Did I make myself clear? The Fed and the market in the post-2020 framework period*

(Preliminary conference draft.)

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Abstract: We study the Federal Reserve's monetary policy communication in the post-2020 period, focusing on its impact on market expectations and term premia. By highlighting the importance of clear and effective communication in shaping market beliefs and financial conditions, we derive key lessons from the FOMC's communication during this period. Additionally, we propose a series of design options for consideration in the forthcoming FOMC strategy review.

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I. Introduction

The "Statement on Longer-Run Goals and Monetary Policy Strategy."[1] opens by laying out the general ramifications for monetary policy:

> "The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.
>
> Employment, inflation, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Monetary policy plays an important role in stabilizing the economy in response to these disturbances. (...)"

The statement places front and center the role that communication and long-term interest rates play in achieving the Fed's dual mandate. Such emphasis is warranted as the Fed's ability to stabilize the economy depends in large part on how its actions and words affect longer-term interest rates and broader financial conditions. Standard models admit a clear relationship in which contemporaneous inflation and the output gap are a function of expected future real interest gaps. The current policy stance thus encapsulates not just the current interest rate but also the expectations of what the future interest rate will be.

Yet, in practice, long-term rates reflect not only the market's expectations about the policy and economic trajectories but also uncertainty surrounding those paths, manifest in risk (term) premia. Communication, therefore, matters for successful policymaking through its impact on expectations and, as growing evidence suggests, risk compensations. Communication clarity should carry an especially high price during structural shifts in the economy and as policymakers adjust the framework under which they operate.

Ahead of the Federal Reserve's next framework review, in this paper, we analyze the Fed's communication during the last five years since the announcement of the current framework in August 2020. Though every decade faces its unique challenges, the early 2020s were rife with new unknowns. We begin by summarizing the key events that shaped this period and the Fed's motivations for designing a new framework. Against this backdrop, we then discuss what we consider successes and failures of the Fed's communication and how they influenced the market's perceptions of the Fed's policy stances as events unfolded. We draw on various pieces of evidence, including survey forecasts of market participants, Fed forecasts, and textual analysis of the Fed's communication and newspaper articles covering the Fed. Finally, we assess the Fed's communication in terms of its implications for the yield curve and

[1] https://www.federalreserve.gov/monetarypolicy/files/fomc_longerrungoals.pdf

long-term yields, in particular. We explore a channel whereby changing public perceptions of policy mistakes due to communication failures can raise risk premia. Based on the body of evidence, we conclude the paper by distilling lessons for the Fed to consider in the next review.

Our evaluation benefits from hindsight that policymakers obviously lacked at the time. Even with access to all historical data, understanding the environment and deriving recommendations remains challenging. There are diverse views on what the Fed should have or could have done. Nevertheless, lessons can hopefully be learned from past experiences. These lessons should not overshadow the fact that monetary policy has been extremely successful in the last three decades, and the Fed was navigating uncharted waters in the post-pandemic world. Despite the challenges, it appears to be steering the economy towards what looks like a soft landing today.

The 2020 framework was a major shift in the Fed's approach to policymaking. Formed by the experience of the post-Global Financial Crisis (GFC) years, the Fed constructed the framework and the communication tied to it with a single dominant scenario in mind (effective lower bound, prevalence of demand-type shocks). With flexible average inflation targeting, FAIT, as the key tenet, the FOMC clearly signaled their willingness to overshoot the 2% inflation target to make up for past undershoots. Those past inflation misses, however, appear to have concerned the Fed more than they did the market. Ultimately, the framework was tested on a scenario different from the one it was designed for. While the likelihood of such realization was largely down-weighted in the design, the unlucky scenario was in the range of possibilities considered by external observers before it materialized.

We analyze the communication successes and failures around and after the 2020 framework introduction. The relatively nuanced logic of the strategy made it hard to explain to the public. With the intention of preserving flexibility, the framework was by design unspecific about its implementation. Fed officials' communication starting from before the announcement suggests that different individuals interpreted the elements of the new strategy differently. As the public and market participants sought clarification, and before the fragility became evident, the FOMC was challenged to answer concrete questions about the modifiers related to the FAIT. Adding forceful forward guidance successfully communicated the intention of lower-for-longer at a time when such policy was warranted by the economic recovery in ongoing pandemic. However, forward guidance reinforced the one-sided focus and made the escape clauses present in the framework difficult to fall back on when it became necessary.

Ex-post, the Fed appears to have been constrained by the framework and the forward guidance, even though such constraints were perhaps not perceived as material by policymakers in real-time. The need to build credibility for the newly announced strategy and

to respect the forward guidance commitments led to deemphasizing risk management, which had historically played a large role in the Fed's decision-making. As a consequence, the Fed became less sensitive to upper inflation tail risks relative to its past behavior, delaying action as the data started to diverge from the dominant scenario it assumed.

Financial markets were closely attuned to the details of the Fed's communication. As the lack of specificity around the framework sowed seeds of uncertainty, the Fed's communication through 2021, in response to incoming data, fostered confusion among market participants about the Fed's reaction function, in particular its inflation response.

We explore the implications of these developments for financial markets through how they affected the term structure of interest rates. We juxtapose the changes in short- and long-maturity yields (measured using two-, ten-, and 30-year Treasury futures[2]) in narrow windows around key macroeconomic releases and the Fed's communication events including decision announcements, Chair's press conferences, minutes releases, and the Fed officials' speeches, media interactions, etc. From August 2020 through August 2023, the ten-year yield rose more than 3.5 percentage points. Of the overall increase, nearly 150 basis points (bps, 41% of the total) occurred in 30-minute windows around eight types of macro announcements. Instead, the Fed's communication windows lowered the ten-year yield by around 40 bps (-11% of the total). The remaining 70% of the increase took place outside the explicit event windows we consider.

Just after the framework announcement and before inflationary pressures surfaced, short-term yields remained firmly anchored by the lower-for-longer policy, consistent with the Fed's intention. The Fed's communication events saw moderate rises in long-term yields (not exceeding 14 bps by March 1, 2021), paralleled by similarly sized increases around macro announcements. From mid-2021, with unfavorable economic outcomes, long-term yields accelerated significantly, yet the bulk of the upward move occurred outside the Fed's communication events. While the Fed's communication over this period pushed up shorter yields somewhat, it contributed a small share of the increase at the short-maturity range and produced a moderate offset to some of the increase at the long-maturity range taking place on other non-Fed events.

The small contribution of the Fed event windows to yield increases masks three interpretative issues. First, markets revise beliefs about the appropriate policy stance in response to macroeconomic events. Second, those revisions can stem from both expectations about the short-rate path and/or the market's changing risk perceptions and the associated premium.

[2]The numbers we report below are for coupon bond yields rather than zero coupon yields. We use the ten- and 30-year Ultra Treasury futures to keep the maturities of the deliverable bonds in the contract as close as possible to the reference maturity.

Finally, the net effect of economic recovery, inflationary pressures, and monetary policy is complex to assess from overall yield changes alone.

We therefore further decompose yield movements into short-rate expectations and term premia at the daily frequency. We show that the Fed event days and macro days are associated with a significant build-up of term premia that continues through mid-2022 until the Fed's hawkish pivot. We estimate that the term premium component linked to the Fed-induced uncertainty rises cumulatively by around 80 bps at the ten-year maturity from August 2020 to mid-April 2022. From that point, it stabilizes and begins to moderate as the Fed officials consistently communicate more hawkish stances. We also show that the Fed's forward guidance anchored market's short-rate expectations through early 2022, making them unresponsive to incoming inflation news. Instead, long-term yields reacted via increased news sensitivity of the term premia, which again abated once policy started to normalize. As such, to the extent that markets and the Fed disagree on the appropriate policy stance, markets can unwind the effect policy intended to achieve (in this case, easy financial conditions) via higher premium.

To understand the connection between the yield dynamics and the market's beliefs about the Fed's stances, we proxy for changing perceptions of policy mistakes from the content of Wall Street Journal articles covering the Fed. We document that term premia, but not short-rate expectations, comove positively with our measure of mistake perceptions. Finally, we also show that determinate hawkish language in the Fed officials' speeches post-pivot contributed to lowering term premia charged on long-term bonds.

The risk premium aspect of the market's reaction to the Fed is not without consequences. One might argue that higher premium at times when tightening is needed does the job for the Fed without the Fed needing to act. This argument, however, omits the fact that the market's reaction via risk premium might, on other occasions, undermine the effects that policymakers aim to achieve. More broadly, the Fed should strive to achieve outcomes with instruments it can control best, and controlling term premia is undoubtedly hard. Even when term premia amplify policy and therefore help its course, policymakers' "grip on the steering wheel is not as tight as it otherwise might be" (Stein, 2013). Effective communication is one means to reduce the likelihood of market outcomes that are inconsistent with the Fed's intentions. We highlight complex interactions between the Fed's policy strategy, its implementation and communication, and market's beliefs.

The paper is structured as follows. Section II provides the timeline of events. Section III discusses the motivation for the 2020 review, emphasizing aspects of how it was initially communicated. Section IV is a diagnosis of communication successes and failures. Sections

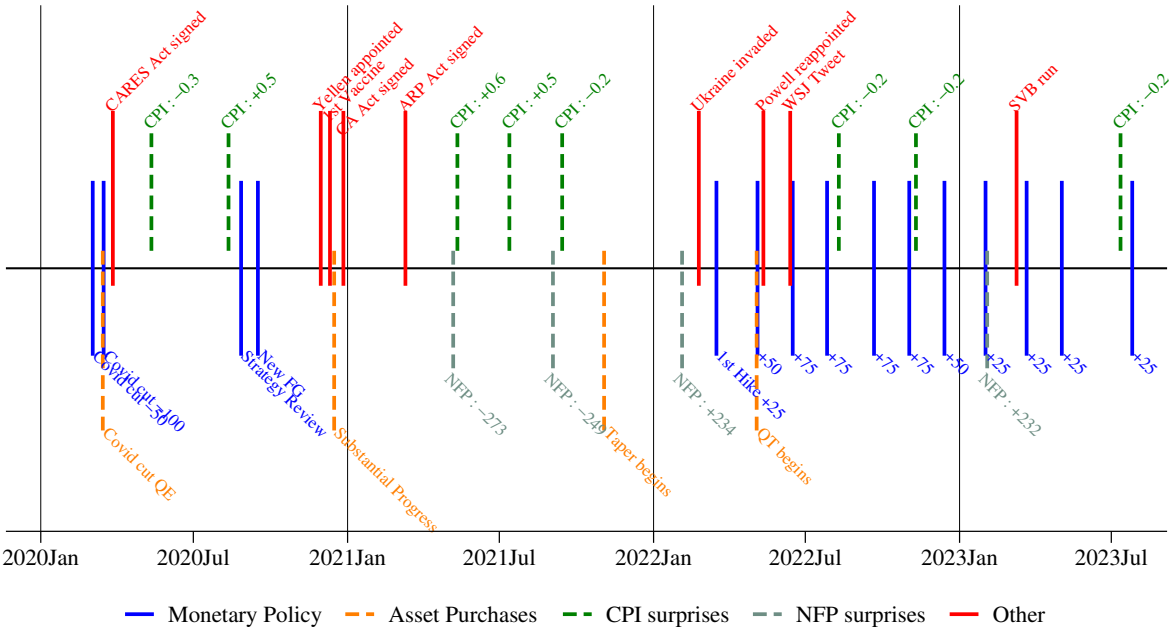

Figure 1. Timeline of main events.

V studies the implications for interest rates. We conclude in Section VI by summarizing lessons and recommendations from this analysis.

II. Timeline of key events since 2020

For the context of analyzing the Fed's post-2020 communication, Figure 1 summarizes the complex environment of the past five years, marking key monetary policy events along with other global, macro, and fiscal policy outcomes.

The initial period was dominated by Covid-19, designated global pandemic on March 11, 2020, which significantly disrupted economic activity throughout 2020 and into 2021. Early lockdowns caused a large jump in unemployment peaking at 14.8% in April 2020; as prices declined, annual core CPI inflation reached 1.2% by May 2020 (see Figure 2). While inflation picked up as economies reopened in 2021, supply disruptions persisted. Throughout 2021, higher-than-expected inflation coincided with lower-than-expected employment outturns, as shown by the evolution of core CPI inflation and non-farm payroll surprises in Figure 2.[3] Inflation continued to rise and was further propelled by Russia's invasion of Ukraine in February 2022, and the associated global increase in oil and gas prices. Inflation reached a peak in June 2022 (7.1% PCE deflator and 9.0% CPI inflation), and has gradually fallen

[3]The Fed focuses primarily on the core personal consumption expenditure (PCE) inflation rather than CPI inflation. However, given that the PCE inflation is usually released about two weeks after the CPI report, PCE surprises likely understate the amount of inflation news in a given month.

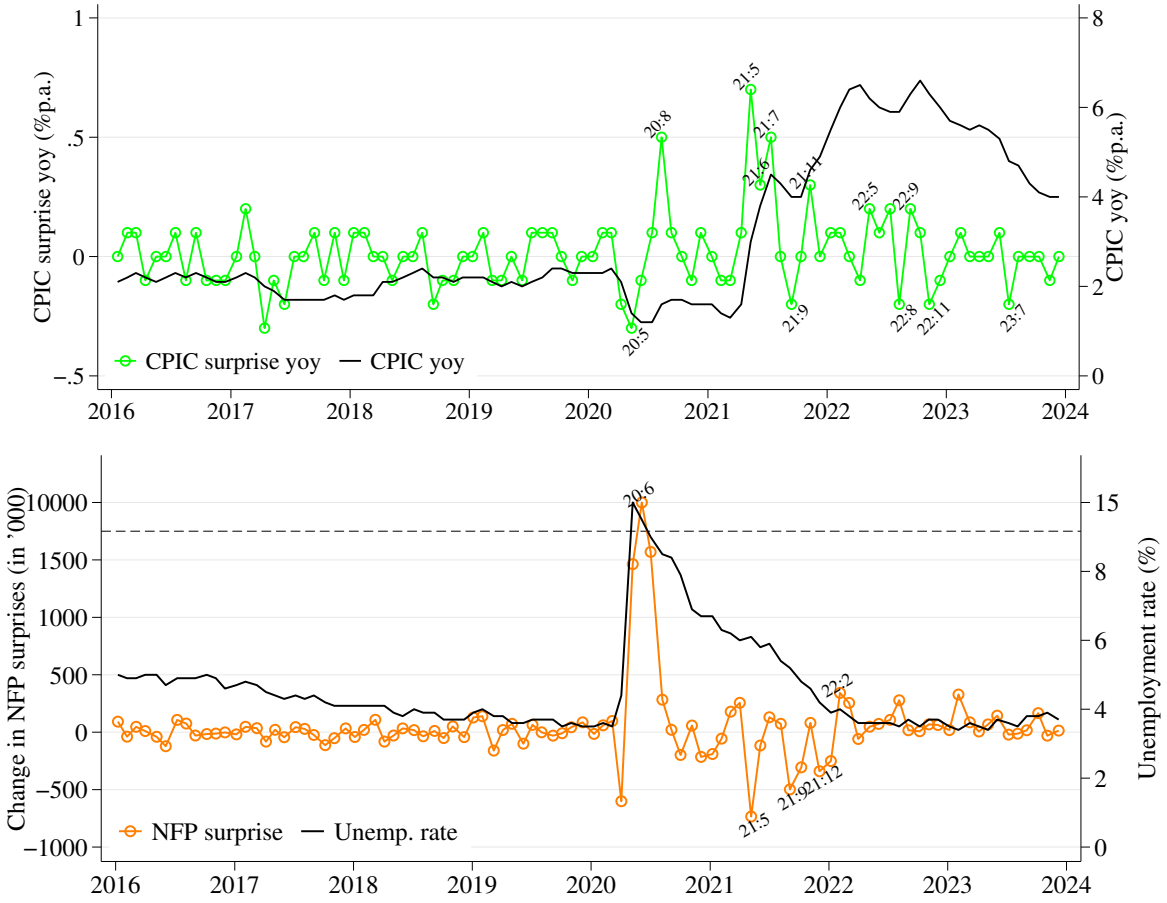

Figure 2. Inflation and non-farm payroll surprises. The figure presents the core CPI inflation surprises (upper panel) and the non-farm payroll (NFP) change surprises (lower panel). Surprises are measured as the actual release minus the survey forecast reported by Bloomberg. The figures also superimpose the actual release of the year-over-year core CPI inflation rate (upper panel right axis) and the unemployment rate (lower panel right axis). The sample is from 2016 to 2023.

back to around 3% (by Spring 2024) following an easing of supply constraints, decline in energy costs and the policy response.

The policy response to the pandemic was significant. In terms of fiscal actions, the Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law on March 27, 2020, providing $2.2tn of fiscal support. In December 2020, the Consolidated Appropriations Act added a stimulus of around $900bn.[4] With the new Biden administration and Janet Yellen becoming the Treasury Secretary, the American Rescue Plan was signed into law on March 11, 2021, extending the support by $1.9tn. The main fiscal response to inflation, the Inflation Reduction Act, was signed into law on August 16, 2022.

[4]The total bill was worth $2.3tn, with the remainder an omnibus spending bill.

Meeting	Policy type	Action	Notes
Mar 2020	Both	FFR cut twice (Mar 3 and 15); QE begins (Mar 23)	Mar 15: "The effects of the coronavirus will weigh on economic activity in the near term and pose risks to the economic outlook. In light of these developments, the Committee decided to lower the target range for the federal funds rate to 0 to 1/4 percent."
Aug 2020	Framework	New policy framework announced	"2020 Statement on Longer-Run Goals and Monetary Policy Strategy"
Sep 2020	FFR	Interest rate guidance that removed preemption	"The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time."
Dec 2020	AP	AP guidance on tapering which is seen as necessary before rate rises can begin	"In addition, the Federal Reserve will continue to increase its holdings of Treasury securities by at least $80 billion per month and of agency mortgage-backed securities by at least $40 billion per month until substantial further progress has been made toward the Committee's maximum employment and price stability goals."
Sep 2021	AP	Tapering imminent	"If progress continues broadly as expected, the Committee judges that a moderation in the pace of asset purchases may soon be warranted."
Nov 2021	AP	Tapering announced	"In light of the substantial further progress the economy has made toward the Committee's goals since last December, the Committee decided to begin reducing the monthly pace of its net asset purchases..."
Jan 2022	AP	Tapering nearly done meaning rate rises could begin from March 2022	"The Committee decided to continue to reduce the monthly pace of its net asset purchases, bringing them to an end in early March.."
Mar 2022	Both	FFR +0.25; QT soon	"In addition, the Committee expects to begin reducing its holdings of Treasury securities and agency debt and agency mortgage-backed securities at a coming meeting."
May 2022	Both	FFR +0.50 & QT announced	"In support of these goals, the Committee decided to raise the target range for the federal funds rate to 3/4 to 1 percent and anticipates that ongoing increases in the target range will be appropriate. In addition, the Committee decided to begin reducing its holdings of Treasury securities and agency debt and agency mortgage-backed securities on June 1, as described in the Plans for Reducing the Size of the Federal Reserve's Balance Sheet that were issued in conjunction with this statement."
Jun 2022	FFR	FFR +0.75	"Clearly, today's 75 basis point increase is an unusually large one, and I do not expect moves of this size to be common. From the perspective of today, either a 50 basis point or a 75 basis point increase seems most likely at our next meeting. We will, however, make our decisions meeting by meeting, and we will continue to communicate our thinking as clearly as we can. Our overarching focus is using our tools to bring inflation back down to our 2 percent goal and to keep longer-term inflation expectations well anchored."
Jul 2022-Jul 2023	FFR	Multiple increases	Target range for FFR reached 5.25% to 5.5%.

Table I. Key Federal Reserve policy dates. The table presents the chronology of key policy events in 2020–2023. Policy type refers to policy implemented by asset purchases (AP), rate changes (FFR), or both.

To set the stage for subsequent analysis, Table I provides a chronology of the key FOMC policy actions over this period. The pandemic-driven easing response in March 2020 brought the federal funds rate (FFR) to 0−25 bps and reinstated asset purchases. With the FFR back at the zero lower bound (ZLB), the Chair announced the new monetary policy framework in Jackson Hole on August 27, 2020, followed by forward guidance on interest rates in September 2020. The guidance stipulated that rates would remain low "until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time" (FOMC statement on September 16, 2020). In December 2020, the FOMC statement added guidance on asset purchase tapering as determined by "substantial further progress" on both of the Fed's dual-mandate objectives (FOMC statement on December 16, 2020). In terms of sequencing of policy tightening, asset purchase tapering was understood to be a necessary, but not sufficient, condition for interest rate rises to begin.

After the Fed deemed "substantial further progress" to have been achieved in November 2021, it then gradually reduced monthly asset purchases. This process was completed in March 2022, which coincided with the first 25 bps FFR increase. The March 2022 meeting also made clear that quantitative tightening (QT), the sale of assets from the Fed's balance sheet, was expected to begin soon thereafter. QT began at the next meeting in May 2022 as the FOMC raised FFR by 50 bps.

Although another 50 bps was generally predicted before the June 2022 meeting, a June 13 WSJ article suggested the FOMC would pursue a 75 bps move (Timiraos, 2022). The FOMC followed through with the 75 bps rise on June 15, 2022, taking the FFR target range to 1.50%–1.75%. The FOMC made additional four such moves in a row, and further ones of 50 bps and 25 bps. The FFR target settled at 5.25%—5.50% in July 2023.

III. Background on the 2020 framework design

III.A. The 2020 framework focused on a single dominant scenario

Clarida (2022) discusses the context and motivation for the 2020 monetary policy framework review. The framework grew out of the experience following the global financial crisis (GFC) when the Fed was confronted with inflation persistently underrunning the 2% target and the need to provide policy support for the economy with nominal rates at the effective zero lower (ELB) bound. Given their estimate of a low R-star, the Fed perceived a crucial role in re-anchoring inflation expectations back up at the 2% target in part because raising inflation expectations was seen as a way of creating more space for monetary policy to fight the next demand-driven recession (see e.g., Chair Powell's press conference on October 30, 2019).

