Financial Market Effects of FOMC Communication: Evidence from a New Event-Study Database Online Appendix

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A Details on USMPD

A.1 FOMC Communication Events

The main channels of FOMC communication are the post-meeting statement, the Chair's press conference, and the meeting minutes. The exact release timing and content of each of these communication types have changed over recent decades. Here we provide some more details relative to the description in Section 2.1 of the paper.

A.1.1 FOMC Statements

The FOMC statement has long been the Committee's primary mode of communication with the public. The first statement was released following the February 1994 meeting. Those early statements tended to be short, factual statements of any change in monetary policy, and were issued only when the Committee changed the target for the federal funds rate. Starting with the May 1999 meeting, the FOMC started issuing a statement after every meeting. The content and length of the statements changed considerably over the years, ranging from one short paragraph about the economic situation and policy decision to elaborate statements about the economic outlook, forward guidance, and unconventional policy tools. Today, statements typically describe the FOMC's economic outlook (especially in relation to the Committee's dual mandate), the current stance of policy (including any changes), and the outlook for policy. Through all of the changes in content, the statement has continued to be the most closely watched FOMC communication.

The USMPD contains data for all FOMC meetings since 1994, including those from 1994 to 1999 that were not followed by a statement release. For simplicity, we refer to the high-frequency surprises for all of these as "statement surprises." The database also includes in this category announcements of certain extraordinary measures, such as international dollar swap lines. An example is the announcement of the establishment of dollar swap lines on March 19, 2020, during the height of the COVID pandemic.

Over the period from 1994 to 2024, the FOMC convened 18 unscheduled meetings that were followed by the release of an FOMC statement. These unscheduled FOMC meetings generally took place during emergency situations in the form of a conference call. The USMPD identifies these meetings with an indicator variable. Conference calls that were not followed by a statement/press release are not included in the database, since no new information was made public at that time.

In extraordinary circumstances, the FOMC may convene an emergency meeting and make an announcement on weekends or holidays. One instance is the FOMC announcement made

on Sunday March 15, 2020, at 5pm Eastern time, in response to the widespread financial stress at the onset of the COVID pandemic. Being outside of market operating hours, this important announcement would not be picked up by our default procedure, resulting in a missing value. In this case, we defined the event window from the market close on Friday to the opening of futures markets at 6pm Eastern time on Sunday, following Swanson and Jayawickrema (2024). Future announcements outside trading hours will be dealt with in a similar manner.

The SEP is another closely watched type of FOMC communication. Its content and timing have changed significantly over time: Initially, the FOMC provided its projections alongside its semiannual Monetary Policy Report to Congress. Starting in November 2007, the scope and frequency of those projections increased. Between 2007 and the first press conference, the SEP was released quarterly with the minutes, three weeks after the meeting. Since April 2011, the SEP has been released quarterly, after every other FOMC meeting, along with the statement. In 2012 the "dot plot" was introduced, which displays the assumptions of FOMC participants for the appropriate future path of the policy rate. The USMPD contains an indicator for FOMC meetings that were followed by an SEP release.

A.1.2 Press Conferences

The Fed Chair's post-meeting press conference provides more information about the Committee's views and decisions. The first post-meeting press conference was held by Chair Bernanke in April 2011. From 2011 through 2018, press conferences were held at meetings with SEP releases—three times in 2011, five times in 2012, and quarterly (four times per year) from 2013 onward. Starting with the January 2019 meeting, Chair Powell began holding them after every FOMC meeting.

A.1.3 Minutes of FOMC Meetings

Almost since its inception in 1933, the FOMC has released summaries of its policy deliberations and the rationale behind its decisions in a relatively timely manner—Danker and Luecke (2005) provide more detail on this history. The minutes of an FOMC meeting provide a detailed summary of the discussions at the meeting. They are released to the public with a delay, which has shortened over time. Before 2005, the minutes were not released until after the subsequent meeting, so they contained little new information about monetary policy. Starting with the December 2004 meeting, the FOMC began releasing the minutes three weeks after each meeting, with the first release in January 2005. Although the USMPD contains data for minutes releases starting in 2001, our event studies focus on minutes released

from 2005 onward to account for this change in timing and information content.

A.2 Data Sources

Our main source of intraday data is LSEG Tick History.[1] Historical data from LSEG Tick History starts in 1996. Intraday data for 1994 and 1995 are from the Chicago Mercantile Exchange (CME), Tick Data and Gürkaynak et al. (2005).

Timestamps for the events correspond to the information on the Federal Reserve Board's website.[2] For events before 2016, this information was backfilled using information from Reuters/Bloomberg and the data in Gürkaynak et al. (2005). For FOMC meetings from 1994 to 1999 that were not followed by a statement release, the timestamp corresponds to the Reuters/Bloomberg headline announcing the meeting conclusion.

A.3 Event Windows

The USMPD contains intraday changes for the following event windows:

- **FOMC Statements**: 30-minute event windows starting 10 minutes before and ending 20 minutes after the release of the FOMC statement. This is standard practice since Gürkaynak et al. (2005).
- **Press Conferences**: 70-minute event windows starting 10 minutes before the beginning and ending 60 minutes after the beginning of the Chair's post-meeting press conference.
- **Monetary Events**: event windows starting 10 minutes before the release of the FOMC statement and ending either 20 minutes after the statement release or 60 minutes after the beginning of the press conference, if one occurred after that meeting.
- **Minutes**: 30-minute event windows starting 10 minutes before and ending 20 minutes after the release of the FOMC meeting minutes.

For FOMC statements, the typical assumption is that a 30-minute window is appropriate and sufficient to capture the market reaction, going back to Gürkaynak et al. (2005). FOMC statements typically take the form of relatively concise press releases, with only limited changes relative to the previous release, and are distributed to reporters under embargo a

[1] For more details on LSEG Tick History, formerly known as Reuters/Refinitiv Tick History, see https://www.lseg.com/en/data-analytics/market-data/data-feeds/tick-history.

[2] See https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm for recent years and https://www.federalreserve.gov/monetarypolicy/fomc_historical_year.htm for historical information.

few minutes before the official release. Market participants can digest the FOMC statement and related news headlines fairly quickly, and Gürkaynak et al. (2005) show that using 30 or 60 minute windows yields largely equivalent results. We follow this convention and define the "statement window" as a 30-minute interval that starts 10 minutes before and ends 20 minutes after the release of each FOMC statement.

For the FOMC meeting minutes, studies on their information content are limited. The available evidence, however, suggests that price discovery is rather quick. In particular, Rosa (2013) showed that market volatility increases substantially at the time of their release, and remained elevated for about 10-20 minutes thereafter, on average, and across different asset prices. This suggests that the market-relevant information in the minutes appears to be digested and processed in market prices very quickly after their public release.

For determining the intraday window for the press conferences, we cannot rely on time-stamps that mark the end of the press conference. Thus we start with the question of how long it usually lasts. Swanson and Jayawickrema (2024) note that the "duration of the press conferences is typically about one hour, but ranges [...] from about 45 minutes to 1 hour and 15 minutes" (p. 10). Our own analysis of press conference videos showed that the median length of press conferences is 54 minutes and the vast majority are shorter than one hour. Very much consistent with this analysis, De Pooter (2021) analyzed the press conferences up to October 2021 and found that on average they last 54 minutes. In recent years, under Chair Powell, press conferences have typically lasted about 45 minutes.

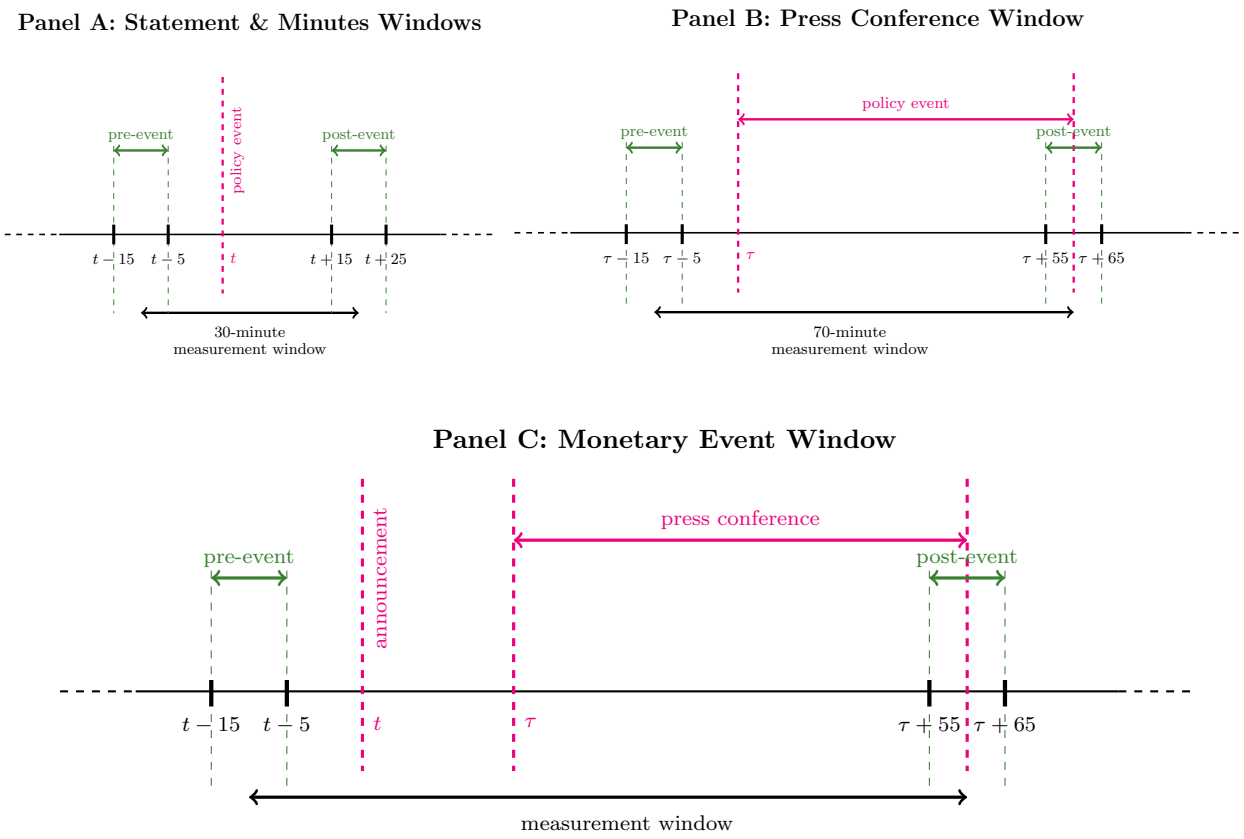
Two earlier studies of FOMC press conferences have made different choices: Cieslak et al. (2024) use a 120-minute window from the beginning of the FOMC press conference to capture the reaction of financial markets, but note that their conclusions are robust to considering shorter windows. Swanson and Jayawickrema (2024) use an 85-minute window from ten minutes before to 75 minutes after the start.

