When the Fed Reveals Its Hand: The SEP and Monetary Policy Surprises

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Abstract

Recent advances in high-frequency identification of monetary policy shocks reveal that measures are contaminated by information and news effects. We contribute to this literature by incorporating the intermittent release of central bank projections, i.e. the Summary of Economic Projections (SEP). We develop a theoretical framework showing that forecast releases amplify monetary policy surprises by providing additional information beyond what is conveyed through interest rate decisions alone and by anchoring expectations during non-release meetings. We confirm empirically that monetary policy surprises following SEP releases are typically 2 to 3 times larger than those without releases. To identify the information effects, we construct novel SEP surprise measures using a Bloomberg survey of market expectations about Federal Reserve projections. SEP surprises explain about 30 percent of the variation in monetary policy surprises during SEP meetings and account for essentially all of the differences between SEP and non-SEP meetings. Finally, to validate that SEP surprises contain economically meaningful information, we show that individual forecasters update their expectations of core PCE inflation in response to both common and their own idiosyncratic SEP surprises.

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1 Introduction

The identification of exogenous monetary policy shocks is a central challenge in macroeconomics, with important implications for understanding how monetary policy transmits through the economy. Reliable identification is essential for measuring the effects of monetary policy.[1] High-frequency identification strategies (Kuttner, 2001; Gürkaynak et al., 2005) have emerged as a leading approach to study the effects of monetary policy by using narrow event windows around policy announcements to isolate unexpected changes.

However, even these measures may be contaminated by multiple distinct information components. Recent research shows that monetary policy surprises, as measured by high-frequency interest rate changes around central bank announcements, can also include the central bank's response to news (Bauer and Swanson, 2023a,b) and/or central bank information effects (Nakamura and Steinsson, 2018; Jarociński and Karadi, 2020, 2025; Miranda-Agrippino and Ricco, 2021). This complicates the interpretation and application of high-frequency monetary policy surprises.

We focus on an important new feature of central bank communication—the intermittent release of projections through the Summary of Economic Projections (SEP). The recurring releases allow us to identify the central bank information effect because the information shared with the public varies from meeting to meeting. We extend the theoretical frameworks of Bauer and Swanson (2023a) and Jarociński and Karadi (2025) to include the intermittent release of a proxy of central bank forecasts to the private sector. We show that monetary policy surprises following a central bank forecast release are likely to be larger than those following a non-release due to the anchoring of expectations during non-release meetings and the additional information beyond interest rate decisions provided at release meetings. Furthermore, our framework implies that if the forecast release is a good proxy for the central bank's actual forecast, then after controlling for differences in the forecast surprises the monetary policy surprises should be similar.

We confirm these findings empirically using the Federal Reserve as a case study. In line with our theoretical model, across a range of widely-used high frequency measures we show that since the Federal Open Market Committee (FOMC) started releasing the SEP in conjunction with their statements in 2013, monetary policy 'shocks' following meetings with SEP releases have been significantly larger than those for non-release meetings. Next, using a unique Bloomberg survey that asks specifically about what respondents expect the FOMC's median projections to be, we generate SEP

[1] Monetary policy shock identification dates at least back to Romer and Romer (1989, 2004), Bernanke and Blinder (1992), and Christiano et al. (1999) albeit with notable critiques from Leeper et al. (1996) and Uhlig (2005).

surprises as the difference between the survey and the median SEP forecast. We identify the effect of these SEP surprises on monetary policy surprises and show that they explain up to 30 percent of the variation in monetary policy surprises during SEP meetings. This accounts for essentially all the difference in monetary policy surprises between SEP and non-SEP meetings. Finally, we show that individual forecasters update their expectations of core PCE inflation in response to both common and their own idiosyncratic SEP surprises. Our results show that SEP releases convey material information about Fed views beyond what markets infer from interest rate decisions alone.

This paper contributes to the literature on identifying monetary policy shocks by providing a method for decomposing high-frequency surprises to account for information revealed in projection releases. At least since Gürkaynak et al. (2005) it has been acknowledged that monetary policy surprises contain information about multiple types of policies. Several studies, e.g. Swanson (2021, 2024) and Jarociński (2024), have sought to separately identify the effects of forward guidance and quantitative easing (or large-scale asset purchases). We provide a new approach for identifying the effects of communication policy specifically in the form of the SEPs using surprises relative to what markets expected the FOMCs views were. We also show that this information differs quite substantially from what others have identified and matters for a range of monetary policy measures.

This paper is closely related to Hubert (2025) who exploits a unique institutional feature in which up until 2015 the Bank of England released their inflation forecasts 4 days after the monetary policy decision to separately identify the financial market response. Hubert finds an interaction between the monetary policy surprise and the forecast release surprise which he interprets as the forecast releases dampening central bank information effects by helping markets solve their signal extraction problem. We extend this line of inquiry in several key ways. First, we consider the setting wherein a central bank releases their forecasts intermittently but simultaneously with monetary policy decisions and show that the monetary policy surprises associated with forecast releases are larger. Second, we find that these differences disappear once we remove the unique contribution of the forecast release surprise. Third, we show that these forecast surprises contain economically meaningful information by showing that individual forecasters update their own economic projections in response to both the common and idiosyncratic SEP surprises.

The paper is also related to Miranda-Agrippino and Ricco (2021) who argue that controlling for Federal Reserve Board staff forecasts helps to capture the signaling effect of monetary policy. Additionally, it relates to Romer and Romer (2008) who show that staff forecasts are a key input into, and are more accurate than, the FOMC forecasts, and that deviations between them filters into

monetary policy surprises. While Bauer and Swanson (2023b) find that the staff forecasts no longer matter once news is controlled for, we focus instead on the publicly released FOMC forecasts. We find that even after controlling for news, the difference between the FOMC's forecasts and private sector expectations thereof matter for monetary policy surprises.

The paper also contributes to the literature on analyzing the FOMC's forecasts. Evaluations of the FOMC's forecasts date at least back to Gavin and Mandal (2003) with subsequent papers including Romer (2010), Sheng (2015), Hubert (2015), Arai (2016), Kalfa and Marquez (2019, 2021), Marquez (2023), Hendry et al. (2024), Arai and Chang (2025), Cole (2025) and Gonzalez-Astudillo and Tanvir (2026). We extend the literature by comparing them against financial market expectations of the FOMC's views and how these have evolved along with the policy implications.

While one might intuitively expect that more transparent communication should reduce market surprises, information theory suggests the opposite (Shannon, 1948; Sims, 2003): effective communication that reveals previously unknown information should generate larger reactions. When the SEP conveys meaningful information about the Fed's internal forecasts and economic views beyond what can be inferred from the interest rate decision alone, markets update their beliefs more substantially, producing larger measured surprises. This perspective reframes the identification challenge: the "contamination" in traditional shock measures is evidence that projection releases serve their intended purpose of providing additional policy-relevant information to the public. Our framework allows us to quantify this information content.

The rest of the paper proceeds as follows. The next section discusses the theoretical framework and its two testable predictions. Section 3 illustrates the differences in monetary policy surprises between SEP and non-SEP meetings. Section 4 starts by describing the unique Bloomberg survey and how we construct SEP surprises. Then it discusses the methods we use to disentangle the effects of SEP surprises from monetary policy surprises and presents the results. Section 5 revisits whether monetary policy surprises matter for private forecast revisions. Finally, section 6 concludes.

2 Theoretical Framework

In this section we develop a simple theoretical framework in which the selective release of central bank forecasts creates a wedge between monetary policy surprises for meetings with and without releases. We start with the framework used in Bauer and Swanson (2023a) and subsequently extended in Jarociński and Karadi (2025) and then augment it further to generate empirically

testable predictions based on whether or not the central bank releases a proxy of its forecasts.

2.1 Imperfect Information

Bauer and Swanson (2023a) propose a simple model with imperfect information. There are two agents in the economy: the private sector and the central bank. The output gap x_t is perfectly observed by all agents at each time period t, and follows an AR(1) process

$$x_t = \rho x_{t-1} + \eta_t; \quad \eta_t \overset{iid}{\sim} N(0, \sigma_\eta^2), \tag{1}$$

where $\rho \in [0, 1)$ and η_t is exogenous.

In each period t, after x_t is observed, the central bank sets the interest rate i_t according to a linear monetary policy rule

$$i_t = \alpha x_t + \epsilon_t; \quad \epsilon_t \overset{iid}{\sim} N(0, \sigma_\epsilon^2), \tag{2}$$

where ϵ_t is exogenous and $\alpha > 0$ denotes the responsiveness to the output gap. The parameter α is known by the central bank but is not known or observed by the private sector.[2] All other parameters are known by all agents. x_t and i_t are observed by all agents but ϵ_t is never observed by the private sector. Let $\mathbb{I}_t = \{i_t, x_t, i_{t-1}, x_{t-1}, ...\}$ denote the available information up until time t.

In each period, the private sector starts with a distribution of beliefs about $\alpha \sim N\left(\hat{\alpha}_t, \sigma_{\alpha t}^2\right)$, such that $\mathbb{E}_t\left[\alpha | \mathbb{I}_{t-1}\right] = \hat{\alpha}_t$. Thus, when x_t is realized, but before the central bank announces i_t, the private sector's expectations for current and future interest rates, i_{t+j} for $j = 0, 1, 2, ...$, are

$$\mathbb{E}_t\left[i_{t+j} | x_t, \mathbb{I}_{t-1}\right] = \mathbb{E}_t\left[\alpha x_{t+j} | x_t, \mathbb{I}_{t-1}\right] = \hat{\alpha}_t \rho^j x_t. \tag{3}$$

After the central bank announces its interest rate, i_t, the private sector is surprised by the amount

$$mps_t \equiv i_t - \mathbb{E}_t\left[i_t | x_t, \mathbb{I}_{t-1}\right] = \left(\alpha - \hat{\alpha}_t\right) x_t + \epsilon_t. \tag{4}$$

where the first term captures the different private sector and central bank reactions to the same information and is what Bauer and Swanson (2023a) refer to as the "response to news effect". The residual, ϵ_t, is assumed to be the monetary policy shock.

[2] Note that Bauer and Swanson (2023b) extends the framework to allow for time-varying α_t. We abstract from that innovation here but allowing for it does not change the implications of our results.

