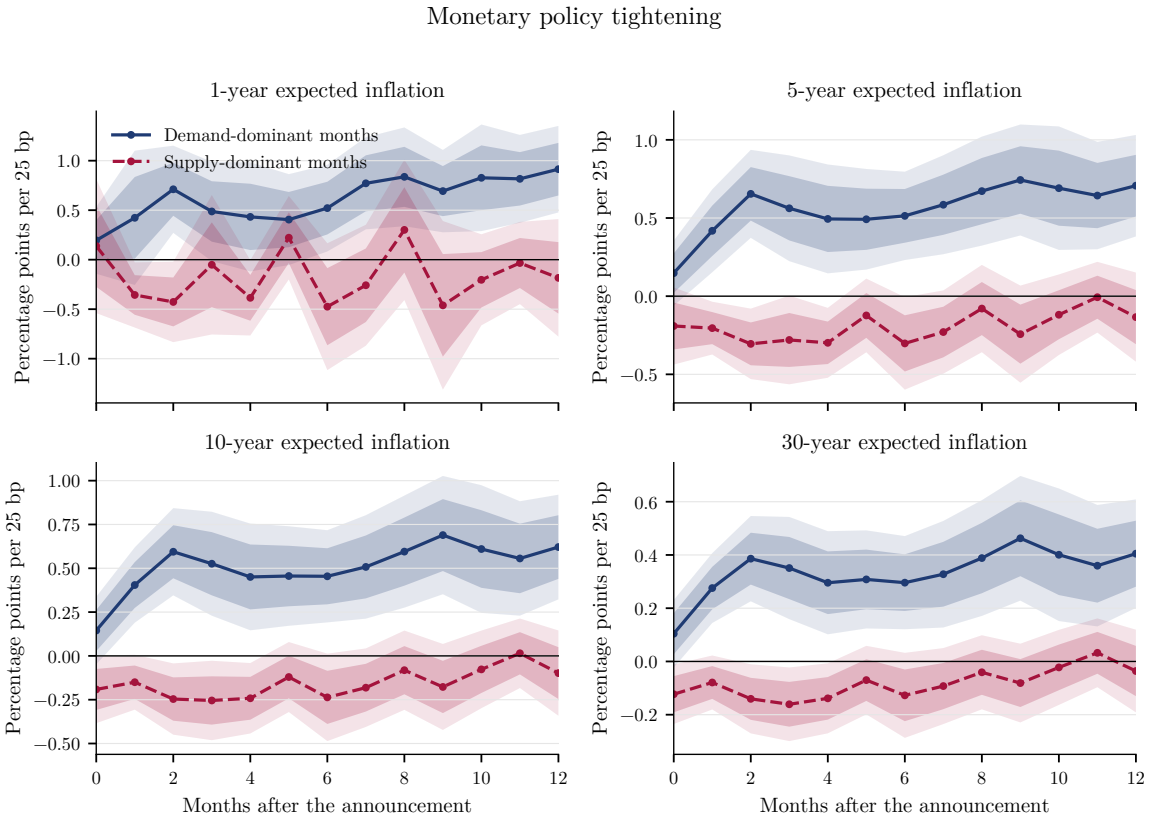
Table 2: Response to a Tightening Surprise by Inflation Regime

Dependent variable: $y_{n,t+h} - y_{n,t-1}$, monetary policy shock

	5-year expected inflation			10-year expected inflation		
	Demand (1)	Supply (2)	Difference (3)	Demand (4)	Supply (5)	Difference (6)
$h = 0$	0.147	-0.191	0.338*	0.145	-0.191	0.336**
	(0.127)	(0.150)	(0.196)	(0.117)	(0.117)	(0.164)
$h = 1$	0.418***	-0.204**	0.623***	0.404***	-0.150	0.555***
	(0.161)	(0.103)	(0.199)	(0.131)	(0.095)	(0.168)
$h = 2$	0.654***	-0.305**	0.960***	0.594***	-0.246**	0.841***
	(0.171)	(0.137)	(0.225)	(0.151)	(0.124)	(0.200)
$h = 4$	0.494**	-0.298**	0.793***	0.451**	-0.242**	0.692***
	(0.212)	(0.136)	(0.269)	(0.185)	(0.122)	(0.236)
$h = 6$	0.514***	-0.302*	0.816***	0.454***	-0.237	0.691***
	(0.172)	(0.180)	(0.271)	(0.160)	(0.152)	(0.242)
$h = 8$	0.672***	-0.079	0.751**	0.595***	-0.082	0.677**
	(0.212)	(0.170)	(0.301)	(0.194)	(0.138)	(0.267)
$h = 12$	0.707***	-0.134	0.841***	0.621***	-0.098	0.719***
	(0.197)	(0.173)	(0.291)	(0.182)	(0.148)	(0.258)
Observations	427 ($h = 0$) to 421 ($h = 12$)					

Notes: Estimates of equation (3) for a 25 basis point tightening surprise, in percentage points of expected inflation. Demand is the response in months in which the demand-driven contribution to core PCE inflation exceeds the supply-driven contribution, β_h^{n+}; Supply is the response in the remaining months, $\beta_h^{n+} + \beta_h^{n+S}$; Difference is Demand minus Supply, $-\beta_h^{n+S}$. Controls are the regime indicator, the contemporaneous contributions, and six lags of the dependent variable, log industrial production, the unemployment rate, the NFCI, the log S&P 500, the shadow federal funds rate, and the two contributions. Newey–West standard errors with bandwidth $h + 1$ are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels. Sample February 1990 to August 2025.

FIGURE 5: RESPONSE TO A TIGHTENING SURPRISE IN DEMAND- AND SUPPLY-DOMINANT MONTHS

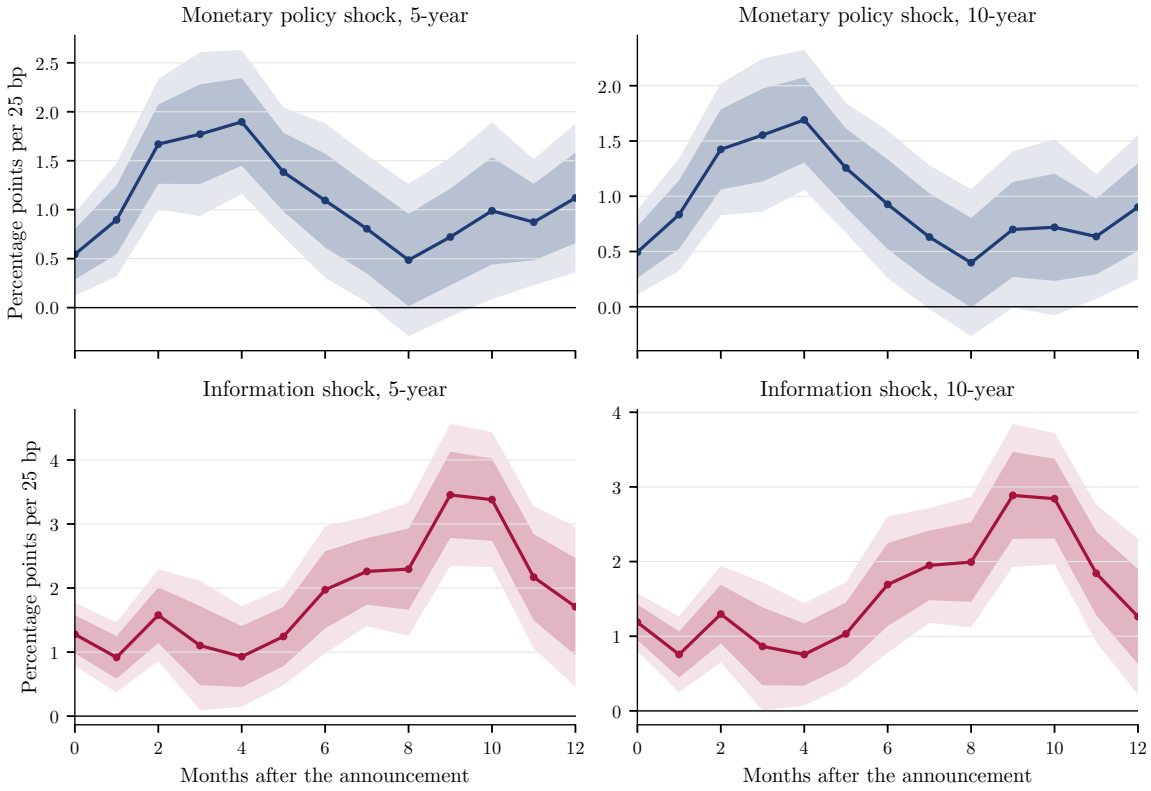


Notes: Responses of expected inflation at one, five, ten, and thirty years to a 25 basis point monetary policy tightening surprise from equation (3), in percentage points, in demand-dominant months (solid) and supply-dominant months (dashed). Shaded areas are 68 and 90 percent Newey–West bands with bandwidth $h + 1$; the supply-regime band uses the delta method. Sample February 1990 to August 2025.