For the ECB press conferences which are also about one hour long, Altavilla et al. (2019) opt for an 85-minute window, from 10 minutes before to 15 minutes after the end of the event. For the Bank of England, Braun et al. (2025) use a window from 15 minutes before the start to 10 minutes after the conclusion of the press conference.

Against this rather heterogeneous backdrop, to decide on the appropriate length of the FOMC press conference window, we experimented with different window lengths and found little market response beyond 60 minutes after the start, which is typically about 5–15 minutes after the end. Based on our knowledge of the length of the press conferences and our additional analysis, we decided to end the window 60 minutes after the beginning of the press conference.

For the monetary event window, we note that typically, the press conference starts half

Figure A.1: Intraday windows around FOMC communication events



The time of the FOMC announcement (and in panel A, of the minutes release) is denoted by t. The start of the press conference is denoted by τ.

an hour after the corresponding statement is released, resulting in a 100-minute window. Occasionally, especially early in the press-conference sample, the gap has been larger, resulting in longer windows.

The calculation of changes and returns around events requires the choice of specific pre-event and post-event price observations. To avoid interference from misquotes and possible outliers, we follow Altavilla et al. (2019) and Braun et al. (2025) and define the pre-event and post-event prices as the median price in ten-minute windows that bracket the start and end of each event window.[3]

Figure A.1 illustrates the four different event windows in the USMPD, as well as the pre-event and post-event windows.

[3]To deal with instances where the trading volume on a certain instrument is so low that there are not at least three prices within one of the ten-minute windows, we search over extended time windows until three distinct consecutive prices are found.

Table A.1: Instruments in the USMPD

Label	LSEG RIC	Description	Start Date
MP1		Surprise for current FOMC meeting (based on FF)	1994
MP2		Surprise for next FOMC meeting (based on FF)	1994
FF1:FF6	FF	Federal Funds futures (six monthly contracts)	1994
ED1:ED8	ED	Eurodollar futures (eight quarterly contracts)	1994
	SRA	SOFR futures (eight quarterly contracts)	2022
OIS1Y	USD1YOIS=	1-year OIS rate	Dec-2003
OIS2Y	USD2YOIS=	2-year OIS rate	Aug-2011
UST3M	US3MT=RR	3-month T-Bill rate	1994
UST6M	US6MT=RR	6-month T-Bill rate	1996
UST2Y	US2YT=RR	2-year Treasury yield	1994
UST5Y	US5YT=RR	5-year Treasury yield	1994
UST10Y	US10YT=RR	10-year Treasury yield	1994
UST30Y	US30YT=RR	30-year Treasury yield	1994
TIPS5Y	UST5YTIP=RR	5-year TIPS yield	2005
TIPS10Y	UST10YTIP=RR	10-year TIPS yield	2005
TIPS30Y	UST30YTIP=RR	30-year TIPS yield	2005
SP500	.INX	S&P 500 market index	1996
SPFUT	ESc1	S&P E-mini futures (front contract)	Sep-1997
FTW5000	.FTW5000	FT Wilshire 5000 market index	Sep-2021
DXY	.DXY	Dollar index	1994
EURUSD	EUR=	Spot Euro-Dollar exchange rate	May-1998
USDJPY	JPY=	Spot Dollar-Yen exchange rate	1996

A.4 Instruments

Table A.1 lists and explains the financial instruments contained in the USMPD, including their LSEG tickers (RICs).

The instruments most commonly used for constructing monetary policy surprises are MP1, MP2, and ED2–ED4. As described in Section 2.3 of the paper and detailed below in Section A.4.2, MP1 and MP2 are based on fed funds futures and measure the policy rate surprise for the current and upcoming FOMC meeting. Furthermore, ED2–ED4 capture changes in short-rate expectations for two to four quarters ahead, based on Eurodollar futures up to 2021 and SOFR futures thereafter.

For Treasury and TIPS yields, the data up to 2024 uses 'RR' RICs which refer to data sourced directly from TradeWeb. Due to licensing reasons, from 2025 onward we use 'RRPS' RICs that refer to values from LSEG Pricing Service. We have verified that both types of data series yield very similar high-frequency Treasury yield changes.

A.4.1 Federal funds futures

Federal funds futures are monthly contracts that settle based on the average federal funds rate over the course of each month. Contracts are available for a number of consecutive months, with declining liquidity as the maturity increases.

A.4.2 Implied Target Surprises for FOMC Meetings

Federal funds futures in general combine expectations that pertain to multiple upcoming FOMC meetings. Gürkaynak et al. (2005) show how to combine federal funds futures at different maturities to isolate policy rate expectations related to particular FOMC meetings. We follow this approach to calculate the implied target rate surprises for the current and subsequent FOMC meeting, as follows:

$$MP1_s = \begin{cases} \frac{D^s}{D^s - d^s}(ff^1_{s,t} - ff^1_{s,t-\Delta t}) & \text{if } D^s - d^s > 7 \\ ff^2_{s,t} - ff^2_{s,t-\Delta t} & \text{otherwise} \end{cases} \tag{A.1}$$

$$MP2_s = \begin{cases} \frac{D^{s'}}{D^{s'} - d^{s'}} \left[(ff^j_{s',t} - ff^j_{s',t-\Delta t}) - \frac{d^{s'}}{D^{s'}} MP1_s \right] & \text{if } D^{s'} - d^{s'} > 7 \\ ff^{j+1}_{s,t} - ff^{j+1}_{s,t-\Delta t} & \text{otherwise,} \end{cases} \tag{A.2}$$

where $ff^j_{s,t}$ denotes the j^{th} Fed funds futures in month s traded at time t, D^s is the number of days in month s and d^s is the day the asset is traded. The current FOMC meeting happens in month s, and the next scheduled FOMC meeting is in month s'.

In equation (A.1), $MP1$ denotes the surprise around the current FOMC meeting. This is equal to the rescaled rate change for the current-month contract if the meeting is occurring in the first three weeks of the month. If, however, the meeting falls in the last week of the month, the current-month contract rate largely reflects the federal funds rate that had prevailed prior to the meeting and the rescaled change can be very noisy. To avoid this issue, $MP1$ equals the change in the implied rate of the second contract if the meeting falls in the last week of the month.

The implied surprise for the subsequent FOMC meeting, $MP2$, is shown in equation (A.2). $MP2$ uses a combination of longer maturity futures depending on the month in which the upcoming meeting falls, and subtracts the implied surprise for the current one ($MP1$). Note that the calculation of $MP2$ pertains to the next *scheduled* FOMC meeting. For further details, see Gürkaynak et al. (2005) and also Brennan et al. (2025).

For the calculation of $MP1$ and $MP2$ around press conferences, we follow the same methodology. Importantly, $MP2$ also refers to the next scheduled FOMC meeting, which may or may not have a press conference. The calculation of $MP1$ and $MP2$ for monetary events is analogous.

For releases of the FOMC meeting minutes, we need to adjust these definitions. Since there is no current-meeting surprise with the release of the minutes, we set $MP1 = 0$. For the calculation of $MP2$, we use (A.2), which gives us the surprise for the upcoming FOMC meeting, usually scheduled to occur three weeks later.

In short, for press conferences, MP1 is naturally close to zero, and for minutes releases, MP1 is always exactly zero by our definition. Note also that the MP2 surprise always captures news about the policy rate chosen at the next upcoming *scheduled* FOMC meeting.

A.4.3 Eurodollar and SOFR Futures

The contracts ED1 to ED8 correspond to the first eight quarterly Eurodollar contracts. For example, for a meeting scheduled in May, the contracts ED1–ED3 expire in mid-June, mid-September and mid-December of that same year, and the ED4 contract expires in mid-March of the following year.

The phasing out of LIBOR, and consequent halting of trading in Eurodollar futures in 2023, posed the question of how to measure longer-term policy expectations going forward. Following the LIBOR scandal in 2012, in 2014 the Federal Reserve convened private sector participants to recommend a new reference rate in place of LIBOR. SOFR was endorsed in June 2017 and first released in April 2018. A month later, SOFR futures began trading on the CME. In 2021, the CME announced that by April 14, 2023 all Eurodollar futures would be automatically converted to SOFR futures at a fixed spread. For more details, see Acosta et al. (2024).

SOFR and Eurodollar futures share some similarities, and are designed to be aligned in terms of their quarterly schedule and their reference rate being a 3-month rate. A key difference is that SOFR futures settle based on the compounded daily SOFR rate over the three-month period *before* the expiration date. Care must be taken to correctly align SOFR and Eurodollar contracts, because the LIBOR rate underlying a Eurodollar futures contract instead captures expectations for overnight rates for the three-month period *after* the contract's expiration, so that ED1 corresponds to the second SOFR futures contract, and so on.

As an example, consider a March SOFR and ED futures contracts. The March SOFR futures contract settles in June based on the realized SOFR rate from, roughly, mid-March to mid-June. This aligns with the March Eurodollar futures contract, which settles based on

the 3-month LIBOR at the contract expiration in March. That is, the March SOFR contract expires in June, while the March ED contract expires in March, but both reflect market expectations of short-term rates over the three-month period from mid-March to mid-June. In February, the March ED contract is denoted by ED1. We use the same identifier, ED1, to denote the March SOFR contract, although this is the second active quarterly SOFR futures contract at that time.[4]

A.4.4 Treasury yields

The USMPD further contains high-frequency changes for three- and six-month T-Bill rates, nominal Treasury yields with maturities of 2, 5, 10 and 30 years, and TIPS yields with maturities of 5, 10 and 30 years.

The Treasury yield changes are all based on intraday observations for the benchmark yields from on-the-run securities. These benchmark yields have two significant advantages over Treasury futures, which are widely used to derive high-frequency interest rate changes. First, futures reflect the prices of the cheapest-to-deliver securities, which often have effective durations that are materially shorter than the indicated bond maturity. For example, the effective duration for the 10-year T-Note futures tends to be close to 7 years. Second, the calculation of implied yield changes based on futures prices requires a linear approximation and an estimate of the effective duration. By contrast, on-the-run-securities have effective duration closer to the bond maturity, and we directly observe their market yields.