The preemptive tightening of 2015–2019 was considered by many to have been unwarranted and to have stymied the economy's ability to reach full potential. Eggertson and Kohn (2023) and Meade (2023) explain how the 2015–2019 episode reinforced the desire to have a framework that allowed for inflation overshooting. In fact, FOMC meeting memos between 2014 and 2018 (the last year for which they are currently publicly available) indicate there was fairly regular briefing on persistently low inflation, low or falling $r*$ and concerns about the long-term inflation expectations.

The theoretical advantages of such a strategy are well-founded (Krugman et al., 1998; Eggertsson and Woodford, 2003; Bernanke et al., 2019; Bernanke, 2020).[5] If credible and well established, FAIT can create around 25 to 50 bps of additional stimulus at the ELB because inflation expectations should shift up endogenously as inflation falls below the target (e.g., Krane et al., 2023). However, it is complex to communicate as was signaled at the time (Sack, 2019), especially where central banks do not wish to give up on their flexibility.

To try to anchor inflation expectations at the 2% target, the framework implemented two new elements: emphasis on employment shortfalls instead of two-sided deviations from maximum employment, and flexible average inflation targeting (FAIT).[6] The statement primarily focused on the complementarity between the Fed's inflation and employment goals, consistent with the experience of the demand-driven downturns of the recent past. Both elements then implied an asymmetric policy reaction function and allowed for a delayed liftoff from the ELB.

III.B. FOMC signaled its desire for overshooting, but markets worried less about prior undershoots.

In the years preceding the framework review, the Fed's inflation expectations broadly agreed with those of market participants. Figure 3 Panel A compares median forecasts of core PCE inflation for one and two years ahead from the FOMC's Summary of Economic Projections (SEP) vis-a-vis corresponding expectations from the New York Fed's Survey of Primary

[5] An extensive academic literature and policymakers' speeches discuss price level targeting and inflation targeting, especially in a low interest rate environment, including but not limited to Svensson (1999), Orphanides (2004), Gaspar et al. (2010), Woodford (2010), Erceg et al. (2011), Evans (2012), Hebden and López-Salido (2018), and Mertens and Williams (2019).

[6] The statement reads: "In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time." Clarida (2020, 2022) summarized FAIT as "temporary price-level targeting (TPLT, at the ELB) that reverts to flexible inflation targeting (once the conditions for liftoff have been reached)." The conditions for starting policy normalization were stipulated in the September 2020 FOMC statement.

Dealers (SPD). In the pre-Covid sample, 2015–2019, the Fed's expectations of core PCE inflation were a few basis points below the market.[7]

The Fed's communication in advance of the new framework announcement was explicit about the desirability of potentially overshooting the 2% inflation target. The benefits of overshooting were communicated to the public by multiple Fed officials as early as 2019 (Williams, 12/18/2019 CNBC; Evans, 01/03/2020, Bloomberg).[8] Notwithstanding this clear sign-posting, the Fed's concerns about the low inflation scenario leading up to the 2020 framework didn't seem to be fully shared by the markets.

To assess the relative weight placed on the low inflation scenario prior to the framework review, Figure 3 Panel B describes the inflation tail risk as seen by the market and the Fed using available survey proxies. The SPD elicits investors' subjective probabilities for the distribution of CPI inflation over the next five years and from five to ten years ahead. While we do not have analogous probabilities for the FOMC, members provide risk assessments around their projections for key macro variables, i.e., whether they see risks weighted to the upside or downside of their individual forecasts. The risk diffusion index, published as part of the SEP, therefore, helps assess the evolution of the FOMC's perceptions of tail risks.[9]

The left plot in Figure 3 Panel B depicts the investors' perceived probability from the SPD that the CPI inflation over the next five years falls below 1%, 2%, or exceeds 3%. Pre-pandemic, the market assessed the probability of CPI inflation below 2% to be 45% on average.[10] That probability was relatively stable from 2018 through 2019, never crossing

[7] In the 2015–2019 sample, the Fed's one- and two-year ahead expectations are six and three basis points lower than the market's. In the 2020-2023 sample, they are respectively 18 and eight basis points higher than the market's. Appendix Figure A-1 compares the Fed's SEP high- and low-end forecasts (excluding top and bottom three forecasts) with the 25th and 75th percentiles of the market's distribution.

[8] Williams (2019): "I view the policy of the FOMC really is to make sure we achieve our 2% symmetrical. And that means, inflation, we want to be around 2%—of course, that means sometimes a little bit above." Evans (2020): "We need to clarify what we mean by symmetric inflation objective, we've been underrunning our 2% objective for pretty much as long as we've announced our 2% objective back in 2012. I think we need to overshoot, I think we need to be not concerned with inflation even if it is up to 2.5% on a sustained basis. I think we need a framework that acknowledges what is acceptable in a much more explicit fashion. I think there's too much artfulness in the way it's described now."

[9] For each SEP, participants respond to the question "Please indicate your judgment of the risk weighting around your projections." The risk diffusion index represents the number of participants who responded "Weighted to the Upside" minus the number who responded "Weighted to the Downside," divided by the total number of participants.

[10] This number is not directly interpreted as the probability of inflation below the Fed's 2% inflation target as the target is expressed in terms of PCE inflation rather than CPI inflation. The mean of CPI inflation is on average 26 bps higher than the PCE inflation over the period from 2010 to 2019. Thus, the probability of CPI inflation below 2% proxies for the probability that inflation ends up 26 bps or more below target. Rarely before 2021, the SPD also elicits distributions of PCE inflation. We verify that the probability of PCE inflation falling below 2% did not materially change from 2016 to 2019; using available data for 2016:07, 2017:07, 2018:06, and 2019:04 surveys, we estimate those probabilities at 55%, 59%, 56.5%, and 57.5%.

50%, which suggests that the market viewed CPI inflation above 2% as the more likely scenario. The probability of CPI inflation below 1% was at most 4%, in line with investors putting little weight on the very low inflation outcome in the next five years. Likewise, the probability of CPI inflation above 3% was consistently around 5%. The market's projection of inflation from five to ten years ahead shared similar patterns (not shown).

The overall stable inflation tails are consistent with well-anchored inflation expectations before the pandemic. The right plot in Figure 3 Panel B displays the FOMC's risk diffusion index for the core PCE inflation. The decline in the risk diffusion index from December 2018 to June 2019 indicates that a significant number of FOMC members switched from a balanced assessment of inflation risks to a view that the risks are weighted to the downside. Over the same time, the market perceived probability of downside inflation risk remained nearly unchanged.

III.C. While ultimately the Fed got 'unlucky,' that unlucky scenario was in the realm of possibilities considered by observers.

The framework announcement in Chair Powell's Jackson Hole speech on August 27, 2020, may have seemed to arrive just in time to help weather another period of weak demand amidst the global pandemic. While the underlying assumptions initially appeared well-aligned with the economic challenges, the reliance on one scenario was noted at the time of the framework announcement. On August 27, 2020, WSJ's Greg Ip wrote (Ip, 2020): "Though hard to imagine now, high inflation might one day be a problem again, and another revamp of its principles could be in order."

The potential problems with executing and communicating "temporary price-level targeting (TPLT, at the ELB) that reverts to flexible inflation targeting (once the conditions for liftoff have been reached)", as Clarida (2020) described FAIT, in the face of supply shocks have been earlier noted by Bernanke (2017): "(...) a price-level target can be problematic in the face of supply shocks, and the switch to a price-level target from the current inflation targeting approach would be a significant communications challenge." As it turns out, the Fed soon got "unlucky" with inflationary shocks (Figure 1): Covid-related supply shocks and Russia's invasion of Ukraine. Moreover, the large fiscal stimulus, welcomed as necessary to support the economy in 2020 and 2021, seems to have had a much larger inflationary

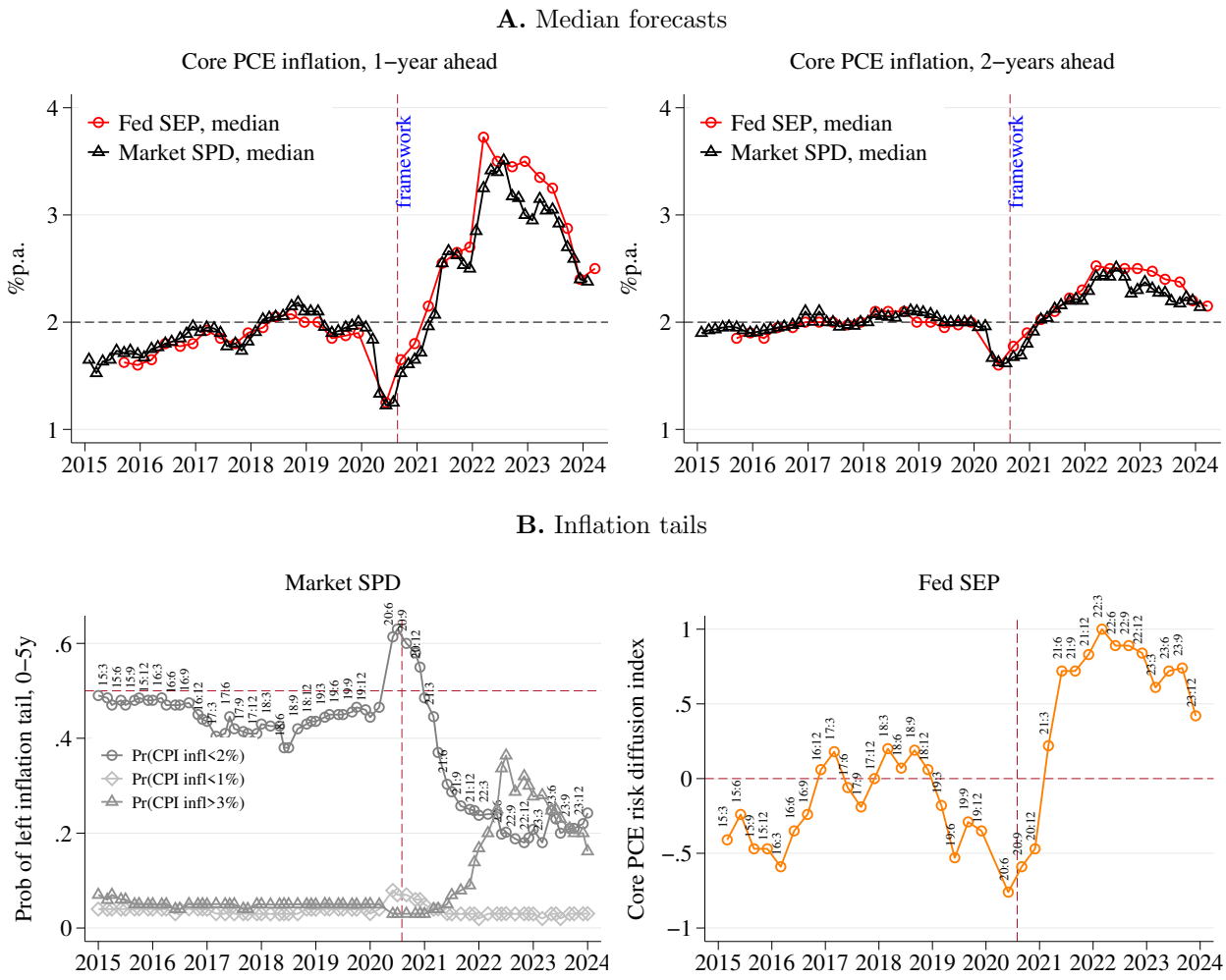

Figure 3. Inflation expectations and tail risks perceived by the Fed and the market. The figure presents measures of inflation expectations and inflation tail risks from the FOMC's Summary of Economic Projections (SEP) and the NY Fed Survey of Primary Dealers (SPD). Panel A compares the median core PCE inflation forecasts in the SEP and the SPD one and two years ahead. Panel B plots inflation risk measures. The left panel presents the CPI inflation tail risk perceived by SPD forecasters: probabilities of five-year average CPI inflation rate (0-5y) above 3%, below 2%, or below 1%. The right panel presents the core PCE risk diffusion index in the Fed's SEP constructed as the number of FOMC participants who deemed "risk weighted to the upside" minus those who deemed "weighted to the downside," divided by the total number of participants. The sample covers the period from 2015 to January 2024 (March 2024 for the SEP). The vertical lines indicate the framework announcement in August 2020. Horizontal dashed lines indicate 2% inflation target in Panel A, 50% probability in the left Panel B, and a diffusion index equal to 0 in the right Panel B.

impact than what the FOMC initially assumed,[11] but as some observers at the time, notably Summers (2021), feared.

[11] E.g., "[The stimulus package] is not going to overheat our economy." (Daly, 02/11/2021, WSJ interview). While the impact of the fiscal stimulus on inflation may have been hard to assess in real-time, Hazell and Hobler (2024) examine the inflationary impact of the January 2021 Georgia senate runoff which, with both seats having been won by the Democrats, increased the likelihood of the large fiscal stimulus. They find the Democrat victory increased the market's expected price level over ten years by 0.76%. De Soyres et al. (2022) identify that the fiscal stimulus during the pandemic contributed to a 2.5 pp increase in inflation

IV. Communication successes and failures

With a new framework, new forward guidance, and then a hawkish pivot, the FOMC faced many communication challenges. Here, we review the major ones.

IV.A. The 2020 framework was, by design, unspecific about implementation aspects.

Given that the FOMC members had espoused overshooting and signaled the need for a framework that incorporated it, the adoption of the FAIT framework was expected by the markets and the Fed watchers, and in that sense, a communication success.

At the same time, although the Fed described its intention as "evolution, not a revolution" (Powell, 2019; Clarida, 2019), FAIT presented a major policy shift in the Fed's views on inflation. The Fed would abandon its strategy of pre-emptively raising rates to prevent higher inflation and instead would allow inflation to run above target aiming for an average rate of 2% over time. As such, the Fed would seek to make up for periods of low inflation with periods of somewhat higher inflation.

By design, the announcement provided few specifics, as stated by Chair Powell, "(...) we are not tying ourselves to a particular mathematical formula that defines the average" (Powell, 2020b). Explaining how the averaging would work in practice required details on the extent of make-up and, thus, the starting point from which counting would begin, or relatedly, the averaging horizon and degree of acceptable overshooting. In preparation for the framework review, the Fed telegraphed related ideas. A January 2018 presentation by the President of St. Louis Fed James Bullard illustrated the challenge of communicating the specifics (Bullard, 2018). Standing in August 2020 and using 2012 as the starting point, as Bullard argued,[12] the Fed would need to tolerate an annual PCE inflation rate at 3% if averaged over the next five years, and 2.5% if averaged over the next 10 years to make up for past inflation misses.

However, given that the Fed was committed to not changing the 2% target,[13] communicating to the public the possibility of a decade-long inflation overshoot was problematic, and

by increasing consumption demand but not increasing production supply. Bianchi et al. (2023) consider a model where unfunded fiscal shocks are accommodated by monetary policy, which causes persistent inflation movements. Using this model, they argue that the inflation overshoot after 2021 mostly came from the ARPA fiscal stimulus.

[12] Taking 1995 as the starting point, Bullard (2018) makes the point that the 2 percent price level path was maintained until 2012, which could be interpreted as an indication of optimal monetary policy during this period.

[13] As Chair Powell stated on August 27, 2020 (Powell, 2020b), "we have not changed our view that a longer-run inflation rate of 2 percent is most consistent with our mandate to promote both maximum employment and price stability."

therefore, the lack of clarity regarding parameters was likely an intentional element of *flexible* AIT (see Brainard (2020a)).

IV.B. The public sought more clarity but answering specific questions related to the framework turned out challenging.

Despite the intention of remaining flexible, the Fed still needed to address questions from the public about the implementation, consistency with the Fed's own expectations in the SEP, and ultimately, the Fed's ability to deliver on the promises. Starting from the FAIT specification, those questions turned out challenging to answer, as evidenced by Chair Powell's September 16, 2020 press conference :

> HOWARD SCHNEIDER. (...) I wonder if you could explain them a little bit more. How do we pin down assessments of maximum employment? When you say that "inflation has risen to 2 percent," does that mean 2 percent for a day, a month, six months? And when you say "on track to moderately exceed," how should we define "moderately"? And how should we define "for some time"?
> CHAIR POWELL (...) So, what does "moderate" mean? It means not large. It means not very high above 2 percent. It means moderate. I think that's a fairly well-understood word. In terms of "for a time," what it means is not permanently and not for a sustained period. We're resisting the urge to try to create a rule or a formula here.

Financial markets were paying attention to the Fed's interpretation of the framework. Goldman Sachs Economics Research collects "notable comments on key topics from Fed officials" over the FOMC intermeeting period in a publication called Chatterbox. Chatterbox reports key quotes and thus is a useful way to filter noteworthy information in the Fed's communication from the investors' perspective.[14] Figure 4 presents the number of communication events by the Fed officials during the post-2020 period that were highlighted in Chatterbox. Within that set, the red line shows the number of mentions of inflation overshooting, including the degree of overshooting whenever a number was provided. The numbers range from 2.25% to 3%, with different officials around the same time quoting different numbers. The last recorded mention of overshooting occurs in November 2021 when the surge of inflation was already well underway (Figure 2). Even though some disparity of views might be healthy, these statements suggest the lack of consensus among the Fed officials on central aspects of the framework.

[14] Our sample covers 762 unique intermeeting individual speaking events (including speeches, testimonies, media interviews, webinars, etc.) over the 2019:12–2023:12 period.

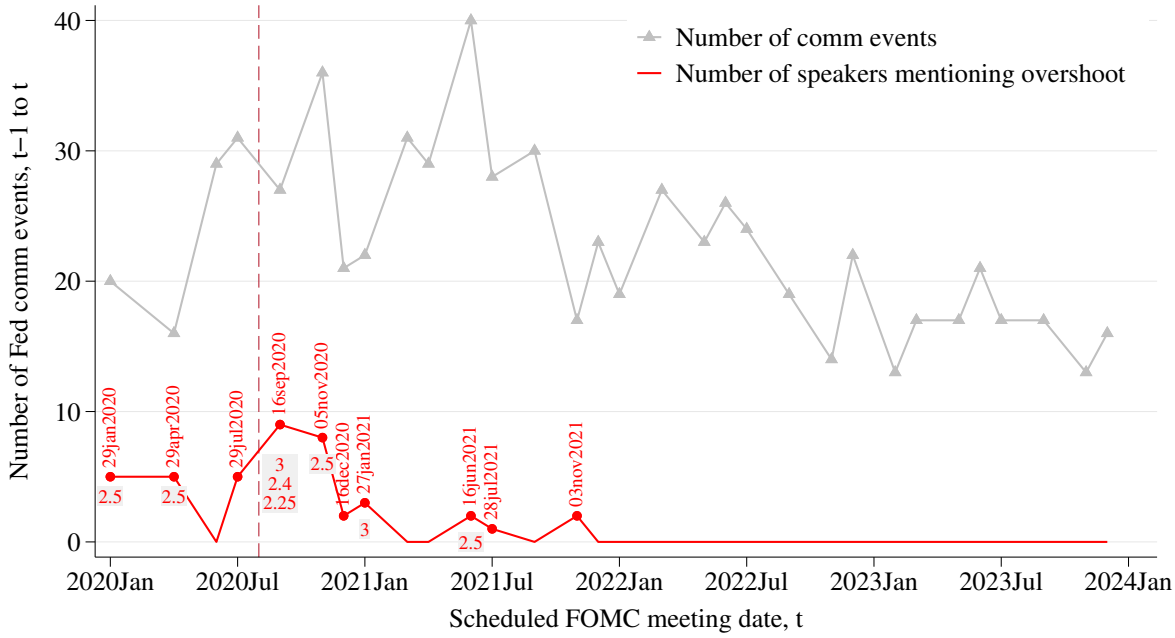

Figure 4. The Fed's communication of inflation overshooting. The figure displays the number of Fed intermeeting communication events and the number of speakers mentioning inflation overshooting, highlighted in Goldman Sachs' Chatterbox. The reported degree of overshooting is marked on the graph whenever an explicit number is provided.

IV.C. Adding forward guidance was initially a communication success but a failure overall.

The FOMC's forward guidance on interest rates adopted in September 2020, and on asset purchases in December 2020, was a success in the sense that market expectations of interest rates in the near term were decisively aligned with the lower-for-longer policy stance. Even before the August 2020 framework announcement, there was an understanding that the economy required low interest rates and, hence, as we argue more formally below, there was little disagreement about the near-term policy path.

However, the 2020 forward guidance is seen by many as a strategic failure (Eggertson and Kohn, 2023; Meade, 2023). The two main reasons for this assessment are its lack of conditionality and a general question about its motivation, i.e., whether it was indeed necessary.

The first issue, shared with the 2020 framework more broadly, is that the forward guidance set a high bar for policy tightening tying it to progress on *both* of the Fed's dual-mandate objectives. As such, it implicitly assumed no trade-off between those objectives (see the phrasing in Table I for September and December 2020).[15] Such an assumption would not

[15]In response to a cost-push shock, optimal policy implies a trade-off between higher inflation and lower employment.

pose a problem in the face of a demand-type shock. However, in the event of a shock that moved the objectives in opposite directions, the exact approach that the FOMC would adopt was unclear. Unlike the December 2012 forward guidance, as Meade (2023) notes, the 2020 forward guidance "was very muscular and did not have similar escape hatches."[16]

As Meade (2023) also points out, the forward guidance did not have to be unconditional. The final paragraph of the 2020 framework statement included an escape clause:

> "The Committee's employment and inflation objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it takes into account the employment shortfalls and inflation deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate."

The forward guidance that was deployed lacked this conditionality and was not clear to markets.[17] If the FOMC were to follow the framework statement, it would have required clear communication of the assessment that inflation and employment goals may no longer be complementary.