The continuous specification of equation (2) tells the same story with the level of each contribution rather than a regime indicator. Panel A of Table 3 reports the coefficients at four and twelve months for the five- and ten-year maturities. At four months the interaction of a tightening with the demand contribution is 0.98 (0.24) and with the supply contribution −0.91 (0.23), so that each additional percentage point of demand-driven inflation adds about one percentage point to the response and each point of supply-driven inflation subtracts about the same. The differential, the row labeled $\beta_h^{+d} - \beta_h^{+s}$, is 1.90 (0.45) at four months and 1.12 (0.46) at twelve. Figure 6 plots it at every horizon: it is significant on impact, largest between two and four months, statistically weak at eight months, and significant again at twelve. The row labeled response at the mean state confirms that, evaluated at the average composition of inflation, the tightening surprise does

nothing, which is why the pooled estimates in Figure 3 are flat. The regime split is my preferred presentation because the two continuous interactions are collinear, both contributions rising with total inflation, and the regime indicator isolates the composition that the hypothesis is about; the continuous specification is nonetheless what Boissay et al. (2025) estimate and it is reassuring that both agree.

FIGURE 6: DEMAND MINUS SUPPLY INTERACTION ACROSS HORIZONS



Notes: The differential $\beta_h^{n+d} - \beta_h^{n+s}$ from equation (2), the change in the response of expected inflation to a 25 basis point positive shock from moving one percentage point of core inflation from the supply to the demand side, for the monetary policy shock (top row) and the information shock (bottom row) at five and ten years. Shaded areas are 68 and 90 percent Newey–West bands with bandwidth $h + 1$.

Magnitudes. A 25 basis point surprise is roughly four standard deviations of the policy shock, so the coefficients overstate what a typical announcement does. Scaled to a one standard deviation surprise of six basis points, the demand-regime response of five-year expected inflation is 0.16 percentage points at two months and 0.17 at twelve, and the supply-regime response is −0.07. The standard deviation of the five-month change in five-year expected inflation over the sample is 0.29 percentage points, so a typical tightening surprise in a demand-dominant month moves the

Table 3: Continuous State-Dependent Local Projections

Dependent variable: $y_{n,t+h} - y_{n,t-1}$

	5-year		10-year	
	$h = 4$	$h = 12$	$h = 4$	$h = 12$
	(1)	(2)	(3)	(4)
Panel A: Monetary policy shock				
s_t^+	-0.006	0.704***	-0.019	0.603***
	(0.242)	(0.233)	(0.206)	(0.204)
$s_t^+ \times \pi_t^d$	0.984***	0.391	0.890***	0.312
	(0.239)	(0.252)	(0.206)	(0.215)
$s_t^+ \times \pi_t^s$	-0.912***	-0.729***	-0.801***	-0.590***
	(0.227)	(0.231)	(0.195)	(0.199)
s_t^-	-0.194	-0.564***	-0.124	-0.518***
	(0.193)	(0.217)	(0.166)	(0.191)
$s_t^- \times \pi_t^d$	0.043	0.163	0.026	0.144
	(0.118)	(0.178)	(0.113)	(0.156)
$s_t^- \times \pi_t^s$	0.079	0.201**	0.032	0.184**
	(0.101)	(0.095)	(0.086)	(0.086)
Difference, $\beta_h^{+d} - \beta_h^{+s}$	1.897***	1.120**	1.691***	0.901**
	(0.447)	(0.463)	(0.385)	(0.397)
Response of s_t^+ at the mean state	-0.217*	0.165	-0.180	0.162
	(0.127)	(0.144)	(0.110)	(0.124)
Wald p-value, four interactions	0.000	0.007	0.000	0.012
Panel B: Information shock				
s_t^+	1.174***	2.399***	0.935***	2.056***
	(0.386)	(0.443)	(0.331)	(0.368)
$s_t^+ \times \pi_t^d$	0.265	0.218	0.233	0.089
	(0.236)	(0.369)	(0.200)	(0.310)
$s_t^+ \times \pi_t^s$	-0.665**	-1.490***	-0.523**	-1.174***
	(0.299)	(0.431)	(0.262)	(0.359)
s_t^-	-0.200	-0.932	-0.034	-0.827
	(0.442)	(0.587)	(0.383)	(0.520)
$s_t^- \times \pi_t^d$	0.377	0.532	0.369	0.537
	(0.308)	(0.455)	(0.287)	(0.411)
$s_t^- \times \pi_t^s$	-0.115	0.275	-0.230	0.188
	(0.237)	(0.271)	(0.210)	(0.242)
Difference, $\beta_h^{+d} - \beta_h^{+s}$	0.929*	1.709**	0.756*	1.263**
	(0.478)	(0.759)	(0.416)	(0.636)
Response of s_t^+ at the mean state	0.595***	0.750***	0.503***	0.678***
	(0.160)	(0.188)	(0.133)	(0.158)
Wald p-value, four interactions	0.082	0.000	0.088	0.000
Observations	427	421	427	421

Notes: Estimates of equation (2), in percentage points of expected inflation per 25 basis point shock. s_t^+ and s_t^- are the positive and negative parts of the shock; π_t^d and π_t^s the demand- and supply-driven contributions to core PCE inflation in percentage points. The mean-state row evaluates the response of s_t^+ at the sample means 0.94 and 1.24 with delta-method standard errors; the Wald row is the p-value that all four interaction coefficients are zero. Controls, standard errors, and significance markers as in Table 2.

five-year expectation by a bit more than half of its usual five-month variation, and a surprise in a supply-dominant month by a quarter of it in the other direction. These are moderate effects, of the same order as the responses of expected inflation to announcements that Nakamura and Steinsson (2018) report for breakeven rates, and larger than the average effects in Pasqualotto (2025) because the average nets out two responses of opposite sign.

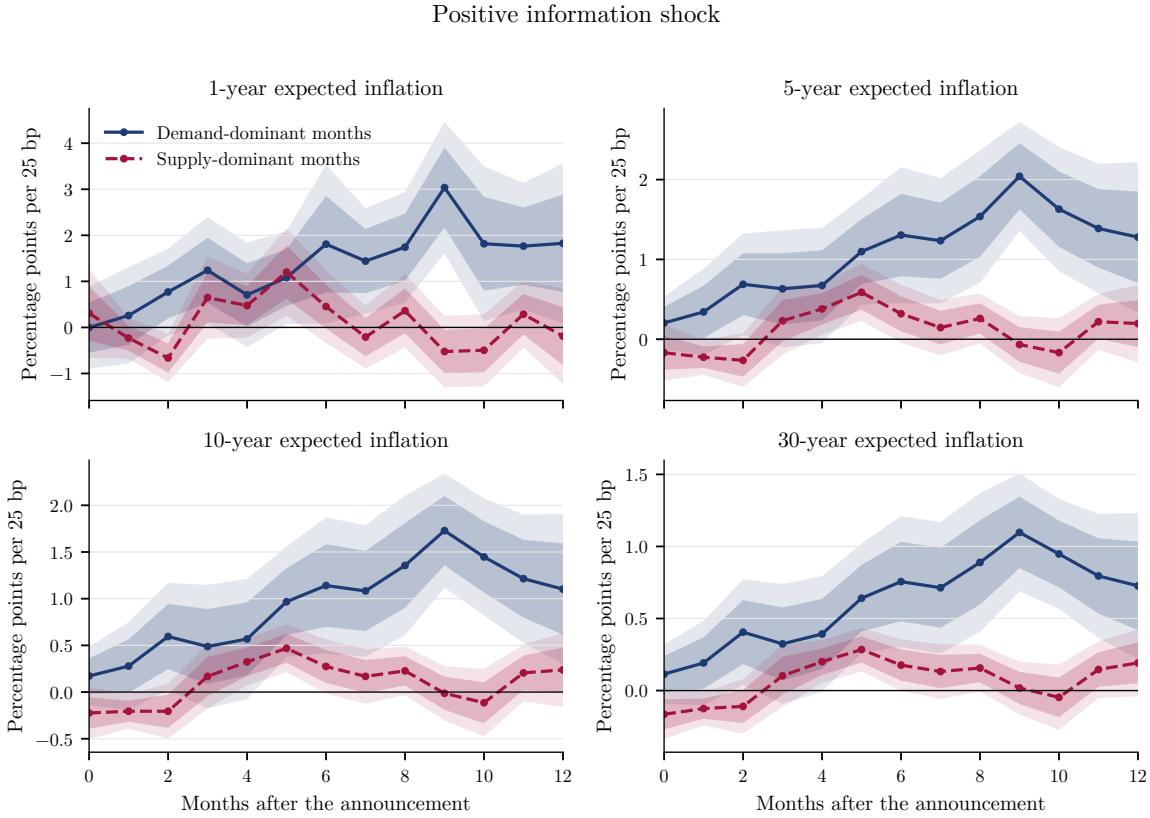
State Dependence of the Information Shock. Table 4 and Figure 7 repeat the regime split for a positive information shock. The response is positive in both regimes and larger in demand-dominant months: at five years, 1.31 (0.52) percentage points at six months and 1.54 (0.51) at eight in demand-dominant months, against 0.32 (0.22) and 0.26 (0.19) in supply-dominant months. The difference is significant at the five percent level at two and eight months and at the ten percent level at six, and insignificant at four and twelve. Panel B of Table 3 shows the continuous version, where the differential is larger and more uniformly significant, 2.30 (0.63) at eight months at five years, because the level of the supply contribution enters with a large negative coefficient: news that the economy is stronger than expected raises expected inflation by less when inflation is already being driven by supply constraints. Unlike the policy shock, the information shock's sign does not flip across regimes, and its response at the mean state is a solid 0.6 to 0.9 percentage points per 25 basis points from four months on. The information content of announcements moves the whole curve, in every state, and it moves it more when demand is the story.