A.5 Units

All financial market data in the USMPD are high-frequency *changes or returns* over different intradaily event windows. These are based on the median price or yield over the pre-event and post-event windows.

- For interest rates, we calculate changes, and these are measured in percentage points.
- For the stock market and exchange rates, we calculate net returns, and these are measured in percent (the relative change multiplied by 100).

[4] In February, the preceding December contract is still actively traded until expiration in March.

B Monetary Policy Surprises

The literature has proposed several approaches to constructing monetary policy surprises from high-frequency rate changes around FOMC announcements. The USMPD contains all the underlying data needed to implement these approaches, and we briefly review the main alternatives below.

- Kuttner (2001) calculated the surprise component of the FOMC's policy rate decision using spot-month fed funds futures. This is exactly $MP1$ as described above.

- Gürkaynak et al. (2005) calculated separate target and path factors based on changes in money market futures rates covering a horizon out to one year. The idea is to disentangle news about the current value of the policy rate (target surprise) and news about its expected future course (path surprise). The calculation is based on the five series in $(MP1, MP2, ED2, ED3, ED4)$. The first two principal components of these series are rotated to allow for an economic interpretation of the factors, based on the following restrictions:

  1. The factors are orthogonal.
  2. The path factor does not load on $MP1$, meaning that it does not capture target rate surprises.
  3. The target factor moves $MP1$ one-for-one.
  4. Both factors have the same effect on $ED4$.

  The calculation, which is detailed in the Appendix of Gürkaynak et al. (2005), is implemented in R code available online with the USMPD.[5]

- Swanson (2021, 2024) extended this factor-based approach to a third, QE factor, using surprises across the entire term structure of Treasury yields. The series are augmented by the high-frequency surprises in the 2-year, 5-year and 10-year Treasury yields, which are provided as part of the USMPD.

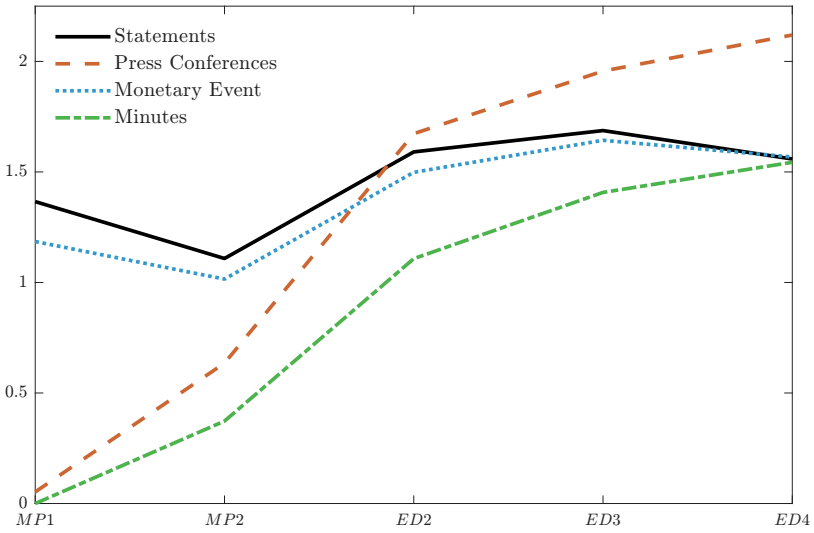
Other measures proposed in the literature can also be constructed from the USMPD.[6]

As described in Section 3.1 of the paper, for each of the four communication events we calculate the first principal component of the event-window changes in MP1, MP2, ED2,

[5] See `https://sffed.us/USMPD`.

[6] For example, Gertler and Karadi (2015) and Miranda-Agrippino and Ricco (2021) used variations of the fourth federal funds futures, $FF4$. Jarociński and Karadi (2020) combined the fourth fed funds futures with stock market data to identify monetary policy and information shocks. Acosta (2026) combined MP1 and ED4 with text-based measures of macroeconomic expectations to similar ends.

Figure B.1: Loadings of monetary policy news on rate changes



Scaled loadings of the principal components on intraday rate changes over four different FOMC communication event windows. Sample: 1994–2024 for Statement and Monetary Event, 2011–2024 for Press Conferences, 2005–2024 for Minutes.

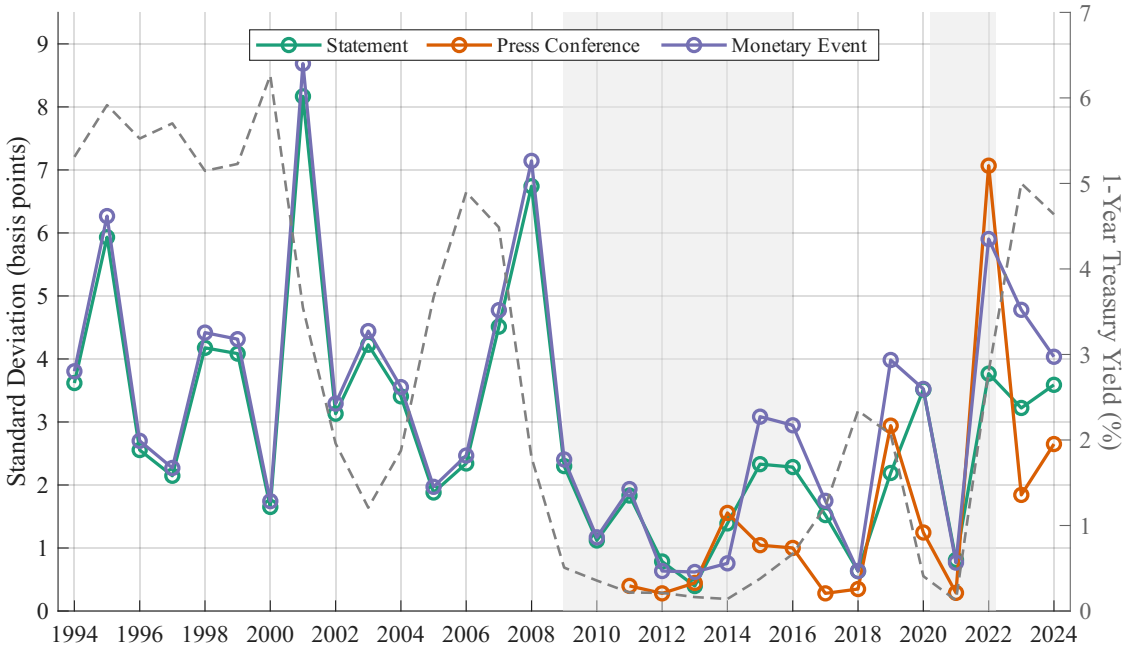
ED3, and ED4, normalized to yield a one percentage point effect on the one-year Treasury yield. Our statement surprise is exactly the Nakamura and Steinsson (2018) measure. The press conference and minutes surprises are similar in spirit to the approach of Swanson and Jayawickrema (2024), who also construct principal-component-based surprises for these events, though the details of their implementation differ. The monetary event surprise is, to our knowledge, novel. Figure B.1 shows the scaled loadings of the principal components on the underlying rate changes for each of the four communication event windows.

We now provide some additional evidence that complements that shown in Section 3.2 in the paper.

Figure B.2 shows the annual volatility of monetary policy surprises over our entire sample period. It also plots the average level of the one-year Treasury yield in each year.

The volatility of surprises has varied substantially over time, following a U-shape over the full sample. In the pre-ZLB period from 1994 to 2008, the standard deviation of statement surprises was close to 5 bp. Volatility then fell sharply and remained low for an extended period. The ZLB mechanically constrained the scope for policy rate surprises, but the low-volatility episode was not limited to the ZLB: during the period from 2015 to 2019, when the policy rate was unconstrained by the ZLB, statement volatility was under 2 bp. The Federal Reserve changed rates gradually and predictably, and markets were not surprised much by policy decisions during this period. Since the March 2022 liftoff, surprise volatility

Figure B.2: Annual volatility of monetary policy surprises

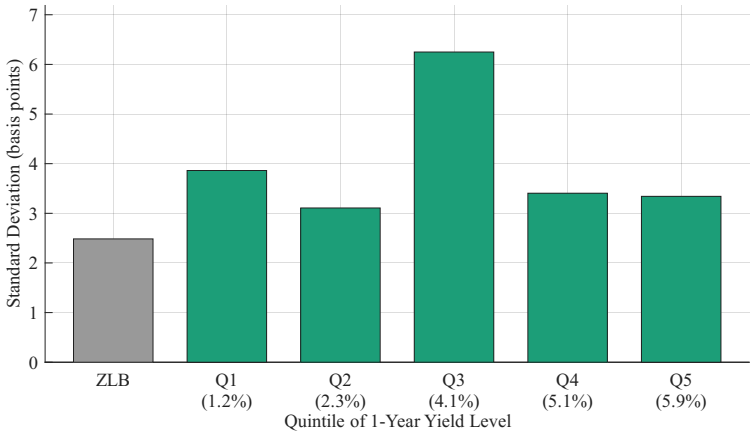


Annual standard deviation of monetary policy surprises (in basis points) around FOMC statements, press conferences, and monetary events. Dashed gray line: average one-year Treasury yield (right axis). Shaded areas indicate zero lower bound periods (December 2008 to December 2015 and March 2020 to March 2022).

has increased markedly, with statement volatility rising to around 3.5 bp and press conference volatility exceeding 4 bp.

The level of nominal interest rates may have contributed to this pattern, as rates themselves followed a broadly similar U-shaped trajectory. Figure B.2 show the average level of the one-year yield alongside surprise volatility for comparison. However, several pieces of evidence suggest that the increased volatility of monetary policy surprises is not simply a mechanical artifact of higher rate levels. The largest individual surprises have occurred in very different rate environments: among the ten largest statement surprises, the one-year yield ranged from 0.4% to 5.7%, and the single largest scheduled-meeting surprise occurred in December 2008, near the onset of the ZLB. There is also no systematic relationship between surprise magnitudes and the level of rates outside of ZLB periods. A regression of the absolute statement surprise on the lagged one-year yield has a statistically insignificant coefficient (with a negative point estimate) and an R^2 of essentially zero. Figure B.3 illustrates this by showing the standard deviation of statement surprises across quintiles of the one-year yield level, excluding ZLB periods. Surprise volatility turns out to be very similar in the lowest and highest rate quintiles. Overall, there is little evidence that the level of rates is an important driver of the volatility of monetary policy surprises.