A broader question is whether the forward guidance was needed at all. The framework made explicit an aim of inflation overshoot above 2% and any employment shortfalls to be made up. As long as inflation remained low and employment was below full potential, loose policy was consistent with the framework, and thus no explicit guidance would have been necessary. Clarida (2022) speaks of the two policies as going hand in hand. However, even in September 2020, not all FOMC voting members favored including guidance, which some commentators saw as presaging future problems.[18]

[16]The 2012 forward guidance stated that the FOMC "currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored" (December 12, 2012 FOMC statement).

[17]The September 2020 FOMC statement in principle contained an escape clause (as did the framework), but it appeared "boiler-plate" and disconnected from the new forward guidance just introduced, making it difficult to use in practice. See also comment by David Wilcox in the recent survey of the Fed's communication by Wessel and Boocker (2024).

[18]President Kaplan dissented because he felt the guidance was unnecessary as the lower-for-longer policy was consistent with the new FOMC goals "as articulated in its new policy strategy statement"; he felt that the guidance left the committee more constrained. President Kashkari dissented as he thought core inflation was a better metric for sustainably raising inflation. A September 16, 2020 WSJ article quotes analysts seeing the dissents to "unveil the reality that the committee is not on the same page, which could presage some problems down the road" (Roberto Perli of Cornerstone Macro) (Timiraos, 2020).

IV.D. The FOMC appeared constrained by the framework and forward guidance.

The Fed officials no doubt acted according to their best assessments available at the time, and any constraints may not have been palpable as decisions needed to be made. However, ex-post, a combination of factors appears to have constrained the Fed, including the need to build credibility for the new framework and the forceful forward guidance.

Building credibility for the framework and respecting commitments

The Fed recognized the need to earn credibility for the new design as the announcement institutionalized commitment to getting inflation back to 2% (Powell, 09/16/2020 press conference). As part of that effort, it had indicated that overshooting would make policy less preemptive (Brainard, 07/14/2020 speech; Kaplan, 04/07/2021 WSJ interview, see Appendix B for additional evidence and quotes). By later in 2021, as inflation was rising, FOMC members acknowledged upside risks, but wanted confidence that it would move persistently above target to remain consistent with the framework (e.g., Powell, 09/09/2021 press conference;[19] Bullard, 09/28/2021 Reuters[20]).

In line with its guidance, the Fed deemed it unlikely that inflation expectations would rise before achieving full employment.[21] Although hindsight reveals that inflation was persistent, in 2021 it was reasonably anticipated to be 'transitory.' However, even then, the challenges posed by the lack of conditionality in forward guidance began to emerge, as higher-than-expected inflation occurred at a time of lower-than-expected employment outturns (Figure 2).

[19]Chair Powell, September 9, 2021 press conference: "You know, we want to foster a strong labor market, and we want to foster inflation averaging 2 percent over time, and I think we're very much on track to achieve those things. In terms of the framework, I see this as very consistent with the framework. We want inflation expectations to be anchored at around 2 percent. We want, we're—that's really the ultimate test of whether we're getting this done under the framework. And, you know, we do want inflation to run moderately above 2 percent."

[20]Reuters article by Schneider (2021) quotes an interview with Bullard: "While Bullard said he agrees inflation will ease somewhat on its own, he said it will take more central bank effort to ensure that happens smoothly over time, and never requires the sort of restrictive policies that could imperil the current expansion. Inflation "is going to stay above target over the forecast horizon. That is a good thing. We are delivering on our...framework," Bullard said of Fed projections last week that inflation will remain above 2% through 2024, even as interest rates remain below the level that would be considered restrictive."

[21]At the April 28, 2021 press conference, Chair Powell said "[I]t seems unlikely, frankly, that we would see inflation moving up in a persistent way that would actually move inflation expectations up while there was still significant slack in the labor market. I won't say that it's impossible, but it, it seems—it seems unlikely. It's much more likely that we would—having achieved maximum-employment conditions—we'd also be seeing 2 percent inflation and be on track to see inflation moving above 2 percent. They tend to move together."

The FOMC members' own accounts line up with the hypothesis of the Fed being constrained by its pre-commitments. After the Fed had pivoted to a more aggressive hawkish stance in 2022, Governor Bowman in a speech on October 12, 2022, reflected (Bowman, 2022):

> "High uncertainty about the outlook puts a premium on flexibility, and—to the extent that the Committee sees a cost to frequent changes to its forward guidance—the provision of explicit forward guidance could reduce the Committee's flexibility to respond to unexpected changes in economic conditions.
>
> The Committee's experience in the second half of last year illustrates this point. Looking back, one might reasonably argue that during that time the Committee's explicit forward guidance for both the federal funds rate and asset purchases contributed to a situation where the stance of monetary policy remained too accommodative for too long—even as inflation was rising and showing signs of becoming more broad-based than previously thought. The facts on the ground were changing quickly and significantly, but the communication of our policy stance was not keeping pace, which meant that our policy stance was not keeping pace."

As a consequence, the Fed seemed to have become less sensitive to upper inflation tail risks relative to the historical behavior.

One piece of evidence consistent with the diminished inflation tail risk sensitivity comes from the FOMC members' risk assessments. Figure 5 graphs the diffusion index for the core PCE inflation that was also shown in Figure 3, right Panel B, but now superimposed against FOMC projections for the FFR one year ahead. The period from September 2020 through June 2021 features a rapid rise in upside inflation risks, with the diffusion index reaching 1 in March 2022 when all members switch to perceive risk being tilted to the upside. This is the first time in the PCE risk diffusion index history (available since 2007) that the entire FOMC agrees on the directional risk assessment.[22] Notably, however, the FOMC's FFR projections one year ahead remain very close to the ELB until September 2021. Figure 5 displays median and high-range forecasts (excluding the three highest numbers). In September 2021, with the inflation risk index already at 0.72, the high FFR forecast one year ahead only reads 0.325%.

The combination of risk assessments and the expected policy path post-2020 framework contrasts with the 2016–2019 experience when small changes in inflation risk assessment to the upside were soon accompanied by rising FFR forecasts. While inflation worries of that earlier period did not materialize, the comparison suggests a significant shift in the policymakers' approach.

[22] During 2021, the unemployment risk diffusion index is around zero (see Appendix Figure A-5).

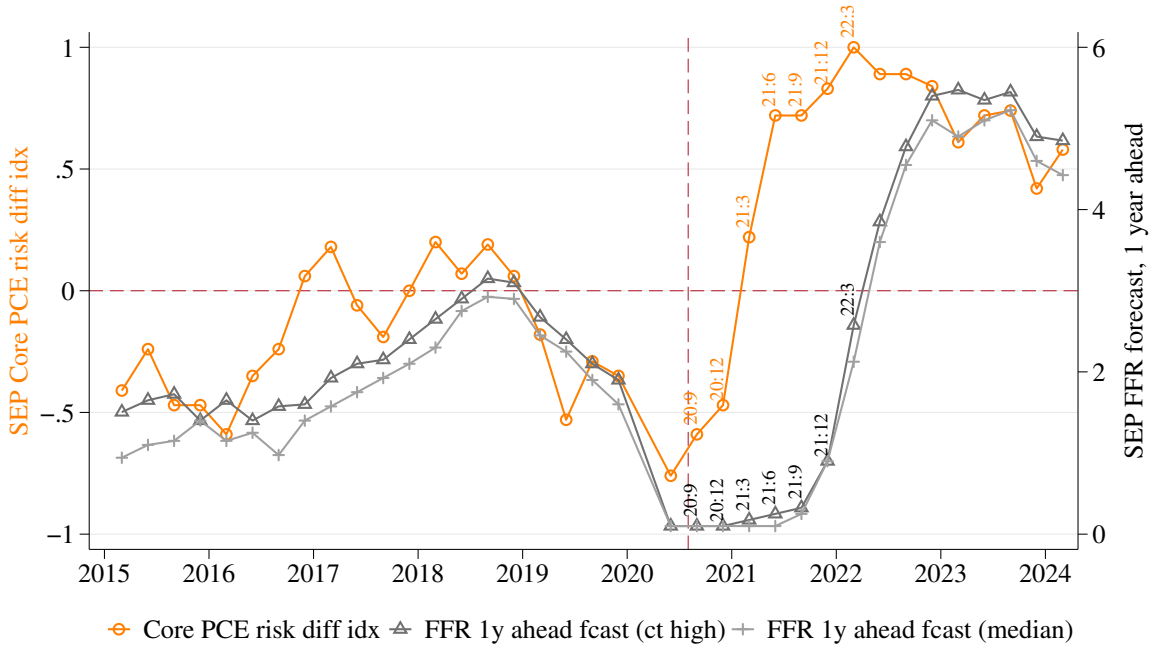

Figure 5. FOMC inflation risk assessment in SEP. The figure plots the risk diffusion index of the FOMC participants for the core PCE inflation against the FOMC's projections of the FFR path one year ahead. The risk diffusion index equal to 1 means that all participants perceive risks weighted to the upside of their forecasts.

Risk management played historically a large role in the Fed's policymaking.

Arguably, the commitments stemming from the framework and the forward guidance not only removed preemptive action on inflation but more broadly weakened, at least temporarily, the risk management approach the Fed pursued in the past few decades. Greenspan (2004) emphasized the need for "a preemptive response to the potential for building inflationary pressures" as part of the risk management approach to monetary policy. Using transcripts of the FOMC meetings for the 1987–2015 period, Cieslak et al. (2023) show that the FOMC's forward-looking policy stances were highly sensitive to policymakers' perceptions of inflation uncertainty, with uncertainty making policymakers more hawkish than what would be justified by macroeconomic forecasts alone. They document that over the pre-2015 period, policymakers' perceptions of inflation uncertainty stemmed primarily from worries about the inflation right tail.

Of course, policymaking happens in real-time, and discriminating between the types of shocks when they occur is difficult, especially in highly uncertain times like those during the pandemic recovery. It stands to reason that the degree of inflation persistence in 2021 was a highly uncertain parameter in the Fed's calculations, as it remains today. Indeed, policymakers may have had different assessments of the persistence of inflation with concerns

of prolonged upside risks.[23] The literature on the optimal policy under uncertainty, as a foundation for the risk-management approach, suggests that in the face of uncertainty about inflation persistence the policymaker may choose to act more aggressively relative to the certainty-equivalent policy rule, given the costs of inaction (unanchoring of inflation expectations) can be very high (e.g., Tetlow, 2018).[24] While policymakers are well aware of these prescriptions (Bernanke, 2007), the Fed nevertheless decided to delay action as inflation was rising with an upside tilt in the risk perception. This fact is consistent with a considerable shift in the policymaking post-2020 framework, with implications for the Fed's credibility given the constraints it effectively imposed.

In devising the 2020 framework, arguably, the FOMC was focused on the worst-case scenario, seen as repeated ELB episodes with a continued challenge to bring inflation up to the target. However, by underplaying the importance of other shocks, and becoming less preemptive, they raised concerns about the likelihood of mistakes that acted against their desired policy in 2021.

IV.E. The 2021 period fostered confusion about the FOMC's reaction function

Markets paid close attention to the FOMC communication about the framework and the policy stance as they evolved. We now provide evidence indicating a heightened uncertainty about the FOMC's reaction function that ensued.

Fed officials conveyed divergent policy stances until the 2022 pivot.

Initially, the lower-for-longer policy facilitated by the framework seemed to hold support among officials. However, with increasing inflation pressures, the views evolved, and the heterogeneity of policy stances expressed in individuals' communications became more apparent. To show this, we classify the policy stances from dovish to hawkish by assigning scores on a scale $\{-1, -0.5, 0, 1, 0.5, 1\}$ to the key quotes highlighted by Chatterbox (1,278 quotes in total). The score assignment is based on our reading and judgment, attempting to capture

[23] On October 4, 2021, Jim Bullard was quoted as saying "I am concerned that the risks are to the upside, that we'll continue to get higher-than-anticipated inflation, that this high inflation will persist into 2022." Bullard (2021)

[24] The models characterizing optimal rules under uncertainty can be broadly divided into two strands, see, e.g., Blinder (1999), Rudebusch (2001), Walsh (2003), and Bernanke (2007) for discussion of this literature. Following Brainard (1967), one strand considers Bayesian policymakers facing parameter uncertainty, e.g., Söderström (2002), Kimura and Kurozumi (2007), highlighting the non-robustness of the well-known conservatism principle. The other strand derives from the literature on model uncertainty considering a robust-control policymaker (e.g., Hansen and Sargent, 2001; Giannoni, 2007; Onatski and Stock, 2002; Levin and Williams, 2003).

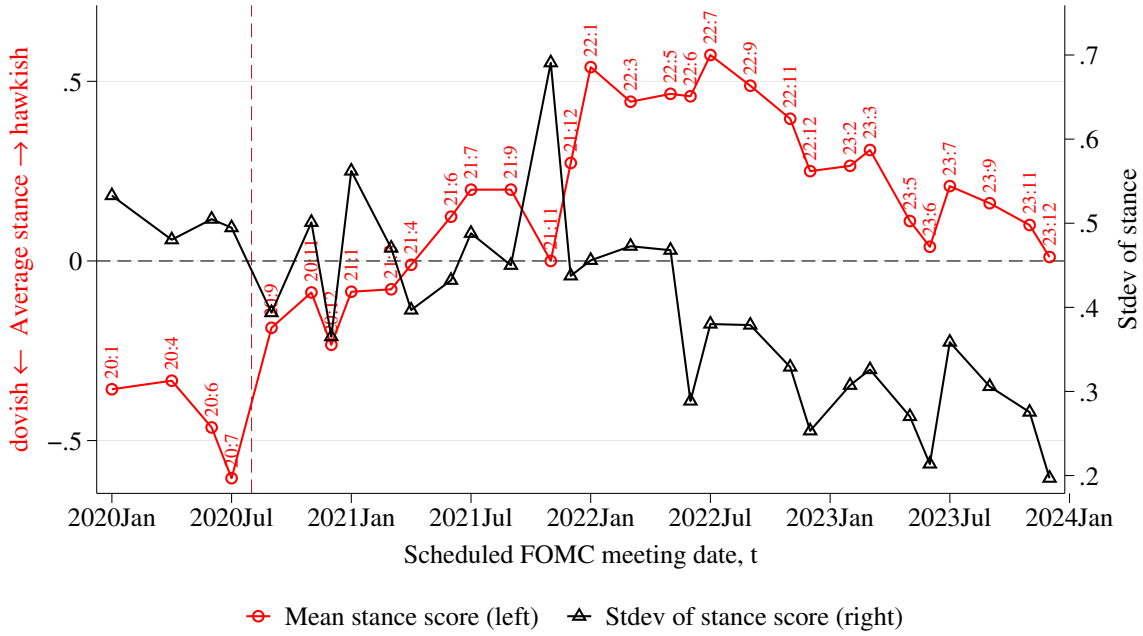

Figure 6. Fed officials' policy stance communication. The figure summarizes the mean and standard deviation of the Fed officials' policy stances (hawk-dove (HD) scores) communicated over the intermeeting period based on the key quotes highlighted in Goldman Sachs' Chatterbox. The averages and standard deviations of HD scores are calculated across key quotes over the intermeeting period from $t-1$ to t.

the relative changes to policy stances. Figure 6 reports averages and standard deviations of HD scores calculated across all individual quotes in a given intermeeting period. A negative (positive) HD score indicates a tendency of the Fed officials to express easier (tighter) policy views. The graph shows that the initially dovish policy stances start reversing in early 2021. From around June 2021, following several positive inflation surprises, officials become on average hawkish, and decisively so in January 2022. The average tendency toward a tighter stance over this period, however, is accompanied by a relatively high dispersion of views across individuals. The stance communication becomes significantly more uniform following the Fed's pivot in June 2022.

Communicating the role of inflation expectations in policy

Given the intention of bringing inflation expectations up, when expectations actually began drifting up (shown for mid- and long-term CPI inflation expectations in Appendix Figure A-2), the FOMC didn't seem to attribute the increase to the new policy framework. In-

stead, many cited expectations' stability as a reason why policy action was not needed.[25] Policymakers expressed little concern about the risk of deanchoring expectations in 2021.

Messaging on inflation expectations needs to acknowledge that inflation expectations are endogenous to policy. If inflation expectations are stable because markets expect sufficient policy action to keep inflation in check, policymakers cannot cite the stability of expectations to justify not taking action. Such a potentially contradictory position could precipitate a rise in inflation expectations.

By 2022, FOMC messaging started to reflect the importance of action to keep expectations contained,[26] acknowledging the risk of deanchoring if the Fed failed to respond.[27] In the spirit of the risk management approach, Mester (2022) cites Fed research that claims "that it's more costly for policy makers to be wrong about inflation expectations being well anchored when they are not, as opposed to erroneously assuming they are rising when they're actually well anchored."

FOMC communication led to public uncertainty about the policy reaction function.

The initial period around the August 2020 announcement required low interest rates; thus, there was little disagreement about immediate policy. However, the lack of clarity on the Fed's interpretation of the framework sowed the seeds of uncertainty about the policy reaction function. The forward guidance, as already argued, added to the confusion as it appeared to constrain the FOMC in 2021.

Figure 7 plots the interquartile range of investors' FFR forecasts for one, four, and eight quarters ahead as reported in the SPD. The term structure of forecast dispersion is indicative of uncertainty about the Fed's reaction function. Clearly, the disagreement about the FFR can simply reflect disagreement about the path of the economy independent of policy, but in the post-2020 period, we fail to find a strong relationship between the FFR and macro disagreements (see Appendix A-1 and A-2 for additional analysis). From around July 2020 through early 2021, the forecasters agree on both the short- and medium-term path of

[25] "I'm watching expectations very closely — both survey-based expectations and market expectations — but I'd say there's nothing in either one of those metrics that looks like you're seeing a breakout in inflation, and you have to remember that inflation is a recurring phenomenon." Barkin (05/03/2021, CNBC Interview).

[26] "So you can look at those long-run measures now of [inflation] expectations and take... comfort in ... that ... they're a little bit above 2%, but they're basically in line with 2% inflation. But you've got to remember that built into those expectations are the Fed taking appropriate action." — Mester (01/12/2022, WSJ Interview)

[27] "U.S. inflation expectations could become unmoored without credible Fed action, possibly leading to a new regime of high inflation and volatile real economic performance. The Fed has reacted by taking important first steps to return inflation to the 2% target." — Bullard (06/01/2022).

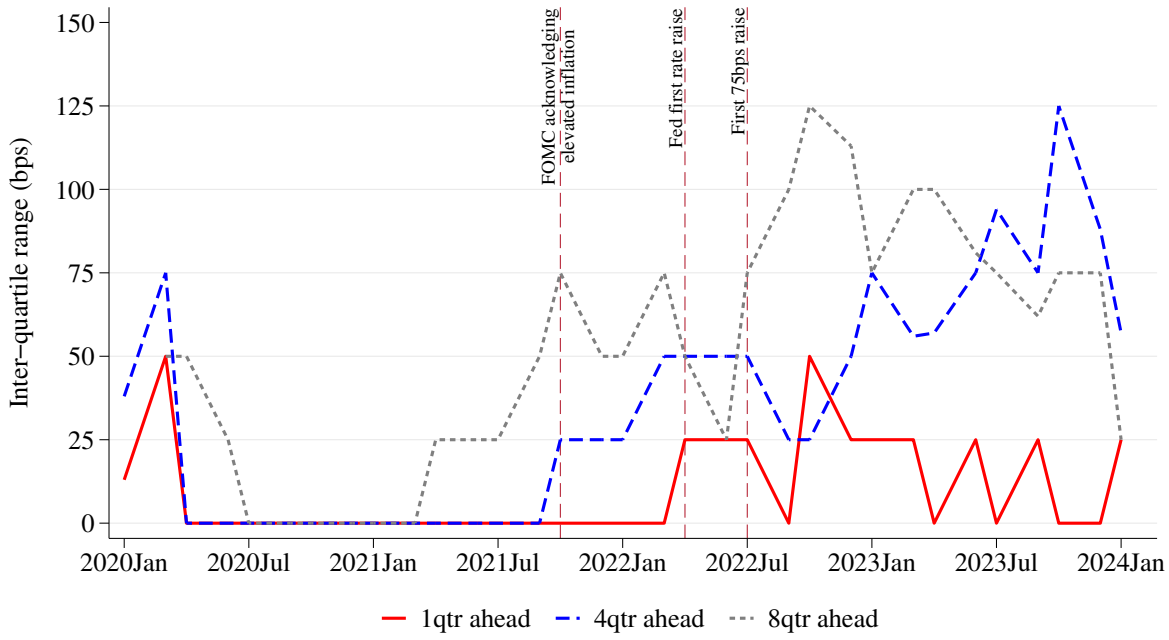

Figure 7. FFR forecast dispersion in the SPD. The figure plots the FFR forecast dispersion from the NY Fed Survey of Primary Dealers (SPD) for one-, four-, and eight-quarter ahead forecasts. Dispersions are measured as the interquartile (75th-25th) range across participants. There are, on average, 24 participants in the survey of the sample period in the figure.

policy, consistent with the Fed's intention of lower-for-longer being clearly communicated and understood by the market. The situation changes in the first half of 2021 when forecasters diverge on the longer-term policy path while still agreeing about the near term.

The media coverage of the Fed during the 2021 inflation surge indeed suggests that the public became increasingly uncertain about the Fed's response to inflation. To measure how the public uncertainty about the Fed's stances evolved, we analyze the content of news articles published by the Wall Street Journal (including the Wall Street Journal Central Banking Pro) from January 2020 to December 2023. We download the full text of articles that mention Fed-related keywords from the Factiva database (7784 articles in total). We then classify each article's content using ChatGPT's GPT-4 Turbo model. The model determines whether a supplied article indicates uncertainty about the Fed's policy stance and whether the uncertainty is about the response to inflation, the real economy, Fed communication or other aspects.[28] The GPT classifies 38% of all articles as indicating some form of

[28] We use the following prompt:

> *Does the article suggest uncertainty about Fed's policy stance and what is the uncertainty about?*
> Write answer as: {Yes/No} {response to inflation / response to real economy / inflation targets / communication / Fed's macroeconomic projections / Fed policy framework / dot plots} {explanation less than 25 words}

uncertainty about the Fed (the uncertainty types can be overlapping). The articles classified as conveying uncertainty about the Fed's response to inflation form the largest category (23% of all articles), followed by uncertainty about the response to the real economy (10% of all articles), uncertainty stemming from communication (4%), and policy framework (1.2%). Other categories represent less than 1% of all articles.

