WORKING paper

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When Does Monetary Policy Matter? Asset Price Responses to Conflicting Signals[1]

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ABSTRACT

This paper investigates how investors process central bank announcements when present and future policy signals conflict. We classify FOMC statements by whether signals about the policy path reverse current-decision news. Reversal statements account for nearly half of meetings and drive a disproportionate share of monetary policy effects on long-term interest rates, while non-reversal meetings move stock prices and short-term yields. This fundamental heterogeneity extends to the ECB and Bank of England. Further evidence suggests reversal statements convey information about the pace of future policy adjustments, with content in the joint distribution of present and future signals, not their individual levels.

Keywords: Monetary Policy Surprises, Policy Expectations, Yield Curve, Identification, Policy Signals.

JEL classification: E43, E52, E58, G12

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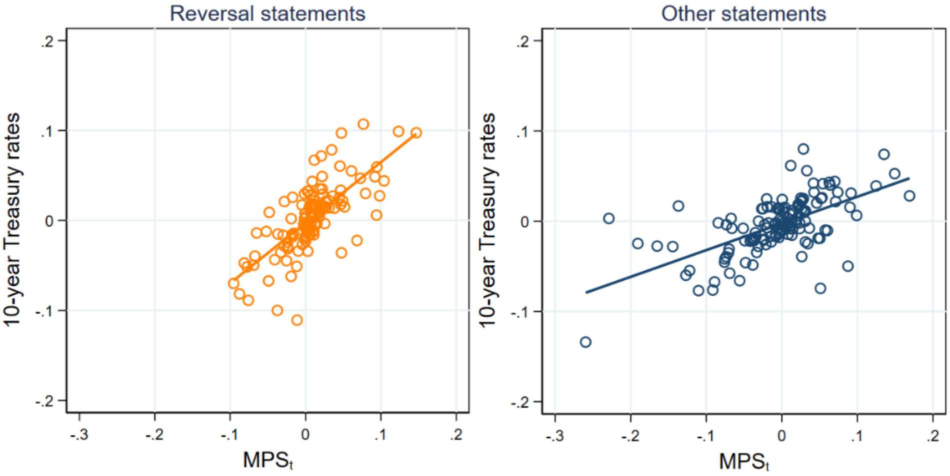
NON-TECHNICAL SUMMARY

This paper investigates how investors process Federal Reserve's policy announcements when the central bank simultaneously conveys conflicting signals about the present and the future stance of monetary policy. We propose a novel classification of policy announcements, over the period from 1994 to 2026, that identifies two distinct statement types.

Central bank announcements convey two types of information at once: news about the current interest rate decision and signals about the future path of policy. These two pieces of information may not point in the same direction. A central bank can raise rates today while signaling that future hikes will be fewer or slower than expected or hold rates unchanged while suggesting that the pace of future tightening will be faster than anticipated. We call such announcements reversal statements. All others are direction-preserving statements.

This novel classification is based on the interplay between the Target factor (news about the current rate decision) and the Path factor (signals about the future policy path orthogonal to the current decision) from Gürkaynak, Sack, and Swanson (2005). A reversal statement is one where the Path surprise moves in the opposite direction to the Target surprise and dominates it in magnitude, so that the net signal is primarily forward-looking. This classification is simple and transparent, and two model-free alternatives that bypass the factor model entirely deliver the same results.

Figure 1. Long-term interest rates and monetary surprises



Note: 30-minute changes in 10-year Treasury yields (y-axis) against monetary policy surprises (x-axis) for 254 scheduled FOMC meetings between February 1994 and January 2026. Orange: reversal statements. Blue: non-reversal statements

The main finding is stark. Reversal statements account for nearly half of all scheduled FOMC meetings and drive a disproportionate share of monetary policy's effect on long-term interest rates. A 10 basis point monetary surprise from a reversal statement moves 10-year Treasury yields by 6.7 basis points, more than twice the effect from non-reversal statements. Direction-preserving statements, by contrast, primarily move stock prices and short-term rates but have little effect on long-term yields. This heterogeneity extends to the ECB and the Bank of England, confirming it is not specific to FOMC communication.

We then investigate what information reversal statements convey. Decomposing yields into real rates and inflation compensation shows that the reversal effect operates entirely through real interest rates, ruling out news about the inflation target or the central bank's reaction function. Decomposing further into expectations hypothesis and term premium components reveals that the effect operates primarily through revisions in expected future short rates, with a secondary contribution from the term premium. Forward rate evidence confirms that reversal statements generate a sharp revision in policy expectations at me²dium-term horizons that declines and becomes insignificant at the 10-year

horizon, a rotation in the expected rate path rather than a parallel shift, consistent with investors learning about the pace of future rate adjustments. Option-implied uncertainty measures do not respond differentially on reversal days, indicating that the term premium effect reflects duration risk associated with the change in the shape of the rate path, not an increase in uncertainty about its level.

These findings have direct implications for the identification of monetary policy effects. Standard event-study analyses pool together two qualitatively different types of statements, introducing an aggregation bias. The information that matters for long-term rates lies in the joint distribution of present and future policy signals, not their individual levels.

Quand la politique monétaire est-elle efficace ? Signaux contradictoires et réactions des prix d'actifs

RÉSUMÉ

Cet article analyse comment les investisseurs réagissent aux annonces de politique monétaire lorsque la banque centrale envoie simultanément des signaux contradictoires sur sa décision actuelle et sur la trajectoire future des taux. Nous proposons une classification des annonces du FOMC fondée sur l'interaction entre le facteur « Décision » (surprise sur la décision de taux courante) et le facteur « Trajectoire » (surprise sur la trajectoire future) de Gürkaynak, Sack et Swanson (2005). Une annonce de retournement est celle où la surprise « Décision » contredit et domine la surprise « Trajectoire », de sorte que le signal net porte essentiellement sur l'avenir.

Le résultat principal est net : les annonces de retournement représentent près de la moitié des réunions programmées du FOMC et expliquent une part disproportionnée de l'effet de la politique monétaire sur les taux longs. Une surprise de 10 points de base issue d'une annonce de retournement déplace les rendements à 10 ans de 6,7 points de base, contre moins de 3 points de base pour les autres annonces. À l'inverse, les autres annonces - qui préservent la direction du signal - affectent principalement les prix des actions et les taux courts. Cette hétérogénéité dans les annonces de politiques monétaires s'étend à la BCE et à la Banque d'Angleterre.

Nous montrons ensuite que l'effet des annonces de retournement transite entièrement par les taux réels et opère principalement via les révisions des anticipations de taux courts futurs. Les taux à terme confirment une révision marquée aux horizons de moyen terme mais nulle à l'horizon de dix ans, cohérente avec le fait que les investisseurs apprennent sur le rythme des futurs ajustements de taux plutôt que sur leur niveau final. L'information pertinente pour les taux longs réside ainsi dans la distribution conjointe des signaux présents et futurs, et non dans leurs niveaux individuels, une dimension que les analyses standard de politique monétaire ne capturent pas.

Mots-clés : politique monétaire, surprises monétaires, structure de termes, identification, signaux de politique monétaire

1 Introduction

Central bank announcements convey two types of information simultaneously: news about the current policy decision and signals about the future policy path. These two pieces of information may not point in the same direction. For instance, a central bank could raise interest rates today while signaling that future hikes will be fewer or slower than expected. Alternatively, it can keep rates unchanged while suggesting that the pace of future tightening will be faster than anticipated. When forward-looking signals reverse the current-decision news, investors face a specific challenge in processing the announcement: they must reconcile conflicting news and form a view on which signal matters the most. How do investors process such announcements? Do these conflicting signals shape the transmission of monetary policy to asset prices differently from announcements where signals about the future policy path do not reverse the current decision news?

This paper provides a systematic answer to this question. We build on the decomposition of Gürkaynak et al. (2005a) (hereafter GSS), who extract a Target factor (capturing news about the current federal funds rate decision) and a Path factor (capturing residual signals about the expected future policy path) from changes in short-term interest rate futures within a 30-minute window around FOMC announcements. We classify FOMC announcements according to whether signals about the future reverse (or not) the current-decision news, so that the net signal is primarily forward-looking. We show that this novel classification reveals a fundamental heterogeneity in monetary policy transmission that standard specifications average out.

The main empirical finding is stark. *Reversal* statements account for nearly half of all scheduled FOMC meetings and drive a disproportionate share of monetary policy's effect on medium- and long-term interest rates. A 10 basis points (bp) monetary surprise from reversal statements moves 10-year Treasury yields by 6.7 bp while the same surprise from non-reversal statements moves them by 3 bp. This result is not driven by a composition effect in the distribution of monetary surprises across reversal and non-reversal meetings, so the stronger transmission on reversal days is not driven by larger surprises. Non-reversal statements, by contrast, primarily move stock prices and short-term rates but have little effect on the long end of the yield curve. This implies that the *joint distribution* of Target and Path factors, not just their individual levels, is crucial for the transmission of monetary policy to long-term rates. This dimension of monetary policy announcements is hidden when using the total surprise or the two factors separately. Importantly, the heterogeneity in monetary policy transmission that we identify is large, robust, and extends to both the ECB and the Bank of England.

We establish this finding by estimating the heterogeneous transmission using a standard event-study regression that allows the pass-through of monetary policy surprises to asset prices to differ across reversal and non-reversal statements. We use high-frequency asset price changes from the US Monetary Policy Database (USMPD) of Acosta et al. (2025), which provides intraday price changes within a 30-minute window surrounding FOMC announcements, for the 254 scheduled meetings between February 1994 and January 2026. Our baseline monetary policy surprise is the first principal component of five interest rate futures contracts, ranging from current-month to one-year-ahead as is standard in the literature (Nakamura and Steinsson 2018). We estimate the Target and Path factors following the GSS rotation procedure applied to the same data. The reversal classification is based on two conditions: (i) the Path surprise moves in the opposite direction to the Target surprise, and (ii) is larger in absolute value. Crucially, we show that our result does not rely on the GSS factor extraction. We compute two model-free alternatives: an *observable-based classification* using the raw surprises in current-month and one-year-ahead futures, and a *single-PCA classification*. They both deliver the same pattern of differential transmission across meeting types, which confirms that this finding is not driven by the GSS decomposition.

A potential concern is that the reversal classification may proxy for the absolute magnitude of Path surprises, rather than conveying information specific to the joint distribution of factors. We show that controlling for either large Path surprises or small Target surprises, and for quantitative easing and forward guidance announcements leaves the reversal effect unchanged. The finding also withstands various robustness checks: daily asset price changes, pre- and post-2009 sub-samples, an extended sample dating back to 1988, and alternative monetary surprise measures including the Bauer and Swanson (2023a) news-adjusted series. It is robust to controlling for the occurrence of press conferences, the publication of FOMC forecasts, FOMC dissent, central bank information effects, monetary policy uncertainty, and turning points in the policy cycle. It also holds when including a third factor and when extending futures maturities used in the factor extraction.[1] The same heterogeneous transmission pattern is observed when the reversal classification is applied to two other central banks with their own institutional and communication frameworks, reinforcing that the finding reflects how investors interpret policy announcements.

We then investigate the potential channels behind this heterogeneous transmission. The decomposition of nominal yields into (i) real rates and (ii) inflation compensation establishes that the reversal effect operates through the future path of real rates, with inflation compensation left unchanged. This provides little support for an interpretation in which the marginal information content of reversal statements conveys news about the inflation target or the central bank's reaction function.[2] Decomposing further into (i) the expectations hypothesis and (ii) term premium components using the affine term structure model of Adrian et al. (2013) reveals that both channels contribute, but the reversal effect operates primarily through revisions in expected future short rates.

The transmission to the forward rates reveals that reversal statements generate a sharp revision in policy expectations at medium-term horizons (2-year) but the response declines steadily and becomes insignificant at the 10-year horizon. This suggests that investors revise the pace of future rate adjustments rather than their expectations about the long-run level. We compute a *pace-of-cycle* shock as the difference between medium-term and near-term futures responses, capturing the curvature of the term structure of policy expectations. The response of this *pace-of-cycle* news is large and significant on reversal days and remains significant even after orthogonalizing it with respect to Target and Path. The secondary term premium channel appears to reflect duration risk associated with the change in the shape of the expected rate path. Indeed, option-implied uncertainty measures do not respond differentially on reversal days, indicating that the term premium effect is not driven by an increase in the dispersion of rate expectations but rather by the compensation required for bearing the duration risk of a rotating yield curve.

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[1] A related literature decomposes asset price changes into three or more factors by including longer-term interest rates (Altavilla et al. 2019, Swanson 2021, Kaminska et al. 2021, Jarociński 2024, Ricco et al. 2024, Akkaya et al. 2024).

[2] Gürkaynak et al. (2005b) and Bianchi et al. (2022) show that monetary policy announcements can shift beliefs about trend inflation, and Bauer and Swanson (2023b) that they also convey news about the central bank's reaction function.

To understand why reversal statements convey such a specific information about the future rate path, we revisit a fundamental property of the GSS decomposition. For long-term interest rates to respond to monetary policy announcements at all, investors must learn something from FOMC statements that they could not infer from publicly observable variables alone. Stein and Sunderam (2018) formalize this by assuming that what investors learn is the FOMC's preferred value of the policy rate. Our evidence suggests a different but complementary interpretation: what investors learn from reversal statements is about the pace of upcoming policy adjustments. The Target factor is not a pure current-decision factor: its loading on one-year-ahead futures is as large as that of the Path factor by construction, meaning that it reflects as much information about the expected future path as Path does. When Path surprises reverse Target surprises, both types of future-path information (the one correlated with the current decision and the one orthogonal to it) pull in opposite directions. The net signal is about the forward-looking content that is orthogonal to expected policy path movements driven by the current rate decision through the expectations hypothesis. This marginal signal generates a kink or rotation in the expected rate path rather than a parallel shift, consistent with the idea that investors are learning about the pace of upcoming policy adjustments.

These findings have direct implications for the identification of monetary policy effects. Standard event-study estimates of the effect of monetary policy on long-term rates are averages that mix two qualitatively different types of statements. The identification of policy effects on long-term interest rates comes primarily from reversal statements, while the identification of equity price and short-rate effects comes from non-reversal statements. Treating all statements as homogeneous introduces an aggregation bias. More broadly, the heterogeneity we document implies that what matters is not just the overall monetary surprise, but also the joint distribution of Target and Path surprises. Accounting for this dimension matters for the interpretation of reduced-form estimates of monetary policy transmission and for the design of empirical strategies to identify its effects.

This paper contributes to several strands of the literature. It connects to the large literature on the identification of monetary policy effects (Ramey 2016), documenting a fundamental heterogeneity in transmission that standard specifications do not capture.[3] Our classification builds directly on the seminal work of Gürkaynak et al. (2005a) and extends their finding by showing that the joint distribution of Target and Path helps to characterize the information conveyed on FOMC days.[4] Boehm and Kroner (2024) identify a *"non-yield"* shock from monetary surprises using stock prices and exchange rates. Our classification complements their approach by documenting another type of signals that could be retrieved from monetary surprises. Boyarchenko et al. (2016) find that most of the effect of FOMC announcements on 10-year rates comes from a *"confidence"* factor with large positive loadings on long-term rates. Our classification identifies which statements could generate such a factor without relying on long-term rates. Various works use the sign of co-movements across asset classes to characterize monetary announcements (Cieslak and Schrimpf 2019, Jarociński

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[3] Our finding connects to Hamilton and Jorda (2002), who document that FOMC announcements have heterogeneous effects depending on the characteristics of the decision itself.

[4] Recent work aims at improving the measurement of monetary surprises using textual analysis (Handlan 2022, Acosta 2024, Aruoba and Drechsel 2024) or by exploiting missing information in asset price responses (Gürkaynak et al. 2020).

and Karadi 2020, Cieslak and Pang 2021, Bianchi et al. 2025).[5] Our approach instead uses the interplay between Target and Path *within* a meeting to provide a classification *across* meetings.