Figure B.3: Volatility of statement surprises by interest rate level



Standard deviation of monetary policy surprises around FOMC statements (in basis points), by quintile of the lagged one-year Treasury yield level. Quintiles are formed from meetings outside the zero lower bound periods (December 2008 to December 2015 and March 2020 to March 2022). Labels show the average one-year yield in each quintile. The gray bar shows volatility for ZLB periods.

C Additional Results for Treasuries

This Appendix shows additional figures and tables for the response of the Treasury market to FOMC policy surprises in Section 4 of the paper.

Table C.1 reports estimates of the response of different interest rates to FOMC statement surprises. It includes the response for the two-year, five-year, and ten-year yields, as well as for 5-to-10-year forward rates for nominal, real, and breakeven inflation rates. Figures C.1 and C.2 show the corresponding term structure responses of nominal and real Treasury rates to statement, press conference, and monetary event surprises.

To better compare statement and press conference surprises, we estimate various multivariate regressions using only the FOMC meetings with press conferences. Table C.2 shows estimates of multivariate regressions using the statement and press conference surprises. Table C.3 reports results for multivariate regressions using press conference surprises as well as target and path surprises similar to those of Gürkaynak et al. (2005). For this analysis, we construct the target and path surprises using only FOMC statement surprises for meetings with press conferences. Over this subsample, we follow the common methodology for calculating orthogonal target and path surprises, as explained in Appendix B. As usual, we then scale the target surprise so that a one-unit change moves MP1 by 100 bp and the path surprise so that it has the same effect on ED4 as the target surprise (≈40 bp). For better comparability, we then rescale the press conference surprise over this sample so that its impact on ED4 around press conferences matches the effects of the target and path surprises around FOMC announcements.

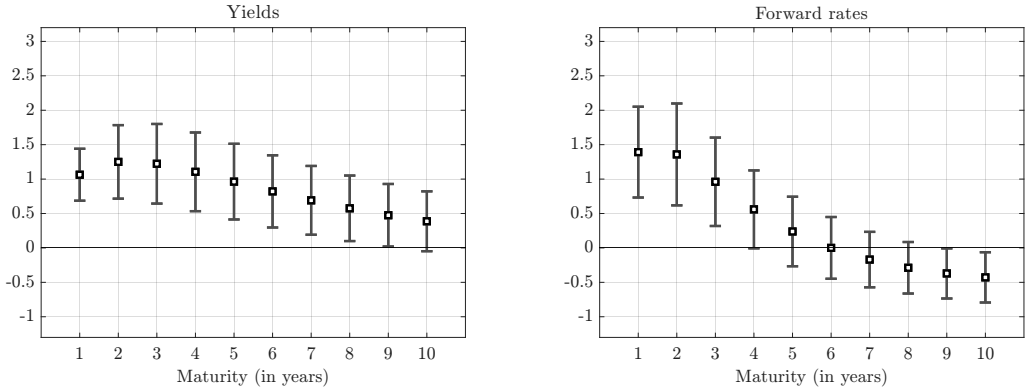
Table C.1: Response of Treasury market to FOMC statement surprises

	2y yld	5y yld	10y yld	5-10y forw
(A) Nominal				
Coefficient	1.25	0.96	0.39	-0.19
	(0.27)	(0.28)	(0.22)	(0.20)
R^2	0.21	0.11	0.03	0.01
(B) Real				
Coefficient	1.40	1.17	0.67	0.18
	(0.33)	(0.31)	(0.23)	(0.18)
R^2	0.17	0.13	0.07	0.01
(C) Inflation				
Coefficient	-0.15	-0.21	-0.28	-0.37
	(0.17)	(0.11)	(0.09)	(0.11)
R^2	0.01	0.02	0.06	0.06

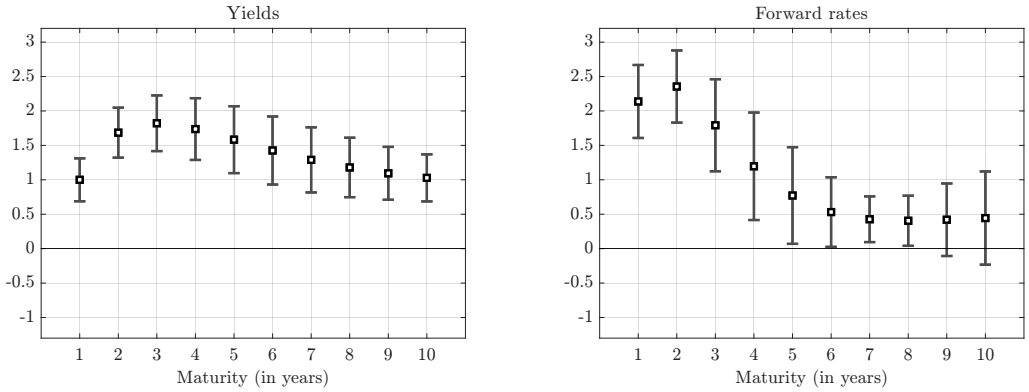
Event-study regressions of daily changes in Treasury rates around FOMC announcements on statement news, the scaled first principal component of 30-minute changes in near-term money market rates around the release of the FOMC statement. Response of nominal Treasury rates in panel (A), of real (TIPS) rates in panel (B), and of breakeven inflation rates in panel (C). Rates are 2-year, 5-year, and 10-year yields in the first three columns, and the 5-to-10-year forward rate in the last column. Sample: 167 FOMC announcements from 2004 to 2024, excluding the financial crisis period from July 2008 to June 2009 and unscheduled FOMC meetings whose daily event window spans a market closure. White standard errors in parentheses.

Figure C.1: Sensitivity of nominal Treasury rates to monetary policy surprises

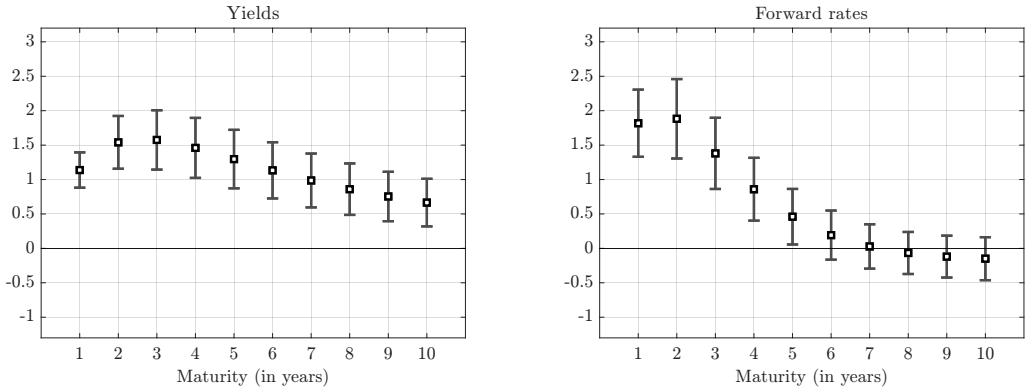
FOMC Statements



Press Conferences

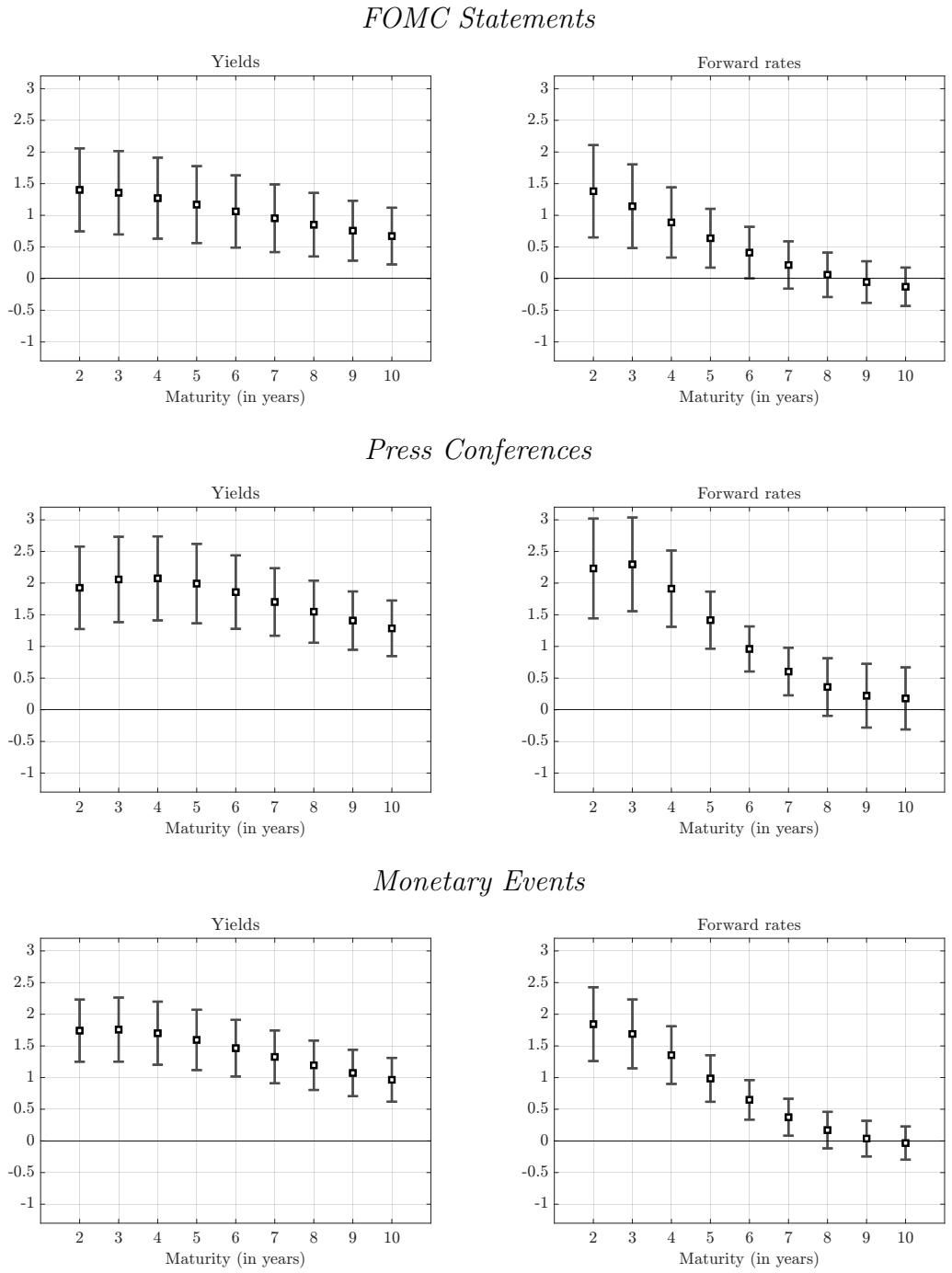


Monetary Events



Event-study regressions of daily changes in nominal Treasury rates on high-frequency monetary policy surprises. Top panels: responses to FOMC statement surprise, with 167 observations from 2004 to 2024. Middle panels: responses to press conference (PC) surprise, with 80 observations from April 2011 to December 2024. Bottom panels: responses to monetary event (ME) surprise, including both FOMC statements and press conferences when available, with 167 observations from 2004 to 2024. Estimation excludes the financial crisis period from July 2008 to June 2009 and unscheduled FOMC meetings whose daily event window spans a market closure. Responses for nominal yields in left panels, for instantaneous nominal forward rates in right panels. Error bars show 95% confidence intervals based on White standard errors.