To measure how uncertainty perceptions changed over time, we create simple counts of articles per day indicating uncertainty about the Fed's inflation response and the real-economy response, respectively. Figure 8 displays the corresponding indices smoothed with a 20-day moving average.[29] The Fed's inflation response appears to be of little concern until early 2021, absent large inflationary shocks. However, from early 2021 on, the uncertainty about the inflation response rapidly increases, and its variation is strongly positively correlated with the level of inflation and inflation surprises around the CPI announcements.[30] Over the same period, the correlation between macro news and the uncertainty about the Fed's real-economy response is much weaker.

The elevated inflation-response uncertainty coincides with the rise in the FFR forecast dispersion at longer horizons, as seen in Figure 7. In Table II, we project the FFR forecast dispersion at different horizons on the WSJ-based reaction-function uncertainty indices. The results show that the FFR dispersion in the SPD is high when the inflation-response uncertainty is high, and the positive link is the strongest for the eight-quarter-ahead dispersion.

IV.F. A hawkish pivot happened in words and actions.

The start of tapering coincided with a hawkish pivot in words as the FOMC was building toward the March 2022 interest rate increase. The first half of 2022 saw especially elevated average hawkish stance scores together with a drop in the dispersion of stances across individual policymakers, as shown in Figure 6. The FOMC's resolve to move policy from accommodative to restrictive in order to reduce inflation became increasingly clear in announcements, press conferences, and speeches.[31] Chair Powell's short and to-the-point

[29] Given the randomness in GPT classification, it is possible that the same article is assessed differently each time the prompt is launched. We thus run the GPT classification twice. The results from both runs are highly correlated (0.88 for uncertainty about inflation response and 0.83 for uncertainty about the real economy response). Figure A-6 compares the indices for uncertainty about the Fed's inflation response obtained from the two runs, showing that they display nearly identical time-series variation.

[30] A projection of the Fed's inflation-response uncertainty index on the level of the core CPI inflation and inflation surprises (at the CPI announcements) yields strongly significant positive coefficients and explains around 50% of variation in the inflation response uncertainty index.

[31] Powell (2022b), NABE Speech, 03/21/2022: "There is an obvious need to move expeditiously to return the stance of monetary policy to a more neutral level, and then to move to more restrictive levels if that is

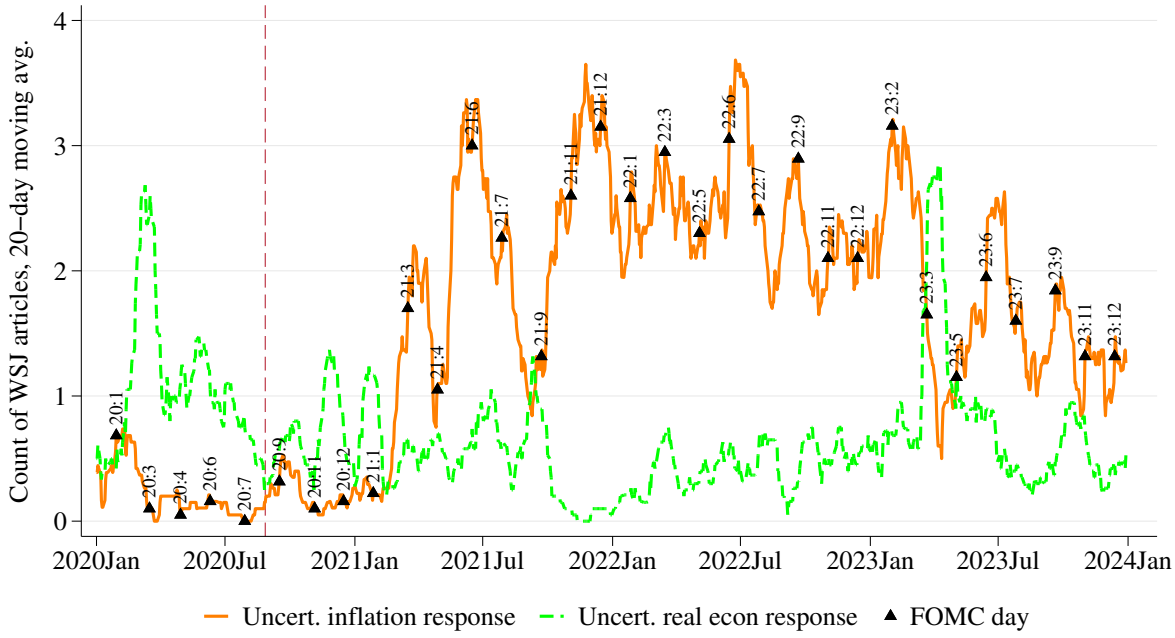

Figure 8. Public perceptions of reaction function uncertainty. The figure presents proxies for public perceptions of uncertainty about the Fed's reaction function. The indices are daily counts of WSJ articles that are classified as suggesting uncertainty about the Fed's response to inflation and the real economy, respectively. The daily counts are smoothed with a 20-day moving average for the purposes of the graph.

	Dependent variable: FFR IQR, 2020:08-2023:12		
	1qtr ahead	4qtr ahead	8qtr ahead
Infl resp uncert	0.271**	0.258	0.554***
	(1.97)	(1.11)	(2.81)
Real-econ resp uncert	-0.088	0.115	0.134
	(-1.01)	(0.80)	(1.01)
R^2	0.10	0.056	0.26
N	27	27	27

Table II. FFR forecast dispersion and public uncertainty about the Fed's reaction function. The table presents regressions of the FFR forecast dispersion (measured as interquartile range) at different horizons (one, four, and eight quarters ahead) on public perceptions of uncertainty about the Fed's reaction function. FFR forecasts are from the NY Fed Survey of Primary Dealers (SPD). The SPD is available at the frequency of FOMC meetings. The uncertainty measures are constructed from daily counts of WSJ articles that are classified as suggesting uncertainty about the Fed's response to inflation ("Infl resp uncert") and the real economy ("Real-econ resp uncert"). To align the uncertainty and survey dispersion measures, we construct the 20-day trailing window average of the WSJ counts for each survey date. The survey dates intend to match the information set of the survey participants. We use the reported survey distribution date. We also verify that controlling for macro forecast dispersion does not affect the results. The sample period is 2020:08–2023:12. Regression coefficients are standardized. HAC t-statistics with 6 lags are reported in parentheses; *, **, *** denote 10%, 5%, 1% significance levels, respectively.

what is required to restore price stability."
Daly (2022), CNBC Interview, 06/01/2022: "I certainly am comfortable to do what it takes to get inflation trending down to the level we need it to be. I really think these inflation numbers have been going on too long, and consumers, businesses and everyday Americans are depending on us to get inflation back down and bridling it."

2022 Jackson Hole speech concluded with the lines: "We are taking forceful and rapid steps to moderate demand so that it comes into better alignment with supply, and to keep inflation expectations anchored. We will keep at it until we are confident the job is done."

V. Implications for interest rates

The Fed's actions and communication affect the economy by impacting financial conditions. In this section, we study the yield curve implications of the Fed's communication following the 2020 framework review. To establish plausibly causal drivers of asset prices, we exploit high-frequency event studies around the Fed communications as well as key macro announcements. We then analyze yield movements that occurred due to investors updating their expectations about the path of the short rate versus changing perceptions of risks and risk premia.

V.A. Data for high-frequency analysis

We use high-frequency data on Treasury futures with underlying bond maturities between two and 30 years. The data is from TickData.com. Most of our analysis focuses on the two-, ten-, and 30-year bond futures. We convert the price changes into yield changes using the duration of the underlying notional bond available from Bloomberg. We refer to the contracts by the maturity of the underlying.[32]

We consider a comprehensive list of Fed communication events including monetary policy decision announcements, Chair's press conferences, minutes releases, as well as communications by individual Fed officials via speeches, media interviews, testimonies, etc. The communication by individuals is important, given that a significant part of noteworthy Fed communications happen outside the scheduled FOMC announcements (e.g, Swanson and Jayawickrema, 2023) and are followed by the market participants (Figures 4 and 6 above). We collect exact time stamps for these events. Our main source of time stamps for individual communications is the FOMC Speak database, which is available through August 30, 2023.[33]

[32]The duration of the futures is shorter than the time to maturity because the underlying is a coupon bond, and the deliverable basket in the futures admits a range of bond maturities. For this reason, we use the "ultra" versions of the ten- and 30-year Treasury futures contracts. The "ultra" contracts specify a narrower range of deliverable maturities (between $9\frac{5}{12}$ and 10 years for the ten-year contract and at least 25 years for the 30-year contract). Thus "ultra" contracts are more closely tied to the ten- and 30-year maturity points on the Treasury yield curve compared to the standard contracts. The average duration of the two-, ten- and 30-year futures is 1.9, 8.0, and 17.6 years, respectively (2020:08–2023:12).

[33]The Fed stopped maintaining the FOMC Speak website in December 2023; the FOMC Speak website is currently retired. New remarks were not entered after August 30, 2023. We obtain the dataset of events that were originally published on FOMC Speak from archival records at FRASER. We thank Genevieve Podleski from FRASER for her help in making the data available. The archive is now accessible at https://fraser.stlouisfed.org/timeline/fomc-speak-archive.

FOMC events			Macro events		
Type	Count†	Window (minutes)	Type	Count†	Window (minutes)
Monetary policy decisions (MPD)	24	−10,+20	CPI	37	−10,+20
Chair press conferences (PC)	24	−10,+120	PPI final demand	37	−10,+20
Minutes	25	−10,+20	Nonfarm payroll	37	−10,+20
Speeches and other intermeeting comms (FOMC Speak)⋆	479	0,+120	GDP	37	−10,+20
			Initial jobless claims	161	−10,+20
			ISM manufacturing	37	−10,+20
			Consumer confidence	37	−10,+20
			Advance retail sales	37	−10,+20

Table III. Summary of events. The table summarizes the FOMC communication events and macro announcements used for the event-study analysis.
†The event counts are reported for the 2020:08–2023:08 sample when the FOMC Speak database ends. The sample covers 24 MPDs and PCs over this period and 25 releases of FOMC minutes (including the August 2020 release of minutes from the July 2020 meeting). Macro releases are monthly, except for weekly initial jobless claims. We include all GDP releases including advanced, second, and third.
⋆The following filters are applied to the individual communication events over the intermeeting period: (1) Event window: 0 to +120min trading window; (2) Drop non-trading day entries (12 events happened on non-trading days, weekends, etc.); (3) Speakers included: Barkin, Bostic, Brainard, Bullard, Clarida, Daly, Evans, George, Harker, Kaplan, Kashkari, Mester, Powell, Waller, Williams (see Appendix Table A-3 for details); (4) Keep events when the speakers' name was mentioned by WSJ on day 0, +1, or +2 of the event; (5) Manually check big moves (e.g., exclude Nov 9, 2020 vaccine announcement; include Jun 13, 2022 WSJ Timiraos' tweet).

To reduce noise, in the analysis below, we only use events that have exact time stamps in the FOMC Speak and that were mentioned in the WSJ up to two days following the event. This leaves us with 479 individual "key speaker" events. Appendix Table A-3 summarizes the types of events by the speaker.

The effects of the Fed's communication over the post-2020 framework need to be assessed in relation to the macroeconomic news that arrived during this period. We consider a set of time-stamped macroeconomic announcements from the Bloomberg Economic Calendar. Table III summarizes the events. For announcements, we use a narrow window from 10 minutes before to 20 minutes after the announcement. For press conferences and other speaking events, we measure the window from the start of the event to +120 minutes, but the conclusions are robust to considering shorter windows of 60 or 90 minutes.

V.B. Yields changes during the post-2020 framework period

In Table IV, we begin by summarizing yield changes that occurred over the full period from 2020:08 to 2023:08 and over subsamples, split by calendar year.[34] The results illustrate the complexity of this period. While monetary policy decision announcements raised interest rates, consistent with the overall tightening of the policy stance, the Chair's post-decision press conferences had the opposite effect and generally lowered rates. Likewise, the inter-meeting communication by the Fed officials through 2022 lowered long-term interest rates. The bulk of rate increases happened around macro announcements and, for the most part on other days.

Figure 9 shows the cumulative yield trajectories starting from August 2020. The behavior of interest rates delineates several distinct phases. Until mid-2021, the two-year yield remains largely unresponsive to the Fed communication and macro events, while long-term yields moderately increase. As the two-year yield is highly sensitive to the movements in short-rate expectations and monetary policy news, its stability over this period is consistent with our earlier conclusion that the low-for-long policy was clearly communicated and understood by the market.

From the second half of 2021, as inflationary pressures become evident, the short-term rates generally rise. Long-term yields, however, display a striking divergence, increasing steeply around macro events and declining around the Fed events. This pattern starts to emerge in 2021 when the Fed's intermeeting communication changes course toward increasingly hawkish, as seen in Figure 6. The divergence becomes especially visible from mid-2022, around the Fed's pivot toward aggressive hikes. By the end of the sample, the Fed event windows cumulatively contribute to offset about 50 bps from long-term yield increases on macro announcements and other days.

Was the Fed carefully communicating to engineer a long-term yield decline or did yields move against the Fed's intentions? One interpretation is that the Fed's communication indeed countervailed some interest rate rises due to unfavorable macro news. Such interpretation, however, ignores the fact that yield changes on macro news can also reflect investors updating beliefs about the path of monetary policy and the associated risk around that path.

[34]The narrow event window approach means that the overall effect of specific events may be overstated (if the market initially overreacts to news) or understated (if the market takes longer to incorporate the news). To the extent that we find evidence of slight understatement of FOMC events and overstatement of macro events, our analysis likely presents a conservative view of yield changes induced by the Fed's communication and an exaggerated view of macro news. We analyze the impulse responses of yield changes up to two days after an event to the initial response using local projection. We find that the two-year yield changes caused by FOMC events are understated and the 30-year yield changes caused by macro events are overstated. Other maturities of yields do not show significant differences.

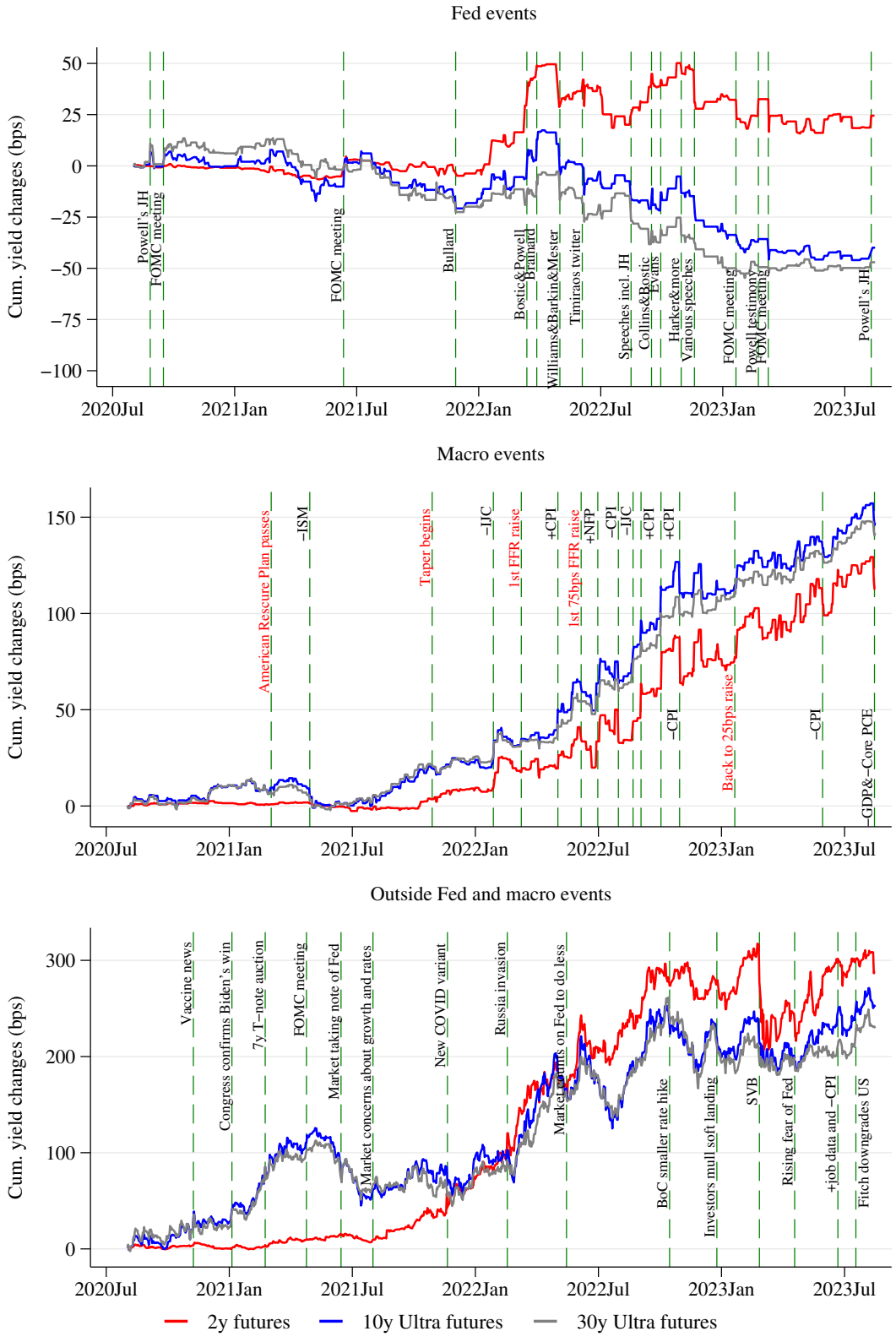

Figure 9. Cumulative yield changes around FOMC and macro events. The figure presents the cumulative yield changes (starting from August 1, 2020) of different maturities in different high-frequency windows defined in Table III. The upper panel plots the changes during FOMC events and the middle panel plots the ones of macro events. The bottom panel plots all the changes happened outside the FOMC events and macro events. High-frequency yield changes are derived from duration-adjusted Treasury future price changes.

Year	Asset	Total yld chng (bps)	Fed events					Macro	Resid.
			MPD	PC	Minutes	Key speak.	Overall		
2020:8-2023:8	2y	422.9	31.0	-60.5	1.5	49.2	23.9	114.5	284.6
	10y	358.8	27.6	-49.1	-2.8	-16.4	-39.9	147.0	251.7
	30y	325.4	24.4	-28.0	-1.4	-41.5	-45.9	141.7	229.6
Total		959 (days)	24		25	480		357	
2020:8-2020:12	2y	0.7	0.0	-0.4	0.7	-1.7	-0.9	1.5	0.2
	10y	36.4	4.4	-1.7	1.6	-5.0	-0.4	10.7	26.1
	30y	37.7	5.0	-3.2	2.8	1.0	6.0	10.9	20.8
Count		130	3		3	98		51	
2021	2y	67.3	6.0	-4.5	1.1	-5.9	-2.8	7.6	62.5
	10y	40.9	9.7	-4.9	0.5	-22.5	-18.0	12.1	46.8
	30y	30.4	8.1	-3.1	-0.1	-30.7	-26.0	13.4	42.9
Count		311	8		8	206		115	
2022	2y	322.3	19.0	-19.5	0.0	34.2	34.6	66.6	221.2
	10y	242.6	7.5	-19.7	-4.4	4.8	-11.8	87.1	167.3
	30y	223.8	4.4	-12.5	-3.6	-12.5	-24.2	77.8	170.2
Count		310	8		8	128		116	
2023:1-2023:8	2y	32.5	6.1	-36.1	-0.4	22.7	-6.9	38.7	0.8
	10y	39.0	6.1	-22.8	-0.6	6.4	-9.8	37.2	11.6
	30y	33.5	6.9	-9.3	-0.5	0.7	-1.7	39.6	-4.4
Count		208	5		6	48		75	

Table IV. Cumulative yield changes around FOMC and macro events. The table reports the total changes in Treasury yields of different maturities accruing around different Fed and macro events by year, from 2020:08 to 2023:08. Yield changes are in basis points and are obtained from duration-adjusted futures price changes. The events and the high-frequency window definitions are summarized in Table III. The "Macro" column includes all macro events listed in Table III. High-frequency windows of "MPD," "PC," "Minutes," and "Macro" do not overlap with each other but could overlap with key-speaker communications. Therefore, we consider the key-speaker windows after removing overlap with other events. The "Overall" column under "Fed events" sums the changes of all Fed events including "MPD", "PC", "Minutes", and "Key speak." "Resid." denotes all trading hours outside the Fed and macro events. Yield changes are calculated by summing changes that happened in all windows for a given event in a given year. Counts of events are reported by year. Cells are colored with conditional formatting by rows where red indicates relatively large contributions, and green indicates relatively small contributions of an event type to the total change reported in that row.

The central bank's success in achieving its objectives depends in part on the ability to influence long-term interest rates in a direction consistent with those objectives. The dynamics of long-term rates are complex as they reflect investors' risk perceptions (term premia) over and above expected short rates. Thus, while communication becomes a critical part of policymaking through its impact on long-term rates, designing and implementing it in a way that delivers desired outcomes is far from trivial. It is likely that not all movements in long-term rates documented above represented the response the Fed intended or anticipated.

V.C. Case study: Selected Fed communication events

To illustrate some of the communication challenges, we focus on how market rates responded to the Fed's communication around two pivotal events: the 2020 framework announcement itself and the 75 bps hike in June 2022.