This paper also connects to work on forward guidance (Lunsford 2020, Andrade and Ferroni 2021) and the distinct effects of speed-of-adjustment versus level guidance (Neuhierl and Weber 2019). The term premium channel relates to Hanson and Stein (2015), Hanson et al. (2021), and Kekre et al. (2024), who argue that monetary policy operates in part through term premia, a mechanism consistent with the consequence on duration risk of the information content of reversal statements. In addition, our result that the subset of reversal statements drives a disproportionate share of the effect of FOMC policy announcements on long-term interest rates and, most if not all, of the effect on real interest rates suggests that both the results of Nakamura and Steinsson (2018) and Hillenbrand (2025) might be related to reversal meetings more specifically.

Our paper also relates to the literature documenting that investors respond to more than the first-moment of the announced policy. Haddad et al. (2025) show that central bank announcements convey state-contingent policy promises and that this higher-moment information explains a large part of the market impact of asset purchase programs. Bundick et al. (2024) find that FOMC announcements reshape the term structure of interest rate uncertainty over and above the expected path of policy rates, while Bauer and Chernov (2024) and Bauer et al. (2022) document that higher-moments of the future rate distribution are important drivers of bond risk premia and of the market response to FOMC announcements. Our paper is complementary as we document the importance of the joint distribution of Target and Path surprises. This dimension of central bank communication is distinct from, but consistent with, the role of higher-moment information.

2 Two subsets of monetary policy statements

Over the past thirty years, a rich literature has emerged on the measurement and identification of monetary policy shocks (Coibion 2012). Notably, we have seen a move from VAR and narrative approaches (Bernanke and Blinder 1992, Christiano et al. 1999, Romer and Romer 2004) to high-frequency approaches to mitigate important endogeneity concerns (Cook and Hahn 1989, Rudebusch 1998, Rigobon and Sack 2004). Kuttner (2001), Cochrane and Piazzesi (2002) and Faust et al. (2004), among others, pioneered this literature using data from Federal funds rate futures.[6] These contracts are useful for distinguishing between *anticipated* and *unanticipated* changes in the policy rate. Anticipated changes are already embedded in futures prices. When the FOMC actual decision differs from what is implied by the futures, this difference represents an unanticipated change, referred to as a monetary policy surprise (MPS).

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[5] A related and ample strand of the literature focuses on central bank information effects, documenting that policy announcements may also convey signals about the economic outlook (Romer and Romer 2000, Ellingsen and Söderström 2001, Campbell et al. 2012, Melosi 2016, Lakdawala and Schaffer 2019, Miranda-Agrippino and Ricco 2021, Karnaukh and Vokata 2022, Hoesch et al. 2023, Nunes et al. 2024, Golez and Matthies 2025, Jarociński and Karadi 2025, Ricco and Savini 2025, Ehrmann and Hubert 2026, Pelin 2026, Miranda-Agrippino and Williams 2026).

[6] A Fed funds futures contract reflects investor consensus about the average daily effective federal funds rate for a given calendar month (Krueger and Kuttner 1996). D'Amico and Farka (2011), Barakchian and Crowe (2013) and Gertler and Karadi (2015) combines high-frequency data from futures with the VAR approach to improve identification.

2.1 Monetary surprises, the GSS decomposition and their transmission

To compute monetary policy surprises, we follow the standard practice in the literature, as in Nakamura and Steinsson (2018) and Bauer and Swanson (2023b), and use high-frequency asset price changes from the US Monetary Policy Database (USMPD) of Acosta et al. (2025). The USMPD provides intraday price changes in a 30-minute window around FOMC announcements for five interest rate futures contracts: the current-month Federal Funds futures (FF1), the second-month Federal Funds futures (FF2), and Eurodollar futures expiring two, three, and four quarters ahead (ED2, ED3, ED4).[7] Our baseline monetary policy surprise MPS_t is the first principal component of these five futures surprise series extracted from their covariance matrix for scheduled FOMC meetings. It is then scaled so that its loading on ED4 equals one, as is standard in the literature. This scaling ensures that one-unit of MPS_t corresponds to a one-unit change in the one-year-ahead futures rate, making the magnitude of surprises directly interpretable.

In a seminal paper, Gürkaynak et al. (2005a) (hereafter GSS) show that news about the current policy stance represents only a small fraction of the information conveyed on FOMC days. They characterize monetary policy news with two factors extracted from short-term futures: the *Target* factor, which captures surprise changes in the Federal Funds Rate (FFR) target, and the *Path* factor, which captures residual surprise changes in the future policy path over the coming year, orthogonal by construction to surprise changes in the current FFR.[8] They show that the effects of monetary policy on asset prices can be adequately characterized by these two factors.

We estimate these factors from the USMPD data following the GSS procedure. We apply principal component analysis to the covariance matrix of the five futures surprises and retain the first two components, which are then rotated so that the first factor (Target) has a loading of exactly one on FF1 and the second factor (Path) has a loading of zero on FF1 as a consequence. The *Target* factor therefore tracks one-for-one surprise changes in the current policy rate, while the *Path* factor captures residual forward-looking variation orthogonal to the current decision surprise. The *Path* factor is then scaled so that its loading on ED4 is the same as that of the *Target* factor.[9] Appendix Table A1 reports the estimated factor loadings.[10]

We use these three objects, MPS_t and its Target/Path decomposition, to first estimate the *unconditional* effects of monetary policy announcements on asset prices, which we then use as a benchmark. Our sample covers the 254 scheduled FOMC meetings between February 1994 and January 2026.[11] We follow the standard event-study approach and estimate the following specifications:

$$\begin{aligned} \Delta Y_t &= \alpha + \beta\, MPS_t + \epsilon_t \\ \Delta Y_t &= \alpha + \beta_T\, Target_t + \beta_P\, Path_t + \epsilon_t \end{aligned} \tag{1}$$

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[7] The USMPD provides rescaled versions (MP1 and MP2) of the current- and next-month Fed Funds futures (FF1 and FF2), where raw price changes are scaled by the remaining fraction of the month at the time of the announcement.

[8] We show in a robustness check that including a third factor, which would be relevant for QE periods for instance, and extending to longer futures maturities leave our main result unchanged.

[9] This normalization ensures that a one-unit change in either factor corresponds to similar changes in the one-year-ahead futures rate. Our classification rests on the *relative* magnitude of *Target* and *Path*, so this comparability is essential.

[10] Our series closely match Acosta et al. (2024), with correlations of 0.98 and 0.99 for *Target* and *Path* factors respectively.

[11] The full USMPD sample contains 256 scheduled meetings over this period. We exclude two exceptional QE announcements (16 December 2008 and 18 March 2009). The results are robust to including them (see Section 3.3).

where ΔY_t is the 30-minute change in either the log S&P 500 or nominal Treasury yields at 2-, 5- and 10-year maturities, measured in the same intraday window around the FOMC announcement (provided in the USMPD). MPS_t, $Target_t$ and $Path_t$ are all measured in the same 30-min window around FOMC announcements. Using intraday changes circumvents the role of potential confounding factors from same-day, non-FOMC events (Lucca and Moench 2015).

Table 1: Standard monetary policy effects

	SP500	2y	5y	10y
Panel A: Monetary policy surprises				
MPS_t	-4.088***	0.756***	0.672***	0.400***
	[0.58]	[0.04]	[0.05]	[0.05]
R^2	0.23	0.77	0.61	0.40
Obs.	254	254	254	254
Panel B: Target and Path factors (GSS)				
$Target_t$	-3.552***	0.434***	0.347***	0.128**
	[0.77]	[0.04]	[0.07]	[0.05]
$Path_t$	-1.624***	0.377***	0.348***	0.233***
	[0.31]	[0.01]	[0.02]	[0.02]
R^2	0.23	0.87	0.72	0.55
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Panel A uses MPS_t, defined as the first principal component of futures surprises from the USMPD data, scaled so that its loading on ED4 equals 1. Panel B replaces MPS_t with the Target and Path factors, estimated following the GSS procedure from the same USMPD data (see Appendix Table A1 for loadings). The dependent variables are the 30-minute change in log SP500 (column 1) and in nominal Treasury yields at 2-, 5- and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table 1 reports results from both specifications. Panel A confirms the standard effects of monetary policy, which are well documented in the literature (Bernanke and Kuttner 2005): a restrictive surprise is associated with lower stock market valuations and higher nominal yields, with effects declining along the maturities of the yield curve.[12] Quantitatively, a 10 bp surprise causes the S&P 500 to fall by 0.41% and raises 10-year yields by 4 bp. The R^2 at 10-year is 40%, in line with the 36% reported by Bauer and Swanson (2023a).[13]

Panel B replaces MPS_t with their Target and Path components. The Target factor dominates the equity response (-3.55 vs. -1.62 for Path), while the Path factor gains relative importance at longer maturities, reflecting its forward-looking content. The two factors jointly raise the R^2 at 10-year from 40% to 55%, consistent with Gürkaynak et al. (2005a). This improvement in the fraction of variance explained motivates the idea that monetary surprises are a heterogeneous concept that captures different types of signals, particularly those relating to the future policy path.

However, even with the Target/Path decomposition, FOMC news leaves a sizable share of long-term yield variance unexplained. The next section explores whether this may reflect a deeper level

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[12] Appendix Table A2 confirms that these results hold across alternative MPS measures.

[13] Kilic et al. (2024) similarly document, using intraday data, that while VIX dynamics cluster around FOMC announcements, the fraction of variance explained remains limited (their Table 3).

of heterogeneity, *across* meetings rather than *within* them. What could matter is not only the information conveyed by Target and Path surprises in isolation, but also the information embedded in their *joint* distribution, *i.e.* whether path signals reverse current decision news or not.

2.2 Classifying FOMC statements

We leverage the Target/Path decomposition of monetary surprises to propose a simple yet powerful classification of the 254 FOMC statements according to the nature of the signal they convey. The Target and Path factors carry different implications for policy expectations depending on the horizon considered. The Target factor represents a standard short-term interest rate shock: it primarily reflects news about the current FFR decision. The Path factor represents a forward guidance shock, *i.e.* a shock to expected interest rates at some future horizon (see McKay et al. 2016, Bundick and Smith 2020 and Del Negro et al. 2023 for analyses of forward guidance effects). Although there is no one-to-one mapping between the Path factor and a structural forward guidance shock, they capture the same concept: signals about the future policy stance that go beyond what is implied by the current decision.

On any given FOMC day, the Target and Path surprises can either reinforce each other or pull in opposite directions. When the central bank raises rates but simultaneously signals a flatter future path (or holds rates steady while signaling faster or stronger than expected future adjustments), the forward-looking signal embedded in Path reverses the news conveyed by the current decision. In such meetings, investors face a challenge as they need to reconcile (i) a current-rate surprise in one direction with (ii) a path surprise in the other direction, and form a view on which signal dominates the long-term rate outlook. We define a *reversal* statement as when this challenge is most evident: the Path surprise not only moves in the opposite direction to the Target surprise, but overturns it. It means that the net signal relates primarily to the future rather than the current decision:

$$\mathbb{1}_t^{\text{Rev}} = \mathbb{1}\big\{|Path_t| > |Target_t| \text{ and } Path_t \times Target_t < 0\big\} \tag{2}$$

We later provide evidence in Section 4 suggesting that this configuration is consistent with information about the pace of the policy cycle rather than a shift in the level of the policy stance: the central bank is adjusting how fast it intends to move in the future, not just the decision it takes today. A canonical example would be a rate hike accompanied by a dovish path signal, which investors may interpret as meaning that future hikes will be fewer or slower, *i.e.* a deceleration of the tightening cycle. Symmetrically, a hold decision paired with a hawkish path surprise signals that the pace of future tightening will be faster than investors anticipated. In both cases, the relevant information for the term structure is not the current-rate decision *per se*, but the *joint* distribution of signals about the current-rate decision and the trajectory of policy rates over the coming quarters.

By contrast, there are meetings where the current decision and Path surprises point in the same direction, or where signals about the future policy path only mitigate the current decision without reversing it.[14] In such meetings, the current decision and the net signal are mutually consistent and push investors' updating in a single direction, arguably making the announcement easier to interpret. A natural prior would therefore be that *direction-preserving* statements have a stronger effect

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[14] In practice, it is never the case that $Path_t \times Target_t = 0$ over our sample.

on asset prices: the signal is unambiguous, enabling investors to update their policy expectations without considering conflicting signals.

Table 2: Descriptive statistics for monetary surprises

	N	%	Mean Abs.	SD
Reversal meetings	123	48%	0.029	0.030
Non-reversal meetings	131	52%	0.045	0.046

Note: This table shows the number and percentage of scheduled FOMC meetings in each category, along with the mean absolute value and standard deviation of the monetary policy surprise MPS_t (first principal component from USMPD data, scaled to ED4). Reversal meetings satisfy $|Path_t| > |Target_t|$ and $Path_t \times Target_t < 0$, while non-reversal meetings are the remaining ones not satisfying this condition. The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026. The difference in mean monetary surprises (0.029 vs. 0.045) is significant at the 1% level using pairwise t-test.

Table 2 reports the distribution of the two subsets of FOMC statements and the basic properties of monetary surprises in each. Of the 254 meetings in our sample, 123 are classified as reversals (48%) and 131 are not (52%), so reversal statements are an important feature of FOMC communication. The monetary surprises are smaller in absolute value on reversal days (0.029 vs. 0.045 on non-reversal days), which implies that the stronger transmission to asset prices from reversal statements documented below is not driven by composition effects, *i.e.* larger surprises that may have larger effects. If anything, it makes the differential effect even more pronounced. Appendix Figure A1 plots the time series of reversal statements alongside the FFR.

Model-free alternative classifications. A natural concern is whether the identification and classification of reversal meetings depends on the GSS methodology. We construct two model-free alternatives. The first is an *observable-based* classification: we regress the four-quarter ahead Eurodollar surprise (ED4) on the current-month futures surprise (FF1), and define the fitted value as our "target-observable" ($\widetilde{FF1}$) and the residual as our "path-observable" ($\widetilde{ED4}$). A reversal statement is then defined by the condition that $|\widetilde{ED4}| > |\widetilde{FF1}|$ and opposite signs, without relying on any PCA or factor rotation. This classification abstracts from any factor model and works directly with raw observable futures prices. The second model-free alternative is a *single-PCA* classification: we extract the first principal component of all five futures surprises without rotation, decompose it into its projection on FF1 (the "current-decision" component, the fitted values) and its orthogonal complement (the "future" component, the residuals), and apply the same sign-and-magnitude condition. This classification uses the standard MPS measure from the literature and orthogonalizes it to the current-decision surprise, without imposing any structure.

Appendix Table A3 reports the distribution of statements under the baseline and both model-free alternatives. These classifications identify fewer reversal meetings, 97 and 70 respectively, against 123 in the baseline, reflecting that they are more conservative by construction. The *observable-based* classification works with raw futures prices, which may contain more measurement noise than the rotated factors. In contrast, the *single-PCA* classification combines present and future information into a single component, making the separation between the two noisier. Both alternatives therefore tend to retain only the most unambiguous reversal statements. We also construct a combined measure that identifies a statement as a reversal only when all three classifications concur, resulting in 29 cases in total. The robustness of the main result across all four classifications is documented in Section 3.