Figure C.2: Sensitivity of real Treasury rates to monetary policy surprises



Event-study regressions of daily changes in real (TIPS) Treasury rates on high-frequency monetary policy surprises. Top panels: responses to FOMC statement surprise, with 167 observations from 2004 to 2024. Middle panels: responses to press conference (PC) surprise, with 80 observations from April 2011 to December 2024. Bottom panels: responses to monetary event (ME) surprise, including both FOMC statements and press conferences when available, with 167 observations from 2004 to 2024. Estimation excludes the financial crisis period from July 2008 to June 2009 and unscheduled FOMC meetings whose daily event window spans a market closure. Responses for real yields in left panels, for instantaneous real forward rates in right panels. Error bars show 95% confidence intervals based on White standard errors.

Table C.2: Response to statement and press conference surprises

	2y yld	5y yld	10y yld	5-10y forw
(A) Nominal				
STMT	1.28	1.10	0.47	-0.16
	(0.25)	(0.28)	(0.22)	(0.23)
PC	1.83	1.70	1.08	0.46
	(0.19)	(0.24)	(0.18)	(0.16)
R^2	0.66	0.44	0.26	0.06
(B) Real				
STMT	2.01	1.63	0.97	0.31
	(0.43)	(0.38)	(0.25)	(0.22)
PC	2.15	2.17	1.39	0.62
	(0.35)	(0.34)	(0.24)	(0.20)
R^2	0.52	0.49	0.37	0.09
(C) Inflation				
STMT	-0.73	-0.53	-0.50	-0.47
	(0.26)	(0.17)	(0.12)	(0.13)
PC	-0.32	-0.47	-0.31	-0.17
	(0.23)	(0.17)	(0.14)	(0.17)
R^2	0.12	0.20	0.22	0.11

Event-study regressions of daily changes in Treasury rates on high-frequency statement (STMT) and press conference (PC) surprises. Response of nominal Treasury rates in panel (A), of real (TIPS) rates in panel (B), and of breakeven inflation rates in panel (C). Rates are 2-year, 5-year, and 10-year yields in the first three columns, and the 5-to-10-year forward rate in the last column. Sample: FOMC meetings with post-meeting press conferences from April 2011 to December 2024, excluding unscheduled FOMC meetings whose daily event window spans a market closure (80 observations). White standard errors in parentheses.

Table C.3: Response to target, path, and press conference surprises

	2y yld	5y yld	10y yld	5-10y forw
(A) Nominal				
Target	0.09	0.01	-0.07	-0.15
	(0.14)	(0.15)	(0.16)	(0.18)
Path	0.22	0.20	0.10	-0.01
	(0.03)	(0.04)	(0.03)	(0.04)
PC	0.27	0.25	0.16	0.07
	(0.02)	(0.03)	(0.03)	(0.02)
R^2	0.75	0.50	0.30	0.06
(B) Real				
Target	0.25	0.10	0.06	0.02
	(0.14)	(0.15)	(0.18)	(0.22)
Path	0.34	0.29	0.17	0.05
	(0.05)	(0.05)	(0.04)	(0.03)
PC	0.32	0.32	0.20	0.09
	(0.04)	(0.04)	(0.03)	(0.03)
R^2	0.59	0.57	0.42	0.10
(C) Inflation				
Target	-0.17	-0.09	-0.13	-0.17
	(0.11)	(0.06)	(0.05)	(0.07)
Path	-0.11	-0.09	-0.07	-0.06
	(0.04)	(0.03)	(0.02)	(0.02)
PC	-0.05	-0.07	-0.05	-0.02
	(0.03)	(0.02)	(0.02)	(0.03)
R^2	0.13	0.23	0.23	0.11

Event-study regressions of daily changes in Treasury rates on high-frequency target and path surprises around FOMC statements, as well as press conference (PC) surprises. Response of nominal Treasury rates in panel (A), of real (TIPS) rates in panel (B), and of breakeven inflation rates in panel (C). Rates are 2-year, 5-year, and 10-year yields in the first three columns, and the 5-to-10-year forward rate in the last column. Sample: FOMC meetings with post-meeting press conferences from April 2011 to December 2024, excluding unscheduled FOMC meetings whose daily event window spans a market closure (80 observations). White standard errors in parentheses.

To investigate the robustness of our estimates and to reconcile them with earlier results in the literature, we estimate the event-study regressions for BEI rates over a range of samples, reported in Table C.4. Every sample excludes the global financial crisis (GFC) period from July 2008 to June 2009 except where noted.

- *2004–2024 (baseline)*: our baseline sample, which also excludes the four unscheduled FOMC meetings in this period whose daily event window spans a market closure.
- *incl. all unsched. meetings*: all unscheduled meetings are included.
- *incl. GFC period*: the GFC period is included; otherwise as in the baseline.
- *incl. GFC and all unsched.*: no exclusions at all, that is, every FOMC announcement in the period.
- *excl. all unsched. meetings*: every unscheduled meeting is dropped, not only those whose window spans a closure.
- *excl. March 2020*: all five March 2020 announcements are excluded, in place of the unscheduled meetings dropped in the baseline.
- *excl. '15–'18 tightening*: the baseline sample less the December 2015 to December 2018 tightening cycle, the period of deanchoring concerns.
- *2004–2014 (Nakamura–Steinsson)*: ends in March 2014, as in Nakamura and Steinsson (2018).
- *2014–2024 (post Nakamura–Steinsson)*: the remaining observations of our full sample.
- *2004–2019 (pre-COVID)*: ends in December 2019, before the onset of the pandemic.
- *2004–2015 (pre-tightening)*: ends in November 2015, just before the tightening cycle.
- *2015–2018 (tightening cycle)*: the December 2015 to December 2018 tightening cycle on its own.

The last five rows apply the baseline exclusions and vary only the period.

The estimated BEI responses are negative in every row at ten years and at the 5-to-10-year forward horizon, and of similar magnitude in most. The exceptions are informative. The two rows that retain all unscheduled meetings give responses uniformly weaker than the baseline's and never significant. Estimated on the 2015–2018 tightening cycle alone, by contrast, the responses are three to six times the baseline, a period we return to below. And in the row

Table C.4: Breakeven inflation response to FOMC announcement surprises across samples

	5y		10y		5–10y forward		
Sample	Coef.	R^2	Coef.	R^2	Coef.	R^2	N
2004–2024 (baseline)	-0.21 (0.11)	0.02	-0.28 (0.09)	0.06	-0.37 (0.11)	0.06	167
2004–2024, incl. all unsched. meetings	0.01 (0.17)	0.00	-0.09 (0.19)	0.00	-0.20 (0.25)	0.01	171
2004–2024, incl. GFC period	-0.40 (0.14)	0.07	-0.35 (0.10)	0.08	-0.31 (0.14)	0.05	176
2004–2024, incl. GFC and all unsched.	-0.20 (0.19)	0.02	-0.19 (0.17)	0.02	-0.19 (0.22)	0.01	180
2004–2024, excl. all unsched. meetings	-0.24 (0.12)	0.03	-0.30 (0.10)	0.06	-0.38 (0.12)	0.06	159
2004–2024, excl. March 2020	-0.13 (0.13)	0.01	-0.28 (0.09)	0.06	-0.43 (0.12)	0.09	166
2004–2024, excl. '15–'18 tightening	-0.14 (0.10)	0.01	-0.23 (0.09)	0.04	-0.32 (0.11)	0.04	142
2004–2014 (Nakamura–Steinsson)	0.08 (0.09)	0.00	-0.12 (0.11)	0.01	-0.32 (0.17)	0.05	77
2014–2024 (post Nakamura–Steinsson)	-0.48 (0.17)	0.11	-0.45 (0.13)	0.12	-0.41 (0.14)	0.06	90
2004–2019 (pre-COVID)	-0.17 (0.12)	0.02	-0.30 (0.11)	0.06	-0.43 (0.14)	0.08	124
2004–2015 (pre-tightening)	0.00 (0.10)	0.00	-0.16 (0.11)	0.02	-0.34 (0.16)	0.06	90
2015–2018 (tightening cycle)	-1.28 (0.26)	0.57	-1.18 (0.19)	0.56	-1.09 (0.27)	0.32	25

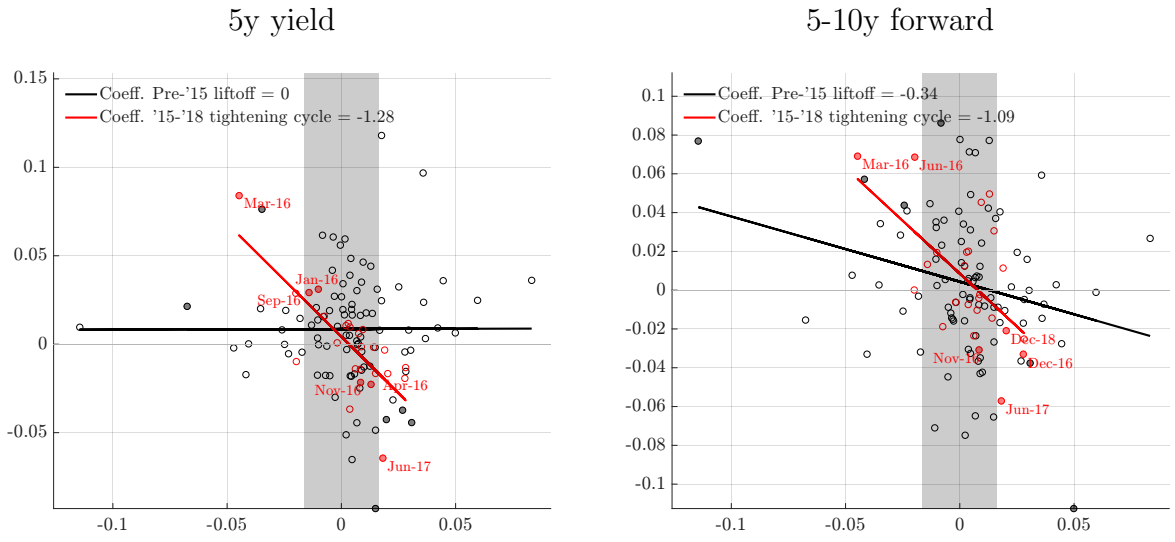
Event-study regressions of daily changes in breakeven inflation rates around FOMC announcements on high-frequency announcement surprises, one row per estimation sample. For details on the samples refer to the text. White standard errors in parentheses.

that excludes that cycle from the baseline sample, the five-year response weakens to -0.14 while the 5-to-10-year forward response holds at -0.32, so it is the medium-horizon result rather than the five-year one that survives dropping the deanchoring episode.