2.2 Imperfectly Observable Data

Jarociński and Karadi (2025) effectively extend this framework to allow for the fact that neither the central bank nor the private sector observe the true output gap. Instead, they both observe it imperfectly with different sources of noise such that

$$\begin{aligned} \tilde{x}_t^{CB} &= x_t + v_t^{CB}; \quad v_t^{CB} \overset{iid}{\sim} N(0, \sigma_{CB}^2), \\ \tilde{x}_t^{PS} &= x_t + v_t^{PS}; \quad v_t^{PS} \overset{iid}{\sim} N(0, \sigma_{PS}^2), \end{aligned} \tag{5}$$

where the former is only observed by the central bank and the latter is observed by the private sector. When the central bank sets the interest rate, it does so based on its own data

$$i_t = \alpha \tilde{x}_t^{CB} + \epsilon_t, \tag{6}$$

whereas the private sector forms its beliefs based on its own measure of the output gap

$$\mathbb{E}_t \left[i_{t+j} | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS} \right] = \mathbb{E}_t \left[\alpha x_{t+j} | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS} \right] = \hat{\alpha}_t \rho^j \tilde{x}_t^{PS}. \tag{7}$$

Thus, after the central bank announces its interest rate, the monetary policy surprise is

$$mps_t \equiv i_t - \mathbb{E}_t \left[i_t | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS} \right] = (\alpha - \hat{\alpha}_t) \tilde{x}_t^{PS} + \alpha \left(\tilde{x}_t^{CB} - \tilde{x}_t^{PS} \right) + \epsilon_t, \tag{8}$$

where the first term in Eq. (8) is the "response to news effect" as above in Eq. (4). The second term is what Jarociński and Karadi (2025) refer to as a "central bank information effect" governed by differences between private sector and central bank information about the state of the economy. The final term, ϵ_t, is assumed to be the monetary policy shock.

2.3 Lumpy Forecast Releases, Imperfect Proxies, and Anchored Expectations

We adapt the framework further in two key ways. First, we assume the central bank releases a proxy of its forecasts to the private sector along with the interest rate decision

$$s_t = \tilde{x}_t^{CB} + v_t^S; \quad v_t^S \overset{iid}{\sim} N(0, \sigma_S^2), \tag{9}$$

where v_t^S governs how good of a proxy to the central bank's actual forecasts is released. This is a realistic formulation of what the Federal Reserve provides in its Summary of Economic Projections (SEP). The market often considers the median projection to be the FOMC's forecast, but it is only a proxy of what the committee might be focused on during FOMC meetings. Second, we add another realistic feature following the FOMC's SEP releases that the central bank's forecast releases do not occur every meeting. Instead there are two types of meetings, $R_t = \left\{ \begin{array}{cc} 1 & 0 \end{array} \right\}$, where when $R_t = 1$ the central bank releases their forecasts and when $R_t = 0$ they do not.

We make two simplifying assumptions for ease of exposition. First, we assume that the central bank only makes major updates to its forecasts when they are published. Second, we assume that on non-release dates the private sector anchors their expectations to the previous forecast release.

While it is useful to assume that the central bank only updates its forecasts when they are released, it is an oversimplification that we will relax below. For example, Federal Reserve Board staff update and share their forecasts internally with the FOMC before every meeting.[3] However, FOMC member projections are only systematically collected and compiled into a published forecast for SEP meetings. While individual members' views may evolve between SEP releases, the committee does not have an explicit coordination mechanism to update the consensus view.

Assuming that the private sector treats central bank forecasts as unchanged outside of releases is consistent with guidance from the Chair of the FOMC. For example, during the February 5 2024 press conference following a non-SEP meeting, Jerome Powell stated: "I would point you to the SEP as - you know, as good evidence of where people are, although it is one cycle later." Similarly, during a speech at the Jackson Hole conference in August 2022, Chair Powell repeatedly referenced the previous SEP released in June as evidence for where the committee was, again indicating that SEP forecasts serve as an anchor point for understanding Fed views between releases.[4] This is reinforced by the fact that the forecasts for the Federal Reserve's publicly facing FRB/US model, which is widely used by financial market participants, are based on the median SEP forecasts and are only updated after each release. Thus both internally and externally there is a substantial difference between the quality of signal received for SEP meetings versus non-SEP meetings.

Our framework implies that there are two different situations we need to consider, when the central bank releases their forecasts and when they do not. We focus on these cases independently.

[3]Historically staff have updated key forecasts at roughly a weekly frequency; see Chang and Levinson (2023).

[4]See Powell, J. H. (2022) "Monetary Policy and Price Stability", Speech at "Reassessing Constraints on the Economy and Policy," an economic policy symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, https://www.federalreserve.gov/newsevents/speech/powell20220826a.htm (Last Accessed October 31, 2025)

Central Bank Forecast Release ($R_t = 1$)

First, consider the case where the central bank releases their forecast and the private sector assumes the forecast will be updated to reflect the latest data estimated using their own sources

$$\mathbb{E}_t\left[i_{t+j}|\tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, R_t = 1\right] = \mathbb{E}_t\left[\alpha x_{t+j}|\tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, R_t = 1\right] = \hat{\alpha}_t \rho^j \tilde{x}_t^{PS}. \tag{10}$$

After the central bank announces its interest rate $i_t = \alpha \tilde{x}_t^{CB} + \epsilon_t$, the monetary policy surprise is

$$mps_{t,R_t=1} \equiv i_t - \mathbb{E}_t\left[i_t|\tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, R_t = 1\right] = (\alpha - \hat{\alpha}_t)\,\tilde{x}_t^{PS} + \alpha\left(\tilde{x}_t^{CB} - \tilde{x}_t^{PS}\right) + \epsilon_t, \tag{11}$$

which is identical to Jarociński and Karadi (2025) where there is both a "response to news effect" and a "central bank information effect" capturing the difference between what the central bank and the private sector expect. Thus, when both the central bank and private sector update their forecasts, the private sector learns about the central bank's information set. The forecast release allows for this to be measured directly, as demonstrated by Hubert (2014, 2025).

No Central Bank Forecast Release ($R_t = 0$)

For cases where the central bank does not release their forecast, the key feature is that the private sector anchors its expectations to the central bank's forecast release and assumes that it continues on the same trajectory so that their expectations prior to an announcement are

$$\mathbb{E}_t\left[i_{t+j}|\tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0\right] = \mathbb{E}_t\left[\alpha x_{t+j}|\tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0\right] = \hat{\alpha}_t \rho^{j+1} s_{t-1}. \tag{12}$$

If the central bank sets interest rates based on the same trajectory $i_t = \alpha\rho\tilde{x}_{t-1}^{CB} + \epsilon_t$, the surprise is

$$mps_{t,R_t=0} \equiv i_t - \mathbb{E}_t\left[i_t|\tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0\right] = (\alpha - \hat{\alpha}_t)\,\rho\tilde{x}_{t-1}^{CB} - \hat{\alpha}_t\rho v_{t-1}^{S} + \epsilon_t, \tag{13}$$

where $\hat{\alpha}_t\rho v_{t-1}^S$ captures how well the forecast release serves as a proxy for the actual forecasts. If the forecast release is a perfect proxy, meaning $\sigma_S^2 = 0$, this term disappears (because v_{t-1}^S=0 for all t) and the monetary policy surprise is identical to the model in Bauer and Swanson (2023a) such that all that matters is the "response to news effect" and the monetary policy shock. Thus, as long as the private sector anchors its expectations to the forecast release and the central bank does not substantively alter its trajectory then the "central bank information effect" disappears.

We can relax our assumptions to allow the central bank to update its forecasts at every meeting and also allow the private sector to become partially unanchored.[5] This adds additional terms to Eq. (13) and implies that identification of the monetary policy 'shock' is more complex; see Appendix A.1 for details. However, the differences between release and non-release surprises will remain as long as the private sector partly anchors their expectations to the proxy forecast release and the underlying data generation process exhibits some persistence.

The differences between the forecast release and non-release cases imply several empirically testable predictions. First, the monetary policy surprises following a central bank forecast release are likely to be larger in an absolute sense than those following a non-release. Formally this means

$$\mathbb{E}(|mps_{t,R_t=1}|) \geq \mathbb{E}(|mps_{t,R_t=0}|),^{6}$$

which reflects both the anchoring of private sector expectations to the central bank's existing forecast on non-release meetings and the fact that the central bank's update of their forecasts during release meetings provides the private sector with information about their anticipated trajectory beyond what is conveyed through interest rate decisions alone.

Second, our framework implies that if the central bank's forecast release is a reasonably good proxy for their actual forecast, then after controlling for differences in the forecast surprises, the monetary policy surprises for release and non-release meetings should be of similar magnitude.

The next two sections are devoted to testing our model's two predictions in the context of the Federal Reserve. In the next section we assess whether the first prediction holds across a number of alternative measures of high frequency monetary policy surprises. The subsequent section uses a unique Bloomberg survey to assess the relevance of our model's second prediction.

3 Monetary Policy Surprises Are Different for SEP Meetings

3.1 The Summary of Economic Projections

The FOMC has released the SEP on a semi-regular basis for almost two decades. The first release was as an addendum to the FOMC minutes roughly one month after the October 2007 meeting. It

[5] E.g. see Miranda-Agrippino and Williams (2026) for evidence that market participants update their interest rate expectations in response to macroeconomic news outside Fed announcements.

[6] Under the assumption of normality with a zero mean, the expected value of the absolute value of x, is just a rescaled function of the variance of x. Thus, under our assumptions an inequality in mean absolute values implies that a similar inequality should hold for the variances.

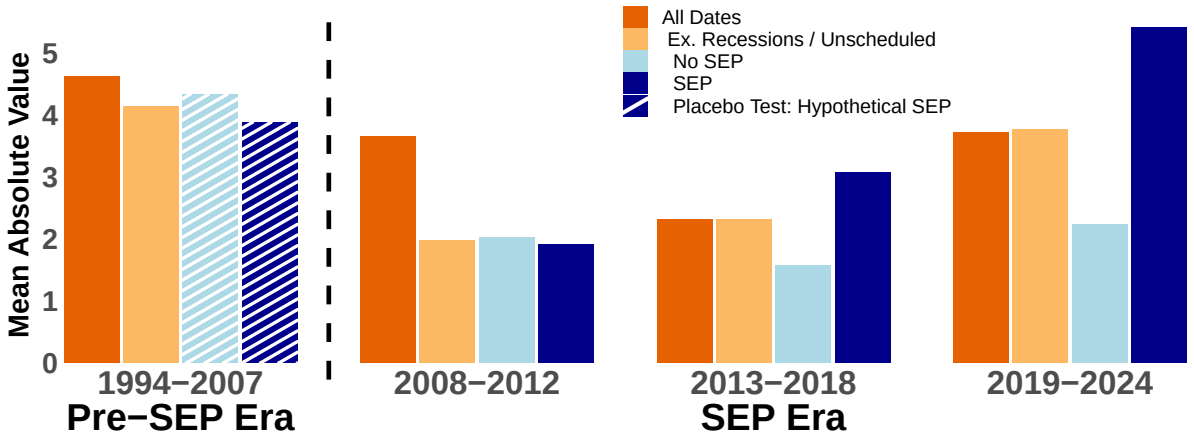
presented the FOMC's forecast ranges and central tendencies for real GDP growth, the unemployment rate, PCE inflation, and core PCE inflation for the current year out through 3 years ahead. Speaking just after the initial release, then-FOMC chair Ben Bernanke argued that the SEP should be viewed as "a forecast, a provisional plan, and an evaluation of certain long-run features of the economy" (Bernanke, 2007).