3 Heterogeneous transmission across statement types

3.1 Investors' responses to reversal statements

This paper addresses the question of whether conflicting signals conveyed by a monetary policy announcement, rather than each individual signal, influence how investors process this information and update their beliefs. As suggested in Section 2.2, *direction-preserving* statements may be easier to interpret and therefore have more powerful effects. In contrast, in reversal statements, where signals about the future policy path reverse the current decision news, the investors' interpretation might be more ambiguous so that the effect of the policy announcement would be weaker. To test for potential heterogeneity, we interact MPS_t with the reversal dummy $\mathbb{1}_t^{\text{Rev}}$, allowing monetary surprises to transmit differently across the two types of statements:

$$\Delta Y_t = \alpha + \beta_1 \, MPS_t + \beta_2 \, MPS_t \cdot \mathbb{1}_t^{\text{Rev}} + \beta_3 \, \mathbb{1}_t^{\text{Rev}} + \epsilon_t \tag{3}$$

where $\hat{\beta}_1$ captures the effect of monetary policy surprises MPS_t from non-reversal, direction-preserving statements, $\hat{\beta}_2$ the marginal effect from reversal statements, and $\hat{\beta}_1 + \hat{\beta}_2$ the total effect from reversal statements. $\hat{\beta}_3$ is a level control for asset price differences on reversal days. Equation (3) is estimated using OLS with heteroskedasticity-robust standard errors.

Table 3: Monetary policy effects: reversal vs. non-reversal statements

	SP500	2y	5y	10y
MPS_t	-3.740***	0.624***	0.542***	0.296***
	[0.63]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.174	0.492***	0.479***	0.377***
	[1.39]	[0.06]	[0.08]	[0.08]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.914***	1.116***	1.021***	0.673***
	[1.24]	[0.04]	[0.06]	[0.06]
R^2	0.24	0.83	0.67	0.47
R^2 Non-reversal	0.28	0.76	0.63	0.38
R^2 Reversal	0.18	0.89	0.69	0.53
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Equation (3) estimated by OLS. The level dummy $\mathbb{1}^{\text{Rev}}$ and the constant are included but not shown. MPS_t is the first principal component of futures surprises from the USMPD data, scaled to ED4. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. The R^2 rows are computed from subsample regressions. The dependent variables are the 30-minute change in log S&P500 (column 1) and in nominal Treasury yields at 2-, 5-, 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table 3 presents the main findings of this paper. On non-reversal days, the effects of monetary surprises follow the "standard" pattern: a negative effect on stock prices and a positive but moderate effect on yields, which decline along the maturity spectrum. At a 10-year horizon, the non-reversal effect is 3 bp for a 10 bp monetary surprise. Therefore, the traditionally identified effect on equity prices and short-term nominal yields (2-year rates) comes primarily from the subset of non-reversal statements, where the signal is unambiguous.

Second, and more importantly, the central finding of this paper overturns our null hypothesis. The marginal effect of reversal statements is large and highly significant at all yield maturities: at a 10-year horizon, the interaction coefficient $\hat{\beta}_2$ is 0.38, and the total effect from reversal statements reaches 0.67. The effect of monetary surprises from reversal statements is around twice as large as the effects of non-reversal statements across the maturity spectrum. In contrast, stock prices do not respond differently on reversal days.

Figure 1 illustrates this for 5- and 10-year yields. On reversal days (right panel), the relationship between monetary surprises and yield changes is steep and data cluster tightly around the regression line. On non-reversal days (left panel), the relationship is flatter and more dispersed. Not only does the magnitude of the effect of monetary policy on interest rates double for reversal statements compared to non-reversal statements, but the fraction of the nominal yields variance explained is also higher. Monetary surprises account for 89, 69 and 53% of the variance of 2-, 5- and 10-year rates for those statements compared to around 76, 63 and 38% for non-reversal statements.

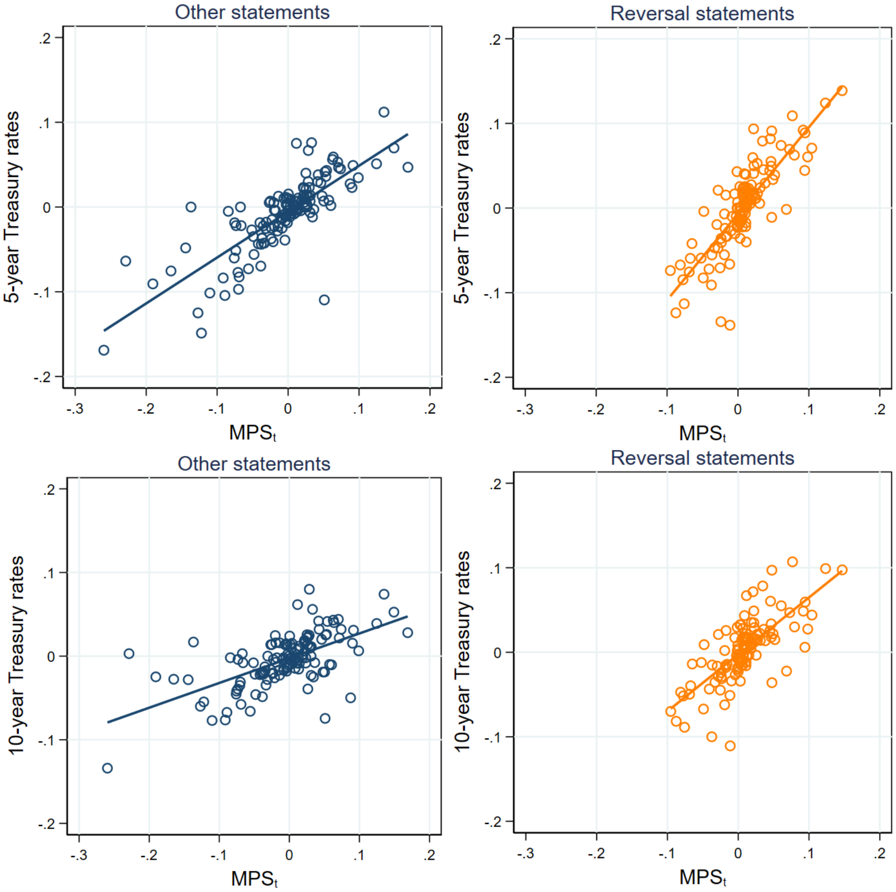
The pattern observed in asset prices sheds light on the nature of the information conveyed by reversal statements. Standard discount-rate news that affects the present value of future cash-flows usually lowers stock prices while raising nominal yields. This is what is observed for non-reversal statements. The strong response of long-term yields on reversal days, coupled with the absence of any differential stock price reaction, suggests that reversal statements convey information specific to the interest rate term structure, rather than news about the discount rate or the macroeconomic outlook. We explore these potential interpretations in more details in Section 4.

Appendix Table A4 reports a three-way decomposition distinguishing amplifying ($Target_t \times Path_t > 0$), attenuating ($Target_t \times Path_t < 0$ but $|Target_t| > |Path_t|$), and reversal statements. In attenuating statements, the current-decision signal dominates because the path surprise only partially offsets it. They show no systematic differential effect on long-term rates, confirming that grouping amplifying and attenuating statements involves no loss of generality, and that what really matters is the fact that signals about future policy reverse the current-decision news.

Appendix Table A5 extends the analysis to include all maturities from 1 to 30 years. We observe that the heterogeneous transmission is at work from 2 to 25 years, while the effect of non-reversal statements is small and often insignificant beyond short maturities. The effect of reversal statements peaks at a maturity of around 2-5 years after which it declines gradually, becoming imprecisely estimated at 25-year and null at 30-year. The fact that the effects of reversal statements extend to distant horizons where future policy rates are unlikely to directly impact nominal yields suggests that a simple shift in policy expectations may not fully explain the transmission process. Other channels may also be at play, such as changes in the shape of the expected rates path or in the term premium component. We investigate these channels directly in Section 4. Regardless of the mechanism, these results across the entire yield curve suggest that a large part of the asset price transmission relevant for borrowing and investment decisions operates through this specific subset of reversal statements.

Model-free alternative classifications. Table 4 replicates the baseline result using all three alternative reversal classifications described in Section 2.2. The observable-based and single-PCA classifications identify fewer reversal meetings (97 and 70 respectively), yet the qualitative pattern is

Figure 1: Monetary surprises and interest rates: reversal vs. other statements



Note: 30-minute changes in nominal yields around FOMC announcements (y-axis) against MPS_t computed as the first principal component of futures surprises from the USMPD data, scaled to ED4 (x-axis). Left panel: non-reversal statements (blue). Right panel: reversal statements (orange). Upper row: 5-year nominal yields. Lower row: 10-year nominal yields. The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

unchanged across all panels. The total reversal effect on 10-year yields is large and significant under every classification, ranging from 0.56 to 0.66, while the non-reversal effect remains moderate and stable at around 0.31-0.38. The combined classification, which retains only the 29 meetings categorized as reversal statements by all three methods, delivers a total reversal effect of 0.58, still nearly twice the size of the non-reversal effect. Two important conclusions can be drawn. First, our main finding is independent of the GSS factor extraction and the rotation procedure. Second, even the most restrictive definition of a reversal, one that requires all three classifications to concur, identifies a subset of meetings with substantially stronger transmission to long-term rates. This confirms that the heterogeneity documented in Table 3 is a robust feature of the data, independent of how reversal statements are defined.

Overall, the main message is that monetary policy surprises affect long-term interest rates primarily through reversal statements. The subset of FOMC meetings where the path surprise reverses the current-decision surprise accounts for a disproportionate share of monetary policy's effect on medium- and long-term Treasury yields in Tables 3 and 4. In other words, the joint distribution of

Table 4: Heterogeneous transmission under alternative reversal classifications

	SP500	2y	5y	10y
Panel A: Observable-based classification				
MPS_t	-3.701***	0.658***	0.556***	0.314***
	[0.62]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev/Obs}}$	-0.367	0.333***	0.312***	0.247**
	[1.70]	[0.08]	[0.08]	[0.10]
$MPS_t \mid \mathbb{1}^{\text{Rev/Obs}} = 1$	-4.068**	0.991***	0.868***	0.562***
	[1.59]	[0.06]	[0.06]	[0.08]
R^2	0.24	0.80	0.66	0.45
Obs.	254	254	254	254
Panel B: Single-factor PCA classification				
MPS_t	-4.176***	0.687***	0.611***	0.347***
	[0.62]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev/PC1}}$	0.409	0.442***	0.380***	0.308***
	[1.81]	[0.06]	[0.08]	[0.08]
$MPS_t \mid \mathbb{1}^{\text{Rev/PC1}} = 1$	-3.767**	1.130***	0.991***	0.655***
	[1.70]	[0.05]	[0.07]	[0.07]
R^2	0.23	0.80	0.64	0.44
Obs.	254	254	254	254
Panel C: Combined classification				
MPS_t	-4.174***	0.714***	0.642***	0.378***
	[0.59]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev/Combined}}$	1.406	0.384***	0.274***	0.204**
	[2.25]	[0.08]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev/Combined}} = 1$	-2.768	1.098***	0.916***	0.582***
	[2.17]	[0.06]	[0.07]	[0.08]
R^2	0.25	0.79	0.62	0.41
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each panel replicates Equation (3) using an alternative reversal classification. Panel A: observable-based (no PCA, target-observable = projection of ED4 on FF1, path-observable = residual). Panel B: single-factor PCA (first PC decomposed into present/future via projection on FF1). Panel C: all three classifications combined. The level dummy and the constant are included but not shown. The dependent variables are the 30-minute change in log S&P500 (column 1) and in nominal Treasury yields at 2-, 5-, 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Target and Path surprises conveys relevant information for long-term rates that is not captured by either factor in isolation, nor by the total MPS_t. Event-study analyses that use the standard MPS_t therefore average over qualitatively different types of statements. This conflates two distinct transmission mechanisms and confounds the source of monetary policy's influence on the long-term interest rates.

3.2 Are reversal statements capturing large path factors?

By construction, reversal statements tend to have large Path surprises as a direct implication of the condition $|Path_t| > |Target_t|$. A natural concern is thus whether the stronger transmission from reversal statements reflects the fact that large Path surprises move long-term rates more (Gürkaynak et al. 2005a), rather than anything specific to the fundamental nature of reversal statements. Conversely, reversal statements might also be often characterized by smaller Target surprises. Appendix Figure A2 shows a scatterplot of Target and Path surprises. Reversal statements do not appear more clustered in these extreme bins than non-reversal statements. More broadly, large Path surprises may also arise from meetings with quantitative easing (QE) or explicit forward guidance announcements, which, by design, operate on longer maturities and could therefore be systematically classified as reversals. We address these concerns in a more systematic way with two complementary sets of tests: first, we isolate the roles of large Path and small Target surprises directly, and second, we control explicitly for QE and forward guidance announcement meetings.

Large Path surprises. We augment Equation (3) with an interaction term between MPS_t and a dummy for meetings where $|Path_t|$ exceeds its 75th percentile, regardless of the magnitude of $|Target_t|$. Table 5 reports the results. While the large Path interaction term has a limited explanatory power for long-term rates, the reversal interaction term remains large and significant throughout. Notably, although 35% of reversal statements occur when the Path factor is classified as large, it is the joint distribution of Target and Path surprises, rather than the size of the Path factor itself, that drives the differential transmission. This rules out the interpretation that the stronger transmission to long-term yields reflects larger Path surprises. Appendix Table A6 further confirms this by interacting the reversal dummy directly with Path surprises rather than with MPS_t. First, we observe the standard effects of the Path factor on long-term nominal yields for the set of non-reversal statements. Second, we also observe that reversal statements do not present any additional effects of the Path factor on long-term yields. Therefore, these results exclude the possibility that the strong impact of reversal statements on long-term interest rates is due to the standard effects of the Path factor on long-term yields.

Table 5: Reversal statements vs. large Path surprises

	SP500	2y	5y	10y
MPS_t	-4.026***	0.548***	0.438***	0.228***
	[0.73]	[0.05]	[0.06]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.805	0.441***	0.422***	0.351***
	[1.53]	[0.08]	[0.09]	[0.09]
MPS_t x $\mathbb{1}^{\text{Large Path}}$	0.100	0.142*	0.185**	0.113
	[1.18]	[0.08]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.831***	0.989***	0.860***	0.578***
	[1.64]	[0.09]	[0.11]	[0.10]
R^2	0.25	0.84	0.69	0.49
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Equation (3) augmented with $MPS_t \times \mathbb{1}^{\text{Large Path}}$, where $\mathbb{1}^{\text{Large Path}}$ is a dummy for $|Path_t| \geq$ 75th percentile. The level dummies and the constant are included but not shown. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. The dependent variables are the 30-minute change in log S&P500 (column 1) and in nominal Treasury yields at 2-, 5-, 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Small Target surprises. A related concern is that the effects of reversal statements could be driven by cases where the Target surprise is near zero, either because there is little news about the current decision, or because of measurement error (these statements with little news on the current stance could be positive or negative near zero). In such cases, even a modest Path surprise would mechanically satisfy the magnitude condition, potentially inflating the count of reversals with meetings that carry little information about either the current decision or the future path. We therefore augment Equation (3) with an interaction term between MPS_t and a dummy for meetings where $|Target_t|$ falls below its 25th percentile. Appendix Tables A7, A8, and A9 consider progressively more stringent combinations: small Target alone (covering 28% of reversal meetings), small Target or large Path (59% of reversal meetings), and small Target and large Path simultaneously (4% of reversal meetings). In all cases, the reversal interaction term remains large and significant, while the additional dummies have no explanatory power for long-term yields.

Unconventional policy announcements. By nature, quantitative easing (QE) announcements affect long-term interest rates and, by design, contain a strong forward-looking component. Therefore, they could be systematically classified as reversal statements. Over our sample period, the Fed used large-scale asset purchases (LSAP) to compress long-term yields (Krishnamurthy and Vissing-Jorgensen 2011, Christensen and Rudebusch 2012, D'Amico et al. 2012). We control for this by using the list of QE announcements from Corbet et al. (2019) and the LSAP surprises of Swanson (2021). We augment Equation (3) with interaction terms between the monetary surprises and a dummy for QE announcement meetings, between LSAP surprises and the reversal dummy, and between monetary surprises and a dummy for large LSAP shocks (above their 75th percentile). Appendix Tables A10, A11, and A12 show that our central result is unchanged.