Table 4: Response to a Positive Information Shock by Inflation Regime

Dependent variable: $y_{n,t+h} - y_{n,t-1}$, central bank information shock						
	5-year expected inflation			10-year expected inflation		
	Demand (1)	Supply (2)	Difference (3)	Demand (4)	Supply (5)	Difference (6)
$h = 0$	0.204	-0.169	0.373	0.172	-0.225	0.397
	(0.202)	(0.214)	(0.295)	(0.190)	(0.169)	(0.254)
$h = 1$	0.342	-0.225*	0.567	0.278	-0.205*	0.483
	(0.329)	(0.134)	(0.364)	(0.287)	(0.113)	(0.319)
$h = 2$	0.688*	-0.265	0.953**	0.595*	-0.206	0.800**
	(0.387)	(0.205)	(0.441)	(0.349)	(0.178)	(0.396)
$h = 4$	0.673	0.380*	0.294	0.568	0.323**	0.245
	(0.440)	(0.197)	(0.501)	(0.392)	(0.153)	(0.441)
$h = 6$	1.305**	0.319	0.985*	1.141**	0.274	0.867*
	(0.518)	(0.220)	(0.587)	(0.443)	(0.176)	(0.498)
$h = 8$	1.537***	0.260	1.277**	1.356***	0.227	1.129**
	(0.505)	(0.190)	(0.555)	(0.454)	(0.157)	(0.493)
$h = 12$	1.279**	0.196	1.083	1.102**	0.238	0.865
	(0.572)	(0.294)	(0.671)	(0.489)	(0.241)	(0.555)
Observations	427 ($h = 0$) to 421 ($h = 12$)					

Notes: Estimates of equation (3) for a 25 basis point positive central bank information shock, in percentage points of expected inflation. Columns, controls, standard errors, and significance markers as in Table 2.

FIGURE 7: RESPONSE TO A POSITIVE INFORMATION SHOCK IN DEMAND- AND SUPPLY-DOMINANT MONTHS



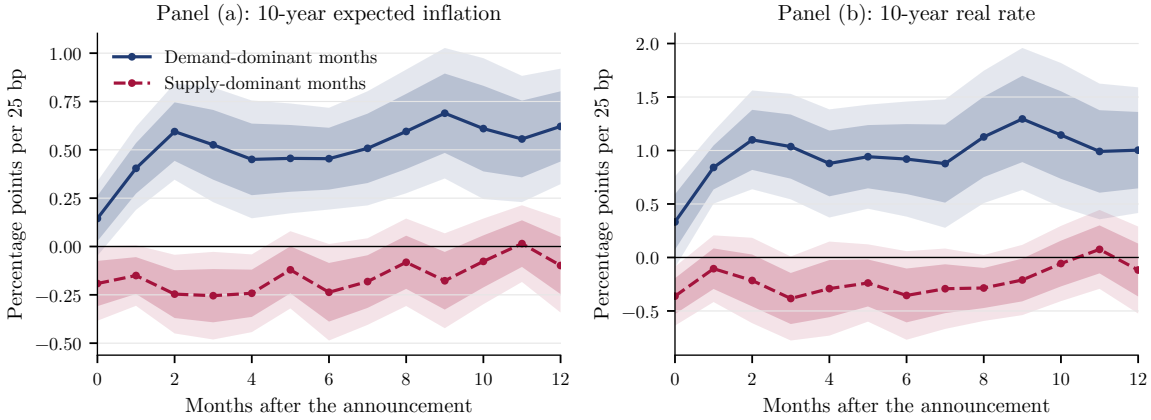
Notes: Responses of expected inflation at one, five, ten, and thirty years to a 25 basis point positive central bank information shock from equation (3), in demand-dominant months (solid) and supply-dominant months (dashed). Bands and sample as in Figure 5.

The Sign of the Demand-Regime Response. A tightening that raises expected inflation at every maturity out to thirty years is not what a model of credible policy predicts, and the paper's result should not be presented as if it were. Two explanations are consistent with the estimates. Under the first, the policy shock in a demand-dominant month still carries information: the sign restriction removes the part of the surprise that moves stocks and rates together, but a tightening delivered when demand is strong may confirm the Fed's reading of the economy in a way that lifts inflation expectations even as it lowers equity prices. Under the second, the effect is in the measurement. The Cleveland Fed curve is fitted to nominal yields and inflation swaps, and a surprise that raises nominal yields raises the model's inputs on the announcement day; how the model splits the increase between real rates, expected inflation, and risk premia depends on its

factor structure, not on anyone's beliefs.

Figure 8 uses the model's own output to weigh the two. Panel (a) repeats the ten-year expected-inflation responses of Figure 5. Panel (b) estimates equation (3) with the model's ten-year real rate as the dependent variable. After a tightening in a demand-dominant month the real rate rises by 0.88 (0.31) percentage points at four months and 1.13 (0.38) at eight; after a tightening in a supply-dominant month it falls by 0.36 (0.17) on impact and stays below zero. Real rates and expected inflation move in the same direction in both regimes, and the real-rate response is larger. If beliefs about inflation were rising because the audience read the tightening as inadequate, one would expect real rates to fall, not rise, and if the tightening were a credible response to strong demand, one would expect real rates to rise and expected inflation to fall. What the model reports instead is a nominal curve that rises across the board after a tightening during demand-driven inflation and falls across the board after one during supply-driven inflation. That is the pattern Najjar and Shapiro (2025) document with daily nominal and TIPS forward rates, and their interpretation, that markets learn more about the Fed's reaction function from a surprise delivered during a demand imbalance, fits the real-rate side of Figure 8 well. On the expected-inflation side they point the other way: their breakeven regressions, imprecise as they are, have a tightening lowering market-implied expected inflation by more when demand-driven inflation is high, and their real-forward response exceeds their nominal one. A market measure and the model measure therefore disagree on the sign of the expected-inflation response in exactly the regime where the model's real rate moves most. That is hard to reconcile with a change in beliefs and easy to reconcile with the model attributing part of a nominal-yield movement to expected inflation. Whether a directly observed expectations series sides with the breakevens or with the model is the question Section 6 takes up with yields, breakevens, households, and professional forecasters. Until those are in hand, the state dependence documented here is a fact about how the expected-inflation curve, as priced and modeled, responds to a tightening in different inflation environments.

FIGURE 8: EXPECTED INFLATION AND THE REAL RATE AFTER A TIGHTENING, BY REGIME



Notes: Responses to a 25 basis point monetary policy tightening surprise from equation (3) in demand-dominant months (solid) and supply-dominant months (dashed), in percentage points. Panel (a): Cleveland Fed ten-year expected inflation. Panel (b): the same model's ten-year real rate. Bands and sample as in Figure 5.

6 Prices, Models, and Beliefs

The Cleveland Fed curve is one measure of expected inflation among several, and the sign puzzle of Section 5 is a question about what it measures. This section re-estimates the regime split of equation (3) on the market prices the model is built from, on the market's own inflation compensation, and on the direct surveys of households and professional forecasters that the model does not use. The measures are described in Section 3 and Appendix A; they enter in percentage points, at end-of-month values for daily series, and the specification is otherwise unchanged except that the short SCE sample uses two lags. Table 5 reports the demand- and supply-regime responses and their difference at two and six months, Figure 9 plots the full responses to a tightening for eight of the measures, and Figure A2 in Appendix B does the same for the information shock.

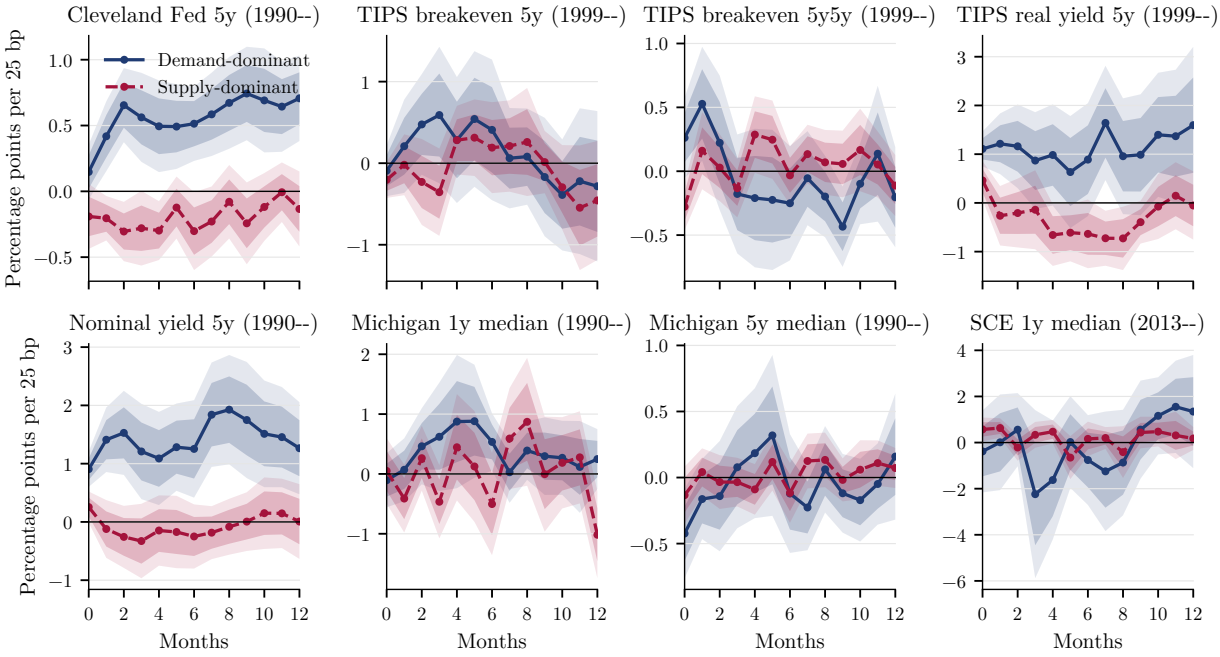
Table 5: Response to Announcement Shocks by Measure of Expected Inflation