August 27, 2020 framework announcement. In Section IV, we have argued that the framework announcement and subsequent communication left markets seeking more clarity. Figure 10 shows how yields responded to Chair Powell's announcement on August 27, 2020 and the Fed's communication on two selected days afterward: September 1 when Governor Lael Brainard delivered a speech about the new framework and the September 16 FOMC meeting when the new forward guidance was provided. By the day end on August 27, the long-term yields increased by up to 15 bps (a three-standard-deviation move), while the two-year yield stayed constant. The shape of response across maturities is consistent with stable medium-term short-rate expectations but suggests an increased term premium,[35] a tell-tale sign of uncertainty created by the announcement. The media commentary following the announcement highlights questions about the specific implementation.[36] The long-term yields declined in the days following the announcement, as the Fed officials provided interpretation. As one example, Figure 10 shows that long-term yields continued the decline on September 1 Lael Brainard's speech, discussing in detail the motivation and changes introduced by the framework and reaffirming support for lower-for-longer.

Nevertheless, ahead of the September 16 FOMC meeting the markets still wondered about the specific conditions that might prompt an end to near-zero interest rates. Chair Powell, when asked in the press conference, declined to define the framework modifiers. Additionally, the dissents among the FOMC regarding the forward guidance (by presidents Kaplan and Kashkari) were noted by the public for generating potential problems in the future (09/16/2020, WSJ). On balance, the announcement and the press conference added volatility by moderately raising long-term yields.

June 2022 75 bps hike. Another example of the Fed's communication creating yield volatility is the first 75 bps hike in June 2022. Leading up to the June 2022 meeting, the Fed guided the markets to expect a series of 50 bps hikes.[37] However, negative inflation news

[35] The inflation swap rates around the August 27 announcement did not materially change: the ten-year swap rate increased by 1.3 bps to 1.971% on August 27 and to 2.013% on September 1, suggesting that the market did not perceive the announcement as a shift in the Fed's inflation target or became uncertain about the Fed's commitment to that target.

[36] "The revamp also set the table for the Fed to provide more specifics about how long it expects to keep interest rates low as soon as its Sept. 15-16 meeting. It could do that by putting forward an inflation threshold and a qualitative description of labor market conditions that would warrant higher rates." (08/27/2020, WSJ)

[37] This expectation was shared by Fed watchers with significant experience. On June 8, former governor Larry Meyer wrote in a pre-FOMC briefing to investors: "Now all of us know that the FOMC will raise the

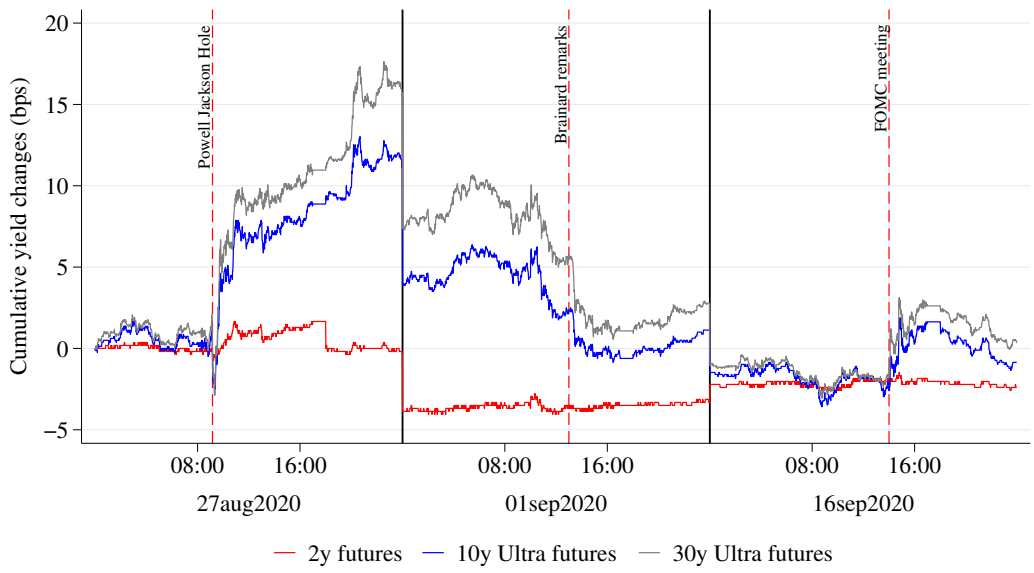

Figure 10. August 27, 2020 framework announcement. The figure plots minute-frequency intra-day bond yield movements implied by the interest rate futures prices for two-, ten- and 30-year Treasury futures. Yield changes are cumulative starting from 12AM on August 27, 2020, the day the new framework was announced and displayed for three selected days with important FOMC events: Chair Powell's Jackson Hole Symposium speech on August 27; Governor Brainard's remarks at the Brookings Institution on September 1, and the FOMC meeting statement release and press conference on September 16. The vertical lines indicate the starting time of each event.

and rapid increases in inflation expectations in preliminary Michigan survey results prompted Chair Powell to act more aggressively. During the blackout period, on June 13, 2022, two days before the FOMC meeting, Nick Timiraos wrote in WSJ "Fed Likely to Consider 0.75-Percentage-Point Rate Rise." The information appeared to credibly come from the Fed.

Figure 11 displays cumulative yield changes at high frequency between June 13 (the day of the WSJ leak) and June 15 (the FOMC meeting). While some analysts started to anticipate a more aggressive Fed move earlier based on negative inflation news, yields jumped significantly at the time Timiraos tweeted his article. The day ended 20 bps higher at the two-year maturity, reflecting the now highly likely additional 25 bps tightening beyond the 50 bps expectation. This move represents the third-largest daily increase in the two-year yield since 1994. The FOMC statement on June 15 confirmed the 75 bps hike. On impact, yields fully reflected the 25 bps surprise, consistent with the Fed's desired tightening. However, the increase was reversed during the Chair's press conference, with the two-year yield returning back to the pre-June 13 level before long rates ending up 10 basis points higher.

funds rate by 50 basis points at next week's meeting. Takes the suspense away. And we have all been told that there will be a third consecutive 50 in July. (...) We have never expected a hike of 75 basis points at any meeting this year."

Was the final outcome of the June 13–15 events consistent with the Fed's intentions? It might not have been if the goal of surprising the market was to signal a hawkish pivot and forcefully tighten financial conditions to prevent the potential unanchoring of inflation expectations. The yield data suggests that the market saw the 75 bps move as a shift in the timing of tightening without a fundamental change in policy stance or the terminal rate the Fed envisioned as appropriate.[38] Thus, although the Fed successfully signaled its ability to move up faster than expected, it is unclear to which extent the move helped restore the Fed's credibility for fighting inflation relative to the smoother 50 bps sequence that markets anticipated.[39] This is perhaps a potential cost of being less preemptive; once policymakers are percieved to be behind the curve, they have to carefully balance their desire to make up lost ground while not appearing to panic.

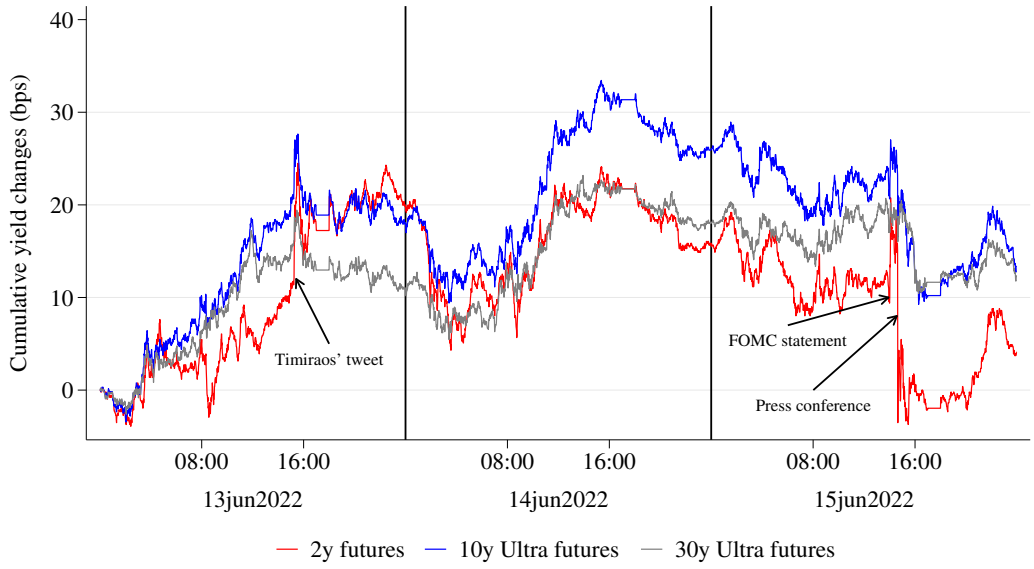

Figure 11. June 2022 75 bps hike. The figure plots minute-frequency intra-day bond yield movements implied by the interest rate futures prices for two-, ten- and 30-year Treasury futures. Yield changes are cumulative starting from 12AM on June 13, 2022, in which afternoon Nick Timiraos (WSJ) posted on Twitter about Fed likely considering a 75bps rate rise. The FOMC meeting statement release and press conference then took place on June 15 which confirmed this 75bps rise. The arrows indicate the starting time of these events.

[38] In the press conference on June 15, 2022, Chair Powell said: "Clearly, today's 75 basis point increase is an unusually large one, and I do not expect moves of this size to be common."

[39] Some at the time saw the Fed as overreacting to news (the Michigan survey numbers got ultimately revised down) and acting in a panic mode. "'Other analysts said Monday afternoon that a larger 0.75-point rate jump would cause more problems for the central bank than it would solve by confusing investors about how the Fed reacts to new data. "It just opens up additional communication challenges thereafter," said Neil Dutta, an economist at research firm Renaissance Macro. "It suggests the Fed is losing confidence in its forecast. We all know they were trying to catch up, but now it looks like they are panicking.'" (06/13/2022, WSJ)

V.D. Term premia vs. short-rate expectations

An important question in understanding the above yield moves is whether they reflect risk premiums or short-rate expectations. The distinction matters broadly for the Fed's decision-making, as expressed by Kohn (2005):

> "Investors' expectations are reflected in asset prices, but so are risk premiums, and inferences about future economic conditions obtained from market prices are conditional on estimates of those premiums. Neglecting or grossly misestimating risk premiums will lead to misperceptions of the market's outlook and thus potentially to market moves that we did not anticipate. (...) To what extent are long-term interest rates low because investors expect short-term rates to be low in the future (...), and to what extent do low long rates reflect narrow term premiums (...)? Clearly, the policy implications of these two alternative explanations are very different."
> – Governor Donald L. Kohn, July 21, 2005

The distinction is especially pertinent given that the Fed's communication itself drives both these components.[40]

We use intuition from Cieslak and McMahon (2024) to lay out the channels through which the Fed could impact risk premia in financial markets. In their stylized model, the risk premia on the aggregate stock market and nominal bonds are both increasing in the volatility of the perceived monetary policy shock. The source of the monetary policy shock, or a policy mistake, is the market's perception that the Fed may incorrectly assess economic conditions relative to the market's belief of what these conditions are. Alternatively, the shock can arise from market's concerns about the Fed's type: The Fed could be perceived as too hawkish or too dovish in responding to inflation, given what the market deems optimal.

The setting implies that the volatility of the perceived monetary policy shocks increases with the extent of both of these concerns. Thus, risk premiums on bonds and equities rise with policy communication or actions that induce market's concerns about policy mistakes. The effect of hawkish signals from the Fed depends on the direction of the policy mistakes perceived by the market, i.e., whether the Fed is seen as too hawkish or too dovish. In the former case, hawkish signals raise premiums, while they lower premiums if the market is concerned about too dovish Fed. Cieslak and McMahon (2024) examine the period from 1987 to 2015 when the main concern was tilted toward the Fed being too dovish such that hawkish communications reduced premiums.

[40] A large literature studies how the Fed affects risk/term premia, highlighting a separate role of news about future short rates versus premia, e.g., Bernanke and Kuttner (2005); Bekaert et al. (2013); Hanson and Stein (2015); Hansen et al. (2018); Cieslak and Schrimpf (2019); Cieslak and Pang (2021); Kroencke et al. (2021); Pflueger and Rinaldi (2022); Bianchi et al. (2022a,b); Caballero and Simsek (2022); Bundick et al. (2024). Bauer et al. (2023) review evidence on how announcements impact risk appetite.

V.E. Yield curve decompositions

We rely on two decompositions to empirically separate sources of the yield curve variation. The first approach is based on the Kim and Wright (2005) no-arbitrage term structure model. The estimates from their model are regularly updated by the Federal Reserve Board[41] and are available at daily frequency for maturities between one and ten years. We use the term premium on the ten-year yield (denoted as "*TP10*" below) provided in the dataset and compute short-rate expectations at the two-year horizon (denoted as "*EH2*" below) as the two-year yield (fitted by their model) minus the two-year term premium.

Our second approach follows Cieslak and Pang (2021) and exploits sign restrictions on stock market returns and yield changes in a structural VAR framework. The decomposition provides four labeled orthogonal factors by splitting short-rate expectations news into monetary news (MP) and growth news (G), and risk premium news into common premium (CRP) news and hedging premium (HRP) news. The CRP component captures the idea that the Fed can affect risk premia through policy-induced uncertainty. It is identified as news that dominantly impacts the long end of the yield curve and moves stock and bond returns in the same direction. The HRP component is instead identified from news moving stocks and long-term bonds in opposite directions, as in flight-to-safety episodes, aiming to reflect economic uncertainty exogenous to the Fed.

We use both decompositions at the daily frequency. We cumulate changes in yield components on days with Fed events, macro events, and other days. Figure 12 plots the cumulative short-rate expectations changes for the two-year maturity and term premia changes for the ten-year maturity from Kim and Wright (2005). The first fact from the graph is that term premia increased by up to 144bps until June 14, 2022, the Fed's hawkish pivot, with 60 bps realized on the Fed event days and another 66 bps realized on macro news days, and the rest on other days. Much of the term premium increase occurred as short-rate expectations two years out remained unchanged, nor did it overlap with QT announcements. The second result is that, after the rate tightening started, term premia first declined and then remained stable on Fed event days and drifted down on macro days.

Short-rate expectations and term premia in the post-framework period are influenced by news about the economic recovery and resolution of uncertainty about the course of the pandemic. Thus, daily windows used in Figure 12 confound multiple effects. To further separate the news types driving term premia and short-rate expectations, in Figure 13 we graph the cumulative ten-year yield changes due to the four news factors from the Cieslak

[41] The data is available at https://www.federalreserve.gov/data/yield-curve-tables/feds200533.csv.

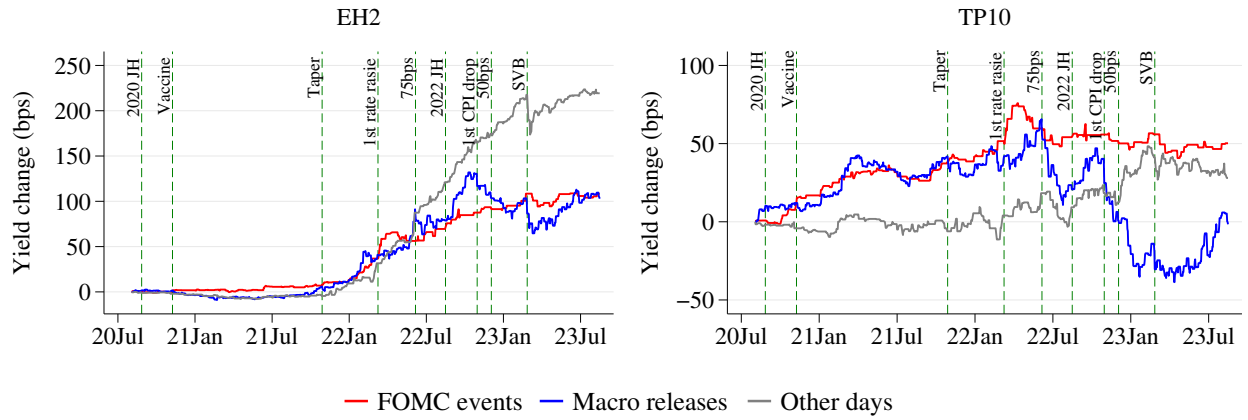

Figure 12. Short-rate expectations and term premia. The figure presents the cumulative changes (starting from August 1, 2020) in the short-rate expectations component of the two-year yield (*EH2*, left panel) and the term premium component of the ten-year yield (*TP10*, right panel). The yield decomposition is based on the Kim and Wright (2005) model. Each component is further split into changes on days with Fed events, days with macro releases, and other days. When a macro release happens on the same day as a Fed event, we classify it as a macro day.

and Pang (2021) decomposition. The monetary news component (MP) reveals that from late 2021, macro announcement days were associated with investors revising their beliefs toward a tighter stance of monetary policy. On balance, revisions of monetary policy views on macro days were at least as large as on the Fed event days. Importantly, the decomposition reveals that the CRP component starts rising on the Fed event days soon after the 2020 framework announcement. Its peak on April 19, 2022 at 84 bps coincides with multiple Fed officials intensifying communication about rate rises from the beginning to mid-April and with the general timing of the shift from dovish to consistently hawkish communications recorded in Figure 6. The overall peak of CRP (on all days) occurs on June 16, 2022, the day after the first 75 bps hike.[42]

V.F. Yield sensitivity to inflation surprises

The above results suggest that the Fed's stance impacts how asset prices respond to macroeconomic news. We therefore explore the sensitivity of yields and yield components to macroeconomic surprises over four subsamples: 2016:01–2020:02 (pre-Covid), 2020:03–2020:12 (initial Covid shock and early recovery, framework review period), 2021:01–2022:02 (large inflationary surprises, no rate hikes), and 2022:03-2023:12 (active rate hikes). We start by analyzing the yield sensitivity to core CPI surprises. The annual core CPI surprises are

[42]The HRP component also displays significant variation over this period. HPR is expected to raise yields as the economy strengthens and recession-hedging properties of bonds become less valuable, as seen through mid-2021. Conversely, it is expected to depress yields as uncertainty about the strength of the economy increases and in flight to safety episodes, as seen in late 2022 and around the SVB collapse.

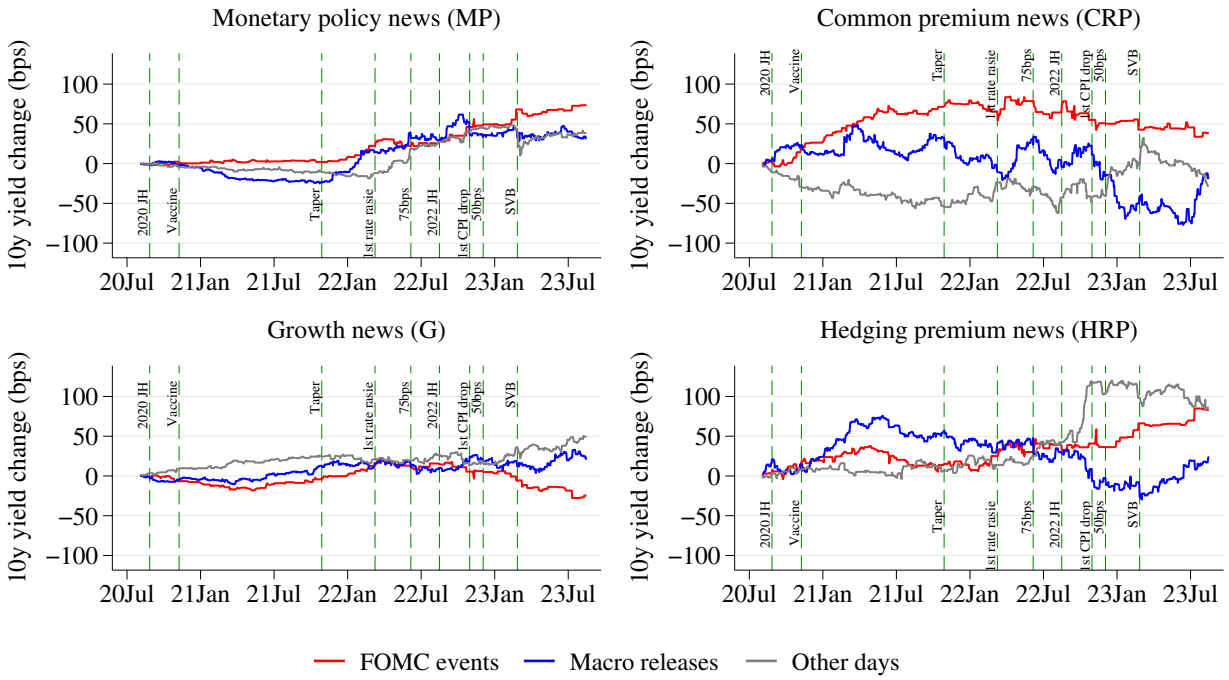

Figure 13. News decomposition. The figure presents the cumulative changes (starting from August 1, 2020) of the ten-year yield due to four orthogonal factors: monetary news (MP), growth news (G), common premium (CRP) news, and hedging premium (HRP) news. The yield decomposition is based on Cieslak and Pang (2021). Each news component is further split into changes on days with Fed events, days with macro releases, and other days. When a macro release happens on the same day as a Fed event, we classify it as a macro day.

plotted in Figure 2. During the 2016–2023 period, the surprises have a standard deviation of 0.15 percentage points (pp), a maximum of 0.7 pp, and a minimum of −0.3 pp.[43]

Table V presents regressions of daily yield changes on core CPI inflation surprises. The top panel estimates the unconditional yield sensitivity over the 2016–2023 sample for a total of 96 CPI announcements. The bottom panel estimates sensitivities for each subperiod, interacting surprises with subperiod dummy variables. The first two columns contain estimates for the two- and ten-year yield changes, showing that yields respond positively to higher-than-expected CPI numbers. In terms of magnitudes, a 0.5 pp inflation surprise raises the ten-year yield by 8.5 bps on announcement days in the full sample, but the effects differ significantly across subperiods. In the last subperiod (2022:03–2023:12), the ten-year yield sensitivity rises to 25 bps per 0.5 pp surprise.