We also take a closer look at which period leads to the especially strong negative responses of breakeven inflation rates at medium-to-long maturities. Figure C.3 shows scatter plots of changes in the five-year BEI yield (left panel) and the 5-to-10-year BEI forward rates (right panel) against FOMC announcement surprises. Two different subperiods are highlighted in the scatter plots: The red cloud of points corresponds to the tightening cycle from December 2015 to December 2018, whereas the black circles visualize the sample from the beginning of our sample, January 2004, to just before the onset of the tightening cycle, November 2015. For each regression sample, the six most influential observations, as measured by the *DFBETA* measure of influence, are highlighted as filled circles. They are labeled with the month of the FOMC announcement for the sample corresponding to the tightening cycle.

Monetary policy surprises led to especially strong negative responses of breakeven inflation rates at medium-to-long maturities during the tightening period from the 2015 liftoff to the end of 2018. In contrast, during the period of relative stability of market-based inflation expectations from 2004 to 2015, we find no response of the five-year BEI yield. This latter

Figure C.3: BEI forward rate changes and FOMC surprises across subsamples



BEI rate changes on days with FOMC announcements and monetary policy surprise calculated from 30-minute rate changes around the release of the FOMC statement, for the five-year yield (left panel) and the 5-to-10-year forward rates (right panel). Black circles for 90 FOMC announcements from January 2004 to November 2015 (excluding financial crisis period from July 2008 to June 2009); red circles for 25 FOMC announcements from December 2015 to December 2018. Six most influential observations, as measured by the *DFBETA* measure of influence, highlighted and labeled. Least squares regression lines correspond to the estimates for the 2004–2015 and 2015–2018 samples in Table C.4.

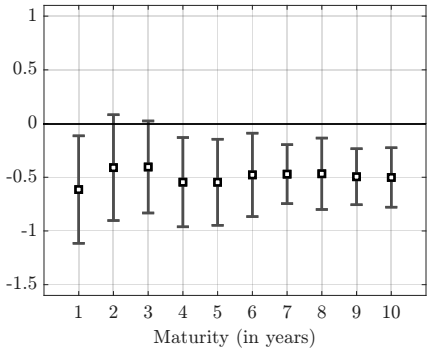
sample largely overlaps with the samples used by Nakamura and Steinsson (2018) and Hanson and Stein (2015), which explains why those studies found essentially no response of breakeven inflation rates to monetary policy. The subsample pattern supports the view that signals about monetary policy, and especially about the inflation target, can explain the sensitivity of market-based inflation expectations to policy surprises. Potential de-anchoring of long-run inflation expectations was an important concern for the Committee over the 2015–2018 tightening period.[7] Policy actions and communications plausibly provided new information about the Fed's reaction function, shifting long-run inflation expectations.

Inflation swaps are an alternative source of market-based inflation expectations and have been studied extensively in the macro-finance literature (e.g., Haubrich et al., 2012; Fleckenstein et al., 2014). As BEI spreads can be affected by differential liquidity in real and nominal bond markets, and potentially by the Fed's TIPS QE purchases, we also estimate the response of inflation swaps to monetary policy surprises to assess the robustness of our results. An important question about inflation swaps is when the market is sufficiently liquid

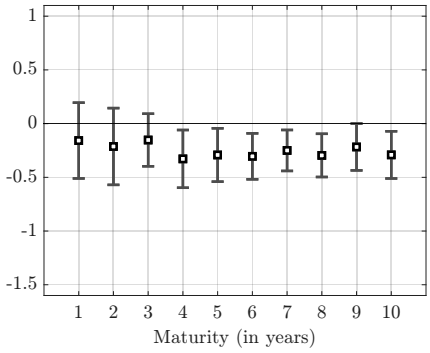
[7]See, for example, the minutes of the December 15–16, 2015 and December 12–13, 2017 FOMC meetings. In the December 2017 minutes, several participants "expressed concern that persistently weak inflation may have led to a decline in longer-term inflation expectations," pointing to low market-based inflation compensation and declines in some survey measures.

Figure C.4: Sensitivity of inflation swap rates to monetary policy surprises

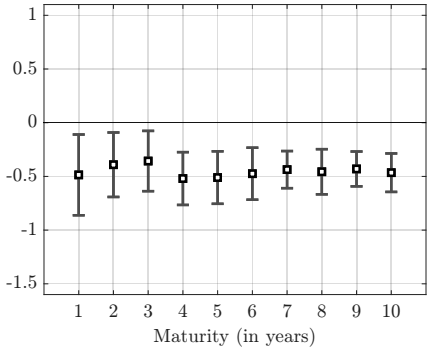
FOMC Statements



Press Conferences



Monetary Events



Event-study regressions of daily changes in inflation swap rates on high-frequency monetary policy surprises. Top panel shows estimated responses for FOMC statement surprise, middle panel for press conference surprises, and bottom panel for monetary event surprises. Sample: 124 FOMC meetings from 2010 to 2024 and 80 press conferences from 2011 to 2024. Error bars show 95% confidence intervals based on White standard errors.

Table C.5: High-frequency Treasury market response to different monetary policy surprises

	5y yld			10y yld			5-10y forw			30y yld		
	STMT	PC	ME	STMT	PC	ME	STMT	PC	ME	STMT	PC	ME
(A) Nominal												
Coeff.	1.28	1.40	1.40	0.69	0.94	0.81	0.10	0.47	0.22	0.11	0.42	0.23
	(0.17)	(0.13)	(0.15)	(0.14)	(0.11)	(0.12)	(0.13)	(0.10)	(0.13)	(0.12)	(0.11)	(0.11)
R^2	0.52	0.72	0.55	0.30	0.58	0.35	0.01	0.21	0.03	0.01	0.25	0.04
N	167	80	167	167	80	167	167	80	167	167	80	167
(B) Real												
Coeff.	1.58	1.95	1.75	0.95	1.31	1.10	0.33	0.67	0.45	0.35	0.64	0.49
	(0.17)	(0.13)	(0.17)	(0.13)	(0.09)	(0.13)	(0.14)	(0.08)	(0.13)	(0.10)	(0.11)	(0.10)
R^2	0.58	0.73	0.55	0.42	0.66	0.42	0.05	0.33	0.09	0.11	0.41	0.19
N	159	80	159	159	80	159	159	80	159	159	80	159
(C) Inflation												
Coeff.	-0.34	-0.55	-0.37	-0.31	-0.37	-0.31	-0.29	-0.20	-0.26	-0.25	-0.23	-0.26
	(0.07)	(0.08)	(0.06)	(0.05)	(0.08)	(0.04)	(0.05)	(0.09)	(0.05)	(0.05)	(0.06)	(0.04)
R^2	0.20	0.36	0.21	0.24	0.28	0.21	0.16	0.08	0.12	0.22	0.19	0.19
N	159	80	159	159	80	159	159	80	159	159	80	159

High-frequency regressions of changes in Treasury rates around FOMC communication events on high-frequency monetary policy surprises over different windows. STMT: 30-minute changes around FOMC statements. PC: changes around the post-meeting press conference. ME: changes over the monetary event window, that is, statements as well as press conferences when available. Response of nominal Treasury rates in panel (A), of real (TIPS) rates in panel (B), and of breakeven inflation rates in panel (C), constructed as the difference between nominal and real yields. Rates are 5-year yields, 10-year yields, (approximate) 5-to-10-year forward rates, and 30-year yields. Sample: for STMT and ME surprises, 167 FOMC announcements from 2004 to 2024; for PC surprises, 80 press conferences from 2011 to 2024; both excluding the financial crisis period from July 2008 to June 2009 and unscheduled FOMC meetings whose daily event window spans a market closure. In panels (B) and (C), the STMT and ME samples fall to 159 announcements, since intraday TIPS quotes are missing for eight of them. White standard errors in parentheses.

to provide reliable indicators of day-to-day changes in inflation expectations, and when to start our estimation sample. The relevant literature has documented the low liquidity in inflation swaps in the early years of this market and severe distortions during the financial crisis (Fleming and Sporn, 2013). Market transparency improved substantially with the introduction of mandatory trade reporting under the Dodd-Frank Act at the end of 2012. In line with our baseline sample for dividend swaps in Section 5.2, we start our estimation for inflation swaps in 2010. The estimation results in Figure C.4 show the response coefficients for one- to ten-year inflation swap rates to monetary policy surprises. The coefficients are all negative, of broadly comparable magnitudes as the response of BEI rates, and statistically significant for maturities beyond three years.

Finally, we use intraday data for Treasury yields to more precisely estimate the Treasury market responses. Table C.5 reports the estimated high-frequency response of five-year, ten-year and 30-year yields and 5-to-10-year forward rates to different monetary policy surprises. Note that these yields are not zero-coupon yields but instead reflect yield-to-maturity for on-the-run Treasury securities. We calculate an approximate 5-to-10-year forward rate as

twice the 10-year yield minus the 5-year yield. These estimates confirm and strengthen our earlier results: The coefficients are generally of a similar magnitude as in the results shown above, but they tend to be estimated more precisely and the R^2 tend to be quite a bit larger. Most notably, Table C.5 documents very strong negative effects of FOMC surprises on five-year breakeven inflation rates which are even stronger than those estimated on daily data. At the 30-year maturity, the nominal statement response is small and statistically insignificant, mirroring the near-zero response of 5-to-10-year forward rates, while the press conference and monetary event responses remain significant and the real and breakeven inflation responses are significant throughout.