Measure	Sample	$h = 2$			$h = 6$		
		Demand (1)	Supply (2)	Difference (3)	Demand (4)	Supply (5)	Difference (6)
Panel A: Monetary policy tightening							
Cleveland Fed model, 5-year	1990–	0.654***	-0.305**	0.960***	0.514***	-0.302*	0.816***
		(0.171)	(0.137)	(0.225)	(0.172)	(0.180)	(0.271)
TIPS breakeven, 5-year	1999–	0.475	-0.230	0.705	0.408	0.191	0.218
		(0.375)	(0.320)	(0.495)	(0.524)	(0.339)	(0.611)
TIPS breakeven, 10-year	1999–	0.317	-0.108	0.425	0.049	0.090	-0.042
		(0.300)	(0.203)	(0.380)	(0.346)	(0.216)	(0.426)
TIPS breakeven, 5y5y forward	1999–	0.222	0.028	0.194	-0.251	-0.032	-0.219
		(0.320)	(0.159)	(0.381)	(0.272)	(0.137)	(0.323)
TIPS real yield, 5-year	1999–	1.161**	-0.208	1.369**	0.888	-0.636	1.524*
		(0.522)	(0.429)	(0.665)	(0.704)	(0.428)	(0.888)
Nominal yield, 5-year	1990–	1.528***	-0.257	1.785***	1.253**	-0.250	1.503**
		(0.439)	(0.324)	(0.550)	(0.509)	(0.335)	(0.653)
Nominal 2-year forward	1990–	1.649***	-0.392	2.041***	1.257**	-0.260	1.517**
		(0.506)	(0.402)	(0.650)	(0.584)	(0.380)	(0.740)
Michigan median, 1-year	1990–	0.462	0.263	0.199	0.535*	-0.503	1.038*
		(0.387)	(0.330)	(0.541)	(0.291)	(0.520)	(0.588)
Michigan median, 5-year	1990–	-0.141	-0.034	-0.107	-0.121	-0.117	-0.004
		(0.254)	(0.124)	(0.286)	(0.273)	(0.138)	(0.308)
SCE median, 1-year	2013–	0.559	-0.214	0.772	-0.758	0.160	-0.918
		(0.965)	(0.350)	(1.020)	(1.184)	(0.454)	(1.329)
SCE median, 3-year	2013–	1.954	-0.314	2.268	1.443**	-0.109	1.552*
		(1.720)	(0.295)	(1.764)	(0.686)	(0.511)	(0.870)
Panel B: Positive information shock							
Cleveland Fed model, 5-year	1990–	0.688*	-0.265	0.953**	1.305**	0.319	0.985*
		(0.387)	(0.205)	(0.441)	(0.518)	(0.220)	(0.587)
TIPS breakeven, 5-year	1999–	0.401	0.882*	-0.481	0.067	0.328	-0.261
		(0.655)	(0.486)	(0.835)	(0.809)	(0.498)	(0.940)
TIPS breakeven, 10-year	1999–	0.186	0.665**	-0.479	-0.334	0.172	-0.507
		(0.419)	(0.334)	(0.566)	(0.580)	(0.274)	(0.656)
TIPS breakeven, 5y5y forward	1999–	0.116	0.487**	-0.370	-0.579	-0.018	-0.562
		(0.453)	(0.242)	(0.516)	(0.441)	(0.177)	(0.517)
TIPS real yield, 5-year	1999–	-1.146	-0.103	-1.042	0.362	0.336	0.026
		(0.777)	(0.438)	(0.853)	(1.188)	(0.505)	(1.303)
Nominal yield, 5-year	1990–	0.911	0.681	0.231	2.960***	0.714	2.247**
		(0.837)	(0.537)	(0.995)	(1.012)	(0.516)	(1.142)
Nominal 2-year forward	1990–	1.017	0.828	0.189	3.128***	0.775	2.353*
		(0.947)	(0.648)	(1.148)	(1.064)	(0.591)	(1.224)
Michigan median, 1-year	1990–	0.276	1.059**	-0.784	0.304	-0.756	1.060
		(0.719)	(0.531)	(0.895)	(0.825)	(0.649)	(1.089)
Michigan median, 5-year	1990–	-0.454	0.167	-0.621	-0.470	0.105	-0.575
		(0.377)	(0.253)	(0.446)	(0.330)	(0.200)	(0.387)
SCE median, 1-year	2013–	0.314	-1.259*	1.573	1.355*	0.636	0.719
		(1.009)	(0.701)	(1.233)	(0.753)	(1.293)	(1.545)
SCE median, 3-year	2013–	-0.552	-0.698	0.146	1.466	1.419	0.047
		(2.118)	(0.894)	(2.290)	(1.749)	(0.960)	(2.120)

Notes: Equation (3) for a 25 basis point positive shock with the measure in the row as dependent variable, in percentage points; Demand, Supply, and Difference as in Table 2. Market series are end-of-month values from the Federal Reserve Board's yield-curve estimates; survey series are weighted medians from the microdata. Sample from the year shown through August 2025; SCE regressions use two lags, all others six. Newey–West standard errors with bandwidth $h + 1$ in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

FIGURE 9: RESPONSE TO A TIGHTENING SURPRISE ACROSS MEASURES OF EXPECTED INFLATION

Monetary policy tightening, by measure of expected inflation



Notes: Responses to a 25 basis point monetary policy tightening surprise from equation (3) in demand-dominant months (solid) and supply-dominant months (dashed), in percentage points, for the measure named in each panel; the year in parentheses is the start of that measure's sample. Shaded areas are 68 and 90 percent Newey–West bands with bandwidth $h + 1$.

Nominal and Real Yields. The market prices behind the model show the state dependence in its sharpest form, and they show it over the full sample. Two months after a 25 basis point tightening in a demand-dominant month the five-year nominal Treasury yield is 1.53 (0.44) percentage points higher; in a supply-dominant month it is 0.26 (0.32) lower; the difference is 1.79 (0.55). The two-year instantaneous forward, the object Najjar and Shapiro (2025) study, rises by 0.99 (0.21) on impact in demand-dominant months against 0.29 (0.19) in supply-dominant months and by 1.65 (0.51) against −0.39 (0.40) at two months. The continuous-interaction differential for that forward is 1.84 (0.57) on impact, of the same order as the 2.99 that Najjar and Shapiro (2025) obtain from daily changes over a shorter sample, and the differential is present before TIPS existed: over 1990 to 2003 alone the five-year nominal yield differential at two months is 2.12 (1.25) and the continuous differential at four months 2.26 (1.11) (Table 7). The TIPS real yield, available from 1999, behaves the same way, rising by 1.16 (0.52) at two months in demand-dominant months and falling by

0.21 (0.43) in supply-dominant months, with the difference between 1.4 and 1.7 percentage points through eight months. Whatever the announcement does to beliefs, it does this to the nominal and real curves: a tightening during demand-driven inflation is priced as persistent, and a tightening during supply-driven inflation is priced as something the Fed will reverse.

Breakeven Inflation. Inflation compensation is where the model and the market part company. Table 7 puts the Cleveland Fed five-year expectation and the five-year breakeven on the same 1999 to 2025 sample. The model measure keeps its pattern, 0.55 (0.23) in demand-dominant months against −0.30 (0.16) in supply-dominant months at two months. The breakeven has the same signs but no precision, 0.48 (0.38) against −0.23 (0.32), a difference of 0.71 (0.50), and by four months the difference is zero and stays there. The ten-year breakeven and the five-year-forward five-year breakeven show a significant difference only on impact, 0.30 (0.18) and 0.54 (0.23), driven by a fall in supply-dominant months, and nothing afterward. Where the model measure records a demand-regime rise in expected inflation that persists for a year at every maturity, inflation compensation records at most an impact-day movement that dissipates within a quarter. Najjar and Shapiro (2025) find, on the announcement day, a breakeven interaction with the opposite sign and no significance; at monthly frequency I find the same sign as the model and no significance. Neither reading supports the persistent demand-regime rise in the model measure. Since breakevens contain inflation risk premia and liquidity premia that the model attempts to strip out, the comparison is not decisive on its own, which is why the surveys matter.