Forward guidance announcements. Reversal statements, by conveying a forward-looking signal that overturns the current decision, could overlap with formal forward guidance commitments (Andrade and Ferroni 2021). To distinguish signals about the future policy path in general from explicit commitments to a given rate path, we control for the forward guidance announcements listed in the FOMC's timeline.[15] Appendix Table A13 shows our main result is unchanged.

Taken together, these results suggest that reversal statements remain strongly associated with movements in long-term yields even after accounting for meetings featuring QE or explicit forward guidance, indicating that the reversal classification captures a distinct dimension of policy signals. The discussion above explores whether the reversal effect is mechanically driven by large path surprises. A distinct, more conceptual concern is that reversal statements may reflect a "third factor" not captured by the baseline two-factor decomposition, especially if that missing factor loads primarily on longer maturities.

Third factor and longer maturities. We therefore examine whether the joint realization of the first two factors effectively proxies for a third dimension of policy expectations. We address this concern in three ways. First, we use the three-factor model of Swanson (2021) and compute an additional reversal classification based on the Target vs. forward guidance and LSAP factors. This additional classification has no marginal explanatory power, and the reversal interaction term is unchanged (Appendix Table A14). Second, we extract the third factor from the baseline PCA described in Section 2.1 and interact it with MPS_t. This third factor has no marginal effect, and its inclusion does not affect the reversal result (Appendix Table A15). Third, a related literature decomposes asset

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[15] federalreserve.gov/monetarypolicy/timeline-forward-guidance-about-the-federal-funds-rate.htm.

price changes into three or more factors by including medium- and long-term interest rates in the factor extraction (Altavilla et al. 2019). Boyarchenko et al. (2016) document that most of the effect of FOMC announcements on 10-year rates comes from a "confidence" factor, that has large positive loadings on long-term yields, identified from a factor analysis that includes interest rates up to 10-year maturity. To assess whether our result reflects the presence of such a factor, we augment the baseline PCA model with ED8, 5- and 10-year rates and interact MPS_t with another dummy for when the factor that loads heavily on long-term yields is large. The reversal interaction remains (Appendix Table A16). Although we do not include long-term rates in our factor extraction, the reversal classification captures those policy announcements that move long-term interest rates.

Overall, these results indicate that the strong effects on long-term rates that characterized reversal statements are not driven by (i) mechanically large Path or small Target surprises, (ii) the presence of QE or explicit forward guidance announcements, or (iii) an omitted third factor loading on longer maturities. Instead, the reversal classification reflects information that is specific to the joint distribution of Target and Path surprises.

3.3 Alternative specifications and confounding factors

In principle, the baseline result could reflect features of the sample, the measurement window, or the choice of monetary surprise measure, rather than the informational content of reversal statements itself. It could also be driven by confounding factors correlated with the reversal classification like the publication of FOMC projections, dissent within the FOMC, press conferences, or periods of heightened uncertainty. In this section, we address these concerns one by one.

Alternative specifications. Our baseline estimation uses 30-minute *intraday* changes from the USMPD database. Appendix Table A17 replicates the result using *daily* changes in asset prices. Daily changes introduce noise from same-day, non-FOMC events and absorb the pre-FOMC drift documented by Lucca and Moench (2015), but allow for a longer adjustment window if investors take time to process the announcement. Hanson and Stein (2015) discuss several reasons why using lower-frequency changes can be preferable, including information processing delays and reversals in market momentum. The reversal interaction term on long-term yields remains significant. The result also holds when re-including the two QE outlier meetings (December 2008 and March 2009) excluded from the baseline intraday estimation (Table A18), in pre- and post-2009 sub-samples when monetary policy was uni- or multi-dimensional (Table A19), and when extending the sample back to 1988 using the Bauer and Swanson (2023a) database (Table A20).

Alternative monetary surprise measures. Appendix Tables A21, A22, A23, and A24 replicate Table 3 using, respectively, the Nakamura and Steinsson (2018) surprises, the unadjusted and news-adjusted series of Bauer and Swanson (2023b), and the Jarociński and Karadi (2020) surprises. The estimated reversal interaction term is large and significant in all cases, confirming that the finding does not depend on how the monetary surprises are constructed.

Central bank information effects. Policy decisions may convey signals about the future economic outlook beyond the pure policy stance, which could independently drive revisions in long-term interest rates. We address this issue by using the Jarociński and Karadi (2020) decomposition, both in its continuous form (controlling directly for the central bank information component) and its discrete form (interacting MPS_t with a dummy for information-effect meetings). Appendix Table A25 confirms that the reversal interaction remains large and significant even after accounting for potential central bank information effects.

Monetary policy uncertainty. By their nature, reversal statements contain conflicting signals, which could generate or reflect heightened uncertainty about the policy path. We control for the market-based monetary policy uncertainty index of Bauer et al. (2022) (at the 12-month horizon) and for the interest rate skewness of Bauer and Chernov (2024), which captures the asymmetry in the probability distribution of future rate changes and may proxy for the perceived balance of interest rate risks. Intuitively, a positive skewness indicates that large rate hikes are more likely than large rate cuts, so that the balance of risk is tilted to the upside and reflects macroeconomic risk. As such, it may contain information about the uncertainty on the likely direction of future interest rate changes. We also consider the risk appetite index of Bauer et al. (2023) and the VIX. In all cases, the reversal interaction term remains large and significant (Appendix Tables A26, A27, A28 and A29), indicating that the main result is not driven by uncertainty (Tillmann 2020).

Publication of FOMC projections. The Summary of Economic Projections (SEP), published since 2007, contains FOMC members' projections for GDP, inflation, unemployment, and the future path of the policy rate, and could, on their own, shift long-term nominal yields (Andersson et al. 2006, Hubert 2015, Martinez and Sinclair 2026). Appendix Table A30 shows that stronger effects of monetary surprises from reversal statements hold beyond the publication of FOMC projections.

Press conferences. Since 2011, the Fed has held a press conference at meetings at which the (quarterly) Summary of Economic Projections is released. Since 2018, a press conference has been held after each meeting. The press conference starts with an opening statement followed by a Q&A session during which journalists ask clarifying questions, often on future actions or policy shifts. There is ample evidence of sizable market reactions during the press conference, comparable to, and sometimes even greater than those to FOMC statements (Ehrmann and Fratzscher 2009, Brand et al. 2010, De Pooter 2021, Boguth et al. 2019, Swanson and Jayawickrema 2024, Narain and Sangani 2026). Controlling for press conference occurrences leaves the estimated reversal interaction term unchanged (Appendix Table A31).

Status quo decisions. Reversal meetings are somewhat more likely when the policy rate is unchanged, as path guidance is naturally more salient when there is no current-rate news to anchor investors' updating. Appendix Table A32 confirms that the estimated reversal interaction term remains large and significant after controlling for status quo meetings.

FOMC dissent. Dissenting votes signal internal disagreement about the appropriate policy stance and independently affect how investors interpret the announcement, as they convey signals that shift policy expectations (Riboni and Ruge-Murcia 2014, Blot et al. 2026). If reversal statements are more likely to occur with dissent, because the conflicting signals they convey may reflect disagreement within the committee, the effect of dissent may confound that of reversal statements. Appendix Table A33 shows the result is unchanged after including a dummy for meetings with at least one dissenting vote taken from Thornton and Wheelock (2014).

Macro data releases before FOMC announcements. Alam (2023) shows that the pre-FOMC drift and announcement premium only occur on the one-third of FOMC days that are preceded by key macro releases. On the other two-thirds of FOMC days, there is no drift and announcement premium. We follow the data procedure of this paper and test whether reversal statements cluster on such days by controlling for GDP, CPI, unemployment, and industrial production releases in the three days before the meeting. Although more than half of reversal statements occur on FOMC days preceded by a major data release, the differential effect on long-term rates remains concentrated in reversal statements (Appendix Table A34).

Turning points and policy cycles. As reversal statements convey relevant information for long-term interest rates, a natural question is whether they cluster around turning points in the monetary cycle. This would suggest their content is mainly about the initiation of a new cycle. Appendix Figure A1 plots the time series of reversal statements alongside the FFR: they are spread evenly throughout the sample period, with no visible clustering around cycle transitions. Appendix Table A35 formalizes this by regressing the reversal dummy on a set of meeting characteristics, including turning points, status quo decisions, phases of plateau and tightening or easing cycles (Portier 2026), and uncertainty indicators. Reversal statements are in fact *less* likely at turning points, ruling out the interpretation that they capture the start of a new cycle. They are also less likely during easing cycles, consistent with the idea that path guidance may play a smaller role when the central bank is cutting rates and communication tends to be more directional. They are somewhat more likely during status quo periods, consistent with path guidance carrying more information when the current policy rate is not changing. Neither the uncertainty indicators considered (VIX, monetary policy uncertainty, or interest rate skewness) nor the other meeting characteristics significantly predict the occurrence of reversal statements.

Asymmetry. Finally, it is worth asking whether investor responses differ between hawkish reversals (an unexpected rate cut with a hawkish path signal) and dovish reversals (a rate hike with a dovish path signal). Appendix Table A36 estimates the reversal interaction separately for positive and negative monetary surprises. The coefficients are similar in magnitude and significant, indicating that the stronger transmission on reversal days holds regardless of the surprise direction.

3.4 Euro area and United Kingdom evidence

We now investigate whether the heterogeneous transmission of monetary policy documented for the FOMC is specific to US monetary policy or extends to other major central banks. We apply the same methodology to the European Central Bank (ECB) and the Bank of England (BoE), which differ from the FOMC in their institutional and communication frameworks and the structure of their policy announcements. We cross-check our main result with monetary surprises and the classification of policy statements from these two other central banks.

European Central Bank. For the ECB, we use the Euro Area Monetary Policy Database (EAMPD) of Altavilla et al. (2019), which provides intraday asset price changes in the press release window around ECB policy decisions. We apply the factor extraction and GSS rotation procedure to four OIS rates, 1-month, 3-month, 6-month, and 1-year. The Target factor is normalized so that its loading on the 1-month OIS rate equals one, and the Path factor is orthogonalized to the Target factor and scaled so that both factors have equal loadings on the 1-year OIS rate. The reversal classification follows Equation (2) applied to these ECB-specific factors. The dependent variables are intraday changes in the EURO STOXX 50 and 2-, 5-, and 10-year German sovereign yields as proxies for

Table 6: Euro area and United Kingdom evidence

	Stock	2y	5y	10y
	Panel A: European Central Bank			
MPS_t	-0.053***	0.747***	0.444***	0.092
	[0.02]	[0.06]	[0.07]	[0.07]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.007	0.449***	0.824***	0.787***
	[0.02]	[0.12]	[0.14]	[0.12]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-0.060***	1.196***	1.269***	0.879***
	[0.01]	[0.11]	[0.12]	[0.09]
R^2	0.14	0.74	0.59	0.35
Obs.	315	315	315	315
	Panel B: Bank of England			
MPS_t	-2.504***	0.590***	0.465***	0.314***
	[0.38]	[0.03]	[0.03]	[0.04]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.258	0.185*	0.432***	0.529***
	[2.17]	[0.10]	[0.11]	[0.15]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-3.762*	0.775***	0.897***	0.843***
	[2.14]	[0.10]	[0.11]	[0.15]
R^2	0.28	0.87	0.76	0.54
Obs.	302	302	302	302

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The level dummies and the constant are included but not shown. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. Panel A: the dependent variables are intraday changes in the EURO STOXX 50 and 2-, 5-, 10-year German sovereign yields from Altavilla et al. (2019). The sample goes from January 1999 to October 2025. Panel B: the dependent variables are intraday changes in the FTSE 100 and 2-, 5-, 10-year UK gilt yields from Braun et al. (2025) with one missing observation for stock prices (14 July 2016) and one missing for Gilt yields (11 January 2001). The sample goes from June 1997 to February 2026.

the euro area risk-free rate. Out of 315 ECB decisions from January 1999 to October 2025, 145 are classified as reversal statements (46%), which is close to the 48% share for the FOMC.

Bank of England. For the BoE, we use the UK Monetary Policy Database of Braun et al. (2025), which provides intraday changes in OIS rates and Gilt yields around MPC announcements. The Target and Path factors are taken directly from the database and are computed according to the GSS procedure. The reversal classification is applied to these UK-specific factors following the same sign-and-magnitude condition. Dependent variables are intraday changes in the FTSE 100 and 2-, 5-, and 10-year Gilt yields. Out of 303 BoE decisions from June 1997 to February 2026, 109 are classified as reversals (36%).

We then estimate Equation (3) for these two central banks and asset prices. Table 6 reports the results. For the ECB (Panel A), the non-reversal effect of monetary surprises on 10-year German yields is small and insignificant (0.09), while the effect on reversal days reaches 0.88 and is highly significant. The BoE estimates (Panel B) tell the same story: the non-reversal effect at 10 years is 0.31, while the total reversal effect reaches 0.84, with a highly significant interaction coefficient. As in the US, stock prices do not respond differently on reversal days for either central bank. Appendix Tables A37 and A38 confirm the result under the observable-based classification using 1-month and 1-year OIS rates, for both central banks. Overall, we observe similar pattern in the effects of reversal statements across three central banks, despite their different institutional and communication frameworks. This confirms that the heterogeneous transmission documented in Section 3.1 is not unique to US monetary policy but is a more general feature of monetary policy transmission.

4 What information do reversal statements convey?

Our estimates show that monetary surprises from reversal statements have strong effects on long-term interest rates. Since monetary policy only has temporary effects on real economic variables, what drives its influence on the long end of the yield curve? Several channels have been explored in the literature: revisions to the expected path of future short rates (Gürkaynak et al. 2005a), adjustments to the term premium and duration risk compensation (Hanson and Stein 2015, Kekre et al. 2024), and private agents updating their beliefs about the central bank's time-varying reaction function (Bauer et al. 2024, Bocola et al. 2024, Hack et al. 2024). In this section, we investigate the nature of the information that investors can extract from reversal statements by progressively narrowing down the set of relevant mechanisms through a series of decompositions.

4.1 Real rates and inflation compensation

To understand the information content of interest rate responses (Abrahams et al. 2016, D'Amico et al. 2018), we first decompose nominal yields into their (i) real component (using Treasury Inflation-Protected Securities, or TIPS) and (ii) their inflation compensation component (measured using break-even inflation rates at equivalent maturities).[16] This decomposition enables us to distinguish between two types of update: revisions to the expected path of real interest rates, and revisions to inflation expectations or the inflation risk premium. These are informative about the nature of the information that reversal statements convey. If reversal statements convey news about the inflation target (Clayton and Schaab 2025) or the parameters of the central bank's reaction function (Schmeling et al. 2022, Bauer and Swanson 2023b), inflation compensation should respond systematically. If instead the information is primarily about the anticipated trajectory of real rates, *i.e.* how fast and how far the central bank intends to act in real terms, the response should be concentrated in real rates, leaving inflation compensation largely unchanged.

Results presented in Table 7 deliver a clear answer. The strong transmission of monetary surprises from reversal statements operates entirely through real interest rates. The total reversal effect on 10-year real rates is 0.62 and highly significant (column 6), essentially matching the nominal rate response of 0.61 (column 3).[17] By contrast, the inflation compensation response is close to zero for all maturities on reversal days (columns 7-9), and none of the coefficients are statistically significant. This is difficult to reconcile with interpretations operating primarily through inflation expectations, inflation risk premia or the parameters of the central bank's reaction function: such news would result in systematic revisions to inflation compensation. An important take-away from Table 7 is that the standard effects of monetary policy on real interest rates are themselves largely, if not entirely, driven by the subset of reversal statements.

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[16] These daily data from Gürkaynak et al. (2010) are available at federalreserve.gov/pubs/feds/2008/200805/200805abs.

[17] This estimate marginally differs from the one in Table 3 (0.67) as the data is daily and available on a shorter sample.