[43]To reduce noise in the estimates, we focus just on the CPI, as it is the inflation indicator most followed by investors according to Bloomberg's relevance index. In unreported results, we study the sensitivity of yields to a broader set of inflation news (core PCE price index, PPI, in addition to CPI). The results are qualitatively unchanged.

Looking at overall yield changes masks the changing nature of the yield response to inflation news. The next two columns analyze news sensitivity of the two-year short-rate expectations and ten-year term premium from Kim and Wright (2005). The estimates indicate a dominant term premium response before the Fed's 2022 pivot, and a dominant short-rate expectations response after the pivot. This shift suggests that while the Fed's commitment to low-for-long policy in the early sample made short-rate expectations relatively insensitive to inflation news (see also related evidence in Bocola et al. (2024)), investors priced the news by raising risk compensation.

The last four columns further dissect these results using the orthogonal factors driving the ten-year yield changes from the Cieslak and Pang (2021) decomposition. The component-specific loadings show that investors' interpretation of inflation surprises changed over time. In 2020, positive inflation news was associated with an increase in the term premium via the HPR component. The positive sign (HPR column, second row) is consistent with investors then viewing higher-than-expected inflation as a signal about demand recovery. To the extent that such news resolves economic uncertainty, it should also lower demand for the recession-hedging benefits of Treasuries as investors become more willing to hold stocks. At the same time, the negative coefficient on MP news in 2020 (MP column, second subperiod) suggests that positive inflation surprises led investors to see monetary policy as more accommodative than expected. The interpretation changes notably as inflationary pressures become evident in 2021. The sensitivity of yields to inflation surprises is now driven entirely by the CRP component (CRP column, third subperiod), i.e., positive inflation surprises make both stocks and bonds more risky. While this effect is consistent with investors pricing the underlying supply shocks, part of the response is also likely due to the Fed-induced uncertainty.[44] Indeed, the CRP response becomes statistically insignificant in the final period as the Fed starts to tighten (CRP column, fourth subperiod), even though the supply-side factors plausibly continue to contribute significantly to the inflation dynamics.[45] Importantly, in the tightening period, short-rate expectations become highly responsive to inflation news and the ten-year yield sensitivity primarily reflects investors' revising expectations about monetary policy (MP column, fourth subperiod) rather than term premia.

The sensitivity of the term premia documented above is specific to inflation surprises. Additional analysis in Appendix Table A-4 shows that term premia, and the CRP piece in particular, do not respond to non-farm payroll news over the post-2020 sample.

[44] See Campbell et al. (2017), Campbell et al. (2020), Bekaert et al. (2021), among others, for the analysis of demand and supply drivers of risk premia.

[45] See Shapiro (2024) for a decomposition of inflation into supply- and demand-driven components.

	Yields, $\Delta y^{(n)}$		KW decomposition		CP decomposition, $\Delta y^{10}(\text{news}_i)$			
	2y	10y	*EH2*	*TP10*	*MP*	*G*	*CRP*	*HRP*
A. Unconditional sensitivity in full sample								
CPICsurp	0.18***	0.17***	0.088***	0.079***	0.050**	0.026*	0.089***	0.0045
	(3.07)	(3.89)	(3.15)	(3.82)	(2.07)	(1.68)	(3.14)	(0.17)
$\overline{R}^2$	0.12	0.14	0.13	0.13	0.059	0.028	0.093	-0.010
N	96	96	96	96	96	96	96	96
B. Sensitivity in subsamples								
$D_{16:01,20:02}\times$CPICsurp	0.098**	0.088	0.044**	0.054*	0.011	0.034*	0.049	-0.0053
	(2.27)	(1.60)	(2.30)	(1.86)	(0.98)	(1.79)	(1.08)	(-0.12)
$D_{20:05,20:12}\times$CPICsurp	0.025*	0.13***	0.014*	0.055***	-0.039***	0.016	0.015	0.14***
	(1.98)	(3.95)	(1.73)	(3.72)	(-4.80)	(1.57)	(0.45)	(4.54)
$D_{21:01,22:02}\times$CPICsurp	0.076*	0.13***	0.038*	0.057***	0.015	0.0051	0.12***	-0.012
	(1.72)	(3.59)	(1.88)	(3.35)	(1.26)	(0.30)	(3.63)	(-0.83)
$D_{22:03,23:12}\times$CPICsurp	0.86***	0.49**	0.42***	0.22**	0.34***	0.092	0.15	-0.094
	(4.31)	(2.14)	(4.56)	(2.02)	(3.74)	(1.28)	(1.46)	(-0.73)
$\overline{R}^2$	0.41	0.20	0.44	0.18	0.44	0.044	0.095	0.041
N	96	96	96	96	96	96	96	96

Table V. Yield sensitivity to inflation surprises. The table reports the regressions of yield changes on core CPI inflation surprises. The dependent variables are two- and ten-year yield changes (first two columns), changes in two-year short-rate expectations and ten-year term premia using Kim and Wright (2005) estimates ("KW decomp.") and four-factor decomposition of the ten-year yield changes from Cieslak and Pang (2021) ("CP decomp."). The upper panel shows the sensitivity of yields to core CPI inflation surprises over the full 2016:01–2023:12 sample. The bottom panel presents per-period sensitivity interacting CPI surprises with subperiod dummies. Robust t-statistics are reported in parentheses.

Overall, the inflation sensitivity regressions highlight the difficulty of influencing long-term interest rates. The Fed managed to anchor short-rate expectations through 2021 with the goal of maintaining easy financial conditions. Even so, investors offset part of the intended easing by charging higher term premia when their perceptions of inflationary pressures became inconsistent with the Fed's policy intentions.[46]

V.G. Linking yield curve movements to the public perceptions of policy mistakes

The earlier discussion links term premia to the market-perceived probability of the Fed's policy mistakes. To measure those perceptions, we again turn to textual analysis of the WSJ

[46]This situation shares some resemblance with the yield curve controls (YYC) experiment of Reserve Bank of Australia. While the initial policy seemed to work as intended, the RBA was ultimately forced to abandon it when market expectations became widely inconsistent with the stated policy commitments (Lucca and Wright (2022)). The YCC failure in Australia is clearly an extreme example that cannot be directly compared to the Fed's experience during the past five years. It does, however, serve as a warning against a steadfast commitment to policies once they become inconsistent with the market's assessments.

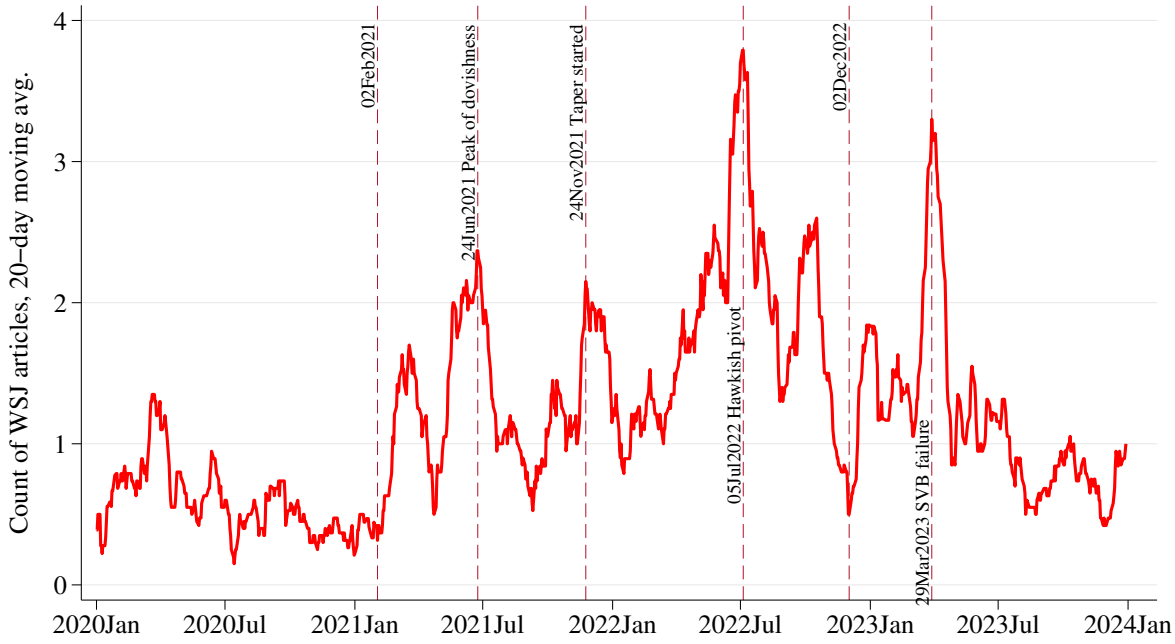

Figure 14. Mistakes index from WSJ articles. The figure plots the 20-day moving average of the mistakes index from 2020:01 to 2023:12. The mistakes index on a day t is the count of WSJ articles of that day classified as suggesting that the public is concerned about possible Fed's policy mistake, error, or incorrect decision (count of "Yes" answered by GPT4 to the prompt in footnote 47). We plot the average mistakes index between day t and $t-19$. The vertical lines mark the dates of selected turning points in the mistakes index.

news articles covering the Fed. Using the same corpus of articles as in Section IV.E, we ask whether an article indicates the public's concern about a potential Fed's policy mistake, error, or incorrect decision.[47]

We then construct a mistakes index counting the number of articles per day that are classified as "Yes" (17.5% of all Fed-related articles during 2020:01–2023:12). While not a direct proxy, the goal is to approximate the time-variation in the policy mistake probability as perceived by the public and link it to the movements in interest rates. Figure 14 plots the 20-day moving average in the mistakes index, marking selected dates when turning points occurred.

Newspaper articles usually provide ex-post narratives based on events that happened, and commentaries can appear several days later. We thus treat the mistakes index as the dependent variable. Specifically, to account for lags in reporting and smooth out noise, we predict a 20-day change in the average mistakes index plotted in Figure 14 with a 20-day

[47]We provide the following prompt to GPT4: "*Q: Does the article suggest that the public is concerned about possible Fed's policy mistake, error, incorrect decision?* Write answer as: {Yes/No/not possible to determine} {explanation less than 25 words}

change in yields, lagged by five days. We experiment with other windows and lags, and find that they do not qualitatively change the conclusions (see Appendix Table A-5).[48]

Table VI starts by projecting the changes in the mistakes index on the changes in short-rate expectations and term premia from Kim and Wright (2005) (columns (1)–(3)). The coefficients indicate a significantly positive association of perceived policy mistakes with term premium changes but no association with short-rate expectations changes. A one-standard-deviation increase in the ten-year yield term premium predicts a 0.21 standard deviation increase in the mistakes index (column (2)). Because Kim and Wright (2005) decomposition generates term premia and short-rate expectations that are positively correlated, to isolate pure term premium changes, in column (3) we include both components jointly. Controlling for short-rate expectations further strengthens the positive term premium loading, in line with the idea that a heightened probability of policy mistakes can increase premia absent any movements in expected short rates.

Columns (4) to (8) project the mistakes index changes onto ten-year yield changes disaggregated into news components from Cieslak and Pang (2021). The results further document that the positive link between mistake perceptions and term premia stems from the common premium (CRP). A one-standard-deviation increase in the ten-year yield due to CRP news is associated with a 0.37-standard-deviation higher mistakes index. Again, there is no relationship between the mistakes index and the news driving short-rate expectations (monetary and growth news factors).[49]

[48]The dependent variable is the change in the average index between time t and $t-20$. Denoting the mistakes index as MI_t, we first calculate its K-day moving average $\overline{MI}_{t,t-K+1} = \frac{1}{K}\sum_{i=0}^{K-1} MI_{t-i}$. Then we take the K-day difference to obtain $\Delta\overline{MI}_{t,t-K} = \overline{MI}_{t,t-K+1} - \overline{MI}_{t-K,t-2K+1}$, which is our dependent variable. In the baseline specification, we set $K = 20$ and regress $\Delta\overline{MI}_{t,t-20}$ on yield changes between $t-5$ and $t-25$.

[49]The coefficient on the hedging premium (HPR) is negative, which suggests that the Fed's policies over the period might have negatively affected the economic uncertainty (e.g., by raising concerns about financial stability), which would in turn increase the demand for safe bonds (and lower their premium) away from stocks. While the loading on HPR is only marginally significant, such an offsetting effect can explain the weaker link between the overall Kim-Wright term premium and the mistakes perceptions relative to the one documented for the CRP alone.

Dependent variable: 20-day change $(t-20,t)$ in the WSJ-based index of perceived policy mistakes

	KW decomposition			CP decomposition				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta EH2$	-0.053		-0.162					
	(-0.33)		(-0.85)					
$\Delta TP10$		0.206**	0.271***					
		(2.12)	(2.82)					
$\Delta y^{(10)}(MP)$				0.018				0.070
				(0.11)				(0.58)
$\Delta y^{(10)}(G)$					-0.131			-0.107
					(-1.28)			(-0.99)
$\Delta y^{(10)}(CRP)$						0.371***		0.382***
						(4.28)		(4.56)
$\Delta y^{(10)}(HRP)$							-0.231	-0.296**
							(-1.64)	(-2.46)
R^2	0.00	0.04	0.06	0.00	0.02	0.14	0.05	0.23
N	890	890	890	890	890	890	890	890

Table VI. Term premia and perceptions of policy mistakes. The table reports regressions of changes in the WSJ-based policy mistakes index on changes in yield components. The dependent variable is the change from $t-20$ to t in the 20-day average mistakes index (plotted in Figure 14). The explanatory variables are components of yield changes between $t-5$ and $t-25$. Columns (1)–(3) are for changes in two-year short-rate expectations and ten-year term premia using Kim and Wright (2005) estimates ("KW decomposition") and columns (4)-(8) are for the four-factor decomposition of the ten-year yield changes from Cieslak and Pang (2021) ("CP decomposition"). The sample period is 2020:08–2023:12. The regressions are estimated at a daily frequency. HAC t-statistics with 36 lags are reported in parentheses.

V.H. Term premia sensitivity to the Fed's communication

What were the aspects of the Fed's communication that contributed to changes in the markets' risk perceptions and therefore to changes in the term premia? To cast light on this question, we explore the content of the speeches by the Chair, Vice Chair, and the governors over the 2020:08–2023:12 period. We follow Cieslak and McMahon (2024) in constructing a text-based measure of policy stance from policymakers' language as a balance of hawkish and dovish words in a speech, scaled by the total number of words in that speech. We label this variable as Speeches-HD_t, with t indicating the day of the speech. If there is more than one speech in a day, we take the average of individual scores. An increase in Speeches-HD_t indicates an expression of tighter policy stances. We also control for language that describes the policymakers' directional views ("sentiment") on inflation and the real

economy.[50] To focus on intermeeting communication, we exclude three days around the FOMC announcement (days -1, 0, and $+1$ around the announcement). Since speeches may reiterate the content of the previous FOMC announcement, we proxy for the announced policy stance using the Chair's opening remarks at the press conference, which we denote as PC-HD_{t-}, with $t-$ subscript indicating that we refer to the most recently available press conference before a day-t speech.

In Table VII, we project changes in yield components from day $t-1$ to $t+3$ on Speeches-HD_t and controls (sentiment and latest PC-HD_{t-}) over the 2020:08–2023:12 sample. We use a longer window for yield changes to account for the full effect. The first four columns document that term premia tend to fall as speeches convey a tighter policy stance. This effect is separate from changes in short-rate expectations. To show this, column (3) uses as the dependent variable premium changes orthogonalized with respect to contemporaneous changes in short-rate expectations.[51] Column (4) directly controls for short-rate expectations in the regression. In both specifications, the loading on Speeches-HD_t is statistically significant, with one standard deviation more hawkish communication, reducing the premium component by between 0.17 and 0.20 standard deviations. Columns (5)–(8) confirm this finding using the four-factor news decomposition. A tighter stance in speeches is associated with investors' updating upward beliefs about the policy path (MP component in column (5)) and revising downward the common premium (CRP in column (7)). The latter effect dominates in terms of statistical significance.

The evidence in Table VII suggests that the hawkish communication over the intermeeting period served to counter risk premium increases. Indeed, while we estimate the above regressions on the entire 2020:08–2023:12 sample, we find that the significance of the communicated policy stance for term premia is driven by the post-2021 period. This is also when the communication has become more consistent across individuals and focussed on reasserting the Fed's credibility for fighting inflation. Using the intuition from Section V.D, term premia can rise on perceptions of policy mistakes going either in an excessively dovish or excessively hawkish direction. On balance, however, the evidence suggests that over the past five years the concerns driven term premia were tilted toward a too-dovish policy.

[50] See Cieslak et al. (2023) for details on the text-based policy stance and macroeconomic sentiment measures.

[51] Expected short-rate changes explain 32% of contemporaneous variation in term-premium changes in the Kim and Wright (2005) decomposition, using the four-day window as in Table VII.

Dependent variable: Change in yield components from $t-1$ to $t+3$ days

	KW decomposition				CP decomposition, $\Delta y^{10}(\text{news}_i)$			
	(1) $\Delta EH2$	(2) $\Delta TP10$	(3) $\Delta TP10^{\perp}$	(4) $\Delta TP10$	(5) MP	(6) G	(7) CRP	(8) HRP
Speeches-HD_t	0.118	-0.097	-0.203***	-0.174***	0.201*	-0.020	-0.199***	0.103
	(1.06)	(-1.25)	(-3.36)	(-3.60)	(1.76)	(-0.22)	(-3.19)	(1.14)
$\Delta EH2$				0.650***				
				(5.89)				
Sentiment$_t$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PC-HD_{t-}	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.09	0.01	0.10	0.40	0.06	0.01	0.04	0.04
N	187	187	187	187	187	187	187	187

Table VII. Term premia sensitivity to the Fed's communication. The table reports regressions of yield changes on the Fed's hawkish/dovish policy stance. The dependent variables are changes from $t-1$ to $t+3$ in yield components from Kim and Wright (2005) and Cieslak and Pang (2021). $\Delta TP10^{\perp}$ in column (3) is the residual of regressing $\Delta TP10$ on $\Delta EH2$. The independent variable is the text-based measure of policy stance (Speeches-HD_t) following Cieslak and McMahon (2024). An increase in Speeches-HD_t indicates an expression of tighter policy stances. Sentiment$_t$ and PC-HD_{t-} control for policymakers' directional views on inflation and the real economy and the announced policy stance from the previous Chair's press conference, respectively. The sample period is 2020:08–2023:12, excluding three days around the FOMC announcement. HAC t-statistics with 20 lags are reported in parentheses

VI. Lessons and suggestions for the Fed's attention in the upcoming review

We are not the first to make suggestions for the Fed's next framework review, as evidenced by the previous framework conference at the Brookings Hutchins Center in May 2023, the 2024 event at the Hoover Institution, the recent Cleveland Fed Communications Conference, as well as the feedback gathered in the Fed communications survey by Wessel and Boocker (2024).

Below, we highlight five lessons from our analysis of the Fed's communication over the last five years. The overriding point is that the Fed's words affect market beliefs at least as much as actions. These beliefs then determine financial conditions and, ultimately, policymakers' ability to achieve their goals. These issues should be at the heart of the next framework review when considering strategy, instruments, and, especially, communication.

The goals laid out for the framework review in 2018–2020 placed communication practices as a central element, alongside strategy and instruments. In preparation for the 2020 review, the Fed's staff produced an extensive body of research on a variety of topics pertinent to the review. Of the 112 Fed-coauthored papers in total, just three were explicitly dedicated to communication practices. The 2020 framework statement mentioned the importance of clear communication, but the actual framework put little emphasis on communication. The

next review should include guidance on the Fed's communication principles and practices, taking into account the lessons learned so far.

Incorporating communication into the framework will not be easy, as despite growing research on central bank communication, many questions remain unanswered. These include both quantitative assessments of past communication successes and failures and theoretical guidance on optimal communication design. Our review highlights some of the complexities over the past five years but merely scratches the surface. Providing answers will involve much work and dedication of resources.

VI.A. Lessons on communication

The framework statement, as the main constitutional document of the FOMC, should be sufficiently broad to encompass different scenarios. In terms of communication, such a design protects against communication becoming overly difficult or constrained in the face of the changing economy.

Lesson 1. *Communication of reaction function is vital and should be the focus of the FOMC's communications.*

A well-communicated and understood reaction function is crucial for the effectiveness of any current policy stance. Alongside the Fed's views on the economy, it helps markets and households comprehend the current policy. Our work highlights that a poorly understood FOMC reaction can generate uncertainty. Even sign-posted decisions can surprise the market and create the perception that the FOMC is reacting in panic, as concerns surrounding the 75 bps hike in June 2022 suggest.

In standard models, it is considered optimal for central banks to commit to and follow a specific fixed rule. This fixed rule acts as a time-invariant reaction function. However, a reaction function can more generally encompass state- and time-dependent mappings from the state of the economy to policy decisions. Due to the economy's complexity, it is impractical for policymakers to rely on and communicate rigid rules. Therefore, the challenge lies in clearly conveying the reaction function while maintaining the flexibility to adjust policy as the economy evolves.

Lesson 2. *Policymakers' assessments of the economy must be credible and well-supported by the data, as they are integral to the reaction function.*

Another difference between stylized models of optimal policy and reality is that the state of the economy to which policy must react is unobservable. An essential task of central

bank economists and policymakers is then to translate observable economic data into an assessment of the underlying state.[52]

Policymakers must ensure their economic assessments of the state are credible. Given inherent uncertainty, there exists a range of credible beliefs and differing opinions on the most likely situation and how it might develop. If the market loses confidence in the central bank's evaluations, or if macroeconomic data indicates that these evaluations are unfounded, concerns about policy errors can lead to increased financial market volatility and higher risk premiums. While the central bank's economic assessments may be vindicated ex-post, it is essential that they are evidenced and well-argued, especially during times of disagreement.