Households. The Michigan survey asks households directly, and it says something different from both the model and the market. The median one-year expectation does not respond to a tightening within the first half year in either regime. Over the following months it separates: twelve months after a tightening delivered in a supply-dominant month the median one-year expectation is 1.02 (0.44) percentage points lower, while after a tightening in a demand-dominant month it is 0.25 (0.30) higher, a difference of 1.27 (0.58). The mean rather than the median gives −1.28 (0.56) and 1.95 (0.81). The supply-regime decline is present before 2020, outside the pandemic months, with two or four lags, and in both halves of the sample, at −1.09 (0.59), −1.02 (0.42), −1.54 (0.46), −2.06 (1.59), and −0.72 (0.34) respectively, but the path to it is not smooth: the difference is 1.04 (0.59) at six months and indistinguishable from zero at seven through eleven, so I read the

twelve-month estimate as suggestive. The five-year median does not move at any horizon in either regime, with every difference inside ±0.35 and none significant; if anything it dips by 0.42 (0.21) on impact in demand-dominant months. The New York Fed survey, available only from 2013 and with 129 usable months, gives no reliable estimate at either horizon.

Taken at face value, the household evidence inverts the model's: it is the supply-driven episode, not the demand-driven one, in which a tightening moves short-run household expectations, and it moves them down. That is the pattern the attention account of Kamdar (2019) predicts, since supply-driven inflation is the kind households notice, and it is the pattern the paper's title was written for. It is also weak evidence, and I present it as such.

Professional Forecasters. The Survey of Professional Forecasters is quarterly, so I re-estimate the regime split at quarterly frequency with the shocks summed over the three months between survey deadlines and the state and controls dated the month before the survey (Appendix A). Table 6 reports the results. Policy surprises barely move professional forecasts: two quarters after a tightening the next-calendar-year CPI forecast is 0.22 (0.22) higher in demand-dominant quarters and 0.29 (0.20) lower in supply-dominant ones, a difference of 0.51 (0.31), and the ten-year forecast difference is 0.23 (0.16). Information shocks do move them, and in the same direction as the model measure: two quarters after a positive information shock the next-year forecast is 0.72 (0.39) higher in demand-dominant quarters and 0.36 (0.29) lower in supply-dominant ones, and at four quarters 1.46 (0.59) against −0.03 (0.26); the ten-year forecast rises by 0.60 (0.32) and 0.90 (0.47) in demand-dominant quarters and not at all in supply-dominant ones. Forecasters, like the model, revise expected inflation upward after good news about the economy, and they do so when demand is the story.

What the Comparison Says. Table 7 and the three subsections line up as follows. The nominal and real curves reprice a tightening in opposite directions in the two regimes, strongly, persistently, and in every subsample. The model measure inherits that repricing and reports it as a demand-regime rise in expected inflation. Inflation compensation shows a trace of the same movement on impact and nothing after a quarter. Professional forecasters do not revise inflation forecasts after policy surprises in either regime. Households, if the twelve-month estimate is believed, revise them down after a tightening during supply-driven inflation and not otherwise. The persistent demand-

TABLE 6: SURVEY OF PROFESSIONAL FORECASTERS, QUARTERLY LOCAL PROJECTIONS

Dependent variable: $y_{q+h} - y_{q-1}$, median SPF forecast

	CPI inflation, next calendar year			CPI inflation, next ten years		
	Demand (1)	Supply (2)	Difference (3)	Demand (4)	Supply (5)	Difference (6)
Panel A: Monetary policy tightening						
$h = 0$ quarters	-0.300	0.091	-0.391	-0.075	0.135	-0.211
	(0.220)	(0.294)	(0.376)	(0.145)	(0.090)	(0.194)
$h = 1$ quarters	0.130	0.065	0.065	0.029	0.058	-0.029
	(0.232)	(0.339)	(0.453)	(0.127)	(0.135)	(0.216)
$h = 2$ quarters	0.218	-0.293	0.511	0.141	-0.093	0.233
	(0.220)	(0.204)	(0.313)	(0.157)	(0.092)	(0.156)
$h = 4$ quarters	0.228	-0.107	0.335	0.048	-0.150*	0.199
	(0.307)	(0.174)	(0.371)	(0.179)	(0.080)	(0.209)
Panel B: Positive information shock						
$h = 0$ quarters	-0.167	-0.143	-0.024	0.301*	0.155	0.146
	(0.318)	(0.272)	(0.429)	(0.159)	(0.098)	(0.178)
$h = 1$ quarters	-0.039	0.107	-0.146	0.180	0.236	-0.057
	(0.435)	(0.445)	(0.619)	(0.201)	(0.189)	(0.273)
$h = 2$ quarters	0.722*	-0.358	1.079**	0.603*	-0.075	0.678*
	(0.386)	(0.288)	(0.434)	(0.322)	(0.105)	(0.355)
$h = 4$ quarters	1.462**	-0.034	1.495**	0.896*	0.085	0.812
	(0.591)	(0.256)	(0.669)	(0.469)	(0.108)	(0.504)
Observations	143 ($h = 0$) to 141 ($h = 4$)			134 ($h = 0$) to 132 ($h = 4$)		

Notes: Estimates of the quarterly analogue of equation (3) for a 25 basis point positive shock, in percentage points of the median forecast. The shock is the sum of the monthly Jarociński–Karadi shocks over the three months ending in the survey month; the regime indicator, state variables, and controls are dated the month before the survey; two lags of the dependent variable and of the controls are included. Next-calendar-year CPI forecasts run from 1990Q1; ten-year forecasts from 1991Q4. Newey–West standard errors with bandwidth $h + 1$ in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 7: Model and Market Measures on Common Samples

Monetary policy tightening surprise

	Regime split, $h = 2$			Continuous differential	
	Demand (1)	Supply (2)	Difference (3)	$h = 4$ (4)	$h = 12$ (5)
Cleveland 5-year, 1990–2025 (baseline)	0.654***	-0.305**	0.960***	1.897***	1.120**
	(0.171)	(0.137)	(0.225)	(0.447)	(0.463)
Cleveland 5-year, 1990–2003	0.137	-0.886**	1.023**	1.378**	0.512
	(0.158)	(0.439)	(0.485)	(0.652)	(0.505)
Cleveland 5-year, 2004–2025	0.785**	-0.211	0.996**	1.134	1.792
	(0.356)	(0.170)	(0.413)	(1.045)	(1.211)
Cleveland 5-year, 1999–2025	0.550**	-0.303**	0.853***	1.692***	0.471
	(0.229)	(0.155)	(0.289)	(0.493)	(0.475)
TIPS breakeven 5-year, 1999–2025	0.475	-0.230	0.705	1.653	2.459
	(0.375)	(0.320)	(0.495)	(1.361)	(2.209)
TIPS breakeven 5-year, 2004–2025	0.561	-0.313	0.874	-2.575	4.633
	(0.572)	(0.360)	(0.753)	(2.486)	(3.355)
TIPS real yield 5-year, 1999–2025	1.161**	-0.208	1.369**	2.728*	0.105
	(0.522)	(0.429)	(0.665)	(1.406)	(1.578)
Nominal yield 5-year, 1990–2025	1.528***	-0.257	1.785***	3.523***	2.684**
	(0.439)	(0.324)	(0.550)	(1.010)	(1.060)
Nominal yield 5-year, 1990–2003	0.670	-1.453	2.123*	2.265**	1.130
	(0.512)	(1.085)	(1.252)	(1.111)	(0.888)

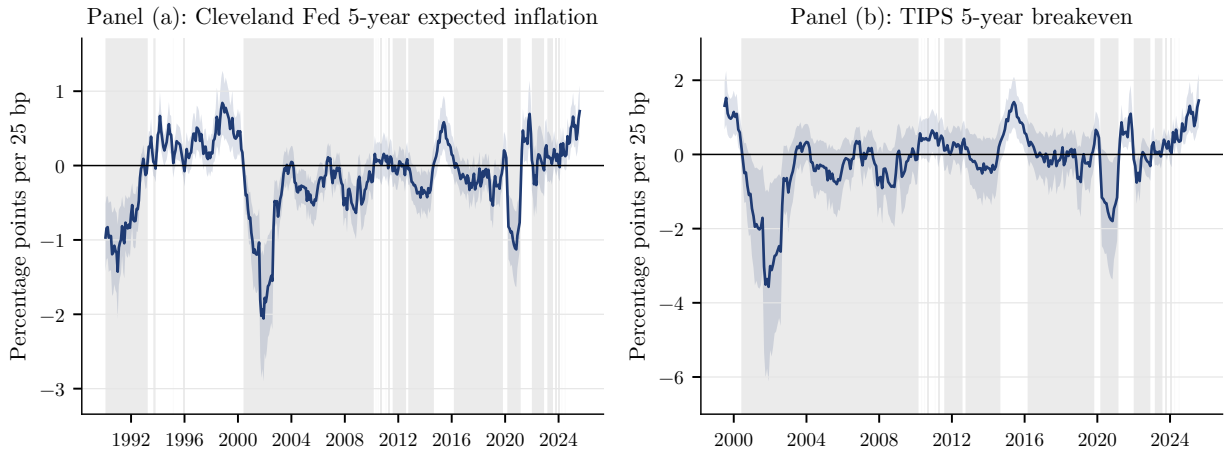
Notes: Columns (1) to (3): responses in demand-dominant and supply-dominant months and their difference at $h = 2$ from equation (3). Columns (4) and (5): the differential $\beta_h^{+d} - \beta_h^{+s}$ from equation (2) at $h = 4$ and $h = 12$. All in percentage points per 25 basis point shock. Newey–West standard errors with bandwidth $h + 1$ in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

regime rise that is the paper's headline for the model measure is therefore a fact about how the Cleveland Fed model decomposes a state-dependent nominal-yield movement, and not a fact about what anyone expects inflation to be. The state dependence of the yield response is real and is the finding of Najjar and Shapiro (2025) extended to monthly dynamics and to the pre-TIPS decade; the state dependence of beliefs, where it exists at all, runs through supply-driven episodes and through households.