Our daily event windows run from the close before the event to the close of the event day. A wider window captures more of the market response, at the cost of additional noise, which matters most for the minutes and for events late in the trading day. Table C.6 reports the regressions of Table 2 for two-day windows, from the close before the event to the close of the following day. The point estimates are larger in all but two of the twenty-four cells, with correspondingly larger standard errors, and our conclusions are unchanged: nominal and real yields rise for all four types of communication, forward rates show no excess sensitivity to statement surprises, and breakeven inflation rates fall throughout. The negative responses of BEI rates tend to be more pronounced than over the baseline one-day windows.

Table C.6: Two-day Treasury market response to different monetary policy surprises

	5y yld				5-10y forw			
	STMT	PC	ME	MIN	STMT	PC	ME	MIN
(A) Nominal								
Coefficient	1.00	1.85	1.42	1.04	-0.14	0.93	0.22	0.40
	(0.32)	(0.35)	(0.28)	(0.48)	(0.38)	(0.50)	(0.35)	(0.47)
R^2	0.07	0.21	0.20	0.04	0.00	0.05	0.00	0.00
N	167	80	167	152	167	80	167	152
(B) Real								
Coefficient	1.48	2.51	1.99	1.31	0.36	1.31	0.71	1.06
	(0.38)	(0.44)	(0.32)	(0.47)	(0.30)	(0.41)	(0.28)	(0.44)
R^2	0.11	0.25	0.28	0.06	0.01	0.11	0.05	0.04
N	167	80	167	152	167	80	167	152
(C) Inflation								
Coefficient	-0.48	-0.66	-0.57	-0.27	-0.50	-0.38	-0.49	-0.66
	(0.18)	(0.29)	(0.14)	(0.23)	(0.18)	(0.29)	(0.15)	(0.28)
R^2	0.04	0.07	0.09	0.01	0.04	0.02	0.05	0.03
N	167	80	167	152	167	80	167	152

Event-study regressions of two-day changes in Treasury rates, from the close before the event to the close of the following day, on high-frequency monetary policy surprises around FOMC statements (STMT), press conferences (PC), monetary events (ME), and minutes releases (MIN). Response of nominal Treasury rates in panel (A), of real (TIPS) rates in panel (B), and of breakeven inflation rates in panel (C). Otherwise identical to Table 2 in the paper, which uses one-day windows. Sample: for STMT and ME surprises, 167 FOMC announcements from 2004 to 2024; for PC surprises, 80 press conferences from 2011 to 2024; for MIN surprises, 152 releases of the minutes from 2005 to 2024; all sample periods excluding the financial crisis period from July 2008 to June 2009 and unscheduled FOMC meetings whose daily event window spans a market closure. White standard errors in parentheses.

Table D.1: Response of risk assets to monetary policy surprises: multivariate regressions

	S&P 500	VIX	Dollar Index	Risk Appetite	BBB Spread	CDX IG	MBS Yield	MBS OAS
STMT	-2.2	7.1	7.4	-4.1	40.5	39.5	113.4	8.6
	(8.5)	(15.3)	(2.4)	(13.5)	(19.9)	(17.9)	(56.9)	(25.5)
PC	-15.9	21.3	8.5	-7.6	5.0	21.9	229.2	26.5
	(4.9)	(7.4)	(1.8)	(16.2)	(22.7)	(17.7)	(48.1)	(13.3)
R^2	0.12	0.05	0.30	0.01	0.04	0.07	0.26	0.03
N	80	80	80	59	80	80	80	80

Event-study regressions of changes/returns in risk assets around FOMC meetings on high-frequency statement (STMT) and press conference (PC) surprises. For description of risk assets, see notes to Table 3. Sample: FOMC meetings with post-meeting press conferences from April 2011 to December 2024, excluding unscheduled FOMC meetings whose daily event window spans a market closure; N varies across assets with data availability. White standard errors in parentheses.

D Additional Results for Risk Assets

This Appendix section reports additional figures and tables for the response of risk assets to monetary policy surprises in Section 5 of the paper. Tables D.1 and D.2 report estimates for multivariate regressions similar to those above for the Treasury market in Tables C.2 and C.3, again using only observations of FOMC meetings followed by a press conference.[8] Figure D.1 shows scatter plots of intraday S&P 500 and dollar returns against statement and monetary event surprises.

[8]See the description in Appendix C for how we construct the target and path factors, and rescale the press conference surprise, for the sample of FOMC meetings with press conferences.

Table D.2: Response of risk assets to target, path, and press conference surprises

	S&P 500	VIX	Dollar Index	Risk Appetite	BBB Spread	CDX IG	MBS Yield	MBS OAS
Target	5.0	-6.1	1.3	-7.0	35.2	19.6	-39.1	-22.1
	(6.0)	(7.5)	(1.3)	(4.1)	(15.7)	(14.6)	(26.6)	(16.2)
Path	-1.0	2.1	1.2	0.6	3.0	4.8	25.7	4.3
	(0.9)	(2.1)	(0.3)	(2.5)	(3.6)	(3.0)	(7.1)	(1.8)
PC	-2.3	3.1	1.3	-0.8	0.7	3.2	33.8	4.0
	(0.7)	(1.0)	(0.3)	(2.0)	(3.2)	(2.6)	(6.8)	(1.8)
R^2	0.17	0.08	0.33	0.03	0.06	0.07	0.35	0.09
N	80	80	80	59	80	80	80	80

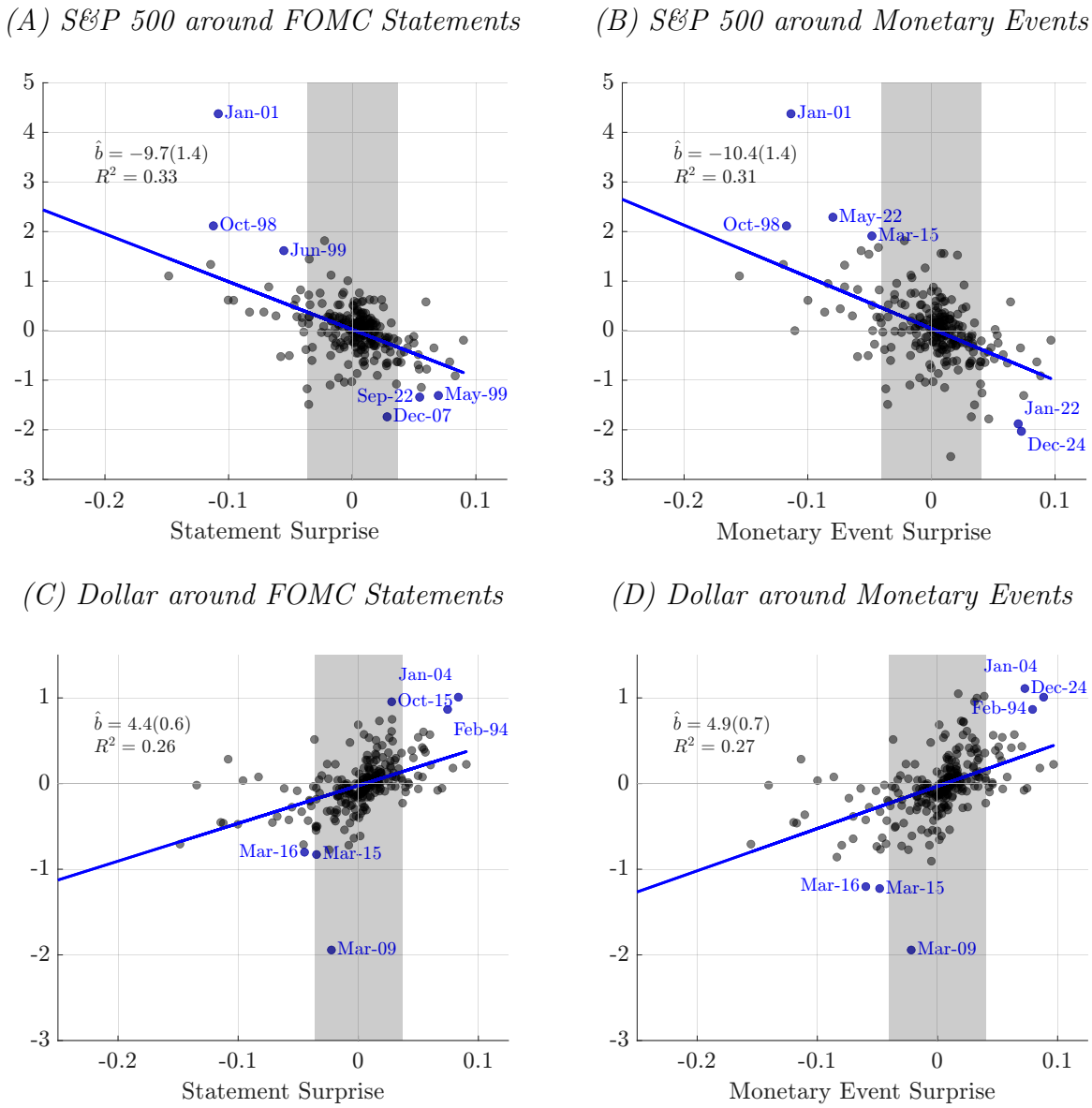
Event-study regressions of changes/returns in risk assets around FOMC meetings on high-frequency target and path surprises around FOMC statements, as well as press conference (PC) surprises. For description of risk assets, see notes to Table 3. Sample: FOMC meetings with post-meeting press conferences from April 2011 to December 2024, excluding unscheduled FOMC meetings whose daily event window spans a market closure; N varies across assets with data availability. White standard errors in parentheses.

Table D.3: Intraday response of risk assets to monetary policy surprises

	STMT	PC	ME	MIN
(A) S&P 500				
Coefficient	-9.7	-16.3	-10.4	-3.6
	(1.4)	(3.1)	(1.4)	(2.1)
R^2	0.33	0.39	0.31	0.04
N	243	80	243	160
(B) Dollar				
Coefficient	4.4	9.1	4.9	5.8
	(0.6)	(1.3)	(0.7)	(0.8)
R^2	0.26	0.57	0.27	0.30
N	259	80	259	160

Event-study regressions of high-frequency returns in the S&P 500 and the dollar index on monetary policy surprises. STMT: 30-minute returns around FOMC statements. PC: returns around post-meeting press conferences. ME: returns around monetary events, that is around statements and press conferences when available. MIN: 30-minute returns around release of FOMC meeting minutes. Sample: FOMC meetings from February 1994 to December 2024 for STMT and ME; post-meeting press conferences from April 2011 to December 2024 for PC; releases of the FOMC meeting minutes from January 2005 to December 2024 for MIN. Unscheduled FOMC meetings whose daily event window spans a market closure are excluded. Intraday S&P 500 quotes are missing for 16 of the FOMC meetings. White standard errors in parentheses.