The SEP has gone through several notable changes which have sought to increase clarity about the FOMC's views on the economic outlook. It was initially released with the minutes following the January, April, June, and October (or November) meetings with forecasts going out through 2-years-ahead except after the October/November meetings when they would extend to 3-years-ahead. In April 2009 forecasts of long-run for real GDP growth, the unemployment rate, and PCE inflation were added.[7] Starting in April 2011, the release schedule was moved up to just prior to the post-FOMC press conference. In 2012 forecasts of the Federal Funds Rate were included (i.e. the "dot plot") and the release schedule was changed such that it became every other meeting in March, June, September, and December.[8] Since 2013, the SEP has been released coincidentally with the monetary policy statement. Most recently, in September 2015, the median forecasts were published along with the central tendency and ranges. Since then there have been additional changes in how uncertainty about the forecasts is communicated.[9]

3.2 Monetary policy surprises by meeting type

Next, we examine whether monetary policy surprises, as measured using alternative high frequency approaches in the literature, are systematically different between SEP and non-SEP meetings. We first visually examine the series of orthogonalized monetary policy surprises from Bauer and Swanson (2023a). This measure, which controls for the response to news effect, should not contain any systematic information. We plot the mean absolute value of the series over the pre-SEP era from 1994-2007 and then the SEP era with sub-samples from 2008-2012 (delayed releases), 2013-2018 (concurrent releases), and 2019-2024 (all press conferences). We focus on regularly scheduled meetings excluding recessions and decompose them into SEP and non-SEP release meetings for the SEP era. We also consider a simple placebo test for the pre-SEP era.

[7] Long-run core PCE inflation forecasts are typically assumed to be 2%; see Gonzalez-Astudillo and Tanvir (2026).
[8] 3-year-ahead forecasts following both the September and December meetings.
[9] There are different views on the effectiveness of these changes; e.g. see Bernanke (2016) and Sahm (2024).



Notes: Each bar represents the mean absolute value of the respective sample. Striped bars denote placebo test for hypothetical SEP dates based on the typical March, June, September, December schedule.

Figure 1: Mean Absolute Monetary Policy Surprises by Era and Subsample

Figure 1 shows that, since 2013, meetings for which the SEP was released in conjunction with the FOMC statement (i.e., those following the March, June, September, and December meetings) exhibit larger surprises (in absolute terms) than FOMC meetings without releases (January or February, April or May, July or August, and October or November).[10] Note that between 2008 and 2013 the SEP was released after the FOMC statement, either with the minutes several weeks later (2008-2011) or 1 hour after the FOMC statement but prior to the press conference (2011-2012).

Notably, as a control case, the pre-SEP era reveals that surprises are nearly identical between the meetings across the dates. If shocks or other meeting-specific factors were systematically larger for seasonal or institutional reasons unrelated to forecast releases, we should observe similar patterns before 2008. We do not. Similarly, in the period from 2008-2012 when the SEP release was delayed, and therefore not captured in the 30-minute event window, we see no differences across meeting types. Finally, the results are not driven by the occurrence of press conferences, which are outside the event window. The differences are largest since 2019 when all meetings had press conferences.[11] Thus, differences do not appear to be because financial markets view these meetings differently (i.e. "live" vs. "dead"), rather differences appear to be driven by the release of additional information.

Next, we examine whether the differences between SEP and non-SEP meetings are statistically significant. We consider many alternative monetary policy surprises from the literature based on a variety of high frequency approaches which are publicly available and have been updated recently.

[10] Appendix Figure A.5 shows similar results for the standard deviations.

[11] If press conferences are included, following Acosta et al. (2025), we see larger differences from 2013-2018 when press conferences were intermittent but continue to see differences in SEP and non-SEP meetings since 2019.

Specifically, the measures we include are from Kuttner (2001), Gürkaynak et al. (2005, "GSS"), Gertler and Karadi (2015), Nakamura and Steinsson (2018), Bu et al. (2021, "BRW"), Bauer and Swanson (2023a), Jarociński (2024), and Jarociński and Karadi (2025).[12]

We ask the question: Are monetary policy surprises associated with meetings with SEP releases significantly different from those without SEP releases? To answer this we estimate the following regression for alternative measures of monetary policy surprises

$$|mps_{i,t}| = \beta_{i,0} + \beta_{i,1}\mathbb{1}_{\{SEP=1\}} + e_{i,t} \tag{14}$$

where $|mps_{i,t}|$ is the absolute value of some monetary policy surprise measure i at time t, $\beta_{i,0}$ captures the measure-specific mean absolute value of the monetary policy surprises for regular FOMC meetings without SEP releases while $\beta_{i,1}$ captures how much the measure-specific mean absolute value of monetary policy surprises for regular FOMC meetings with SEP releases differs from the non-SEP meetings, $e_{i,t}$ is the measure specific residual. Thus, we are interested in whether $\beta_{i,1} \neq 0$ such that SEP releases contribute to monetary policy surprises.

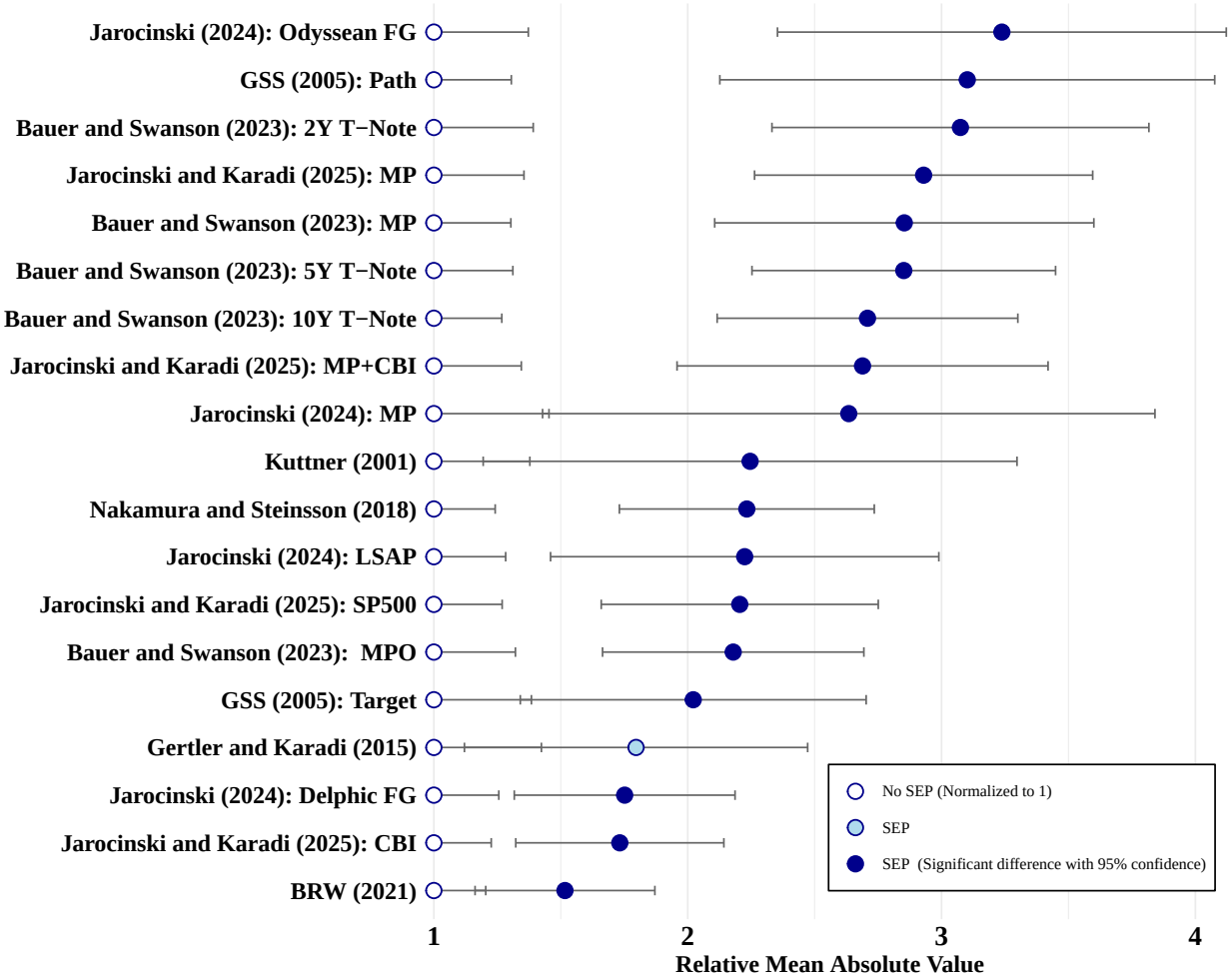
The results in Figure 2 plot both the estimated mean absolute value for the non-SEP meetings ($\hat{\beta}_{i,0}$) and the estimated mean absolute value for SEP meetings ($\hat{\beta}_{i,0}+\hat{\beta}_{i,1}$). The estimates are based on regular meetings (excluding months designated as an NBER recession) from January 2013 up through October 2024 (or the latest available date prior to that). We standardize the estimates relative to the non-SEP value such that estimates for non-SEP meetings are always equal to 1 and the SEP meetings are a multiple of the non-SEP meeting value.

Figure 2 shows that the typical surprise associated with an SEP meeting is significantly larger (in an absolute sense) than non-SEP meeting surprises. Of the 19 measures of monetary policy surprises considered, all but one show significant differences for SEP meetings.[13] For example, focusing on the Gürkaynak et al. (2005, "GSS") path surprise in the second row of Figure 2 shows that the mean absolute value of SEP meeting surprises is more than 3-times larger than surprises in non-SEP meetings. While this is among the largest differences, across all measures the ratio is generally between 2 to 3 times larger than the non-SEP meetings.[14]

[12] All suprises are publicly available from Bauer and Swanson (2023a), Acosta et al. (2024), Brennan et al. (2024), Jarociński (2024), and Jarociński and Karadi (2025). Special thanks to the authors for making their data public.

[13] A Bonferroni correction for multiple testing indicates that 12 of the 19 measures have significant differences.