The Response Over Time. Because the continuous specification makes the response a function of the observed state, it can be evaluated month by month. Figure 10 plots the implied two-month response of five-year expected inflation to a tightening, $\beta_2^+ + \beta_2^{+d}\pi_t^d + \beta_2^{+s}\pi_t^s$, at the observed contributions, for the Cleveland Fed measure over 1990 to 2025 and for the five-year breakeven over 1999 to 2025. The two series have the same shape. The implied response is negative in the

supply-dominated episodes of 1991, 2001 to 2003, 2009, and 2020, close to zero through most of 2010 to 2019, and positive in the demand-led periods of the mid-1990s and 2021 to 2025. Najjar and Shapiro (2025) construct the same object for real forwards and draw the same contrast between the 1970s and the post-Volcker era; over the period in which both can be computed, the model measure and inflation compensation agree on when a tightening was read as persistent and when it was read as a one-off, and disagree only on how long the reading lasts.

Figure 10: Implied Two-Month Response of Five-Year Expected Inflation at Observed States



Notes: The implied response of five-year expected inflation two months after a 25 basis point tightening surprise, $\beta_2^{+} + \beta_2^{+d}\pi_t^d + \beta_2^{+s}\pi_t^s$ from equation (2), evaluated at each month's observed demand- and supply-driven contributions, in percentage points. Panel (a): Cleveland Fed five-year expected inflation, 1990 to 2025. Panel (b): five-year TIPS breakeven, 1999 to 2025. Shaded bands are 90 percent delta-method intervals; grey vertical shading marks supply-dominant months.

7 Robustness and Limitations

Specification and Sample. Table 8 reports the differential $\beta_h^{+d} - \beta_h^{+s}$ from equation (2) for the five-year maturity under alternative specifications and samples, at the horizons where each shock's state dependence is strongest and at twelve months. For the policy shock the four-month differential is between 1.7 and 2.1 percentage points and significant at the one percent level whether the contemporaneous contributions are dropped from the control set, the lag length is cut to four, the sample ends in December 2019, the pandemic months or the financial crisis or the 2021 to 2023 inflation are excluded, or the largest five percent of surprises are removed. Dating the state

at $t-1$, the composition that the announcement's audience could observe, lowers the four-month differential to 1.36 (0.44) and leaves it significant. The twelve-month differential is less robust: it is significant in most rows but not in the pre-2020 sample or with the lagged state, so the late part of the response should be read as suggestive. For the information shock the eight-month differential is between 2.1 and 2.8 and significant at the one percent level in every row; the twelve-month differential is significant in about half of them.

Table 8: Robustness of the Demand Minus Supply Differential

Differential $\beta_h^{+d} - \beta_h^{+s}$, five-year expected inflation

	Monetary policy shock, 5-year		Information shock, 5-year	
	$h = 4$	$h = 12$	$h = 8$	$h = 12$
	(1)	(2)	(3)	(4)
Baseline	1.897***	1.120**	2.295***	1.709**
	(0.447)	(0.463)	(0.633)	(0.759)
No contemporaneous state controls	1.733***	0.933*	2.090***	1.663**
	(0.445)	(0.495)	(0.604)	(0.725)
Four lags	1.886***	1.169***	2.140***	1.549**
	(0.406)	(0.452)	(0.601)	(0.679)
State dated $t-1$	1.362***	0.516	2.807***	1.888***
	(0.443)	(0.460)	(0.635)	(0.714)
Pre-2020 sample	1.766***	0.665	2.463***	1.559
	(0.480)	(0.565)	(0.809)	(0.960)
Excluding 2020m3–2021m12	1.946***	1.058**	2.179***	1.288
	(0.455)	(0.498)	(0.712)	(0.821)
Excluding 2008–2009	1.883***	1.077**	2.092***	1.487**
	(0.494)	(0.422)	(0.603)	(0.666)
Excluding 2021–2023	1.990***	1.145**	2.125***	1.376*
	(0.448)	(0.483)	(0.698)	(0.784)
Excluding largest 5% of shocks	2.139***	1.109**	2.822***	1.151
	(0.530)	(0.499)	(0.970)	(1.289)
Bauer–Swanson orthogonalized surprise	0.734*	0.793*	–	–
	(0.384)	(0.461)		

Notes: Each cell is the difference between the demand and supply interaction coefficients for a positive shock in equation (2), in percentage points of five-year expected inflation per 25 basis point shock, under the specification or sample in the row. The baseline is the specification of Table 3. The Bauer–Swanson row replaces the Jarociński–Karadi policy shock with the orthogonalized surprise of Bauer and Swanson (2023b), available February 1988 to December 2023 with March to December 2020 treated as missing, and has no information-shock counterpart. Newey–West standard errors with bandwidth $h+1$ in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Subsamples. Table 7 in Section 6 splits the sample at the start of 2004. The two-month difference between the regimes for the model measure is 1.02 (0.49) over 1990 to 2003 and 1.00 (0.41) over 2004 to 2025, but its composition changes: before 2004 the action is a supply-regime fall of 0.89

(0.44) with no demand-regime rise, and after 2004 it is a demand-regime rise of 0.79 (0.36) with a small supply-regime fall. The demand-regime rise that constitutes the sign puzzle is a feature of the last two decades.

Influence. Figure A1 in Appendix B re-estimates the two headline differentials leaving out one calendar year at a time. Excluding any single year between 1990 and 2025 moves the four-month policy-shock differential only between 1.77 and 1.99, and the eight-month information-shock differential between 1.90 and 3.05; neither ever loses significance. The result is not driven by the financial crisis, the pandemic, or the post-pandemic inflation, each of which is also excluded outright in Table 8.

Alternative Surprise Series. Table 9 replaces the Jarociński–Karadi policy shock with two other measures of the announcement surprise, keeping the Cleveland Fed five-year expectation as the outcome. The next-meeting fed funds futures surprise from the U.S. Monetary Policy Event-Study Database, available from February 1994, is the series Najjar and Shapiro (2025) use; it is not purged of the information component, so its regime split is a lower bound on what a pure policy shock would show. Two months after a 25 basis point surprise the expectation is 0.37 (0.21) higher in demand-dominant months and 0.13 (0.16) lower in supply-dominant months, a difference of 0.50 (0.27); the continuous differential is 1.54 (0.69) at four months and 1.81 (0.87) at twelve. The sign pattern, the significance of the differential, and its magnitude relative to the baseline are what one would expect from a surprise that mixes the two components.

TABLE 9: ALTERNATIVE SURPRISE SERIES

Dependent variable: Cleveland Fed five-year expected inflation

	Regime split, $h = 2$			Continuous differential		
Surprise series	Demand	Supply	Difference	$h = 4$	$h = 12$	Sample
Jarociński–Karadi policy shock	0.654***	-0.305**	0.960***	1.897***	1.120**	1990–2025
	(0.171)	(0.137)	(0.225)	(0.447)	(0.463)	
USMPD next-meeting surprise	0.366*	-0.134	0.501*	1.535**	1.809**	1994–2025
	(0.208)	(0.156)	(0.271)	(0.687)	(0.869)	
Bauer–Swanson orthogonalized surprise	0.280	-0.182*	0.462**	0.734*	0.793*	1990–2025
	(0.208)	(0.107)	(0.230)	(0.384)	(0.461)	

Notes: Columns (1) to (3): responses in demand-dominant and supply-dominant months and their difference at $h = 2$ from equation (3); columns (4) and (5): the differential $\beta_h^{+d} - \beta_h^{+s}$ from equation (2). All per 25 basis point surprise, in percentage points. The USMPD surprise is the change in the fed funds futures contract for the next FOMC meeting over the monetary-event window of Acosta et al. (2025), summed to months. The Bauer–Swanson series is described in Table 8. Newey–West standard errors with bandwidth $h + 1$ in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Bauer–Swanson Surprise. Bauer and Swanson (2023b) argue that the predictability of monetary surprises reflects the market's underestimation of the Fed's response to public news, and construct a surprise orthogonalized to six pre-announcement variables. Replacing the policy shock with their series gives the same signs and a smaller, marginally significant differential: 0.73 (0.38) at four months and 0.79 (0.46) at twelve. The orthogonalized surprise is a single series with no information component, so the comparison is only informative about the policy shock, and its shorter, pandemic-censored sample removes part of the identifying variation. I read the row as consistent with the baseline rather than as an independent confirmation of it.