Figure D.1: Intraday risk assets and monetary policy surprises



Intraday returns in risk assets and monetary policy surprises. Top panels show intraday S&P 500 returns on vertical axis, bottom panels show intraday dollar returns. Left panels show FOMC statement surprises, right panels monetary event surprises, for FOMC meetings from 1994 to 2024, excluding unscheduled FOMC meetings whose daily event window spans a market closure: 243 observations for the S&P 500, for which intraday quotes are missing for 16 meetings, and 259 for the dollar. Six most influential observations are highlighted and labeled: for the stock market (dollar) regressions, the most influential observations are those with the most negative (positive) *DFBETA* statistic. Least squares regression lines correspond to estimates shown in Table D.3. Gray-shaded areas correspond to one standard deviation, above and below zero, for the monetary policy surprise.

Table D.4: Response of dividend swaps to monetary policy surprises

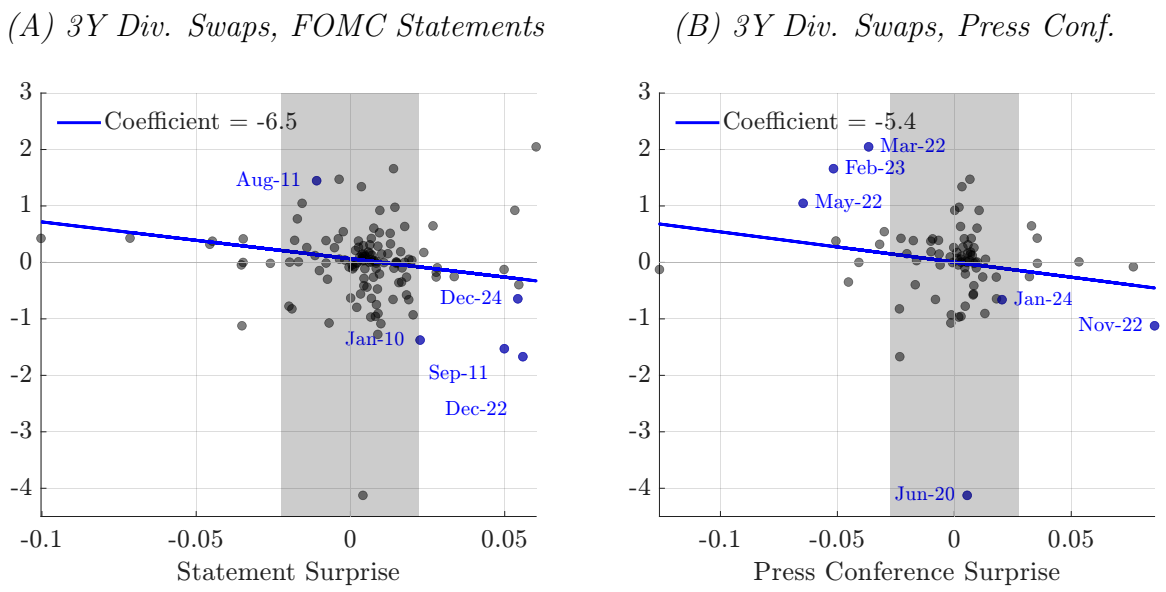
	1y	2y	3y	4y	5y	6y	7y
(A) FOMC Statements, $N = 123$							
Coefficient	1.6	-0.9	-6.5	-7.8	-11.7	-11.8	-9.9
	(2.0)	(3.1)	(4.3)	(3.9)	(4.4)	(4.6)	(4.1)
R^2	0.00	0.00	0.01	0.02	0.03	0.04	0.02
(B) Press Conferences, $N = 79$							
Coefficient	-2.9	-4.2	-5.4	-4.3	-6.0	-4.7	-8.0
	(1.4)	(2.7)	(3.0)	(3.4)	(4.8)	(4.1)	(3.8)
R^2	0.03	0.03	0.04	0.02	0.03	0.02	0.04
(C) Monetary Events, $N = 123$							
Coefficient	-1.1	-3.2	-6.9	-7.1	-10.1	-9.6	-10.2
	(1.1)	(1.6)	(2.2)	(2.2)	(2.9)	(3.0)	(2.7)
R^2	0.00	0.02	0.02	0.02	0.04	0.05	0.05
(D) Minutes, $N = 120$							
Coefficient	6.0	3.2	-2.7	-6.0	-4.5	-12.3	-11.4
	(5.4)	(5.3)	(5.5)	(5.9)	(6.5)	(6.4)	(7.7)
R^2	0.00	0.00	0.00	0.00	0.00	0.02	0.02

Event-study regressions of two-day returns in dividend swaps, for constant (interpolated) annual horizons, on high-frequency monetary policy surprises over different windows. Panel (A): 30-minute changes around FOMC statements. Panel (B): changes around post-meeting press conferences. Panel (C): changes around statements, and press conferences when available. Panel (D): 30-minute changes around release of FOMC meeting minutes. The sample covers FOMC announcements from 2010 to 2024 for panels (A) and (C), press conferences from 2011 to 2024 for panel (B), and minutes releases from 2010 to 2024 for panel (D). Unscheduled FOMC meetings whose daily event window spans a market closure are excluded. White standard errors in parentheses.

Figure D.2 plots returns in three-year dividend swaps against monetary policy surprises for FOMC statements (panel A) and press conferences (panel B). The left panel shows an outlier with a very large positive response to the surprise on March 19, 2020. Excluding this event, an announcement of international swap lines, has no material impact on our estimation results.

Table D.5 presents event-study regression results for dividend swap returns similar to Table D.4, but using the complete sample of interpolated dividend swap returns, starting in 2005. Table D.6 presents estimates for the same type of regressions, but using dividend futures instead of dividend swaps (which limits the sample to 2016–2024). In additional unreported results, we have found that ending our sample in 2019 before the onset of the COVID pandemic, or using dividend swaps only over the 2016–2024 sample when dividend futures were also trading, leads to results that are similar to our baseline estimates.

Figure D.2: Dividend swaps and monetary policy surprises



Two-day returns on dividend swaps with interpolated three-year horizon and high-frequency monetary policy surprises. Left panel: FOMC statement surprises for all FOMC meetings from January 2010 to December 2024. Right panel: press conference surprises for all post-meeting press conferences from April 2011 to December 2024. Six most influential observations, as measured by the *DFBETA* measure of influence, highlighted and labeled. Least squares regression lines correspond to estimates shown in panels (A) and (B) of Table D.4. Gray-shaded areas correspond to one standard deviation, above and below zero, for the monetary policy surprise.

Table D.5: Response of dividend swaps to monetary policy surprises: 2005–2024 sample

	1y	2y	3y	4y	5y	6y	7y
(A) FOMC Statements, $N = 167$							
Coefficient	-0.2	-1.6	-0.9	-1.6	-2.2	-1.1	-1.7
	(3.0)	(2.1)	(3.8)	(3.0)	(3.6)	(4.0)	(3.4)
R^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(B) Press Conferences, $N = 79$							
Coefficient	-2.9	-4.2	-5.4	-4.3	-6.0	-4.7	-8.0
	(1.4)	(2.7)	(3.0)	(3.4)	(4.8)	(4.1)	(3.8)
R^2	0.03	0.03	0.04	0.02	0.03	0.02	0.04
(C) Monetary Events, $N = 167$							
Coefficient	-1.3	-2.8	-2.5	-2.5	-3.6	-2.2	-3.6
	(2.1)	(1.5)	(3.0)	(2.4)	(2.9)	(3.2)	(2.8)
R^2	0.00	0.01	0.00	0.00	0.01	0.00	0.01
(D) Minutes, $N = 160$							
Coefficient	15.9	-9.2	-4.3	-7.1	-11.2	-10.5	-8.7
	(13.1)	(9.3)	(6.4)	(5.9)	(6.3)	(6.3)	(8.8)
R^2	0.03	0.01	0.00	0.01	0.02	0.02	0.01

Event-study regressions of two-day returns in dividend swaps, for constant (interpolated) annual horizons, on high-frequency monetary policy surprises over different windows. Panel (A): 30-minute changes around FOMC statements. Panel (B): changes around post-meeting press conferences. Panel (C): changes around statements, and press conferences when available. Panel (D): 30-minute changes around release of FOMC meeting minutes. Sample period: 2005–2024 (our full sample of interpolated dividend swap returns). White standard errors in parentheses.

Table D.6: Response of dividend futures to monetary policy surprises

	1y	2y	3y	4y	5y	6y	7y
(A) FOMC Statements							
Coefficient	2.2	0.5	-5.4	-7.2	-6.7	-5.4	-6.9
	(2.3)	(3.6)	(4.9)	(5.2)	(5.5)	(4.0)	(2.8)
R^2	0.00	0.00	0.00	0.01	0.01	0.01	0.02
N	76	76	76	76	76	68	68
(B) Press Conferences							
Coefficient	-3.2	-6.0	-5.5	-4.3	-0.9	-1.9	-1.5
	(1.5)	(2.9)	(3.4)	(3.9)	(5.8)	(3.6)	(2.8)
R^2	0.03	0.06	0.04	0.02	0.00	0.00	0.00
N	60	60	60	60	60	56	56
(C) Monetary Events							
Coefficient	-1.2	-3.6	-6.0	-6.0	-3.7	-4.0	-4.3
	(1.0)	(1.6)	(2.3)	(2.5)	(3.6)	(2.4)	(2.1)
R^2	0.00	0.02	0.01	0.01	0.00	0.01	0.01
N	76	76	76	76	76	68	68
(D) Minutes							
Coefficient	3.1	3.9	0.6	-0.5	-0.9	-9.1	-2.3
	(6.4)	(7.1)	(6.7)	(5.9)	(6.5)	(7.0)	(2.6)
R^2	0.00	0.00	0.00	0.00	0.00	0.02	0.00
N	72	72	72	72	72	64	64

Event-study regressions of two-day returns in dividend futures, for constant (interpolated) annual horizons, on high-frequency monetary policy surprises over different windows. Panel (A): 30-minute changes around FOMC statements. Panel (B): changes around post-meeting press conferences. Panel (C): changes around statements, and press conferences when available. Panel (D): 30-minute changes around release of FOMC meeting minutes. Sample period: 2016–2024. White standard errors in parentheses.

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