[14] Appendix Table A.3 presents the raw estimates of mean absolute values and standard deviations for alternative monetary policy surprise measures based on yields. Boehm and Kroner (2025) produce a non-yield surprise measure that shows essentially no difference between SEP and non-SEP dates. This is likely because they orthogonalize their measure with respect to yield surprises thereby effectively removing any common information effects.



Notes: Sample is all regularly scheduled FOMC meetings from January 2013 - October 2024 (or last available date prior to that) except February - April 2020 (i.e. excluding all meetings during NBER defined recession months). Normalized such that the mean absolute value of surprises for non-SEP meetings is 1. Whiskers represent the heteroskedasticity robust 95% confidence intervals and dark blue circles indicate that we reject the null hypothesis that surprises during SEP and non-SEP meetings have the same absolute magnitude on average with at least 95% confidence.

Figure 2: Relative Size of Monetary Policy Surprises for SEP and non-SEP Meetings (2013-2024)

Overall, this section shows that measures of monetary policy surprises are significantly larger in absolute magnitude when associated with SEP releases. This result is consistent with the predictions from our theoretical framework which argues that these differences reflect the anchoring of private sector expectations during non-release meetings and the provision of information during release meetings that is beyond what is conveyed through interest rate decisions alone. It is important to understand empirically how the SEP releases contribute to monetary policy surprises and whether that contribution can be disentangled from other aspects of monetary policy surprises. The next section describes our approach for doing so.

4 SEP Surprises Can Explain Monetary Policy Surprises

4.1 The Bloomberg SEP Survey

Bloomberg has conducted a survey of 30-50 financial market participants and economists at major financial institutions before FOMC meetings since June 2013. Since December 2017, prior to all meetings with SEPs, the survey has asked for participant's expectations of what the FOMC's median forecast will be: "The FOMC updates its economic forecasts this meeting. Please indicate your expectation for the FOMC's median forecast for each of the following indicators at this month's meeting". Thus, it captures what financial market participants think the Federal Reserve's views about the economy will be. These forecasts are perfectly aligned with those published in the SEP and available for all six variables in the SEP (Federal Funds Rate, real GDP growth, unemployment rate, PCE inflation and Core PCE inflation) over the current, the next 1-3 years, and the long-run.[15]

The survey is opened roughly 10 days before each FOMC meeting and closed a week before the start of the meeting. This coincides with the FOMC blackout period that typically starts 10 days before meetings.[16] It also implies that there is no additional information conveyed from FOMC participants from when the survey opens until the FOMC meeting.

However, differences in the forecasts may arise due to new information. For example, in June 2022 a Wall Street Journal article that was purportedly based on information leaked from within the FOMC changed perceptions about the size of the interest rate increase just before the meeting.[17] Additionally, in December 2023 a weaker than expected CPI release on the first day of the FOMC meeting had some participants update their forecasts on the second day of the meeting. Thus, it is possible that the resulting SEP surprise may not purely reflect central bank information. We explore the relevance of these concerns in the Appendix by excluding the June 2022 meeting and by controlling for major news surprises between the SEP survey and FOMC meeting dates.

In addition to publishing the median expectations for each variable and horizon, Bloomberg also publishes the individual survey responses. This allows us to calculate measures of financial market disagreement or uncertainty, e.g. Lahiri and Sheng (2010), about the FOMC's expectations.

[15] Note that the 'Shadow Survey of Market Participants', which has been conducted since early 2017 by the firm MacroPolicy Perspectives prior to each FOMC meeting with an SEP, asks similar questions albeit in a more qualitative format; see Coronado et al. (2025) for more details and discussion. Furthermore, since 2025 the New York Fed's Survey of Market Expectations (SME) has included questions about the SEP forecasts. The SME also has a longer series of questions on expectations about the path of the federal funds rate.

[16] See the FOMC's communication policy on the blackout period as point 7 here.

[17] See: Nick Timiraos (2022), "Fed Likely to Consider 0.75-Percentage-Point Rate Rise This Week" The Wall Street Journal, June 13, 2022, https://www.wsj.com/economy/central-banking/bad-inflation-reports-raise-odds-of-surprise-0-75-percentage-point-rate-rise-this-week-11655147927 (last accessed August 22, 2025).

4.2 SEP Surprises

We can construct SEP surprises using the Bloomberg SEP survey forecasts and the SEP in order to capture the differential between the central bank's expectations about the economy and the private sector's forecasts thereof. We generate SEP surprises for each variable and horizon as

$$\widehat{x}_{t,h} = \tilde{x}^{CB}_{t,h} - med\left\{\tilde{x}^{PS}_{t,i,h}\right\}, \tag{15}$$

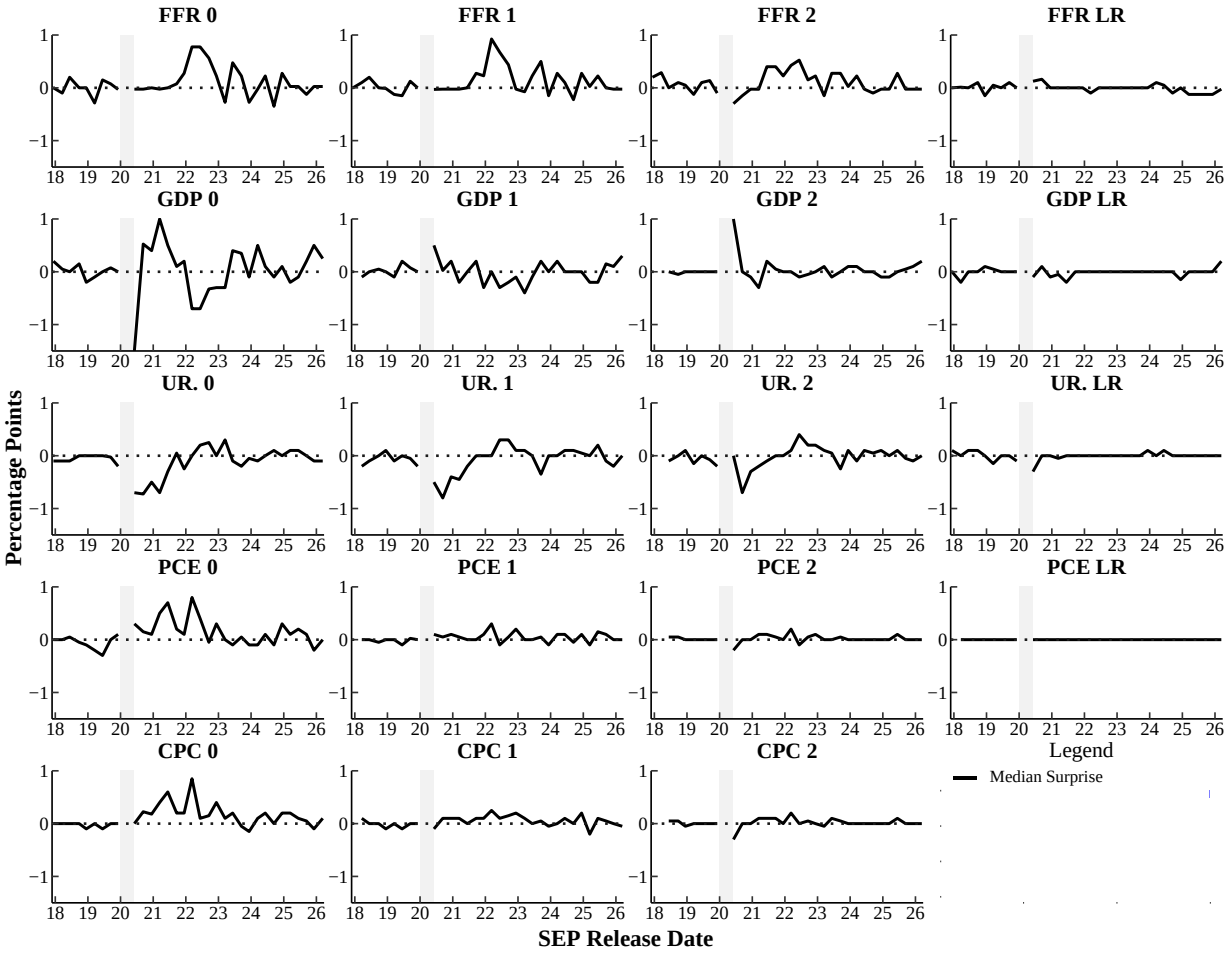
where $\tilde{x}^{PS}_{t,i,h}$ is the prediction of the SEP forecast at time t by individual $i \in N_t$ in the Bloomberg survey sample of private forecasters for variable $x \in \{FFR, GDP, UR, PCE, CPC\}$ at forecast horizon $h \in \{0, 1, 2, LR\}$ while $med\left\{\tilde{x}^{PS}_{t,i,h}\right\}$ is the median forecast across individuals and $\tilde{x}^{CB}_{t,h}$ is the actual forecast released by the FOMC during its meeting at time t. We use the median of individual survey participants to capture the typical private sector expectation without being distorted by outliers. [18] The resulting SEP surprise, $\widehat{x}_{t,h}$, captures the forecast error associated with what the typical Bloomberg participant expected vs. what the FOMC released.

Figure 3 plots the SEP surprises for each variable and horizon over our sample from December 2017 through March 2026. Each row captures a different variable while each column denotes a different forecast horizon. The shaded gray area denotes the pandemic-induced recession in 2020 and coincides with the gap in the SEP surprises in March 2020 when the FOMC did not release a forecast. Note that the FOMC does not release long-run forecasts of core PCE inflation.

The plots in Figure 3 show substantial variation across time, variables, and horizons. Starting with the Federal Funds Rate, the largest surprises, particularly at the current and 1-year horizons occurred in June 2022 when the committee shifted towards a more hawkish stance at the last minute. For real GDP growth and the unemployment rate, the largest surprises, and also periods of disagreement, were in the second half of 2020 and into 2021. For both PCE and core PCE inflation, there are notable spikes in 2021 and 2022 where the private sector expected the FOMC's current year inflation forecasts to be notably lower than they were.[19]

[18] Note that we take the median of only those forecasters who submitted forecasts for all variables and horizons. We convert the forecasts from fixed-event to (approximately) fixed-horizon forecasts such that for the September release we give half weight to two horizons while for the December release we shift forward by one year such that the 3-year-ahead forecast becomes the 2-year-ahead forecast.

[19] See Appendix Table A.4 for a comparison of these forecast surprises across alternative metrics, variables, and horizons relative to a random walk forecast. It shows that the Bloomberg survey median surprises were smaller than random walk forecast surprises for all variables and horizons except the long-run forecasts.