Limitations. Four limitations bear on the interpretation. The expectations measure is model-based and fitted to market prices, and Section 5 shows that the model's real rate moves with its expected inflation after a tightening; the demand-regime response may be a repricing of nominal yields rather than a revision of beliefs. The state variable is a revised, year-over-year measure, and the announcement's audience saw the previous month's value; the lagged-state row of Table 8 shows the result survives that timing but is weaker at long horizons. The two continuous interactions are collinear, which is why the regime split is the preferred presentation and why I report the differential rather than the individual interaction coefficients. And the sign restriction that separates policy from information is a restriction on a thirty-minute window; whatever information the policy component still carries, the demand-regime response inherits.

8 Conclusion

The same FOMC announcement is read differently depending on what is driving inflation when it arrives, and the reading shows up in different places depending on where one looks. Conditioning on the Shapiro (2026) decomposition of core inflation, a tightening surprise raises the Cleveland Fed expected-inflation curve at every maturity in months when demand factors dominate and lowers it in months when supply factors dominate, with the gap opening within two months and surviving every subsample, influence, and alternative-shock check I run. The nominal and real yield curves reprice the same way, more strongly, and already in the 1990s, which extends the daily-frequency finding of Najjar and Shapiro (2025) to monthly dynamics and a longer sample. Breakevens, professional forecasts, and household surveys do not show the demand-regime rise. What households show, weakly, is the opposite: a fall in short-run expectations a year after a tightening delivered during supply-driven inflation. Information shocks raise every measure that responds, and more so when demand is the story.

The reading I draw is that the state dependence of the yield response is a fact about pricing, in the sense of Najjar and Shapiro (2025), and that the model-based expectations curve reports that pricing as if it were a change in beliefs. Papers that use the Cleveland Fed curve as a measure of expectations, including the earlier version of this one, should treat its response to monetary surprises with that in mind. Two limitations remain. The household evidence rests on a twelve-month estimate whose path is noisy, and the New York Fed survey is too short to check it; a longer household panel or an event-study design around individual announcements would settle it. And the state variable is a revised, year-over-year measure that the announcement's audience observed with a lag; the lagged-state results are weaker at long horizons. The natural next step is to ask directly what the audience believed the announcement meant, using the forecaster-level perceived reaction functions that Najjar and Shapiro (2025) exploit, and to test whether the household response in supply-driven episodes reflects attention to the prices those episodes make salient.

References

Acosta, M., Ajello, A., Bauer, M. D., Loria, F., & Miranda-Agrippino, S. (2025). Financial market effects of FOMC communication: Evidence from a new event-study database [Federal Reserve Bank of San Francisco Working Paper 2025-30]. *Working Paper*.

Andrade, P., & Ferroni, F. (2021). Delphic and Odyssean monetary policy shocks: Evidence from the euro area. *Journal of Monetary Economics*, *117*, 816–832.

Auerbach, A. J., & Gorodnichenko, Y. (2012). Measuring the output responses to fiscal policy. *American Economic Journal: Economic Policy*, *4*(2), 1–27.

Bauer, M. D., & Swanson, E. T. (2023a). An alternative explanation for the "Fed information effect". *American Economic Review*, *113*(3), 664–700.

Bauer, M. D., & Swanson, E. T. (2023b). A reassessment of monetary policy surprises and high-frequency identification. *NBER Macroeconomics Annual*, *37*, 87–155.

Boissay, F., Collard, F., Manea, C., & Shapiro, A. H. (2025). Monetary tightening and financial stress during supply- versus demand-driven inflation. *International Journal of Central Banking*, *21*(2), 147–220.

Campbell, J. R., Evans, C. L., Fisher, J. D. M., & Justiniano, A. (2012). Macroeconomic effects of Federal Reserve forward guidance. *Brookings Papers on Economic Activity*, *2012*(1), 1–80.

Coibion, O., & Gorodnichenko, Y. (2015). Information rigidity and the expectations formation process: A simple framework and new facts. *American Economic Review*, *105*(8), 2644–2678.

Coibion, O., Gorodnichenko, Y., & Kamdar, R. (2018). The formation of expectations, inflation, and the Phillips curve. *Journal of Economic Literature*, *56*(4), 1447–1491.

Crump, R. K., Eusepi, S., Moench, E., & Preston, B. (2023). The term structure of expectations. In R. Bachmann, G. Topa, & W. van der Klaauw (Eds.), *Handbook of economic expectations* (pp. 507–540). Elsevier.

D'Acunto, F., Malmendier, U., & Weber, M. (2023). What do the data tell us about inflation expectations? In R. Bachmann, G. Topa, & W. van der Klaauw (Eds.), *Handbook of economic expectations* (pp. 133–161). Elsevier.

Gertler, M., & Karadi, P. (2015). Monetary policy surprises, credit costs, and economic activity. *American Economic Journal: Macroeconomics*, *7*(1), 44–76.

Gürkaynak, R. S., Sack, B., & Swanson, E. T. (2005). Do actions speak louder than words? The response of asset prices to monetary policy actions and statements. *International Journal of Central Banking*, *1*(1), 55–93.

Gürkaynak, R. S., Sack, B., & Wright, J. H. (2007). The U.S. Treasury yield curve: 1961 to the present. *Journal of Monetary Economics*, *54*(8), 2291–2304.

Gürkaynak, R. S., Sack, B., & Wright, J. H. (2010). The TIPS yield curve and inflation compensation. *American Economic Journal: Macroeconomics*, *2*(1), 70–92.

Haubrich, J., Pennacchi, G., & Ritchken, P. (2012). Inflation expectations, real rates, and risk premia: Evidence from inflation swaps. *Review of Financial Studies*, *25*(5), 1588–1629.

Jarociński, M., & Karadi, P. (2020). Deconstructing monetary policy surprises—the role of information shocks. *American Economic Journal: Macroeconomics*, *12*(2), 1–43.

Jordà, Ò. (2005). Estimation and inference of impulse responses by local projections. *American Economic Review*, *95*(1), 161–182.

Kamdar, R. (2019). The inattentive consumer: Sentiment and expectations [Indiana University, December 2019]. *Working Paper*.

Miranda-Agrippino, S., & Ricco, G. (2021). The transmission of monetary policy shocks. *American Economic Journal: Macroeconomics*, *13*(3), 74–107.

Montiel Olea, J. L., & Plagborg-Møller, M. (2021). Local projection inference is simpler and more robust than you think. *Econometrica*, *89*(4), 1789–1823.

Najjar, R., & Shapiro, A. H. (2025). Not all inflation is the same: State-dependent transmission of monetary policy [Federal Reserve Bank of San Francisco Working Paper 2025-28]. *Working Paper*.

Nakamura, E., & Steinsson, J. (2018). High-frequency identification of monetary non-neutrality: The information effect. *Quarterly Journal of Economics*, *133*(3), 1283–1330.

Newey, W. K., & West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica*, *55*(3), 703–708.

Pasqualotto, L. (2025). *The effect of monetary policy shocks on the inflation expectation term structure: An empirical study* [Master's thesis]. University of Padova, Department of Economics and Management. https://thesis.unipd.it/handle/20.500.12608/83150

Shapiro, A. H. (2026). Decomposing supply- and demand-driven inflation. *Journal of Money, Credit and Banking*, *58*(2), 365–388.

Stock, J. H., & Watson, M. W. (2018). Identification and estimation of dynamic causal effects in macroeconomics using external instruments. *Economic Journal*, *128*(610), 917–948.

Tenreyro, S., & Thwaites, G. (2016). Pushing on a string: US monetary policy is less powerful in recessions. *American Economic Journal: Macroeconomics*, *8*(4), 43–74.

Wu, J. C., & Xia, F. D. (2016). Measuring the macroeconomic impact of monetary policy at the zero lower bound. *Journal of Money, Credit and Banking*, *48*(2–3), 253–291.

A Data Construction

Sources and Vintages. The monthly panel runs from January 1982 to February 2026 and is assembled from five public sources. Expected inflation at maturities of one to thirty years and the model's real rates come from the Federal Reserve Bank of Cleveland's inflation expectations release, model output date on the first of each month, downloaded in March 2026; the entire history is re-estimated with each release, so the series is not a real-time vintage. The monetary policy and information shocks are the monthly file of the updated Jarociński and Karadi (2020) decomposition maintained by Marek Jarociński, in which each FOMC announcement's surprise in the policy indicator (the first principal component of surprises in fed funds and Eurodollar futures out to one year) is split by the median rotation satisfying the sign restrictions, and months with several announcements sum them. The demand- and supply-driven contributions to core PCE inflation are the year-over-year headline-and-core file published by the Federal Reserve Bank of San Francisco, which applies the Shapiro (2026) procedure to the current vintage of BEA data. Industrial production, the unemployment rate, the S&P 500 index, and the effective federal funds rate are from FRED; the National Financial Conditions Index is from the Federal Reserve Bank of Chicago; the shadow federal funds rate is the Wu and Xia (2016) series through February 2022, spliced to the effective federal funds rate afterward. The orthogonalized surprise of Bauer and Swanson (2023b) is the monthly series from the authors' 2023 update, available from February 1988 to December 2023; following the authors' recommendation I treat March to December 2020 as missing.