Table 7: Decomposition of nominal yields: real rates and inflation compensation

	Nominal rates			**Real rates**			**Inflation comp.**		
	2y	5y	10y	2y	5y	10y	2y	5y	10y
MPS_t	0.34***	0.16	-0.05	-0.23	0.11	0.06	0.57	0.05	-0.11
	[0.12]	[0.12]	[0.09]	[0.72]	[0.15]	[0.10]	[0.71]	[0.11]	[0.08]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.75***	0.81***	0.66***	1.46*	0.74***	0.56***	-0.71	0.07	0.11
	[0.18]	[0.19]	[0.16]	[0.79]	[0.24]	[0.16]	[0.78]	[0.17]	[0.11]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.09***	0.97***	0.61***	1.23***	0.86***	0.62***	-0.14	0.12	-0.01
	[0.13]	[0.14]	[0.12]	[0.33]	[0.19]	[0.12]	[0.34]	[0.12]	[0.07]
R^2	0.32	0.19	0.10	0.05	0.12	0.10	0.03	0.01	0.02
Obs.	214	214	214	214	214	214	214	214	214

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS. The level dummy and the constant are included but not shown. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. The dependent variables are the daily changes in nominal yields, real rates from TIPS, and break-even inflation rates around FOMC announcements, taken from Gürkaynak et al. (2010). The sample comprises the 214 scheduled FOMC meetings between January 1999 (because of data availability) and January 2026.

The real interest rate response is in principle consistent with two distinct types of information. First, investors may update their beliefs about long-run economic fundamentals as in Nakamura and Steinsson (2018), consistent with low-frequency business cycle fluctuations (Jordà et al. 2017), the long-run effects of monetary policy (Jordà et al. 2025) or when key features of the economy are unobserved (Farmer et al. 2024). The evidence provided in Section 3.3 suggests that the information content of reversal statements is not related to information effects *à la* Cieslak and Schrimpf (2019), Jarociński and Karadi (2020) and Miranda-Agrippino and Ricco (2021). Second, and more directly, investors may revise their expectations about the appropriate future path of the policy rate in real term. This involves considering not only where the economy is heading in the long run, but also *the pace* at which the central bank intends to reach that point, and through which sequence of policy adjustments. Exploring further the second interpretation requires decomposing the interest rate response into its expectations hypothesis and term premium components.

4.2 Expectations hypothesis versus term premium

To further investigate the underlying mechanisms at work in reversal statements, we decompose nominal yields into two components: (i) the expectations hypothesis (EH) component, representing the average of expected future short-term interest rates from the present to the maturity of the long-term bond, and (ii) a term premium (TP) component. Under the expectations hypothesis, a policy announcement shifts the anticipated trajectory of policy, and this revision propagates along the yield curve. Under the term premium channel, long-term rates move because central bank announcements (and conflicting signals in the case of a reversal statement) about future policy affect the compensation investors require for bearing interest rate risk over long horizons (Hanson and Stein 2015, Kekre et al. 2024).[18] These two mechanisms have distinct implications: the EH channel operates through the mean of the expected rate path, while the term premium channel reflects variance, duration risk, or other risk-premium components. We investigate the extent to

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[18] This channel aligns with evidence that economic conditions and time-varying risk aversion drive bond risk premia and shape the market impact of monetary policy announcements (Campbell et al. 2020, Pflueger and Rinaldi 2022).

which each mechanism contributes to the reversal effect by using the decomposition of the affine term structure model of Adrian et al. (2013).[19]

Table 8: Decomposition of nominal yields: expectations hypothesis and term premium

	Nominal rates			**EH component**			**Term premium**		
	2y	5y	10y	2y	5y	10y	2y	5y	10y
MPS_t	0.46***	0.30***	0.09	0.57***	0.50***	0.39***	-0.11**	-0.20***	-0.29***
	[0.10]	[0.10]	[0.09]	[0.08]	[0.08]	[0.07]	[0.05]	[0.05]	[0.07]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.63***	0.66***	0.52***	0.28**	0.41***	0.36***	0.35***	0.26***	0.16
	[0.16]	[0.18]	[0.16]	[0.12]	[0.14]	[0.11]	[0.09]	[0.10]	[0.12]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.08***	0.96***	0.61***	0.85***	0.91***	0.75***	0.24***	0.06	-0.14
	[0.13]	[0.14]	[0.13]	[0.10]	[0.11]	[0.09]	[0.07]	[0.08]	[0.10]
R^2	0.35	0.20	0.09	0.38	0.33	0.32	0.06	0.06	0.08
Obs.	254	254	254	254	254	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS. The level dummy and the constant are included but not shown. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. The dependent variables are the daily changes in nominal yields, in the ACM expectations hypothesis component, and in the ACM term premium around FOMC announcements from Adrian et al. (2013). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table 8 reveals that both mechanisms are at work, but with the EH channel playing the dominant role. Starting with non-reversal statements, MPS_t primarily move the EH component (0.50 at 5-year) while the term premium falls significantly (-0.20 at 5-year). This negative term premium response is intuitive: direction-preserving signals about the future rate path resolve uncertainty and reduce the compensation that investors require for duration risk. This is consistent with the findings of Gertler and Karadi (2015) and Kaminska et al. (2021) who document the important role of the term premium in the monetary transmission.

On reversal days, the picture is strikingly different. The interaction term is sizable for both the EH (0.41 at 5-year) and the term premium components (0.26 at 5-year). The total EH effect is large (0.91 at 5-year) and accounts for most of the nominal rate response (0.96 at 5-year). By contrast, the total term premium effect is effectively zero (0.06, insignificant), reflecting the fact that the large positive interaction term offsets the negative baseline effect observed on non-reversal days. Two conclusions follow. First, both the EH and the term premium channels respond differently on reversal days relative to non-reversal days, suggesting that both mechanisms are activated by the conflicting signals. Second, and more importantly, the EH channel dominates the term premium one both in magnitude and significance: the bulk of the effect of reversal statements on long-term rates operates through revisions to expected future short rates rather than through changes in risk compensation. The term premium results are best interpreted as evidence of a differential offset relative to non-reversal statements, rather than as a large positive total term-premium response on reversal days. The overall evidence suggests that what investors primarily learn from reversal statements is information about the future trajectory of policy adjustments. Section 4.3 tests these interpretations directly.

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[19] These data, at the daily frequency, are available at newyorkfed.org/research/data_indicators/term-premia-tabs.

4.3 Further evidence from forward rates and option-implied uncertainty

The decomposition in Section 4.2 points to two channels through which reversal statements affect long-term rates: a dominant EH channel, whereby investors revise their anticipated trajectory of future short rates, and a secondary TP channel, whereby the conflicting signals raise the compensation investors require for bearing interest rate risk over long horizons. This compensation can reflect either (i) an increase in the dispersion of rate expectations, namely a pure uncertainty channel, or (ii) a change in the duration risk associated with a shift in the shape of the expected rate path, regardless of whether uncertainty rises. To disentangle the two mechanisms behind the TP channel, we examine whether reversal statements generate changes in option-implied distribution measures that would capture the uncertainty mechanism.

Regarding the EH channel, we ask whether reversal statements generate a specific *rotation* in the term structure of policy rate expectations, a kink rather than a parallel shift, consistent with the interpretation that investors learn about the *pace* of future rate adjustments rather than the terminal rate level. A reversal statement is one where, for instance, the FOMC raises rates but simultaneously signals a slower future pace of hikes. Such a statement cannot be interpreted as a simple stance shock: it conveys information that the speed of adjustment will change, which generates a characteristic pattern in the term structure of futures responses.

The pace-of-cycle channel. The pace-of-cycle interpretation predicts a specific pattern in the term structure of policy expectations around reversal meetings. According to this interpretation, policy rate expectations should shift sharply as investors revise the anticipated speed of future rate adjustments. This would imply a movement specific to medium- or long-maturity forward rates, as the revision in the pace of the cycle would affect beliefs about the policy stance at certain maturities. This generates a kink or rotation in the expected rate path rather than a parallel shift. A key advantage of examining forward rates is that they isolate expectations at a specific horizon, independently of the compounding of all short-end expectation adjustments embedded in the expectations hypothesis component: if long-maturity forward rates move on reversal days, this reflects an actual revision in the short-term policy rate expectations at that horizon.

We test this pace-of-cycle channel in two complementary ways. First, we examine the response of instantaneous forward rates at 2-, 5- and 10-year as well as the one-year-ahead forward rates at 1-, 4- and 9-year horizons.[20] Second, we construct a pace-of-cycle shock that captures the curvature of the term structure of policy expectations: the difference between the response of medium-dated futures contracts (the average response of ED5 to ED8) and that of near-term contracts (ED1-ED2):

$$Pace_t = \Delta medium_t - \Delta near_t \tag{4}$$

A positive pace shock on a reversal day signals that medium-term expectations move more than near-term ones, the direct consequence of a rotation rather than a translation of the expected rate path. We also consider an orthogonalized version of this shock, from which both the Target and Path components have been removed, to assess whether the reversal classification conveys information about the pace of the cycle that is not already embedded in the factors themselves.

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[20] Data are available at federalreserve.gov/pubs/feds/2006/200628/200628abs.html from Gürkaynak et al. (2007).

Table 9: Forward rates and pace shocks

	Instantaneous fwd.			1y-ahead fwd.			Pace shocks	
	2y	5y	10y	1y1y	1y4y	1y9y	Raw	Orth.
MPS_t	0.36***	0.04	-0.20**	0.42***	0.09	-0.20**	-0.12**	-0.07
	[0.14]	[0.10]	[0.10]	[0.14]	[0.11]	[0.10]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.97***	0.47**	0.32**	0.98***	0.53**	0.34**	0.92***	0.28**
	[0.23]	[0.20]	[0.16]	[0.22]	[0.21]	[0.16]	[0.12]	[0.12]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.33***	0.51***	0.11	1.40***	0.62***	0.14	0.81***	0.21**
	[0.18]	[0.17]	[0.12]	[0.18]	[0.18]	[0.13]	[0.11]	[0.10]
R^2	0.23	0.04	0.03	0.28	0.05	0.02	0.32	0.05
Obs.	254	254	254	253	253	253	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS. The level dummy and the constant are included but not shown. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. The dependent variables are the daily change in instantaneous forward rates at 2, 5, 10 years (columns 1-3), 1-year-ahead forward rates at 1, 4, and 9 years (columns 4-6), and intraday raw pace shock (difference between medium-term and near-term Eurodollar futures responses, column 7) and pace shock orthogonalized with respect to Target and Path (column 8). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table 9 provides strong support for the pace-of-cycle interpretation. The forward rates pattern is consistent with what the pace-of-cycle hypothesis predicts: the reversal interaction is large and significant at 2 years (0.97) and for 1-year-ahead forward rates at 1 year (0.98), indicating a sharp revision in near-to-medium-term rate expectations, declining steadily and becoming insignificant at 10 years.[21] This is consistent with a kink in the expected rate path: investors revise how fast the central bank will move over the next one to four years without substantially revising the very long-run level of rates. Forward rates respond significantly at intermediate horizons but this effect fades at the 10-year horizon. This is consistent with a rotation rather than a level shift: the pace revision propagates along the yield curve up to the point where the policy rate is expected to have converged to its (unchanged) long-run level.

On non-reversal days, the pace shock is negative (-0.12) and significant, indicating that non-reversal statements flatten the term structure. This is consistent with a parallel shift in rate expectations rather than a rotation. On reversal days, the total effect of the pace shock is positive, large (0.81) and precisely estimated. Importantly, even after the pace shock is orthogonalised with respect to Target and Path (column 8), the reversal interaction term remains significant, confirming that the reversal classification captures information about the pace of the cycle that neither factor conveys independently. Therefore, the evidence on forward rates is consistent with the interpretation that reversal meetings signal a change in the speed of adjustment of the policy stance, rather than a change in its direction or the level of the terminal rate.

Option-implied uncertainty and term premium. If reversal statements create uncertainty about the future path of interest rates, this should be reflected in option-implied measures of interest rate uncertainty, since investors must reconcile conflicting signals. We examine three such measures: the 6-, 12-, and 18-month horizon monetary policy uncertainty (MPU) indices of Bauer et al. (2022)

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[21] The reversal effect on 10-year yields reported in Table 3 thus reflects policy expectation revisions through the EH component as shown in Table 8 rather than direct updates to policy expectations at long horizons (10-year forward rates).

which capture the distribution of the future path of short-term interest rates at different maturities from Eurodollar (and SOFR after 2022) futures and options prices, the interest rate probability distribution (IRPD) derived from LIBOR and SOFR options at 2-, 5-, and 10-year horizons following Mertens and Williams (2021), and the VIX as a broad measure of financial uncertainty.

Table 10: Option-implied uncertainty measures

	MPU (BLM22)			**IRPD**			**VIX**
	6m	12m	18m	2y	5y	10y	VIX
MPS_t	0.15***	0.17***	0.15***	0.41**	0.54	1.24	0.32**
	[0.04]	[0.05]	[0.04]	[0.16]	[0.34]	[0.91]	[0.14]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.16*	-0.07	-0.08	-0.68*	-0.48	-1.84	0.12
	[0.09]	[0.09]	[0.09]	[0.35]	[0.50]	[1.36]	[0.37]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-0.00	0.10	0.06	-0.27	0.06	-0.61	0.44
	[0.08]	[0.08]	[0.08]	[0.31]	[0.37]	[1.01]	[0.34]
R^2	0.08	0.10	0.06	0.04	0.04	0.02	0.05
Obs.	250	250	250	147	147	147	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS. The level dummy and the constant are included but not shown. The row "$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$" shows the total effect ($\beta_1 + \beta_2$) from reversal statements. MPU: daily changes in the monetary policy uncertainty index of Bauer et al. (2022) at 6-, 12-, and 18-month horizons (columns 1-3). IRPD: daily changes in the 70% inter-percentile range of the interest rate probability distribution derived from Eurodollar/SOFR options at 2-, 5-, 10-year horizons, following Mertens and Williams (2021) (columns 4-6, shorter sample due to option data availability). VIX: daily change in the VIX (column 7). The sample comprises the 254 scheduled FOMC meetings between February 1994 (January 2007 because of data availability for IRPD) and January 2026 (August 2025 for MPU).

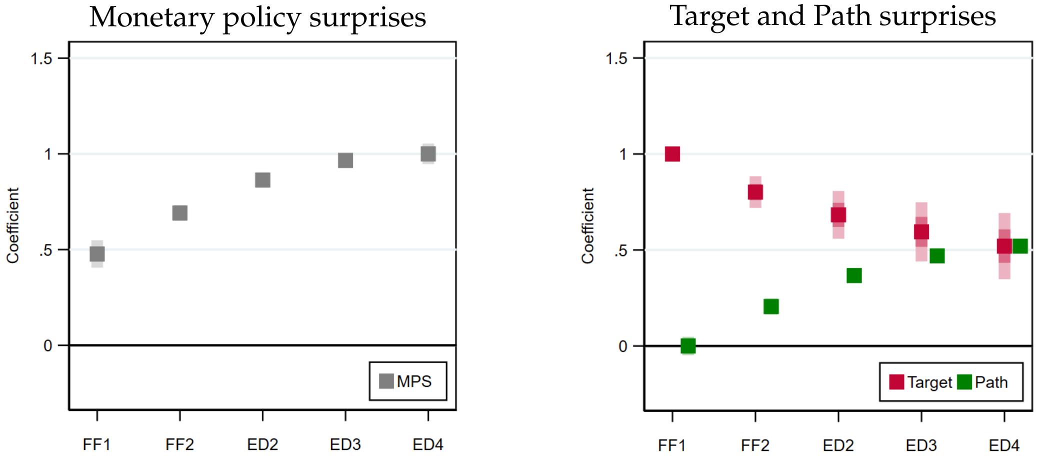
Table 10 delivers a nuanced picture that refines the term premium interpretation. On non-reversal days, monetary surprises significantly raise near-term MPU and the IRPD at 2 years: non-reversal statements increase short-horizon uncertainty about the policy path, consistent with a standard stance shock. On reversal days, the interactions on MPU and IRPD are never positive. If anything, they are weakly negative (significant at the 10% level only) at short horizons, indicating that reversal statements do not generate additional uncertainty about the near- or medium-term policy path. This is consistent with the pace-of-cycle interpretation: investors learn that the speed of future rate adjustments will change, and this revision clarifies the trajectory of policy. The VIX does not respond differently on reversal days either. Overall, the uncertainty channel finds limited support: reversal statements do not raise option-implied uncertainty, suggesting that the term premium differential documented in Table 8 operates through compensation for duration risk rather than an increase in the dispersion of rate expectations. This is consistent with Hanson and Stein (2015) and Kekre et al. (2024): when reversal statements generate a rotation in the expected rate path, they simultaneously shift medium-term expectations and raise the duration risk associated with uncertainty about where the rotation will end, increasing the term premium compensation required at intermediate maturities without necessarily raising the variance of the rate distribution.