Notes: Constructed as difference between the FOMC's median SEP projection less the median Bloomberg SEP projection. Negative (positive) values mean that survey expectations were higher (lower) than the FOMC. Shared area denotes recession month. No SEP was released in March 2020. The SEP has never published the long-run Core PCE forecast. FFR: Federal Funds Rate, GDP: Real GDP Growth, UR: Unemployment Rate, PCE: Personal Consumption Expenditures Inflation Rate, CPC: Core PCE Inflation.

Figure 3: SEP Surprises by Variable and Horizon (Dec 2017 – Dec 2025)

While the surprises from the median of the Bloomberg survey capture the magnitude between what the private sector expects the FOMC's prediction will be and what the actual prediction is, they do not reflect uncertainty about the private sector's beliefs. We account for this by constructing a range of survey disagreement about the SEP and the resulting surprises in Appendix Figure A.6. Among other things, the figures show that while the median inflation surprise is zero at longer horizons, in recent years there has been a skew in the distribution of private sector forecasts. This suggests possible concerns about upside risks to inflation, unanchored expectations (Coibion and Gorodnichenko, 2025), or a possible upward revision of the Fed's long-run inflation forecast.[20]

[20]While it would be interesting to disentangle how much private sector expectations of the FOMC's median forecasts are driven by their own unconditional expectations, this is left to future research.

4.3 Disentangling the Effect of SEP Surprises on Monetary Policy Surprises

We want to understand to what extent SEP surprises contribute to monetary policy surprises. While section 3 illustrated that monetary policy surprises are larger during SEP meetings, other aspects of these meetings, such as forward guidance and market perceptions of "live" vs."dead" meetings could also change the relative size of surprises. Our goal is to identify the unique effect of SEP surprises independent from other features of SEP release meetings.

We start with Eq. (11) as motivation for our empirical analysis. Note that when the central bank releases its forecasts there are three major components of a monetary policy surprise: (i) the response to news, (ii) central bank information, and (iii) the monetary policy shock. Since we are interested in central bank information, we focus on a measure of monetary policy surprises which removes the response to news effect; i.e. the orthogonalized monetary policy surprises from Bauer and Swanson (2023a). When the response to news effect is completely removed, then all that remains is central bank information and the monetary policy shock such that

$$mpo_{t,R_t=1} \approx \underbrace{\alpha\left(\tilde{x}_t^{CB} - \tilde{x}_t^{PS}\right)}_{CBI} + \underbrace{\epsilon_t}_{shock}, \tag{16}$$

where $mpo_{t,R_t=1}$ is the orthogonalized monetary policy surprise when the SEP is released. Our key focus is to identify the central bank information.[21] Jarociński and Karadi (2025) use sign restrictions and heteroskedasticity to identify this information while Hubert (2025) exploits timing differences. Instead, we use the fact that the central bank releases a proxy of its forecast to directly measure the surprises that are associated with that information.

However, we need to translate the theoretical framework into empirical practice. The theoretical framework focuses on a single variable at a single horizon. In practice, the Federal Reserve releases its forecasts of and makes decisions based on the perceived relationships between many variables across multiple horizons. Thus, we need to reduce the dimension of the problem to capture the most economically meaningful aspects of the SEP surprises. We first consider a structured approach using a modified Taylor rule based on the SEP forecasts. Next, we consider a more exploratory approach based on principal components of the SEP surprises.[22]

[21] The response to news effect may be correlated with central bank information; e.g. see Han and Jia (2025). If so, using the orthogonalized measure makes it less likely that we will find central bank information effects.

[22] An alternative semi-structural approach would be examine the the term structure of SEP surprises; e.g. see Ahn and Farmer (2024).

A Modified Taylor Rule

We start by using a modified Taylor rule to impose structure on the SEP surprises. Following Gonzalez-Astudillo and Tanvir (2026), we assume that the FOMC uses a Taylor rule to set monetary policy and that the parameters of this Taylor rule can be elicited from the SEP's median forecasts. Under this assumption, the resulting real-time estimates from this model should capture the FOMC's true parameters. Thus, if we take Gonzalez-Astudillo and Tanvir (2026)'s model and replace the median SEP forecasts with their corresponding SEP surprises then the resulting equation should summarize all of the relevant information at each horizon

$$\tilde{\boldsymbol{\rho}} \odot \widehat{\boldsymbol{FFR}}_{h-1} + (1 - \tilde{\boldsymbol{\rho}}) \odot \left(\widehat{\boldsymbol{FFR}}_{LR} + \tilde{\boldsymbol{\alpha}}^{\pi} \odot (\widehat{\boldsymbol{CPC}}_{h} - \widehat{\boldsymbol{CPC}}_{LR}) + \tilde{\boldsymbol{\alpha}}^{y} \odot 2(\widehat{\boldsymbol{UR}}_{LR} - \widehat{\boldsymbol{UR}}_{h}) \right), \tag{17}$$

where $\odot$ denotes the element-wise product, $\widehat{\boldsymbol{FFR}}_h$ is a T×1 vector of the federal funds rate target forecast surprises for horizon h, $\widehat{\boldsymbol{CPC}}_h$ is a T×1 vector with the core PCE inflation rate forecast surprises for horizon h, and $\widehat{\boldsymbol{UR}}_h$ is a T×1 vector with the unemployment rate forecast surprise for horizon h. The unemployment rate gap is translated to an output gap using typical Okun's law estimates of 2. The coefficients are estimated in real-time and are time varying such that $\tilde{\boldsymbol{\rho}}$, $\tilde{\boldsymbol{\alpha}}^{\pi}$ and $\tilde{\boldsymbol{\alpha}}^{y}$ are T×1 vectors.[23] We construct the long-run core PCE forecast surprise by assuming that the FOMC's long-run core PCE forecast is always 2%. Note that this formulation is related to Tien et al. (2021) where instead of looking at the Federal Reserve staff's forecast errors we consider the differential between the FOMC's forecasts and private expectations thereof.

We construct measures of central bank information for each horizon using Eq. (17). The current year is based on the non-inertial version of the rule due to data limits while estimates of the long-run horizon are already included in the other horizon measures. Next, we estimate how well these measures explain the orthogonalized monetary policy surprises from Bauer and Swanson (2023a).

Table 1 shows the results where each major row represents a different forecast horizon. Note that the coefficient estimates are not interpretable other than their sign and whether they are significantly different from zero. Looking at the first column, there is a high degree of correlation across the horizons, but the 1-Year-Ahead Forecast surprises are clearly statistically significant and help explain the monetary policy surprises. 62% of the variation in the monetary policy surprises associated with SEP meetings is explained by SEP surprises. Our results are consistent with Romer

[23] This effectively allows for time-varying α_t as in Bauer and Swanson (2023b) which is a slight generalization of our theoretical framework. Thanks to Manuel Gonzalez-Astudillo for sharing their real-time results through June 2025. Note that the parameters are only re-estimated in real-time every six months such that we linearly interpolate between these estimates to obtain estimates for each SEP from December 2017 - June 2025.

and Romer (2008) who find that differences between FOMC and Federal Reserve staff forecasts help explain (low frequency) monetary policy surprises. To the extent that staff forecasts are related to private sector expectations of the FOMC forecasts, then we may be identifying a similar effect.

Table 1: SEP Surprises in Modified Inertial Taylor Rule Explain Monetary Policy Surprises

	(1) Inertial (OLS)	**(2) Non-Inertial (OLS)**	**(3) Inertial (IV)**
Current Year Forecasts:	−0.01	0.02	−0.01
	(0.01)	(0.02)	(0.02)
1-Year-Ahead Forecasts:	0.16*	−0.01	0.06
	(0.06)	(0.06)	(0.08)
2-Year-Ahead Forecasts:	−0.00	−0.03	0.14+
	(0.06)	(0.04)	(0.08)
R^2 :	0.62	0.12	0.33
Observations (T):	17	18	17

Notes: 2018-2024. Standard errors in parentheses. Rejection of the null hypothesis based on critical values at 10% (+), 5% (*) and 1% (**) significance levels.

Column (1) likely overstates the separately identifiable contribution of SEP surprises because Eq. (17) includes Federal Funds Rate (FFR) surprises which are a function of the monetary policy shock. Using a non-inertial Taylor Rule instead in column (2) indicates that FFR surprises drive most of the explanatory power. However, using non-FFR surprises as instruments for the FFR surprises shows that there is still value even as the explanatory power falls by about half to 33%.[24]

Principal Components

We next consider an exploratory approach based on the empirical properties of the SEP surprises. In particular, we examine principal components of the surprises. Let $\boldsymbol{S}$ denote a T×VH matrix, with rows corresponding to SEP release dates, columns corresponding to SEP surprises by variables (V), where all variables (except the Federal Funds Rate) and horizons (H) are included and each element of S denotes the individual SEP surprise. This can be written as

$$\boldsymbol{S} = \boldsymbol{F}\boldsymbol{\Lambda} + \boldsymbol{\eta} \tag{18}$$

where $\boldsymbol{F}$ is a T×k matrix of unobserved factors (k<VH), $\boldsymbol{\Lambda}$ is a k×VH matrix of factor loadings, and $\boldsymbol{\eta}$ is a T×VH matrix of white noise disturbances.

[24]The F-statistic for the strength of instruments is around 5. Thus, the results should be interpreted with caution.

We take principal components of all of the SEP surprises across variables and horizons excluding the Federal Funds Rate forecasts given the concerns highlighted above. The first three principal components explain roughly 78% of the total variation. Looking at the loadings on those three principal components, the GDP growth, unemployment, and inflation surprises all contribute. However, the loadings suggest that the first principal component primarily captures surprises associated with short-term supply shocks (i.e. a positive loading on near-term inflation surprises and a negative loading on near-term growth surprises), the second principal component captures surprises consistent with a Taylor rule / demand shocks, and the third principal component captures surprises consistent with supply shocks with greater weight on longer horizons.

Next, we estimate whether the principal components of the SEP surprises are able to explain the Bauer and Swanson (2023a) orthogonalized monetary policy surprises. Table 2 presents the results. The first column shows that all together the first three principal components of the SEP surprises explain roughly 30 percent of the total variation in the monetary policy surprises during SEP meetings. This is roughly in line with the modified inertial Taylor rule when using instrumental variables and provides additional support that after controlling for any endogeneity concerns, SEP surprises can explain a third of the variation in monetary policy surprises on release meetings.