Additional Measures. The nominal and TIPS yield curves are the Federal Reserve Board's daily estimates (files `feds200628` and `feds200805`, retrieved September 2026); I take the last trading day of each month for zero-coupon yields at two, five, and ten years, instantaneous forwards at two, three, five, and ten years, TIPS real yields and forwards at the same maturities, breakeven inflation at two, five, and ten years, and the five-year-forward five-year breakeven. The Michigan series are computed from the survey's public microdata, weighting by the survey weight and dropping responses outside ±95 percent; the five-year question is available continuously from April 1990. The SCE series are weighted medians of the one-year and three-year point forecasts from the

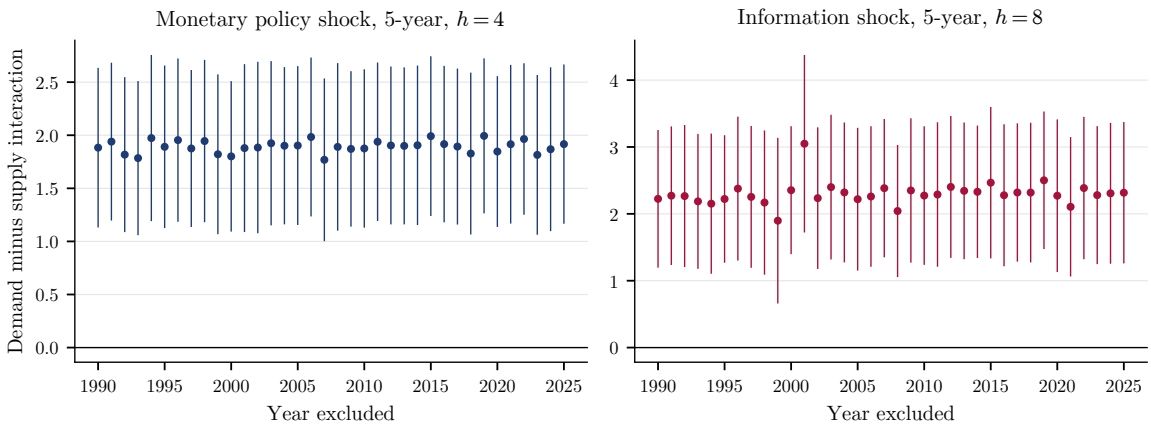
public microdata files covering June 2013 to June 2024. The SPF series are the median forecasts from the Philadelphia Fed's historical files: the next-calendar-year CPI forecast and the ten-year annual-average CPI forecast, which begins in 1991Q4. For the quarterly projections, each survey round is dated its middle month (February, May, August, November); the shock is the sum of the monthly shocks in that month and the two preceding it, and the state and controls are the values in the month before the survey. The USMPD surprises are the MP2 series from the Monetary Events sheet of the database (retrieved September 2026), summed within months.

Variable Definitions. Expected inflation enters in percentage points. The shocks are divided by 0.25 so that one unit is a 25 basis point surprise; the positive and negative parts are $\max(s_t, 0)$ and $\min(s_t, 0)$. The supply-dominant indicator equals one when the supply-driven contribution exceeds the demand-driven contribution in the same month. Controls enter as six lags of their levels; the two contributions also enter contemporaneously. The estimation sample begins in February 1990, the first month with a shock, and ends in August 2025, the last month with a decomposition, giving 427 months at $h = 0$ and 421 at $h = 12$.

Replication. Every estimate in the paper is produced by three Python scripts. The first rebuilds the monthly base panel from the raw source files described above and checks it against the panel assembled by hand in March 2026, which it matches to machine precision on every series (the only difference is that months outside the shock series' coverage are left missing rather than set to zero). The second merges the market and survey series onto that panel and constructs the quarterly SPF panel. The third and a companion script estimate every specification and write every figure and table fragment, along with the summary files from which the numbers in the text are taken. The same Cleveland Fed specifications were estimated in Stata in March 2026, and the two sets of coefficients agree to five decimal places. The poster presented at the PREDOC conference in July 2025 used an earlier sample ending in June 2023, a change from month t rather than $t - 1$, expectations in decimal units, and no main effects for the inflation contributions; its state-dependent estimates should not be compared with the ones reported here.

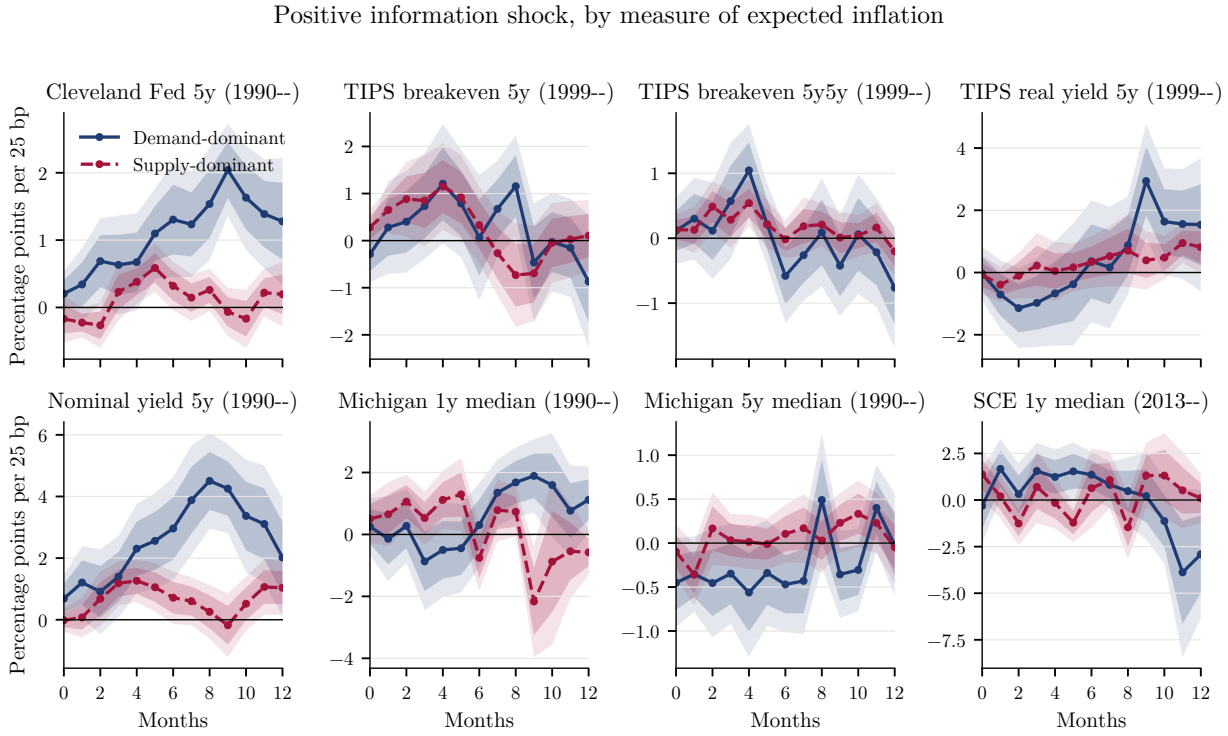
B Additional Results

FIGURE A1: LEAVE-ONE-YEAR-OUT ESTIMATES OF THE DIFFERENTIAL



Notes: Each point is the differential $\beta_h^{+d} - \beta_h^{+s}$ from equation (2) for five-year expected inflation, re-estimated after excluding the calendar year on the horizontal axis, with 90 percent Newey–West bands. Panel (a): monetary policy shock at $h = 4$. Panel (b): central bank information shock at $h = 8$. Units are percentage points per 25 basis point shock.

FIGURE A2: RESPONSE TO A POSITIVE INFORMATION SHOCK ACROSS MEASURES OF EXPECTED INFLATION



Notes: Responses to a 25 basis point positive central bank information shock from equation (3) in demand-dominant months (solid) and supply-dominant months (dashed), in percentage points, for the measure named in each panel. Bands as in Figure 9.

Easing Surprises by Regime. The regime split of equation (3) also yields responses to easing surprises. In demand-dominant months a 25 basis point easing raises five-year expected inflation by 0.36 (0.15) percentage points at eight months and 0.51 (0.16) at twelve, the conventional sign, and the ten- and thirty-year responses are 0.48 (0.14) and 0.31 (0.09) at twelve months. In supply-dominant months easing surprises have no effect at any horizon. The demand-regime asymmetry is therefore one-sided in an unexpected way: both tightenings and easings raise expected inflation, the former immediately and the latter with a lag. Whatever mechanism produces the tightening response does not operate in reverse for easings, which is a further reason to treat the tightening response as a repricing rather than a belief revision until survey evidence is available.

Horizon Profile. The differential for the policy shock in Figure 6 is not monotone: it is largest at two to four months, close to zero at eight, and significant again at twelve. The regime-split

responses in Table 2 show why. The supply-regime response fades to zero after six months while the demand-regime response persists, so the difference at twelve months is entirely the demand-regime level. The dip at eight months reflects a transitory rise in the supply-regime response that is not itself significant. I describe the result in the text as a short-horizon difference that persists because the demand-regime response does, rather than as a difference that grows with the horizon.