The last decade has highlighted that more work needs to be done to develop accurate models of inflation dynamics. Before Covid, the Fed's models failed to explain how a strong labor market mapped into persistently weak inflation which worried policymakers. During Covid, with high unemployment and stable inflation expectations, the models failed to predict persistently high inflation. Even more recently, the strong labor market coincided with a strong disinflation.

Lesson 3. *The framework and communication must reflect pervasive uncertainty in the policymaking.*

Policymakers are well aware of the pervasive uncertainty that accompanies their decision-making (Greenspan, 2004; Bernanke, 2007). The uncertainty in the Fed's assessment of the economy and its implications for policy need to be communicated effectively. This requires a careful balance between coming across as overconfident and powerless. A central bank that appears too certain or unwavering in its economic assessments, especially during uncertain times, can generate concerns about potential policy mistakes and ultimately reduce its own credibility. Uncertainty thus created can contribute to risk premia and tighten financial conditions against policy intentions. As such, openly communicating the uncertainty in policymakers' assessments can reduce public uncertainty about monetary policy.

Lesson 4. *Monetary policy requires careful managing of inflation expectations, but not micro-managing them.*

While there is broad consensus that monetary policy must manage inflation expectations (e.g., King et al., 2008), there is a significant gap between how rational agents in models

[52] Byrne et al. (2022) distinguish between the assessment of the current state of the economy, the projection of the likely future state of the economy, and the decision on how to adjust rates in light of this. Between the first two steps, the main difficulty is the assessment of the contemporaneous conditions. Once these are determined, projecting to understand how the economy will evolve is typically quite mechanical (albeit fraught with uncertainty).

adjust their expectations and real-world evidence from policy shifts. In late 2020 and through 2021, the FOMC appeared focused on establishing credibility for the FAIT framework and the potential benefits of a complex adjustment of inflation expectations. This came at the expense of a delay in addressing the growing challenge of persistent inflation. Evidence suggests that the announcement of FAIT failed to influence market and household beliefs (Coibion et al., 2023) about inflation. As a result, the benefits of FAIT may be limited.

We emphasize the difficulties associated with FAIT, including the challenges in effectively communicating it. However, we note that the jury is still out on whether its benefits can be realized during the next ELB episode.

Lesson 5. *Explicit forward guidance can be constraining, and the appearance of being constrained can undo the intended policy stance.*

While we have argued that communication about reaction functions is crucial for explaining policy stance, explicit forward guidance should be used with caution and moderation. When employed, the inclusion of escape clauses, as envisioned by the framework statement, can be beneficial, making it more effective and adaptable.

VI.B. Communication strategy suggestions for the next review to consider

At the outset, it is worth noting that a general principle of policymaking at the Fed since at least Alan Greenspan has been the "risk management" approach.[53] Greenspan (2004) explained the risk management as follows:

> [T]he conduct of monetary policy in the United States has come to involve, at its core, crucial elements of risk management. This conceptual framework emphasizes understanding as much as possible the many sources of risk and uncertainty that policymakers face, quantifying those risks when possible, and assessing the costs associated with each of the risks. In essence, the risk-management approach to monetary policymaking is an application of Bayesian decision-making.
>
> This framework also entails devising, in light of those risks, a strategy for policy directed at maximizing the probabilities of achieving over time our goals of price stability and the maximum sustainable economic growth that we associate with it.

Although Chair Greenspan is often viewed as unwilling to communicate precisely, his approach to risk management embodied many of the recommendations that we offer below. It entailed a strong focus on the objective, acknowledged the uncertainty faced, and presented oral scenarios to communicate the current assessment and reaction function. The late 1990s

[53] Blinder and Reis (2005) provide a detailed examination of Greenspan's approach to risk management.

offer an interesting comparison to the recent Fed's experience. Back then, fears grew that the strong economy implied higher inflation was about to emerge and the Fed was falling behind the curve. However, Greenspan believed productivity growth was behind the economic strength, and therefore low inflation was sustainable. Although the FOMC did not adjust the policy rate during that period, they were not passively waiting for confirmation or rebuttal of their assessments. Cieslak and McMahon (2024) argue that the FOMC signaled, by communicating a forward-looking policy stance, its willingness to move aggressively should a need arise. This approach appeased the markets, leading to a lower-than-otherwise term premium. In the end, the data supported Greenspan's assessment. Importantly, the FOMC's communication helped ensure that financial conditions were closer to the desired level and not as restrictive if market concerns had been allowed to grow.

While the trend toward clearer, more transparent communication in the last decades may seem at odds with Greenspan's approach, similar risk management considerations were central to Chair Bernanke's policymaking, albeit merged with more open communication practices. Bernanke (2007) stresses that "the pervasive uncertainty that we face as policymakers is a powerful reminder of the need for humility about our ability to forecast and manage the future course of the economy." The decision on when to raise interest rates under Chair Yellen in January 2017 was also discussed as a risk-management decision (Yellen, 2017).

Risk management remains a sensible guiding strategy today and can be integrated with the suggestions below, as well as with other new approaches to communication and efforts to manage market expectations. Various institutional setups and communication strategies are consistent with the lessons we have discussed above. Here, we suggest a non-exhaustive list of those supported by evidence that we believe the Fed should consider in the next review.

1. *Objective-oriented communication*

   It is the objective that matters. Therefore, the Fed should communicate in a way that ties its specific decisions and actions to the objectives it is aiming to achieve. Such communication is simplified in the sense that it is cast in terms of the goal of maximizing the chances of achieving the targets. It also forces the Fed to be explicit about its handling of the tradeoffs involved in its dual mandate if such tradeoffs emerge.

2. *An inflation target with bands*

   The standard among inflation-targeting central banks is to define an inflation target with specified upper and lower bands around it (see e.g., Davig and Foerster (2023) for a review). For example, the Bank of England's target is formally set at 2%, but the Bank is only required to explain deviations that fall outside a range of 2% $\pm$ 1 percentage

point. Inflation that remains within these bands is not considered problematic. If the Fed adopted symmetric bands of just 50 bps, half that of the Bank of England, inflation persisting around 1.7% would not be concerning. This approach would alleviate worries about relatively small inflation undershoots, reducing the need for the FAIT framework, and the FOMC would similarly overlook periods of inflation slightly above 2%.

Some of the benefits of bands are that they are relatively easier to explain, allow the Fed (and the market) to learn more about the underlying shocks, and reduce the potential for inconsistent communications across Fed officials that we document above. By smoothing the Fed's policy transitions, they could prevent unnecessary market volatility.

3. *Scenario analysis*

   Scenario analysis is gaining attention among policymakers. It is one of the main recommendations for the Bank of England in the Bernanke (2024) review. Schnabel (2024) recently suggested a potential use of scenarios at the ECB. The idea is not completely new. Bordo et al. (2020) recommended the Fed rely on scenarios during the Covid pandemic. Additionally, though much of the current discussion concerns quantitative scenarios, in the past, policymakers communicating that a different-from-current policy may be needed given specific outcomes can be seen as building qualitative scenarios (Cieslak and McMahon, 2024).

   While important practical decisions need to be made in their design, scenarios potentially address several of the points we have raised above. They can help explain the current economic assessment and circumstances that would cause policymakers to change that assessment. They can communicate the reaction function. Finally, by presenting a range of scenarios, the FOMC could communicate uncertainty, with individual policymakers using their own scenarios to present the range of views held.

4. *Communication of outlook and its rationalization*

   The FOMC uses the staff Tealbook forecasts as a basis for deliberations.[54] Communicating the policy decisions involves explaining and justifying the FOMC's economic outlook. This is currently achieved via several communication outlets. The statement and minutes provide a qualitative description of the consensus view and the range of discussions at FOMC meetings. Individual members can reveal their own outlooks in speeches or interviews. Since 2009, the SEP provides a quantitative outlook across 19 FOMC members. The challenges with the SEP are that the dots are not connected within an individual over time, across horizons, and to that individual's macro forecasts. Therefore,

[54] In addition to forecasts of the macroeconomy, Tealbooks also contain scenario analysis; Tealbooks are released to the public with a five-year lag.

the SEP does not communicate how and why policymakers change their views on the appropriate policy path. This can add to the market's confusion about the FOMC's reaction function.

Other major central banks release the full numerical forecast that guides their discussions. In some cases, such as the ECB, it is a staff forecast, similar to the Tealbook; in other cases, as at the Bank of England, it is a forecast that represents the committee's best collective judgment. Releasing the Fed's staff forecast would avoid the need to communicate it verbally as it is currently done (Gáti and Handlan, 2022), or the 19 FOMC members to agree on a forecast. The potential cost is that it would increase attention to the staff forecast and limit their willingness to adapt using subjective judgments. An alternative is to immediately release the full (anonymized but connected) SEP matrix, accepting that speeches would likely reveal each dot's author. The review should consider the costs and benefits of each of these options, as well as other options such as dropping median dots and adding uncertainty bands to economic projections (Kohn, 2019).

5. *Learning about public concerns through existing channels to tailor communication in real time*

   The 2020 revision emphasized the idea of the Fed Listens. While engagement exercises with a broader audience serve a purpose (see below), the FOMC should not neglect the useful feedback on how effective their own communication is from their existing sources. In particular, the Fed staff presumably monitors market economists' briefings, and the communication team monitors the questions during press conferences. These sources can provide a *real-time* indication of whether the Fed's communication is getting through.[55] Monitoring this information systematically would allow the FOMC to determine where they can usefully provide clarification and where they may be adding to uncertainty.

VI.C. Other review considerations

We have focused on the effects of FOMC communication with the market. Our suggestions above relate to that analysis. Here, we mention other areas that warrant the Fed's attention.

Communication with the general public

The 2020 framework review put an emphasis on communication with a wider audience. This matches a general trend across central banks in the last decade to address declining trust

[55] Byrne et al. (2022) show that the questions asked by financial journalists in the Q&A part of the ECB's press conference highlight the issues that the opening statement did not provide sufficient clarification.

in central bank policies since the GFC. However, the final review did not make significant changes to the FOMC communication to make it more accessible (though there have been 21 Fed Listens events with broader audiences since May 2020). The next review should revisit this issue and consider whether it wishes to make such changes.

Growing evidence in the last decade indicates the importance of how central banks communicate with the broader public. Beyond managing expectations of the household and business sector, Haldane and McMahon (2018) argue that there are additional reasons for trying to do so effectively. These include benefits in terms of accountability, the potential to build trust and the ability to listen to a major constituent of the economy. Moreover, because financial markets do not always accurately reflect all information that households or businesses may need to make informed decisions, it is useful for policymakers to convey their outlook directly to a wider audience. A finding from across central banks that try to communicate directly with the public is that it is a hard but nonetheless a worthwhile endeavor (Blinder, 2018).[56]

Many central banks have already taken steps to communicate their monetary policy with a broader audience. The Bank of England and the ECB have both moved to complement their traditional communication with financial markets by providing simplified communication. The Fed should explore such measures, including the introduction of simpler-to-read content that explains objectives and decisions without complex technical language.

Helping researchers to help the Fed

From experience conducting research on the Fed's communication, including this paper, a final recommendation relates to ease of data availability and useability. To begin, it is worth acknowledging that FRED at the St. Louis Fed is an incredible resource. On its own, it likely encourages more analysis of the US. However, not all data is perfectly represented in FRED. For example, to fully work with the New York Fed Surveys of Primary Dealers and Market Participants, researchers like us need to gather the data from individual pdf files.

Finally, having a centralized resource that collects key policymaker speeches and interviews and the associated metadata (such as precise time stamps) is extremely useful. The ECB makes txt files of speeches available for researchers. The now-retired FOMC Speak website

[56]Research is advancing quickly with guidance on what works and what doesn't, see a recent summary by Blinder et al. (2024). Haldane et al. (2021) argue that there are distinct challenges related to explanation, engagement, and education. Most research has focused on the explanation dimension, providing evidence on what messaging works (Coibion et al., 2022, e.g.), and what types of language complexity matter (McMahon and Naylor, 2023), and how understanding is affected by communication by different individuals (D'Acunto et al., 2021).

used to fulfill some of these functions for the Fed, and we encourage it to be brought back in some form.

This suggestion does not merit formal consideration in the next review, but by encouraging more analysis of the Fed's communication it could help answer many questions that remain open today.

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Internet Appendix

Did I make myself clear? The Fed and the market in the post-2020 framework period

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A. Additonal tables and figures

	Dependent variable: FFR IQR			
	1984:07-2019:12		2020:08-2023:12	
	1qtr ahead	4qtr ahead	1qtr ahead	4qtr ahead
CPI IQR	-0.055	0.427***	0.335***	0.077
	(-0.91)	(9.13)	(2.72)	(0.58)
RGDP IQR	0.504***	0.405***	-0.267**	-0.315**
	(8.36)	(8.65)	(-2.29)	(-2.22)
R2	0.23	0.60	0.26	0.11
N	425	426	41	41

Table A-1. Blue Chip survey FFR forecast dispersion explained by dispersion of economic indicators. The table presents regressions of interquartile range (IQR) of Federal Funds rate (FFR) forecasts on the IQR of CPI inflation rate and real GDP growth (RGDP) forecasts. Forecasts are from monthly Blue Chip surveys. Two forecast horizons of the FFR are included, one-quarter and four-quarter ahead. The IQR of CPI and RGDP are using the same forecast horizon as the dependent variable. There are two samples, 1984:07–2019:12 and 2020:08–2023:12, representing periods before and after the introduction of the new framework with the initial COVID period omitted. One-quarter ahead forecast is missing in the 1998:11 survey which leads to one observation less of that column. Regression coefficients are standardized. Robust t-statistics are in parentheses, and *, **, *** denote 10%, 5%, 1% significance levels, respectively.

	Dependent variable: FFR IQR, 2020:08–2023:12					
	1qtr ahead	4qtr ahead	8qtr ahead	1qtr ahead	4qtr ahead	8qtr ahead
Core PCE IQR	0.053	0.064	0.049			
	(0.31)	(0.39)	(0.29)			
Headline PCE IQR				0.407**	-0.038	0.157
				(2.77)	(-0.17)	(1.06)
RGDP IQR	-0.437*	-0.452**	0.084	-0.294	-0.490**	0.104
	(-1.94)	(-2.45)	(0.37)	(-1.34)	(-2.32)	(0.50)
Unemp IQR	0.232	-0.142	-0.251	0.032	-0.130	-0.290
	(0.83)	(-0.66)	(-0.94)	(0.13)	(-0.60)	(-1.19)
R2	0.080	0.33	0.047	0.23	0.32	0.067
N	27	27	27	27	27	27

Table A-2. SPD FFR forecast dispersion explained by dispersion of economic indicators. The table presents regressions of interquartile range (IQR) of Federal Funds rate (FFR) forecasts on the IQR of Core PCE, Headline PCE, real GDP growth (RGDP), and unemployment rate (Unemp) forecasts. Forecasts are from the NY Fed Survey of Primary Dealers (SPD). Three forecast horizons of the FFR are included, one-quarter, four-quarter, and eight-quarter ahead. The IQR of Core PCE, Headline PCE, RGDP, and unemployment rate are using the same forecast horizon as the dependent variable. The sample period is 2020:08–2023:12, representing periods after the introduction of the new framework. Regression coefficients are standardized. Robust t-statistics are in parentheses, and *, **, *** denote 10%, 5%, 1% significance levels, respectively.

Speaker	Position (yy:mm)	Voting (2020+)	FOMC speak	WSJ mention	Speech	Interview	Remarks	Testimony	Other	Chatter box	Chatter box frac
Barkin	Rich (18:01-)	21	53	23	10	9	3		1	14	26%
Bostic	Atl (17:06-)	21	50	31	7	23	1			16	32%
Brainard	Gov (14:06-23:02), ViceCh (22:05-23:02)		42	30	23	1	5	1		13	31%
Bullard	STL (08:04-23:08)	22	104	70	27	30	13			42	40%
Clarida	Gov, ViceCh (18:09-22:01)		24	22	16	6				15	63%
Daly	SF (18:10-)	21	47	28	13	14	1			19	40%
Evans	Chi (07:09-23:01)	21,23	30	26	19	5	2			13	43%
George	Kans (11:01-23:01)	22	32	26	12	9	5			14	44%
Harker	Phil (15:07-)	20,23	62	37	27	9	1			27	44%
Kaplan	Dal (15:09-21:10)	20,23	59	39	1	29	9			10	17%
Kashkari	Min (16:01-)	20,23	19	8	1	6			1	3	16%
Mester	Clev (14:06-)	20,22	81	55	29	22	3		1	24	30%
Powell	Chair (18:02-)		30	30	13	4	7	6		18	60%
Waller	Gov (20:12-)		36	28	23	5	0			22	61%
Williams	NY (18:06-)		38	32	20	7	5			17	45%
Total			687	479						264	38%

Table A-3. Summary of individual Fed officials speaking events. The table reports communications by individual Fed officials, excluding FOMC meeting statements, press conferences, and minutes. Only events with exact time stamps are reported. The sample period is 2020:08–2023:08. The time time stamp and a WSJ mention of the event are required for the FOMC speak-Chatterbox match.

	Yields, $\Delta y^{(n)}$		KW decomp.		CP decomp., $\Delta y^{10}(\text{news}_i)$			
	2y	10y	2y,EH	10y,TP	MP	G	CRP	HRP
				A. Unconditional sensitivity in full sample				
NFPsurp	0.10**	0.054	0.041**	0.032*	0.014	0.046***	0.0060	-0.015
	(2.30)	(1.35)	(2.01)	(1.85)	(0.97)	(4.77)	(0.31)	(-0.64)
$\overline{R}^2$	0.045	0.0074	0.033	0.019	0.0037	0.11	-0.010	-0.0069
N	93	93	93	93	93	93	93	93
				B. Sensitivity in subsamples sample				
$D_{16:01,20:02}\times$NFPsurp	0.077	0.090	0.023	0.052	-0.029**	0.065**	0.019	0.034
	(1.04)	(1.29)	(0.78)	(1.64)	(-2.48)	(2.42)	(0.71)	(0.87)
$D_{20:05,20:12}\times$NFPsurp	0.025***	-0.013	0.011*	-0.0038	0.0072	0.014	-0.018	-0.017
	(2.88)	(-0.18)	(1.94)	(-0.19)	(0.48)	(0.73)	(-0.35)	(-0.23)
$D_{21:01,22:02}\times$NFPsurp	0.056	0.020	0.021	0.017	0.0049	0.030***	0.0049	-0.028
	(1.63)	(0.47)	(1.14)	(0.91)	(0.42)	(4.57)	(0.18)	(-0.98)
$D_{22:03,23:12}\times$NFPsurp	0.37*	0.16	0.16*	0.077	0.12***	0.088**	-0.00014	-0.045
	(1.94)	(0.85)	(1.91)	(0.91)	(3.01)	(2.04)	(-0.00)	(-0.60)
$\overline{R}^2$	0.071	-0.0093	0.059	0.0015	0.13	0.11	-0.043	-0.027
N	93	93	93	93	93	93	93	93

Table A-4. Yield sensitivity to non-farm payroll news. The table reports the regressions of yield changes on surprises in non-farm payroll (NFP) changes (expressed in thousands). The dependent variables are two- and ten-year yield changes (first two columns), changes in two-year short-rate expectations and ten-year term premia using Kim and Wright (2005) estimates ("KW decomp.") and four-factor decomposition of the ten-year yield changes from Cieslak and Pang (2021) ("CP decomp."). The upper panel shows the sensitivity of yields to NFP surprises over the full 2016:01–2023:12 sample. The bottom panel presents per-period sensitivity interacting NFP surprises with subperiod dummies. We exclude three extreme surprises in May, June, and July 2020 which were between 10 and 100 standard deviation events. Excluding these three dates, NFP surprises have a standard deviation of 163 thousand. Robust t-statistics are reported in parentheses.

Dependent variable: 20-day change $(t, t-20)$ in the WSJ-based index of perceived policy mistakes

	KW decomposition			CP decomposition				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta EH2$	-0.053		-0.160					
	(-0.34)		(-0.84)					
$\Delta TP10$		0.195*	0.261**					
		(1.71)	(2.04)					
$\Delta y^{(10)}(MP)$				0.001				0.044
				(0.01)				(0.34)
$\Delta y^{(10)}(G)$					-0.152			-0.122
					(-1.28)			(-0.96)
$\Delta y^{(10)}(CRP)$						0.346***		0.347***
						(3.68)		(3.38)
$\Delta y^{(10)}(HRP)$							-0.155	-0.219**
							(-1.42)	(-2.47)
R^2	0.00	0.04	0.06	0.00	0.02	0.12	0.02	0.17
N	890	890	890	890	890	890	890	890

Table A-5. Term premia and perceptions of policy mistakes (contemporaneous). The table reports regressions of changes in the WSJ-based policy mistakes index on changes in yield components. The dependent variable is the change between t and $t-20$ in the 20-day average mistakes index (plotted in Figure 14). The explanatory variables are components of yield changes between t and $t-20$. Columns (1)–(3) are for changes in two-year short-rate expectations and ten-year term premia using Kim and Wright (2005) estimates ("KW decomposition") and columns (4)-(8) are for the four-factor decomposition of the ten-year yield changes from Cieslak and Pang (2021) ("CP decomposition"). The sample period is 2020:08–2023:12. The regressions are estimated at the daily frequency. HAC t-statistics with 36 lags are reported in parentheses.