Table 2: Principal Components of SEP Surprises Explain Monetary Policy Surprises

	Variables + Horizons	Horizons	Variables
First Principal Component:	-0.03	0.02	0.16
	(0.05)	(0.14)	(0.12)
Second Principal Component:	0.12	0.20*	-0.02
	(0.06)	(0.08)	(0.09)
Third Principal Component:	-0.10	0.02	-0.10
	(0.09)	(0.13)	(0.06)
R^2 :	0.27	0.27	0.28
Observations (T):	19	19	19

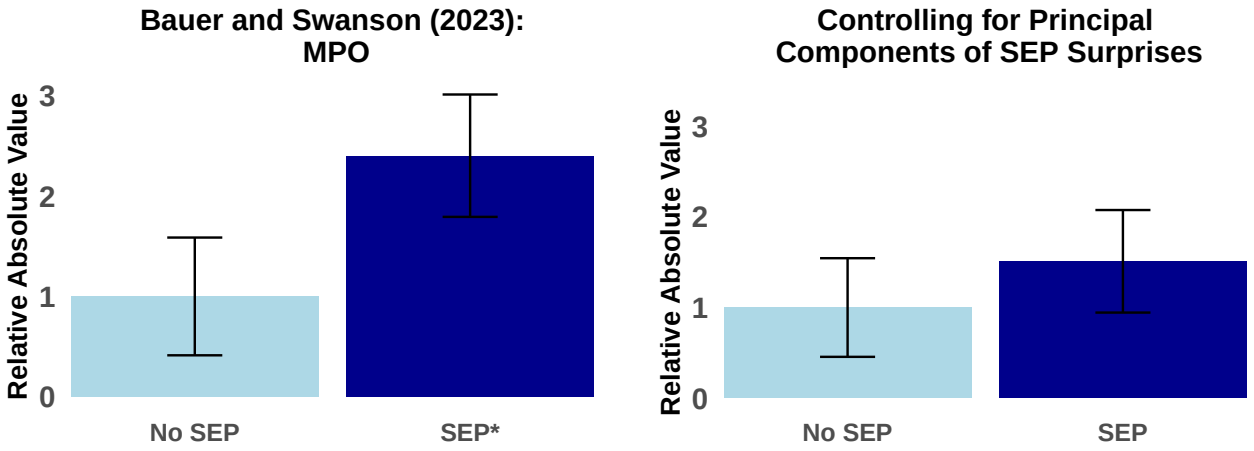
Notes: Each block presents the coefficient estimate and its standard error the R^2 and the number of observations. In the second column of estimates the PC1 captures current year surprises, PC2 captures year-ahead surprises, and PC3 captures 2-year and long-run surprises. In the third column PC1 captures real GDP growth, PC2 captures the unemployment rate and PC3 captures the PCE and core PCE inflation. Stars denote rejection of the null hypothesis using 5% (*) and 1% (**) significance levels.

We also consider other forms of the principal components by estimating them separately by horizon or by variable. The results, shown in the second and third columns of Table 2, indicate that three principal components explain about a third of the total variation of the monetary pol-

icy surprises. Overall, the 1-year-ahead surprises are the most significant and the most relevant surprises by variable are the inflation surprises.[25]

We assess how much the SEP surprises matter by partialing out the effects of the SEP surprises from the monetary policy surprises and examining how that changes the properties of the monetary policy surprises for SEP and non-SEP meetings. For this analysis we focus on the horizon based principal components although the results are similar for the other principal components.

Figure 4 presents the results. Controlling for SEP surprises reduces the absolute value of the monetary policy surprises such that the differences between SEP and non-SEP meetings are no longer statistically (or visually) significant. This provides strong evidence in support of our theoretical framework that monetary policy surprises during meetings where the SEP is released contain central bank information and that this information drives the differences between SEP and non-SEP meetings. It also shows that it is possible to identify and extract this information.



Notes: Sample is 2018-2024. Whiskers denote the 95% confidence intervals . Plots are standardized such that that the non-SEP bars are equal to one. * Denotes that the difference between the SEP and non-SEP values is statistically significant with at least 95% confidence.

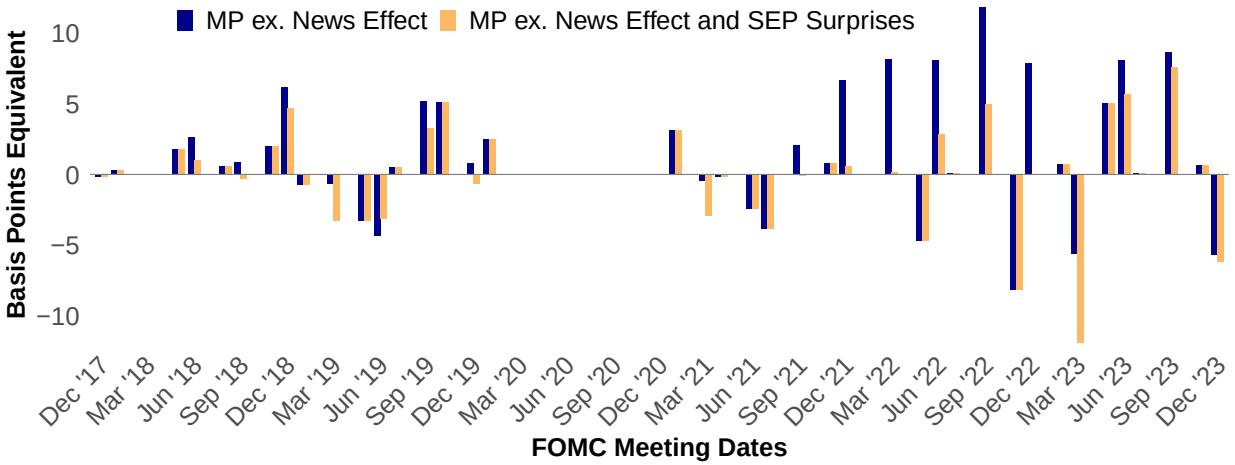
Figure 4: SEP Surprises explain differences between SEP and non-SEP meetings

The results are broadly robust to alternative specifications. First, similar results are obtained when using the inertial Taylor rule with instrumental variables to filter the surprises. Second, Appendix A.3 shows that the results remain broadly unchanged when accounting for private forecaster disagreement, SEP uncertainty, dropping June 2022, and controlling for major economic

[25]We also conducted an exploratory analysis (available upon request) where we considered each individual horizon and variable separately across a wide range of monetary policy surprises. We also considered a number of model selection procedures to select across variables and horizons. Overall, the results consistently show that current year and one-year-ahead PCE inflation and Core PCE inflation surprises are the most statistically significant and explain the largest amount of variation across a wide range of monetary policy surprises.

news releases related to inflation, the labor market, and economic growth that occurred in the days between when the Bloomberg survey closed and the SEP was released. Finally, the results are also qualitatively similar when extending the sample back to 2013 using SEP changes.

Next, we examine the resulting time series of the monetary policy surprises to understand how SEP surprise effects alter their dynamic profile. Figure 5 plots the series from Bauer and Swanson (2023a) and our series which removes the SEP surprise effects using principal components from December 2017 until 2024. Prior to the pandemic, the effects appear to be fairly small but are noticeable. For example, March 2019 stands out as the largest pre-pandemic difference.



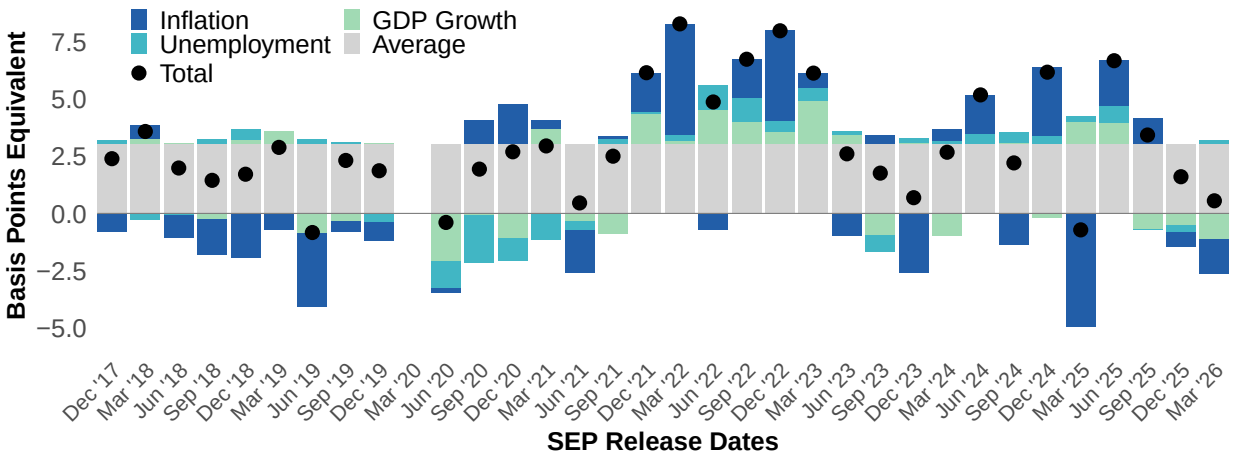
Notes: Scaled to be equivalent to a change in the eurodollar futures contract (ED4) following Nakamura and Steinsson (2018).

Figure 5: Removing the Effects of SEP Surprises from Monetary Policy Surprises

The effects are larger starting in 2021. When only news effects are excluded, monetary policy surprises are mostly large and positive in 2022. However, after removing the SEP surprise effects, monetary policy surprises become much smaller and less positive. Furthermore, in the midst of the large bank failures in March 2023, the SEP surprise effect substantially offset the effect of exogenous policy easing. This illustrates that the information effect of SEP surprises accounts for an important aspect of what was previously considered to be an exogenous monetary policy change.

Next, we decompose and plot the SEP surprise effects through early-2026.[26] Figure 6 shows that the typical SEP surprise effect is positive. In 2021-22, surprise effects are driven by larger than expected revisions to inflation forecasts while in early-2023, they are driven by smaller than expected revisions to GDP growth. Other large effects are seen around major tariff changes in June 2019 and March 2025 when the inflation forecasts were not revised up by as much as expected.

[26] Estimation is only through 2023, when the Bauer and Swanson (2023a) sample ends. An alternative decomposition across horizons reveals that the effects are driven by 1-year-ahead forecast surprises (h=1).



Notes: Scaled to be equivalent to a change in the eurodollar futures contract (ED4) following Nakamura and Steinsson (2018).

Figure 6: Decomposing the Effect of SEP Surprises on Monetary Policy Surprises

Overall, our results in this section show that the differences we observe in monetary policy surprises between SEP and non-SEP meetings are well explained by SEP forecast surprises. These surprises, particularly those associated with inflation, help explain market reactions to FOMC meetings and contain meaningful information which the private sector can use to learn about the FOMC's economic outlook and to interpret the stance of policy beyond the interest rate decision.