Taken together, the evidence from Tables 9 and 10 points to the pace-of-cycle channel as the primary mechanism behind the reversal effect, with a secondary and marginal contribution from the term premium that is not driven by heightened uncertainty. Both channels are consistent with the EH decomposition in Table 8: the large EH response on reversal days reflects the revision in expected future short rates implied by a change in the pace of the cycle, while the differential term premium response reflects the compensation required for duration risk when the shape of the rate path changes. What investors appear to learn from reversal statements is not whether the central bank will tighten or ease, that is the message of non-reversal statements, but at what speed it intends to do so in the future. In the next section, we present further evidence supporting the pace-of-cycle interpretation. We document how the weight put on policy expectations at different horizons differs across reversal and non-reversal meetings, revealing a striking contrast: non-reversal meetings generate a pattern consistent with a parallel shift in rate expectations, while reversal meetings generate an increasing gradient of responses across the maturity spectrum.

4.4 Understanding reversal statements through the GSS decomposition

This section uses the factor structure of Target and Path to provide a simple analytical account of why the joint distribution of the two factors, rather than their individual levels, is an important object for characterizing and interpreting the heterogeneous transmission of monetary policy. Figure 2 plots the estimated factor loadings for MPS_t (left panel) and for Target and Path separately (right panel, see also Table A1). Focusing first on monetary policy surprises, we observe that the estimated factor loadings on current-month futures (FF1) are small, while those on the Eurodollar contracts (ED1 to ED4) are larger and increasingly closer to unity, confirming that most of the information conveyed on FOMC days is about the future path of policy (Gürkaynak et al. 2005a).

Figure 2: Loadings on policy expectations at different maturities



Note: Each panel reports the factor loadings on futures contract surprise at each maturity. Panel (a) uses our monetary policy surprise MPS_t (first principal component from USMPD data, grey). Panel (b) uses Target (red) and Path (green) factors estimated from the same data. FF1 and FF2 are the current-month and next-month Fed Funds futures, ED2 to ED4 are the 2- from 4-quarter ahead Eurodollar futures. The shaded bars correspond to 1 and 2 standard errors confidence intervals.

The right panel of Figure 2 reveals two properties of the factor structure that are central to our classification. *Property 1*: Target (also) embeds information about future policy. Although Target is normalized to load one on FF1 by construction, it also loads heavily on ED2 through ED4. Target is therefore not a pure current-decision factor: it embeds as much information about the expected future path as Path does. *Property 2*: Path alone does not isolate future policy. Since Target already spans the ED2-ED4 space, Path only captures the residual forward-looking variation orthogonal to Target. This is already discussed in Gürkaynak et al. (2005a) and is crucial for our classification.

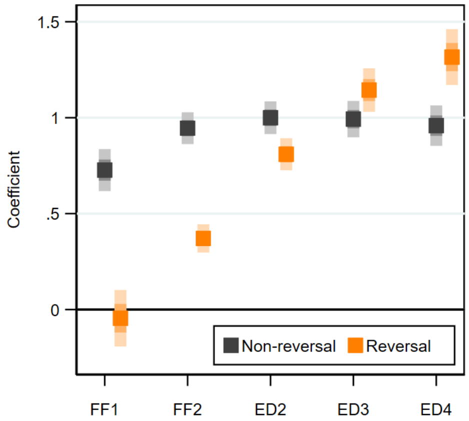
As both factors carry information about the future, their joint distribution becomes an important object for characterizing the forward-looking information of each statement.

We represent the information content of Target and Path schematically, where c denotes news about the current decision (loading on FF1), f^T the component of future-path signals correlated with the current decision, and f^P residual future-path signals orthogonal to $c + f^T$:

$$Target = c + f^T, \qquad Path = f^P \tag{5}$$

Both f^T and f^P carry information about the expected path, but they differ in that f^T covaries with the current decision whereas f^P does not. The net signal of a reversal statement is dominated by f^P, the forward-looking component orthogonal to the expected policy path movements driven by the current rate decision through the expectations hypothesis. This is what makes reversal statements distinct: they convey marginal information about the future policy path that is not embedded in the current-rate decision. The result is a rotation of the yield curve rather than a parallel shift, characterizing signals about the speed of the cycle rather than its direction (or endpoint).[22]

Figure 3: Term structure of policy expectation adjustments



Note: Estimated coefficients from regressions of each futures contract change ΔF_t^k on MPS_t (first principal component from USMPD data), estimated separately on non-reversal (grey) and reversal (orange) subsamples. FF1 and FF2 are the current-month and next-month Fed Funds futures, ED2 to ED4 are the 2- from 4-quarter ahead Eurodollar futures. The shaded bars correspond to 1 and 2 standard errors confidence intervals. The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Figure 3 provides direct evidence of this. For non-reversal statements, the coefficients from regressions of each futures contract on MPS_t peak at ED2 and are flat thereafter, consistent with a parallel shift in policy expectations. For reversal statements, the pattern is strikingly different: coefficients are close to zero at FF1 but rise sharply and monotonically from ED1 to ED4. This increasing gradient is a feature of the data not an assumption. It is the empirical counterpart of the factor structure argument above: when f^P dominates, the information is primarily about medium-term rate expectations, generating a rotation of the yield curve rather than a parallel shift. This directly maps into the pace-of-cycle interpretation: when the path signal reverses the current-decision news, investors primarily learn about the trajectory of rates over the coming quarters.

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[22] FOMC statements use language about the trajectory of policy, the balance of risks and the pace of future adjustments. A large literature uses textual analysis to measure the information content and financial market effects of this language (Lucca and Trebbi 2009, Hansen and McMahon 2016, Hubert and Labondance 2021).

5 Conclusion

This paper documents a striking empirical regularity in the transmission of monetary policy: among the 254 scheduled FOMC meetings between 1994 and 2026, those where the path surprise reverses the current-decision surprise, nearly half of all statements, drive a disproportionate share of monetary policy's effect on medium- and long-term interest rates. A 10 bp monetary surprise from a reversal statement moves 10-year yields by 6.7 bp, more than twice the 3 bp effect on non-reversal days. Non-reversal statements primarily move stock prices and short-term rates, but have little effect on the long end of the yield curve. This heterogeneity is robust across alternative reversal classifications, alternative monetary surprises and a comprehensive set of confounding factor controls. More importantly, it extends to the ECB and the Bank of England, confirming that it is not specific to FOMC communication or the institutional features of US monetary policy.

The decomposition of nominal yields into real rates and inflation compensation provides little support for an interpretation based on investors updating their beliefs about the inflation target or the central bank's reaction function, and points instead to revisions in investors' expectations about the future path of real rates. Decomposing further into the expectations hypothesis and term premium components reveals that the reversal effect operates primarily through the expectations channel: investors revise their beliefs about the pace of future rate adjustments. This pace-of-cycle interpretation is directly supported by the forward rate evidence. A secondary term premium channel is also present, potentially reflecting the duration risk associated with the change in the shape of the expected rate path rather than an increase in uncertainty about the policy direction itself as option-implied uncertainty measures do not respond differentially on reversal days.

These findings have direct implications for the identification and measurement of monetary policy effects. Standard event-study analyses that use the total monetary policy surprise or the Target and Path factors separately pool two qualitatively different types of statements, and in doing so conflate two distinct transmission mechanisms. The effect of monetary policy on long-term interest rates, most relevant for household and firm borrowing and investment decisions, is concentrated in reversal statements, while the effects on equity prices and short-term rates come primarily from non-reversal statements. Treating all FOMC meetings as homogeneous therefore introduces an aggregation bias: it understates the effect on long-term rates for reversal days and overstates it for non-reversal days. More broadly, our analysis underscores that the transmission of monetary policy is not uniform across statements, and that the identification of its effects depends on which subset of meetings is considered and which outcome variable is examined. Accounting for this heterogeneity is important for empirical analyses of the state-dependent effects of monetary policy and for the interpretation of reduced-form estimates of its transmission.

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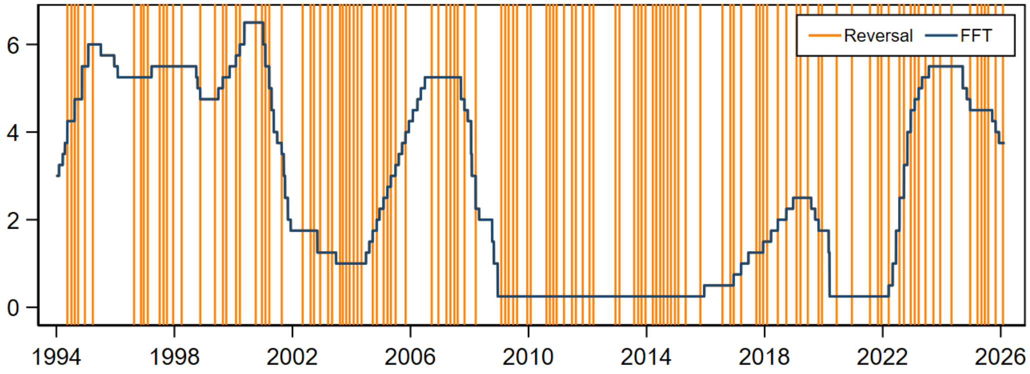
Appendix
For online publication

Figure A1: Time series of reversal statements and the federal funds target rate



Note: The orange vertical lines mark the dates of reversal FOMC statements ($\mathbb{1}^{\text{Rev}} = 1$). The blue line is the effective federal funds target rate. Reversal statements are spread throughout the sample without strong clustering around particular cycle phases.

Table A1: Factor loadings of Target and Path on futures contracts

Futures contract	b_{Target}	b_{Path}
FF1 (current month)	1.000	0.000
FF2 (second month)	0.628	0.126
ED2 (2-quarter ahead)	0.683	0.367
ED3 (3-quarter ahead)	0.595	0.469
ED4 (4-quarter ahead)	0.520	0.520

Note: This table reports the OLS coefficients from regressions of each futures contract surprise on Target and Path factors: $\Delta F_t^k = b_T \, Target_t + b_P \, Path_t + \varepsilon_t$, estimated on the full sample. By construction of the GSS rotation, the loading of Target on FF1 is exactly 1 and the loading of Path on FF1 is exactly 0. The normalization ensures that the loading of Target on ED4 equals the loading of Path on ED4, as in Gürkaynak et al. (2005a), their Table 5. The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A2: Standard monetary policy effects: comparison of MPS measures

	SP500	2y	5y	10y
Panel A: BS23 news-adjusted (Bauer and Swanson 2023b)				
MPS_t	-4.673***	0.837***	0.754***	0.466***
	[0.65]	[0.04]	[0.05]	[0.05]
R^2	0.25	0.80	0.64	0.45
Obs.	237	237	237	237
Panel B: BS23 unadjusted (Bauer and Swanson 2023b)				
MPS_t	-5.347***	0.798***	0.729***	0.446***
	[0.69]	[0.05]	[0.05]	[0.05]
R^2	0.30	0.66	0.55	0.38
Obs.	237	237	237	237
Panel C: NS18 (Nakamura and Steinsson 2018)				
MPS_t	-7.017***	1.312***	1.196***	0.710***
	[1.16]	[0.08]	[0.10]	[0.09]
R^2	0.21	0.72	0.59	0.39
Obs.	232	232	232	232
Panel D: GSS total surprise (Gürkaynak et al. 2005a)				
MPS_t	-1.838***	0.384***	0.348***	0.221***
	[0.29]	[0.01]	[0.01]	[0.02]
R^2	0.21	0.87	0.72	0.54
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each panel estimates Equation (1) using a different monetary surprise measure. Panel A: news-adjusted series of Bauer and Swanson (2023b). Panel B: unadjusted series of Bauer and Swanson (2023b). Panel C: Nakamura and Steinsson (2018) surprise. Panel D: GSS total surprise (sum of Target and Path) from Gürkaynak et al. (2005a). The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A3: Distribution of reversal meetings across classifications

Classification	Reversal	Total
Baseline (GSS Target/Path)	123	254
Observable-based	97	254
Single-factor PCA	70	254
Combined (all three)	29	254

Note: This table reports the number of reversal meetings identified under each classification on the sample of 254 scheduled FOMC meetings from February 1994 to January 2026. The baseline uses Target and Path factors from GSS (Equation 2). Observable-based: reversal defined using the projection of ED4 on FF1 and its residual. Single-factor PCA: reversal defined from the projection of the first PC on FF1. Combined: meetings classified as reversals under all three methods. The fraction of reversal meetings ranges from 27% (single-factor) to 48% (baseline).

Table A4: Heterogeneous transmission: three-way decomposition

	SP500	2y	5y	10y
Panel A: Baseline (GSS-based) classification				
MPS_t	-3.595***	0.653***	0.548***	0.315***
	[0.60]	[0.04]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Attenuating}}$	-1.335	-0.415**	-0.062	-0.253
	[3.70]	[0.20]	[0.30]	[0.17]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.319	0.463***	0.473***	0.358***
	[1.38]	[0.06]	[0.08]	[0.08]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.914***	1.116***	1.021***	0.673***
	[1.25]	[0.04]	[0.06]	[0.06]
R^2	0.26	0.84	0.67	0.48
Obs	254	254	254	254
Panel B: Observable-based classification				
MPS_t	-3.655***	0.661***	0.543***	0.324***
	[0.58]	[0.05]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Attenuating/Obs}}$	1.112	-0.206***	0.101	-0.248
	[4.25]	[0.07]	[0.31]	[0.22]
MPS_t x $\mathbb{1}^{\text{Rev/Obs}}$	-0.413	0.330***	0.325***	0.238**
	[1.70]	[0.08]	[0.08]	[0.10]
$MPS_t \mid \mathbb{1}^{\text{Rev/Obs}} = 1$	-4.068**	0.991***	0.868***	0.562***
	[1.59]	[0.06]	[0.06]	[0.08]
R^2	0.25	0.80	0.66	0.45
Obs	254	254	254	254
Panel C: Single-factor PCA classification				
MPS_t	-4.224***	0.690***	0.603***	0.355***
	[0.63]	[0.05]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Attenuating/PC1}}$	0.699	-0.036	0.093	-0.096
	[2.70]	[0.16]	[0.19]	[0.15]
MPS_t x $\mathbb{1}^{\text{Rev/PC1}}$	0.457	0.440***	0.387***	0.300***
	[1.82]	[0.07]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev/PC1}} = 1$	-3.767**	1.130***	0.991***	0.655***
	[1.70]	[0.05]	[0.07]	[0.07]
R^2	0.24	0.80	0.64	0.45
Obs	254	254	254	254