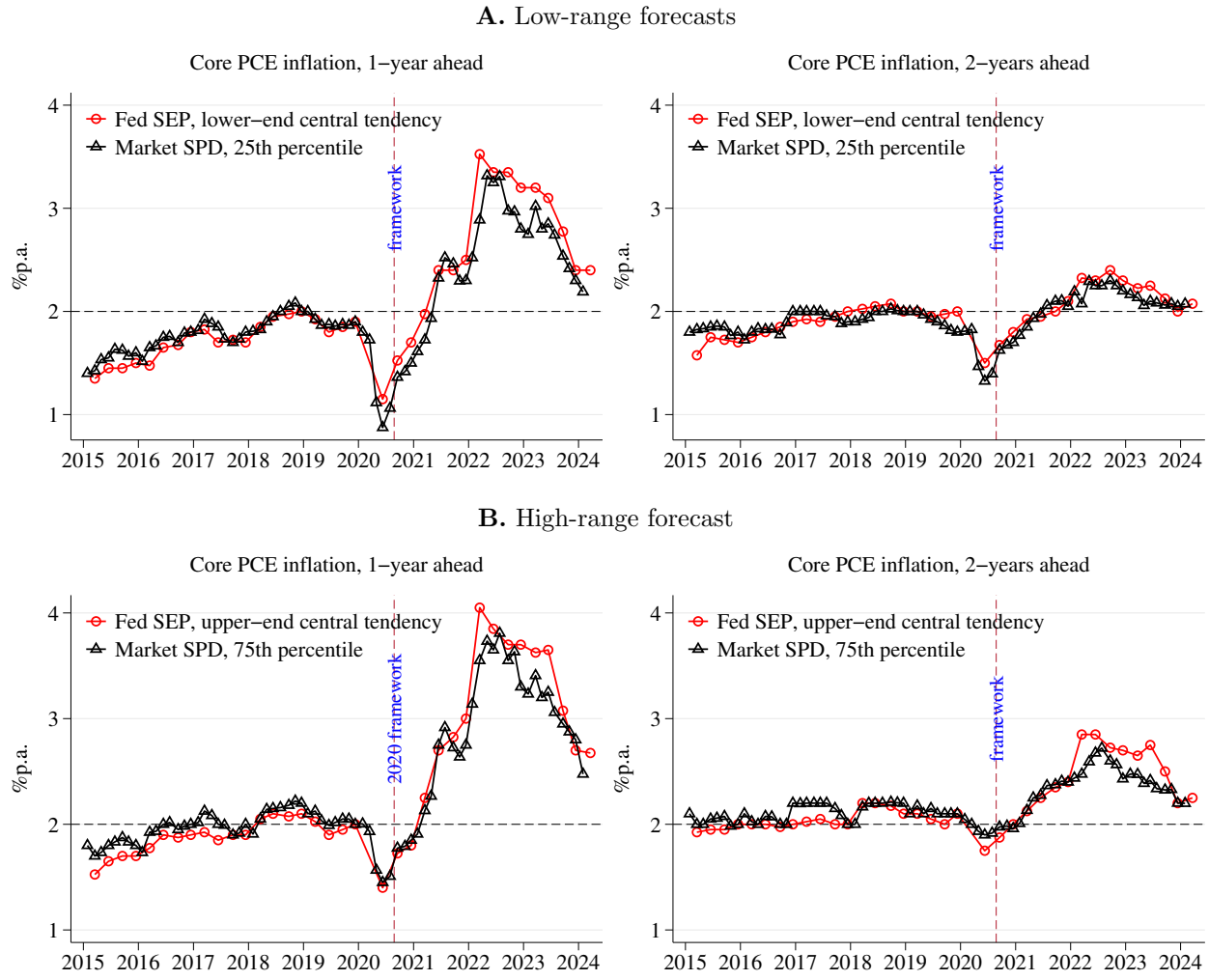

Figure A-1. Inflation expectations of the Fed and market participants. The figure compares core PCE inflation expectations of the FOMC participants from the Summary of Economic Projection (SEP) with the projections from the NY Fed Survey of Primary Dealers (SPD). Both for SEP and SPD, we convert a fourth-quarter to fourth-quarter forecast to a fixed horizon forecast one year ahead (i.e., annual inflation rate starting from today) and two years ahead (i.e., annual inflation rate starting one year from today). The upper panels report lower-range forecasts. The bottom panels report high-range forecasts. For the SPD, these are the 25th and 75th percentile forecasts; for SEP, these are the minimum and maximum central tendency forecast after excluding the three lowest and highest individual forecasts. As there are typically 17 participants in the SEP, the low and high forecasts correspond to roughly 18th and 82th percentiles.

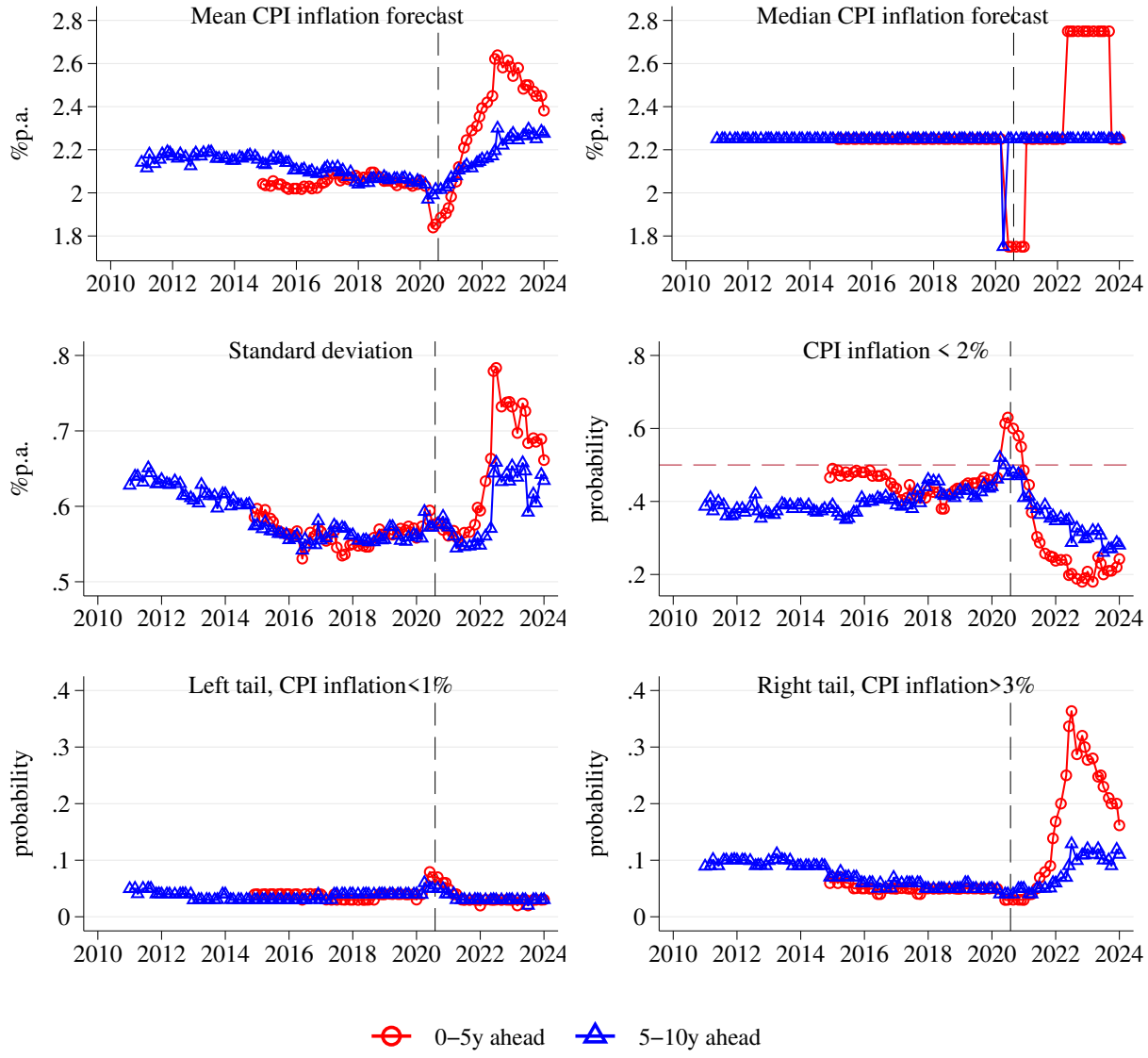

Figure A-2. Inflation distributions perceived by market participants in SPD. The figure plots the CPI inflation distribution forecasts from the NY Fed Survey of Primary Dealers (SPD). In the survey, forecasters are asked to provide a probability distribution of the average CPI inflation rate over the next five years (0-5y ahead, red circles) and over the five-year period that begins five years from now (5-10y ahead, blue triangles). The 0-5y ahead inflation distribution question was only asked since 2015. Probabilities are provided for the CPI inflation rate falling within 0.5%-wide bins. The survey does not have a lower (upper) bound for the lowest (highest) bin. We manually set those extreme bins to 0.5% bin width. We verify that conclusions remain unchanged with an alternative approach having a much wider extreme boundaries using the average$\pm$2.5$\times$standard deviation of the realized inflation rate during the trailling 24-month period. The mean, median, and standard deviation are calculated using the mid-value of each bin. The tail probabilities are obtained by summing probabilities of all bins whose upper (lower) bounds are below (above) a certain threshold. The vertical line in each plot marks August 2020.

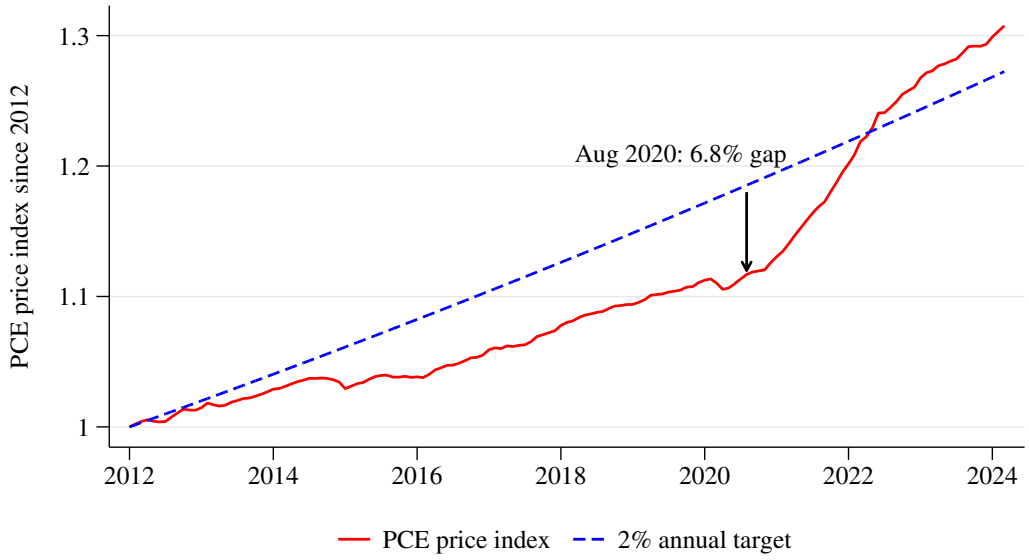

Figure A-3. PCE price index path since 2012. The figure compares the PCE price index change since January 2012 to March 2024 with a hypothetical 2 percent annual increase target path. The arrow denotes the inflation rate shortfall on August 2020 if the price level targeting is adopted and the starting point is set to be January 2012.

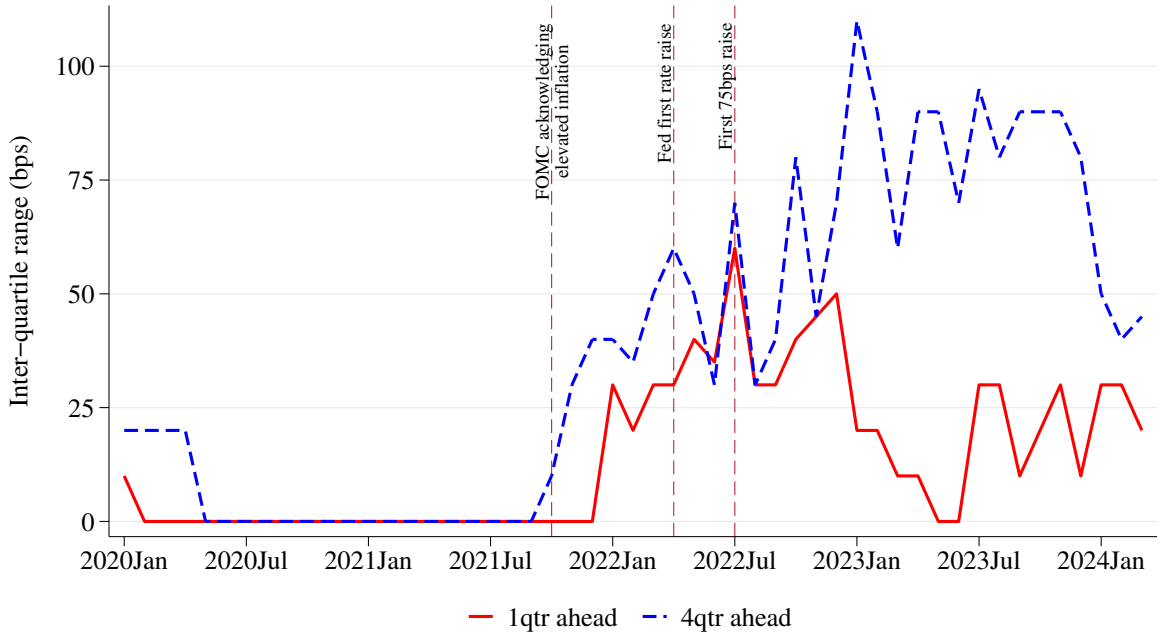

Figure A-4. FFR forecast dispersion in the Blue Chip (BC). The figure plots the Federal funds rate (FFR) forecast dispersion from the Blue Chip survey. Two forecast horizons are plotted. Red and blue lines are for the one-quarter and four-quarter ahead forecasts, respectively. Dispersions are measured as the inter-quartile (75th-25th) range across participants. There are typically around 50 participants in the BC.

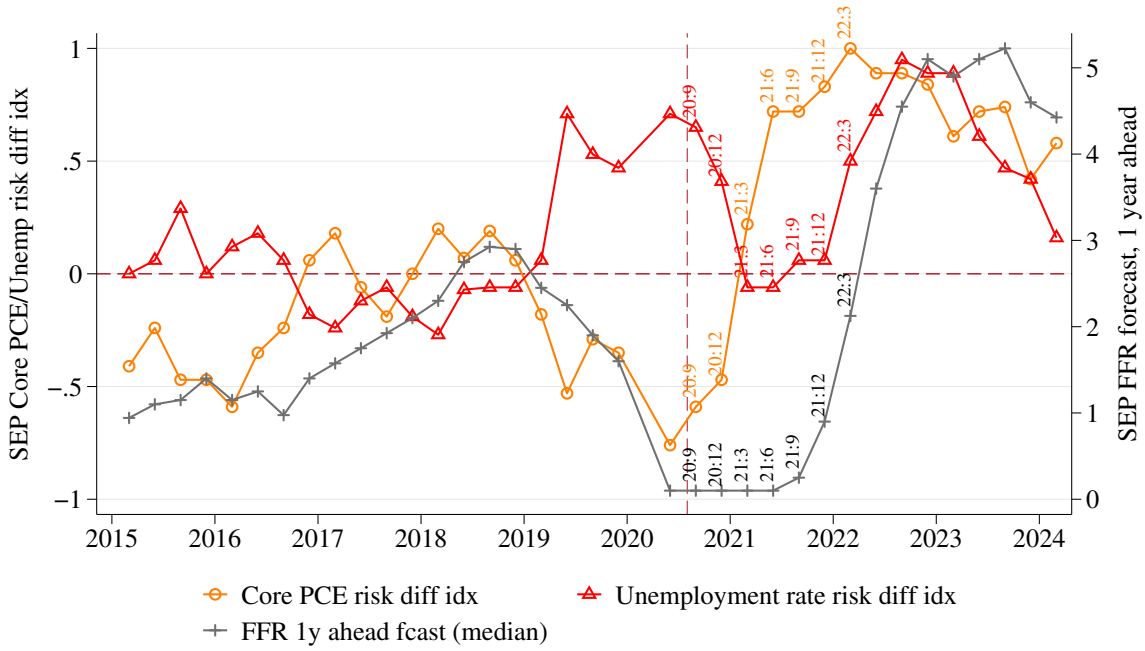

Figure A-5. FOMC inflation and unemployment risk assessment in SEP. The figure plots the risk diffusion index of the FOMC participants for the core PCE inflation and the unemployment rate against the FOMC's projections of the FFR path one year ahead. The risk diffusion index equal to 1 means that all participants perceive risks weighted to the upside of their forecasts.

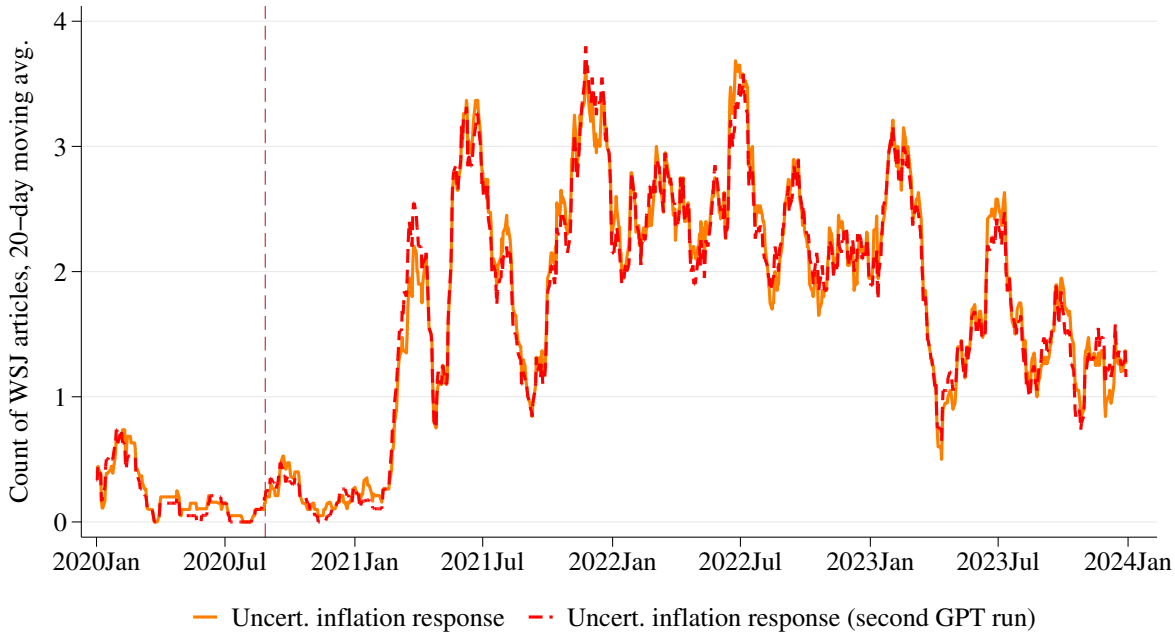

Figure A-6. Robustness: Public perceptions of reaction function uncertainty. The figure presents proxies for public perceptions of uncertainty about the Fed's reaction to inflation obtained from two independent runs of GPT. The solid line reports the inflation reponse uncertainty from Figure 8 in the main text. The indices are daily counts of WSJ articles that are classified as suggesting uncertainty about the Fed's response to inflation. The daily counts are smoothed with a 20-day moving average for the purposes of the graph.

B. Fed officials' quotes surrounding the 2020 framework

- Desirability of overshooting the 2% inflation target

> "What I think will be surprising a little bit to markets is that the economy will continue to improve, possibly more rapidly than financial markets currently think, and yet the Fed will just keep with its current policy. – Bullard (10/06/2019, WSJ)

> "I view the policy of the FOMC really is to make sure we achieve our 2% symmetrical. And that means, inflation, we want to be around 2%—of course, that means sometimes a little bit above." — Williams (12/18/2019, CNBC)

> "We need to clarify what we mean by symmetric inflation objective, we've been underrunning our 2% objective for pretty much as long as we've announced our 2% objective back in 2012. I think we need to overshoot, I think we need to be not concerned with inflation even if it is up to 2.5% on a sustained basis. I think we need a framework that acknowledges what is acceptable in a much more explicit fashion. I think there's too much artfulness in the way it's described now." — Evans (01/03/2020, Bloomberg)

- Removing preemptive inflation strikes

> "And with inflation exhibiting low sensitivity to labor market tightness, policy should not preemptively withdraw support based on a historically steeper Phillips curve that is not currently in evidence. Instead, policy should seek to achieve employment outcomes with the kind of breadth and depth that were only achieved late in the previous recovery." — Brainard (07/14/2020, Speech)

> "I've also said publicly with the new framework we don't want to be pre-emptive [..] I'd say there's a balance between not being pre-emptive, but you also don't want to be–in our efforts to not be pre-emptive, you also don't want to become reactive and behind the curve. — Kaplan (04/07/2021, WSJ)

- Recognizing the need to earn credibility for the new framework

> "We need them to be anchored in a level—at a level that's consistent with our symmetric 2 percent inflation goal. And we think that we need to conduct policy in a way that supports that outcome. That's what we're doing now.
>
> [. . .] That's at the very heart of what we're doing in the review. It's too early to be announcing decisions. We haven't made them yet. But we're in the middle of thinking about ways that we can make that symmetric 2 percent inflation objective more credible by achieving symmetric 2 percent inflation. And it comes down to using your policy tools to achieve 2 percent inflation, and that is the—that is the thing that must happen for credibility in this area. So we're committed to doing that." — Powell (10/30/2019, Press Conference)

"You know, this is all about credibility, and we understand perfectly that we have to earn credibility. This, this facility—this, this framework has to—we have to support it with our actions. [...] We would like to see and we will conduct policies so that inflation moves, for some time, moderately above 2%. So it won't be—these won't be large overshoots, and they won't be permanent but to help anchor inflation expectations at 2%." — Powell (09/16/2020, Press Conference)

"Our framework aims ex ante for inflation to average 2% over time, but it does not make a time-inconsistent commitment to achieve ex post inflation outcomes that average 2% under any and all circumstances and constellations of shocks." – Clarida (11/16/2020, Brookings)