5 Revisiting Fed Information Effect Regressions

To better understand how much SEP-related information actually matters, we revisit the Fed information effect regressions pioneered by Campbell et al. (2012, 2017) and Nakamura and Steinsson (2018) and used in Lunsford (2020), Miranda-Agrippino and Ricco (2021), Hoesch et al. (2023), and Bauer and Swanson (2023a,b) among others. The basic framework is

$$\Delta\tilde{x}^{PS}_{t,h} = (\tilde{x}^{PS}_{t,h} - \tilde{x}^{PS}_{t-1,h}) = \beta_h mps_t + v_{t,h}, \tag{19}$$

where $\tilde{x}^{PS}_{t,h}$ is the private sector forecast of variable x at time t for horizon h, $\Delta\tilde{x}^{PS}_{t,h}$ is the forecast revision for the same variable and horizon between time period $t-1$ and t, mps_t is the cumulation of monetary policy surprises between the two time periods, and $v_{t,h}$ captures the residual. Thus, β_h measures the effect of a monetary policy surprise on private forecast revisions.

For this exercise we use survey forecasts from the Bloomberg Economic survey, which is similar to the Blue Chip Economic Indicator survey that is commonly used for these regressions. The Bloomberg Economic survey is comprised of a large sample of (roughly 50-80) professional fore-

casters on a range of economic variables out through 5-quarters-ahead.[27] It has been conducted monthly (typically near the end of the month) since at least 2007 but we only consider the sample since November 2017 to align with the availability of the SEP surprises.

The Bloomberg Economic survey enables us to link individual participants with those in the Bloomberg SEP survey. Almost half of the participants to the SEP survey between December 2017 to December 2025 also submitted forecasts to the Economic survey. We focus on the subset of around 60 forecasters that submitted to both surveys at least once over this period.[28] This allows us to directly relate individual SEP surprises to their subsequent economic forecast revisions.

We focus on forecast revisions of cumulative Core PCE inflation over the next 4 quarters. We chose inflation forecasts because of the intense interest by the private sector and financial markets following the pandemic; e.g. see Kroner (2025). Additionally, many studies show that some of the strongest evidence for Federal Reserve information advantages is in their medium-term inflation forecasts; see Romer and Romer (2000), D'Agostino and Whelan (2008), Hubert (2015), Rossi and Sekhposyan (2016). Thus, by focusing on revisions to Core PCE inflation forecasts we are likely considering a very favorable environment in which to find evidence of information effects.

We start with consensus forecast revisions. The first two major rows in Table 3 mirror those of Bauer and Swanson (2023a) where, without cleaning for news, a monetary policy surprise (MP) has a positive and statistically significant effect on forecast revisions. The estimated effect size is larger than Bauer and Swanson (2023a) but is in line with what Campbell et al. (2012, 2017) find for CPI at shorter horizons and different sample. However, once the response to news effect is removed in column 2, the relationship disappears. Thus, the effects appear to be driven by news.[29]

Digging deeper reveals a more complex story. Column (3) in Table 3 shows that the SEP surprise component has a large positive and (weakly) significant effect. Recall that the largest SEP surprise in Figure 6 was 8 basis points (bp). The results imply that an 8 bp SEP surprise effect causes a 10 basis point upward revision in inflation expectations.

Column (4) decomposes the surprise effects further into GDP growth, unemployment rate, and inflation, as in Figure 6. Inflation surprises have a large significant effect on forecast revisions, where a 5 bp inflation-related surprise effect (the maximum in Figure 6) leads to an almost 20 bp upward revision in year-ahead inflation expectations. Overall the results show that, even after

[27] The Bloomberg Economic survey has been analyzed before; see Giacomini et al. (2020); Bürgi and Ortiz (2022).

[28] The typical forecaster in our sample submitted to the Bloomberg SEP survey roughly 40% the possible times albeit with a range from once (3% of the time) to 97% of the time.

[29] In our relatively short sample most of this difference is actually driven by 2020.

controlling for news effects, high frequency monetary policy surprises contain information effects, especially about inflation, that private forecasters can learn from and react to.

Table 3: Aggregate Fed Information Effect Regressions: Core PCE Q4/Q4

	(1)	(2)	(3)	(4)
Monetary Policy Surprises (MP):	0.63**			
	(0.17)			
Excluding News Effects (MPO):		0.36		
		(0.4)		
Excluding SEP Surprise Effects (MPOS):			-0.04	-0.23
			(0.43)	(0.41)
SEP Surprise Effects:			1.24+	
			(0.68)	
GDP Growth Surprises:				-1.78
				(2.42)
Unemployment Rate Surprises:				1.48
				(2.66)
Inflation Surprises:				3.79**
				(0.75)
$\hat{\sigma}$	0.1	0.09	0.09	0.08
R^2	0.11	0.02	0.08	0.15
Observations (T)	73	63	63	63

Notes: Sample is December 2017 - December 2023. Forecast horizon is the percent change in Core PCE over 4 quarters 4 quarters from now. All regressions except the first drop March 2020 - December 2020. Heteroskedasticity Corrected Standard errors are presented. Stars denote rejection of the null hypothesis using 10% (+), 5% (*) and 1% (**) significance levels.

The aggregate survey results can be distorted by aggregation and sampling biases. Thus, we extend the analysis using a panel of around 60 individual forecasters that contributed at least once to both Bloomberg's SEP and Economic surveys. This allows us to trace both how common and individual-specific SEP surprises can propagate through to forecast revisions.

The first three columns of Table 4 replicate the consensus results in Table 3 for individual forecasters. The results are broadly similar. Raw monetary policy surprises have a positive and significant effect on forecast revisions. Accounting for news reduces the effect size by half and makes it insignificant. However, decomposing the resulting surprise into the contribution due to SEP and non-SEP surprise effects shows that SEP surprise effects induce a large and statistically significant response. Looking at common SEP surprises directly, without filtering through monetary policy surprises, also shows a positive significant effect on inflation forecast revisions. Thus, we find clear evidence that individual forecasters revise their expectations in response to common SEP surprises.

Table 4: Individual Fed Information Effect Regressions: Core PCE Q4/Q4

	(1)	(2)	(3)	(4)	(5)	(6)
Monetary Policy Surprises (MP):	0.78**					
	(0.29)					
Excluding News Effects (MPO):		0.30				
		(0.24)				
Excluding SEP Surprise Effects (MPOS):			-0.15			
			(0.19)			
SEP Surprise Effects:			1.28**			
			(0.32)			
Common SEP Surprises (1-Year-Ahead):				0.39**		
				(0.07)		
Individual Disagreement with Median					0.46**	
					(0.11)	
Individual SEP Surprises:					0.46*	
					(0.12)	
Federal Funds Rate Surprises:						0.06
						(0.04)
GDP Growth Surprises:						-0.05
						(0.04)
Unemployment Rate Surprises:						0.04*
						(0.02)
PCE Inflation Surprises:						−0.11**
						(0.04)
Core PCE Inflation Surprises:						0.12**
						(0.04)
$\hat{\sigma}$	0.22	0.21	0.21	0.21	0.22	0.22
R^2	0.03	0.00	0.02	0.02	0.01	0.01
Observations (NxT)	3,031	2,633	2,633	2,633	2,044	2,041

Notes: Sample is December 2017 - December 2023. Individual forecasters: N=52. All regressions except the first drop March 2020 - December 2020. Forecast horizon is the percent change in Core PCE over 4 quarters 4 quarters from now. Regressions include forecaster fixed effects. Standard errors are clustered by forecaster and time. Stars denote rejection of the null hypothesis using 10% (+), 5% (*) and 1% (**) significance levels.

Individual forecasters respond to both the common and their individual surprises. Column (5) decomposes the common SEP surprise (FOMC - median) into an individual SEP surprise (FOMC - own) and the individual's disagreement with the median (own - median) using the common PCA weights. The results illustrate that individuals revise their inflation expectations in response to both their individual forecast surprises and their differential with the market. They close their own gap with the FOMC even as they move away from the market view.

Finally, we examine how forecasters revise their core PCE forecasts in response to their own SEP surprises. Column (6) shows that even after controlling for Federal Funds Rate surprises, individuals revise their core PCE forecasts in response to surprises in the unemployment rate, headline PCE inflation, and core PCE inflation. Surprises in core PCE inflation induce the strongest response in core PCE forecast revisions where almost one-third of the gap between the FOMC's forecast the individual's forecast is captured. Forecasters also respond in statistically significant ways to

differences with the FOMC's forecasts for the unemployment rate as well as headline PCE surprises. Thus, forecasters appear to respond to both idiosyncratic and common SEP surprises.

The results are robust to controlling for news releases and can also be seen in private sector expectations of other variables. Appendix Table A.5 shows that after controlling for news releases, information effects are observable in forecast revisions of real GDP growth and the unemployment rate, but not for headline PCE inflation. Additionally, Appendix Table A.6 shows that the results for core PCE and unemployment rate expectations are also robust when including time fixed effects. This helps allay Bauer and Swanson (2023a)'s concern of low explanatory power.

It is also possible to re-examine the macroeconomic effects of monetary policy using our revised monetary policy surprise series. However, since our series is only available starting in December 2017, it its hard to draw strong conclusions, particularly if only the pre-pandemic sample was used. Our results in Appendix A.4 show that after controlling for SEP surprise effects, monetary policy has larger near-term effects on the excess bond premium, inflation, and industrial production. This is consistent with controlling for information effects (Jarociński and Karadi, 2020). It further suggests that the information embedded within SEP surprises has important macroeconomic effects. However, we leave further discussion and analysis of these results for future research.

Our empirical results provide substantial evidence that both forecasters and the macroeconomy respond to SEP surprises. This illustrates that while controlling for the response to news effects is important to understand the real effects of monetary policy, there is still a significant amount of information contained within high frequency monetary policy surprises. Failing to correctly account for this information distorts analyses of the effects of monetary policy.

Our results differ from the survey evidence in Bauer and Swanson (2023a), which indicated that a majority of forecasters do not revise their forecasts in response to the SEP. There are several possible reasons for this difference. First, Bauer and Swanson (2023a) caveat that their survey may be biased if forecasters have an incentive to understate how much information they get from the Federal Reserve. Second, their survey was conducted in July 2019 and likely captures a relatively quiet period that may not be representative of the importance of Federal Reserve information releases during periods of high uncertainty / volatility as occurred subsequently in 2020-2023. Finally, the survey, which sampled attentive forecasters with substantial resources and experience, may downplay information effects if inattentive forecasters with fewer resources are more likely to respond to large information surprises; e.g. see Baker et al. (2020).[30]

[30]We would argue all forecasters can learn from SEP surprises. For example, for every FOMC meeting Goldman

6 Conclusion

This paper advances the identification of exogenous monetary policy shocks by incorporating two key realistic features of central bank communication. We extend the Bauer and Swanson (2023a) and Jarociński and Karadi (2025) frameworks by modeling central banks as releasing proxies of their internal forecasts to the private sector and incorporate that these forecast releases occur intermittently rather than at every meeting. We also include a parameter governing how well these public projections reflect actual central bank views. This formulation captures how the Federal Reserve's Summary of Economic Projections operates in practice and generates testable predictions: monetary policy surprises are systematically larger following projection releases, but controlling for projection surprises eliminates these differences.