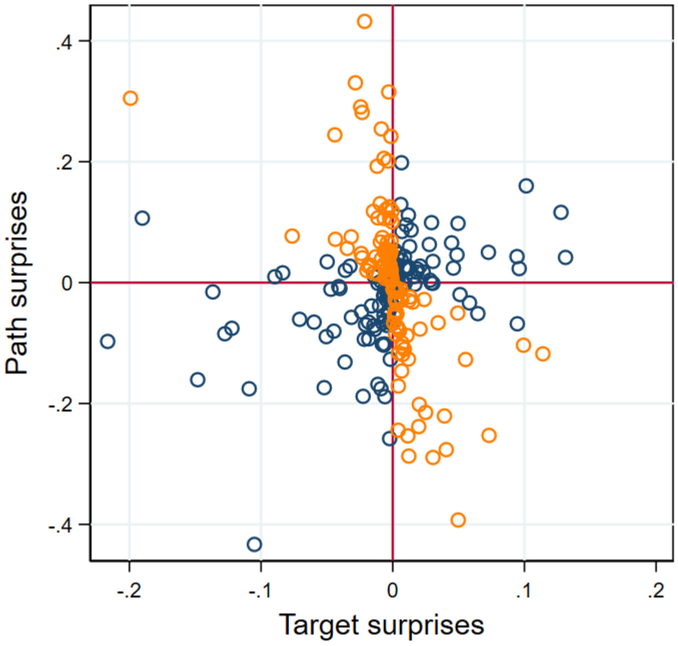
Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Each panel replicates Equation (3) estimated by OLS, augmented to distinguish *amplifying* meetings ($Target_t \times Path_t > 0$), *attenuating* meetings ($Target_t \times Path_t < 0$, $|Target_t| > |Path_t|$), and *reversal* meetings, and using an alternative reversal classification. The amplifying group is the omitted baseline. The level dummies and constant are not shown. Panel A: baseline GSS-based classification. Panel B: observable-based classification (no PCA, target-observable = projection of ED4 on FF1, path-observable = residual). Panel C: single-factor PCA (first PC decomposed into present/future via projection on FF1). The dependent variables are the 30-minute change in log S&P500 (column 1) and in nominal Treasury yields at 2-, 5-, 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A5: Effect of monetary surprises across all maturities

	1y	2y	3y	4y	5y	6y	7y
MPS_t	0.495***	0.455***	0.406***	0.354***	0.301***	0.250**	0.203**
	[0.07]	[0.10]	[0.11]	[0.11]	[0.10]	[0.10]	[0.10]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.291**	0.627***	0.709***	0.699***	0.663***	0.625***	0.592***
	[0.12]	[0.16]	[0.18]	[0.18]	[0.18]	[0.17]	[0.17]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	0.786***	1.082***	1.115***	1.052***	0.964***	0.875***	0.795***
	[0.09]	[0.13]	[0.14]	[0.14]	[0.14]	[0.14]	[0.14]
R^2	0.42	0.35	0.29	0.24	0.20	0.17	0.14
Obs.	253	254	253	253	254	253	253
	8y	9y	10y	15y	20y	25y	30y
MPS_t	0.161*	0.123	0.091	-0.007	-0.051	-0.080	-0.106
	[0.09]	[0.09]	[0.09]	[0.09]	[0.09]	[0.09]	[0.09]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.564***	0.541***	0.520***	0.425***	0.334**	0.254*	0.191
	[0.17]	[0.16]	[0.16]	[0.15]	[0.14]	[0.15]	[0.16]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	0.725***	0.664***	0.611***	0.418***	0.283**	0.174	0.085
	[0.14]	[0.13]	[0.13]	[0.12]	[0.12]	[0.12]	[0.13]
R^2	0.12	0.10	0.09	0.05	0.03	0.02	0.01
Obs.	253	253	254	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS. This table replicates Table 3 and extends it to all maturities from 1 to 30 years. Dependent variables: 30-minute changes in zero-coupon nominal Treasury yields at the indicated maturities, measured around FOMC announcements (USMPD). The level dummy $\mathbb{1}^{\text{Rev}}$ and constant are not shown. The sample comprises the 253-254 scheduled FOMC meetings between February 1994 and January 2026 (due to data availability).

Figure A2: Scatterplot of Target and Path surprises



Note: This figure represents the scatterplot of Target and Path surprises with reversal statements in orange and non-reversal statements in blue.

Table A6: Path factor interacted with reversal dummy

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
$Path_t$	-2.355***	0.481***	0.405***	0.259***
	[0.54]	[0.03]	[0.04]	[0.04]
$Path_t$ x $\mathbb{1}^{\text{Rev}}$	1.135*	-0.157***	-0.090**	-0.041
	[0.67]	[0.04]	[0.04]	[0.04]
$Path_t \mid \mathbb{1}^{\text{Rev}} = 1$	-1.219***	0.324***	0.315***	0.218***
	[0.39]	[0.02]	[0.02]	[0.02]
R^2	0.15	0.75	0.64	0.53
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, replacing MPS_t with the Path factor on the right-hand side. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A7: Controlling for small Target surprises

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.699***	0.621***	0.539***	0.295***
	[0.64]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.050	0.484***	0.472***	0.373***
	[1.38]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{Small Target}}$	-2.419	0.141*	0.129	0.098
	[1.89]	[0.08]	[0.15]	[0.17]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.750***	1.105***	1.010***	0.668***
	[1.25]	[0.04]	[0.06]	[0.06]
R^2	0.25	0.83	0.67	0.47
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with an interaction between MPS_t and a dummy for meetings where $|Target_t|$ falls below its 25th percentile. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A8: Controlling for small Target *or* large Path surprises

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-4.034***	0.542***	0.425***	0.221***
	[0.74]	[0.05]	[0.06]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.396	0.428***	0.387***	0.327***
	[1.54]	[0.08]	[0.09]	[0.09]
MPS_t x $\mathbb{1}^{(\text{Small Target} \mid \text{Large Path})}$	0.556	0.157**	0.224**	0.138
	[1.18]	[0.08]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-5.430***	0.970***	0.812***	0.547***
	[1.68]	[0.09]	[0.11]	[0.10]
R^2	0.24	0.84	0.69	0.49
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with an interaction between MPS_t and a dummy for meetings where $|Target_t| \leq$ 25th percentile *or* $|Path_t| \geq$ 75th percentile (covering approximately two-thirds of reversal meetings). The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A9: Controlling for small Target *and* large Path surprises

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.719***	0.619***	0.537***	0.288***
	[0.64]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.841	0.495***	0.497***	0.407***
	[1.45]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{(\text{Small Target \& Large Path})}$	-2.655*	0.148*	0.083	0.124
	[1.41]	[0.08]	[0.10]	[0.10]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.560***	1.115***	1.033***	0.695***
	[1.31]	[0.04]	[0.06]	[0.06]
R^2	0.24	0.83	0.67	0.48
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with an interaction between MPS_t and a dummy for meetings where $|Target_t| \leq$ 25th percentile *and* $|Path_t| \geq$ 75th percentile simultaneously (covering approximately 10% of reversal meetings). The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A10: Controlling for QE announcements

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.776***	0.623***	0.539***	0.291***
	[0.63]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.140	0.493***	0.482***	0.382***
	[1.40]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{QE}}$	18.859	0.699	2.752**	1.513***
	[14.53]	[0.47]	[1.23]	[0.32]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.916***	1.116***	1.021***	0.674***
	[1.25]	[0.04]	[0.06]	[0.06]
R^2	0.24	0.83	0.67	0.50
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Equation (3) estimated by OLS, augmented with a linear and interacted term for major QE announcements from the list of Corbet et al. (2019). The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 252 scheduled FOMC meetings between February 1994 and January 2026.

Table A11: Controlling for LSAP surprises from Swanson (2021)

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.523***	0.641***	0.615***	0.366***
	[0.74]	[0.05]	[0.04]	[0.05]
$S21\_LSAP$	0.165	0.014	0.041***	0.042***
	[0.13]	[0.01]	[0.01]	[0.01]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.806	0.467***	0.525***	0.465***
	[1.62]	[0.07]	[0.09]	[0.10]
$S21\_LSAP$ x $\mathbb{1}^{\text{Rev}}$	-0.430***	-0.009	-0.011	-0.008
	[0.16]	[0.01]	[0.01]	[0.01]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.329***	1.108***	1.139***	0.831***
	[1.44]	[0.05]	[0.09]	[0.09]
R^2	0.25	0.81	0.76	0.69
Obs.	202	202	202	202

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Equation (3) estimated by OLS, augmented with the continuous LSAP surprise from Swanson (2021) and its interaction with the reversal dummy. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 202 scheduled FOMC meetings between February 1994 and June 2019, with available LSAP data.

Table A12: Interacting with a dummy for large LSAP surprises (Swanson 2021)

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-4.359***	0.697***	0.641***	0.380***
	[0.98]	[0.07]	[0.06]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.056	0.468***	0.520***	0.459***
	[1.66]	[0.07]	[0.09]	[0.09]
MPS_t x $\mathbb{1}^{\text{High LSAP shocks}}$	0.858	-0.150*	-0.173*	-0.141
	[1.29]	[0.08]	[0.09]	[0.10]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.302***	1.165***	1.161***	0.839***
	[1.52]	[0.06]	[0.09]	[0.08]
R^2	0.21	0.81	0.66	0.49
Obs.	202	202	202	202

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for meetings where the absolute LSAP surprise from Swanson (2021) exceeds its 75th percentile and its interaction with MPS_t. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 202 scheduled FOMC meetings between February 1994 and June 2019, with available LSAP data.

Table A13: Controlling for forward guidance announcements

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.698***	0.620***	0.537***	0.293***
	[0.62]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.601	0.459***	0.434***	0.356***
	[1.50]	[0.06]	[0.08]	[0.09]
MPS_t x $\mathbb{1}^{\text{FG}}$	-3.937*	0.245***	0.334*	0.163
	[2.27]	[0.09]	[0.18]	[0.13]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.300***	1.079***	0.971***	0.649***
	[1.38]	[0.05]	[0.06]	[0.07]
R^2	0.26	0.83	0.67	0.47
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for forward guidance announcements from the Federal Reserve's policy communication timeline and its interaction with MPS_t. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A14: Robustness: Swanson (2021)'s three-factor model

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.542***	0.620***	0.530***	0.287***
	[0.63]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.205	0.449***	0.379***	0.286***
	[1.74]	[0.08]	[0.09]	[0.09]
MPS_t x $\mathbb{1}^{\text{S21 Reversal}}$	-2.754	0.028	0.117	0.081
	[1.88]	[0.11]	[0.11]	[0.12]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.069***	0.909***	0.573***	
	[1.72]	[0.07]	[0.08]	[0.09]
R^2	0.25	0.84	0.69	0.52
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with an interaction between MPS_t and a reversal dummy constructed analogously from the forward guidance and LSAP factors of Swanson 2021 ($\mathbb{1}^{\text{S21 Reversal}}$), generating a subset of 76 reversal statements. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A15: Controlling for a third factor

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.702***	0.618***	0.537***	0.287***
	[0.65]	[0.04]	[0.05]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.125	0.485***	0.477***	0.388***
	[1.48]	[0.06]	[0.08]	[0.08]
MPS_t x Third Factor	-0.327	0.047	0.036	0.047
	[0.59]	[0.04]	[0.04]	[0.05]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.827***	1.103***	1.014***	0.675***
	[1.29]	[0.04]	[0.06]	[0.06]
R^2	0.24	0.83	0.67	0.47
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with the interaction between MPS_t and the third principal component of the five futures surprises from the USMPD data. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A16: Estimating a first principal component (PC1) with long maturities

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.580	0.200	-0.047	-0.246*
	[3.18]	[0.22]	[0.19]	[0.15]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.018	0.497***	0.493***	0.393***
	[1.40]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{High PC1 Long}}$	-0.239	0.442**	0.611***	0.560***
	[3.15]	[0.22]	[0.19]	[0.15]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.598	0.697***	0.446**	0.148
	[3.16]	[0.21]	[0.19]	[0.15]
R^2	0.24	0.84	0.69	0.50
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with an interaction between MPS_t and a dummy for meetings where the first principal component of an augmented set of futures (including ED8, 5-year, and 10-year yields) loads heavily on long-maturity rates. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A17: Heterogeneous transmission with daily window

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.330***	0.455***	0.301***	0.091
	[1.65]	[0.10]	[0.10]	[0.09]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.240	0.627***	0.663***	0.520***
	[3.78]	[0.16]	[0.18]	[0.16]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-3.570	1.082***	0.964***	0.611***
	[3.40]	[0.13]	[0.14]	[0.13]
R^2	0.03	0.35	0.20	0.09
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using daily changes in asset prices rather than 30-minute intraday changes. Daily changes introduce noise from same-day non-FOMC events but allow for a longer adjustment window. The level dummy and constant are not shown. The dependent variables are the daily change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured on FOMC announcement days. The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A18: Including the two outlier QE meetings (Dec 2008, Mar 2009)

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.755***	0.440***	0.329***	0.154
	[0.55]	[0.09]	[0.09]	[0.10]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.580	0.696***	0.742***	0.582***
	[1.41]	[0.16]	[0.20]	[0.20]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-5.335***	1.136***	1.072***	0.736***
	[1.30]	[0.14]	[0.18]	[0.18]
R^2	0.25	0.35	0.21	0.11
Obs.	256	256	256	256

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Equation (3) estimated by OLS on the full sample including the two meetings excluded from the baseline due to exceptional QE announcements (16 December 2008 and 18 March 2009). The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 256 scheduled FOMC meetings between February 1994 and January 2026.

Table A19: Subsample evidence: pre-2009 (Panel A) and post-2009 (Panel B)

	SP500	2y	5y	10y
Panel A: Pre-2009				
MPS_t	-3.716***	0.594***	0.511***	0.281***
	[0.72]	[0.05]	[0.06]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.738	0.442***	0.437***	0.417***
	[1.81]	[0.08]	[0.09]	[0.10]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-2.978*	1.037***	0.949***	0.698***
	[1.66]	[0.06]	[0.07]	[0.08]
R^2	0.25	0.81	0.71	0.55
Obs.	119	119	119	119
Panel B: Post-2009				
MPS_t	-4.139***	0.776***	0.684***	0.370***
	[1.08]	[0.06]	[0.11]	[0.11]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-3.870**	0.452***	0.441***	0.264*
	[1.70]	[0.09]	[0.16]	[0.14]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-8.010***	1.228***	1.125***	0.634***
	[1.31]	[0.06]	[0.11]	[0.10]
R^2	0.33	0.90	0.63	0.38
Obs.	135	135	135	135

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * p < 0.10, ** p < 0.05, *** p < 0.01. Each panel replicates Table 3 on a subsample split at January 2009. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The overall (pre and post) sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A20: Extended sample from 1988 using Bauer and Swanson (2023a) data

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-4.414***	0.736***	0.655***	0.457***
	[0.58]	[0.04]	[0.05]	[0.04]
MPS_t x $\mathbb{1}^{\text{Rev}}$	5.644	0.652***	0.695***	0.558***
	[8.54]	[0.10]	[0.16]	[0.14]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.230	1.387***	1.350***	1.015***
	[8.52]	[0.09]	[0.15]	[0.13]
R^2	0.26	0.83	0.66	0.50
Obs.	292	263	287	292

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS on an extended sample back to 1988 using the Bauer and Swanson (2023a) database. The reversal classification is constructed using the GSS rotation procedure applied to the 1988-2026 sample. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises between 263-292 scheduled FOMC meetings (due to data availability) between February 1988 and December 2023.

Table A21: Alternative monetary surprises: Nakamura and Steinsson (2018)

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-5.999***	1.056***	0.946***	0.509***
	[1.27]	[0.08]	[0.10]	[0.10]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-3.673	1.000***	0.969***	0.763***
	[2.68]	[0.14]	[0.16]	[0.16]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-9.672***	2.055***	1.915***	1.272***
	[2.36]	[0.12]	[0.13]	[0.12]
R^2	0.22	0.79	0.66	0.48
Obs.	232	232	232	232

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using the Nakamura and Steinsson (2018) monetary surprise series on the right-hand side with the baseline GSS reversal classification. Larger coefficients reflect the scaling of the NS18 series, which has larger variance than the baseline MPS_t. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 232 scheduled FOMC meetings between February 1995 and May 2024 (due to data availability).

Table A22: Alternative monetary surprises: Bauer and Swanson (2023b)'s unadjusted

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-4.544***	0.726***	0.635***	0.361***
	[0.83]	[0.05]	[0.06]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.283	0.298***	0.315***	0.277***
	[1.33]	[0.07]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.827***	1.024***	0.950***	0.638***
	[1.04]	[0.05]	[0.07]	[0.07]
R^2	0.25	0.82	0.67	0.49
Obs.	237	237	237	237

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using the unadjusted monetary surprise series of Bauer and Swanson (2023b) with the baseline GSS reversal classification. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 237 scheduled FOMC meetings between February 1994 and December 2023 (due to data availability).

Table A23: Alternative monetary surprises: Bauer and Swanson (2023b)'s news-adjusted

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-5.098***	0.685***	0.615***	0.342***
	[0.92]	[0.07]	[0.07]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.598	0.296***	0.297***	0.271***
	[1.33]	[0.09]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-5.695***	0.981***	0.912***	0.613***
	[0.96]	[0.05]	[0.06]	[0.06]
R^2	0.30	0.69	0.57	0.42
Obs.	237	237	237	237

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using the news-adjusted monetary surprise series of Bauer and Swanson (2023b), orthogonalized with respect to publicly available macroeconomic information before the announcement, with the baseline GSS reversal classification. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 237 scheduled FOMC meetings between February 1994 and December 2023 (due to data availability).

Table A24: Alternative monetary surprises: Jarociński and Karadi (2020)

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-4.165***	0.711***	0.610***	0.334***
	[0.71]	[0.04]	[0.06]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.376	0.429***	0.435***	0.351***
	[1.30]	[0.06]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-5.541***	1.140***	1.045***	0.685***
	[1.08]	[0.04]	[0.06]	[0.06]
R^2	0.25	0.82	0.65	0.45
Obs.	252	252	252	252

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using the monetary policy surprise series of Jarociński and Karadi (2020), which adjusts for central bank information effects, with the baseline GSS reversal classification. The level dummy and constant are not shown. The level dummy and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 252 scheduled FOMC meetings between February 1994 and December 2025 (due to data availability).

Table A25: Controlling for central bank information effects

	SP500	2y	5y	10y
Panel A: CBI-adjusted MPS (JK20 continuous shock)				
$JK20\_MP$	-8.611***	0.696***	0.570***	0.270***
	[0.22]	[0.09]	[0.09]	[0.08]
$JK20\_CBI$	8.095***	0.753***	0.720***	0.509***
	[0.24]	[0.16]	[0.16]	[0.11]
$JK20\_MP$ x $\mathbb{1}^{\text{Rev}}$	0.290	0.443***	0.487***	0.436***
	[0.26]	[0.10]	[0.12]	[0.11]
$JK20\_CBI$ x $\mathbb{1}^{\text{Rev}}$	0.812	0.390**	0.262	0.064
	[0.62]	[0.19]	[0.23]	[0.16]
$JK20\_MP \mid \mathbb{1}^{\text{Rev}} = 1$	-8.321***	1.139***	1.057***	0.706***
	[0.15]	[0.04]	[0.07]	[0.07]
R^2	0.95	0.82	0.66	0.47
Obs.	252	252	252	252
Panel B: Discrete CBI dummy				
MPS_t	-4.969***	0.626***	0.531***	0.285***
	[0.68]	[0.04]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-2.697***	0.498***	0.475***	0.378***
	[1.01]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{CBI}}$	13.090***	-0.019	0.119	0.129
	[1.50]	[0.08]	[0.13]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-7.665***	1.124***	1.007***	0.662***
	[0.79]	[0.04]	[0.06]	[0.06]
R^2	0.48	0.83	0.67	0.48
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Panel A uses the continuous JK20 monetary policy shock and CBI shock from Jarociński and Karadi (2020), controlling directly for the CBI component. Panel B adds a discrete CBI dummy to the baseline specification. The reversal effect holds after controlling for central bank information effects. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 252-254 scheduled FOMC meetings between February 1994 and January 2026.

Table A26: Controlling for monetary policy uncertainty (MPU)

	(1)	(2)	(3)	(4)
	SP500	2y	5y	10y
MPS_t	-7.134***	0.740***	0.800***	0.335**
	[2.04]	[0.11]	[0.17]	[0.17]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.940	0.494***	0.484***	0.381***
	[1.30]	[0.06]	[0.08]	[0.08]
MPS_t x MPU	2.916*	-0.107	-0.239*	-0.038
	[1.69]	[0.10]	[0.14]	[0.15]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-8.074***	1.234***	1.284***	0.716***
	[2.18]	[0.11]	[0.17]	[0.17]
R^2	0.29	0.83	0.67	0.47
Obs.	250	250	250	250

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with the interaction between MPS_t and the 12-month monetary policy uncertainty (MPU) index of Bauer et al. (2022), entered linearly and standardized. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 250 scheduled FOMC meetings between February 1994 and July 2025, with available MPU data.

Table A27: Controlling for interest rate skewness

	(1)	(2)	(3)	(4)
	SP500	2y	5y	10y
MPS_t	-3.948***	0.611***	0.526***	0.283***
	[0.57]	[0.04]	[0.04]	[0.04]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.436	0.476***	0.462***	0.363***
	[1.34]	[0.06]	[0.08]	[0.07]
MPS_t x ISK	3.889***	0.192*	0.449***	0.433***
	[1.40]	[0.11]	[0.13]	[0.14]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-5.384***	1.088***	0.989***	0.646***
	[1.22]	[0.04]	[0.06]	[0.06]
R^2	0.27	0.84	0.69	0.51
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with the interaction between MPS_t and the interest rate skewness measure (ISK) of Bauer and Chernov (2024), which captures the asymmetry in the distribution of future rate changes, entered linearly and standardized. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A28: Controlling for BBM23 risk appetite index

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.244***	0.617***	0.570***	0.342***
	[0.72]	[0.05]	[0.06]	[0.05]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.751	0.480***	0.495***	0.400***
	[1.49]	[0.07]	[0.09]	[0.09]
MPS_t x BBM23 risk	-0.481	0.001	-0.045	-0.069**
	[0.50]	[0.03]	[0.04]	[0.03]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-3.996***	1.097***	1.065***	0.742***
	[1.40]	[0.05]	[0.07]	[0.07]
R^2	0.23	0.81	0.65	0.48
Obs.	224	224	224	224

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with the interaction between MPS_t and the risk appetite index of Bauer et al. (2023), entered linearly and standardized. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 224 scheduled FOMC meetings between February 1994 and January 2026, with available BBM23 data.

Table A29: Controlling for the VIX

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-5.955***	0.851***	0.804***	0.534***
	[1.92]	[0.07]	[0.08]	[0.12]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.927	0.489***	0.475***	0.373***
	[1.28]	[0.06]	[0.08]	[0.08]
MPS_t x VIX	0.098	-0.011***	-0.013***	-0.011**
	[0.07]	[0.00]	[0.00]	[0.01]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-6.882***	1.341***	1.279***	0.907***
	[1.60]	[0.07]	[0.10]	[0.13]
R^2	0.36	0.84	0.68	0.49
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with the interaction between MPS_t and the VIX level on the announcement day, entered linearly and standardized. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A30: Controlling for SEP publications

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.406***	0.613***	0.549***	0.303***
	[0.66]	[0.05]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.197	0.484***	0.483***	0.378***
	[1.45]	[0.06]	[0.09]	[0.08]
MPS_t x $\mathbb{1}^{\text{SEP}}$	-1.310	0.052	-0.036	-0.030
	[1.39]	[0.07]	[0.10]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.604***	1.098***	1.033***	0.681***
	[1.42]	[0.05]	[0.07]	[0.07]
R^2	0.26	0.83	0.67	0.47
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for meetings at which the Summary of Economic Projections (SEP) was published and its interaction with MPS_t. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A31: Controlling for press conferences

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.450***	0.602***	0.528***	0.295***
	[0.67]	[0.05]	[0.05]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-0.685	0.455***	0.456***	0.376***
	[1.43]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{Press Conf}}$	-2.325*	0.161***	0.102	0.009
	[1.37]	[0.06]	[0.10]	[0.08]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.135***	1.057***	0.984***	0.672***
	[1.39]	[0.05]	[0.07]	[0.07]
R^2	0.28	0.84	0.67	0.47
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for meetings followed by a press conference and its interaction with MPS_t. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A32: Controlling for status quo decisions

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.835***	0.607***	0.480***	0.242***
	[0.74]	[0.05]	[0.06]	[0.06]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.007	0.459***	0.385***	0.305***
	[1.57]	[0.07]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{Status Quo}}$	0.184	0.075	0.255***	0.215***
	[1.23]	[0.08]	[0.08]	[0.08]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.842***	1.066***	0.865***	0.548***
	[1.66]	[0.07]	[0.08]	[0.09]
R^2	0.25	0.83	0.69	0.50
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for meetings with no change in the federal funds rate target and its interaction with MPS_t. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A33: Controlling for FOMC dissent

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.595***	0.652***	0.573***	0.321***
	[0.88]	[0.05]	[0.07]	[0.07]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.272	0.479***	0.465***	0.366***
	[1.38]	[0.06]	[0.09]	[0.08]
MPS_t x $\mathbb{1}^{\text{FOMC Dissent}}$	-0.106	-0.063	-0.079	-0.065
	[1.14]	[0.07]	[0.09]	[0.09]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.866***	1.131***	1.039***	0.688***
	[1.30]	[0.05]	[0.06]	[0.07]
R^2	0.24	0.83	0.67	0.48
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for meetings with at least one dissenting vote (from Thornton and Wheelock 2014) and its interaction with MPS_t. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A34: Controlling for macro data releases preceding FOMC announcements

	(1) SP500	(2) 2y	(3) 5y	(4) 10y
MPS_t	-3.315***	0.654***	0.548***	0.325***
	[0.73]	[0.04]	[0.06]	[0.07]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.189	0.497***	0.481***	0.378***
	[1.38]	[0.06]	[0.08]	[0.08]
MPS_t x $\mathbb{1}^{\text{FOMC Macro data}}$	-1.128	-0.091	-0.019	-0.079
	[1.23]	[0.07]	[0.09]	[0.08]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.504***	1.152***	1.029***	0.703***
	[1.20]	[0.05]	[0.07]	[0.07]
R^2	0.24	0.83	0.67	0.47
Obs.	254	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, augmented with a dummy for FOMC days within 3 days of a major macro data release (GDP, CPI, unemployment, or industrial production) and its interaction with MPS_t, following Alam 2023. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A35: Characteristics of reversal meetings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$	$\mathbb{1}^{Rev}$
QE	0.27											
	[0.22]											
FG		0.17										
		[0.10]										
SEP			0.05									
			[0.07]									
PressConf				0.01								
				[0.07]								
Dissent					0.02							
					[0.06]							
TurnPoint						-0.39***						
						[0.08]						
TurnPeriod							-0.09					
							[0.06]					
Status Quo								0.14**				
								[0.07]				
Plateau									-0.11			
									[0.09]			
Easing									-0.25**			
									[0.10]			
Tightening									-0.17			
									[0.10]			
High Vix										0.00		
										[0.06]		
High MPU											-0.03	
											[0.06]	
High ISK												0.05
												[0.06]
R^2	0.00	0.01	0.00	0.00	0.00	0.04	0.01	0.02	0.00	0.00	0.00	0.00
Obs.	256	256	256	256	256	256	256	256	256	256	252	256

Note: ** $p < 0.05$, *** $p < 0.01$. Each column is a separate OLS regression of the reversal dummy on the indicated meeting characteristic. QE: major QE announcement. FG: forward guidance announcement. SEP: Summary of Economic Projections. Pconf: press conference. Dissent: meeting with at least one dissenting vote. Turning: turning point meeting (first and last meetings of a cycle). TurningPeriod: within 9 months of a turning point. StatusQuo: no change in target. Plateau: within a plateau period (extended no-change periods) between easing and tightening phases. High VIX/MPU/ISK: above-median uncertainty indicators. The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A36: Asymmetry: positive vs. negative monetary surprises

	(1) 2y	(2) 5y	(3) 10y
Pos. MPS_t	0.691***	0.532***	0.291***
	[0.08]	[0.08]	[0.07]
Neg. MPS_t	0.584***	0.547***	0.299***
	[0.06]	[0.08]	[0.09]
Pos. MPS_t x $\mathbb{1}^{\text{Rev}}$	0.406***	0.452***	0.314***
	[0.10]	[0.11]	[0.12]
Neg. MPS_t x $\mathbb{1}^{\text{Rev}}$	0.561***	0.531***	0.482***
	[0.12]	[0.14]	[0.13]
Pos. $MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.097***	0.985***	0.605***
	[0.04]	[0.08]	[0.09]
Neg. $MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	1.146***	1.078***	0.780***
	[0.10]	[0.11]	[0.09]
R^2	0.83	0.67	0.47
Obs.	254	254	254

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS, allowing the effect of monetary surprises and the reversal interaction to differ for positive and negative surprises. Pos. MPS_t: monetary surprise interacted with a dummy for $MPS_t > 0$. Neg. MPS_t: monetary surprise interacted with a dummy for $MPS_t < 0$. The level dummies and constant are not shown. The dependent variables are the 30-minute change in log S&P 500 (column 1) and in zero-coupon nominal Treasury yields at 2-, 5-, and 10-year maturities (columns 2-4), measured around FOMC announcements (USMPD). The sample comprises the 254 scheduled FOMC meetings between February 1994 and January 2026.

Table A37: Euro area evidence: alternative ECB specification

	(1) STOXX50	(2) 2y	(3) 5y	(4) 10y
MPS_t	-0.057***	0.776***	0.503***	0.144**
	[0.02]	[0.06]	[0.07]	[0.07]
MPS_t x $\mathbb{1}^{\text{Rev}}$	0.008	0.414***	0.727***	0.707***
	[0.02]	[0.13]	[0.13]	[0.12]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-0.049***	1.190***	1.230***	0.851***
	[0.01]	[0.11]	[0.11]	[0.10]
R^2	0.15	0.73	0.54	0.28
Obs.	315	315	315	315

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using ECB data. The ECB MPS is the change in the 1-year OIS rate in the press release window from Altavilla et al. 2019. The reversal classification uses the observable-based approach applied to ECB-specific Target and Path factors. The level dummy and constant are not shown. The dependent variables are the 30-minute intraday changes in the Eurostoxx50 (column 1) and 2-, 5-, and 10-year German sovereign yields (columns 2-4), measured in the press release window. The sample comprises the 315 ECB policy decisions between January 1999 and October 2025.

Table A38: United Kingdom evidence: alternative BoE specification

	(1) FTSE	(2) 2y	(3) 5y	(4) 10y
MPS_t	-2.398***	0.593***	0.477***	0.329***
	[0.41]	[0.03]	[0.03]	[0.04]
MPS_t x $\mathbb{1}^{\text{Rev}}$	-1.761	0.093	0.215***	0.244**
	[1.29]	[0.06]	[0.08]	[0.12]
$MPS_t \mid \mathbb{1}^{\text{Rev}} = 1$	-4.159***	0.687***	0.692***	0.573***
	[1.22]	[0.05]	[0.07]	[0.11]
R^2	0.28	0.86	0.73	0.49
Obs.	302	302	302	302

Note: Huber-White heteroskedasticity-robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Equation (3) estimated by OLS using Bank of England data. The BoE MPS is the sum of Target and Path surprises from the UK Monetary Policy Database of Braun et al. 2025. The reversal classification uses the observable-based approach applied to BoE-specific Target and Path factors. The level dummy and constant are not shown. The dependent variables are the 30-minute intraday changes in the FTSE 100 (column 1) and 2-, 5-, and 10-year UK Gilt yields (columns 2-4), measured around MPC announcements. The sample comprises the 302 Bank of England MPC decisions between June 1997 and February 2026.