Our empirical analysis strongly confirms these theoretical predictions. Across multiple monetary policy surprise measures, all show statistically significant differences between SEP and non-SEP meetings, with SEP meeting surprises around 2 to 3 times larger. Using novel SEP surprise measures from Bloomberg survey data, we demonstrate that projection surprises explain about 30 percent of the variation in monetary policy surprises during SEP meetings—sufficient to eliminate statistically significant differences in shock magnitudes between meeting types. These results remain robust when controlling for information leaks, macroeconomic data releases, and survey disagreement, confirming that central bank information effects are empirically meaningful and measurable. Finally, to validate that SEP surprises contain economically meaningful information, we also show that individual forecasters update their expectations of core PCE inflation in response to both common and their own idiosyncratic SEP surprises. The magnitude of these information effects indicates that SEP releases convey material information about Fed views beyond what markets infer from interest rate decisions alone.

Our approach provides a novel method for identifying central bank information effects that is complementary to but distinct from existing approaches. While Jarociński and Karadi (2025) use sign restrictions and heteroskedasticity to statistically decompose monetary policy surprises into policy and information components, we exploit the institutional feature of intermittent projection releases to directly measure when and how much information is revealed. This allows us to tie information effects to specific, observable communication events rather than inferring them as

Sachs produces a preview and a recap of of how their views have changed. Of the 28 SEP-related FOMC meetings between September 2018 and September 2025, Goldman explicitly noted that they updated their outlook for monetary policy at least 8 times (29%) and their economic outlook twice (7%) in September 2022 and December 2023.

statistical residuals. Similarly, while Bauer and Swanson (2023a) orthogonalize surprises with respect to publicly observed macroeconomic news, our SEP surprise measures capture the revelation of the central bank's private assessment of economic conditions. By measuring market expectations of Fed projections through the Bloomberg survey, we provide the first direct quantification of how forecast communication systematically contaminates high-frequency monetary policy surprise measures. This institutional approach validates the conceptual importance of information effects while providing researchers with a transparent, replicable method for isolating this channel.

That said, our analysis raises deeper questions about the shock identification literature. The very notion of an exogenous monetary policy 'shock' contains an inherent tension: effective monetary policy operates through systematic, predictable responses to economic conditions, leaving little room for true exogenous variation. The surprises we study, after removing news and information effects, exhibit less variation in order to capture policy experiments suitable for estimating causal effects. We demonstrate that even state-of-the-art shock measures contain quantifiable information effects after controlling for news. While there are efforts to increase the variation of monetary policy surprises, for example by adding speeches (Swanson and Jayawickrema, 2024), testimonies (Gordon and Lunsford, 2024), and press conferences (Acosta et al., 2025) it remains to be seen whether these new measures are contaminated by information effects. It is possible that the search for purely exogenous policy variation may be chasing an increasingly small residual.

Within this context, our findings provide researchers with methods for isolating information effects embedded in projection releases. Our framework could be adapted to other central banks that intermittently release forecasts, offering a replicable approach to measuring information contamination. For policymakers, our results demonstrate that transparency initiatives like the SEP successfully convey private information but also create new challenges for measuring policy effects. The identification challenge in monetary policy research continues to evolve alongside central banking practices, and our results highlight the importance of identifying and accounting for all sources of endogeneity in measuring policy effects.

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A Supplemental Appendix

A.1 Extending the Theoretical Framework

For cases where the central bank does not release their forecast our key assumptions are that (a) the central bank does not update their forecasts and (b) that the private sector completely anchors their expectations on the previous central bank forecast release. These are fairly strong assumptions and we explore how relaxing them impacts our results.

The assumptions in our framework operate through the forecasts that the private sector and the central bank make on dates when the central bank does not release its forecasts. We can allow the private sector to update their forecasts more generally as follows

$$\bar{x}_t^{PS} = \rho s_{t-1} + \gamma_{PS}(\tilde{x}_t^{PS} - \rho s_{t-1}), \tag{A.1}$$

where $\gamma_{PS} \in [0, 1]$ can be interpreted as the probability that private sector forecasts are unanchored from the previous central bank forecast release. When $\gamma_{PS} = 0$ the forecasts are completely anchored while when $\gamma_{PS} = 1$ they are completely unanchored and just rely on new information.

We can also generalize the central bank's forecast updates to allow for new information

$$\bar{x}_t^{CB} = \rho \tilde{x}_{t-1}^{CB} + \gamma_{CB}(\tilde{x}_t^{CB} - \rho \tilde{x}_{t-1}^{CB}), \tag{A.2}$$

where $\gamma_{CB} \in [0, 1]$ is the probability that the central bank updates its forecasts. When $\gamma_{CB} = 0$ the central bank forecast do not get updated while when $\gamma_{CB} = 1$ they are completely updated.

Now on non-release dates, the private sector sets its expectations as

$$\mathbb{E}_t \left[i_{t+j} | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0 \right] = \mathbb{E}_t \left[\alpha x_{t+j} | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0 \right] = \hat{\alpha}_t \rho^j \bar{x}_t^{PS}, \tag{A.3}$$

the central bank sets interest rates using $i_t = \alpha \rho \bar{x}_t^{CB} + \epsilon_t$, and the monetary policy surprise is

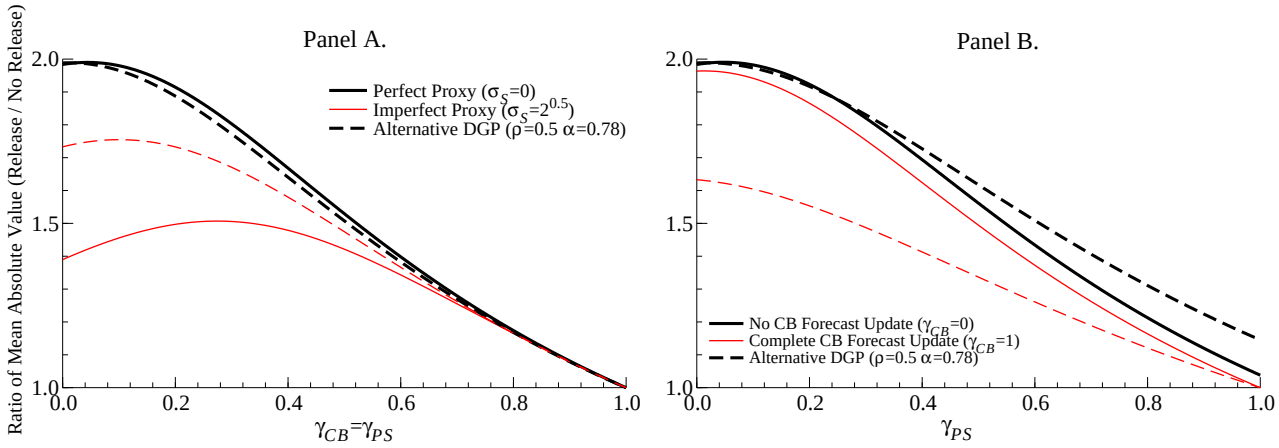
$$mps_{t,R_t=0} \equiv i_t - \mathbb{E}_t \left[i_t | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0 \right] = (\alpha - \hat{\alpha}_t) \bar{x}_t^{PS} + \alpha(\bar{x}_t^{CB} - \bar{x}_t^{PS}) + \epsilon_t, \tag{A.4}$$

where the second term can be expanded using Eq. (A.1) and Eq. (A.2) as

$$(\bar{x}_t^{CB} - \bar{x}_t^{PS}) \equiv (\gamma_{PS} - \gamma_{CB}) \rho \tilde{x}_{t-1}^{CB} - (1 - \gamma_{PS}) \rho v_{t-1}^S + \gamma_{CB} \tilde{x}_t^{CB} - \gamma_{PS} \tilde{x}_t^{PS}. \tag{A.5}$$

The special case where the central bank does not update its forecast, the private sector is completely anchored, and the forecast release is a perfect proxy implies that $\gamma_{CB} = \gamma_{PS} = 0$ such that Eq. (A.5) equals zero. On the other hand, the the special case that $\gamma_{CB} = \gamma_{PS} = 1$ implies that there is no difference with the forecast release case. However, in general γ_{CB} and γ_{PS} could be any value between [0,1] and could differ from one another.[31]

To better understand the implications of these possibilities we simulate the monetary policy surprises based on a hypothetical set of parameters and explore how changes in γ_{CB} and γ_{PS} alters the relative size of monetary policy surprises for release and non-release dates. Figure A.1 presents the results by plotting the ratio of the mean absolute value of monetary policy surprises following central bank forecast release meetings relative to the mean absolute value of monetary policy surprises following non-release meetings. If surprises are the same magnitude then the ratio will be 1 while values greater than 1 imply that surprises following a forecast release are larger.



Notes: Simulations based on 1 million observations. Parameter choices for Data Generation Process (DGP) are: $\rho = 0.9$, $\sigma^2_\eta = 1$, $\sigma^2_\epsilon = 1$, $\alpha = 0.9$, $\sigma^2_{\tilde{\alpha}} = 0.125$, $\sigma^2_{CB} = 2.5$, $\sigma^2_{PS} = 2.5$, and $\sigma^2_S = 0$ unless otherwise specified. Note that solid lines use standard DGP while dashed lines use alternative DGP as specified.

Figure A.1: Simulation Results for the Relative Size of Monetary Policy Surprises

Panel A shows how the relative magnitude of surprises changes when the probability of central bank forecast updates changes with the probability of private sector becoming unanchored from the previous forecast release in the context of the releases being perfect and imperfect proxies. In general there is at least some difference between the surprises up until the private sector becomes completely unanchored. The differences are largest when the private sector is completely anchored and when the forecast release is a perfect proxy.[32]

Panel B illustrates how the relative magnitude of surprises changes when the probability of

[31] Although it is likely that γ_{PS} is a function of the private sector's estimate of γ_{CB}.

[32] A bad forecast proxy could conceivably push the ratio below 1 if the private sector remained anchored to it.

central bank forecast updates is held constant but the probability of the private sector becoming unanchored changes. Depending on the value of ρ, the relative magnitude of surprises may be insensitive to the probability of a central bank forecast update or not. Particularly when the data exhibits high persistence (i.e. ρ is large), then forecast updates have relatively little impact.

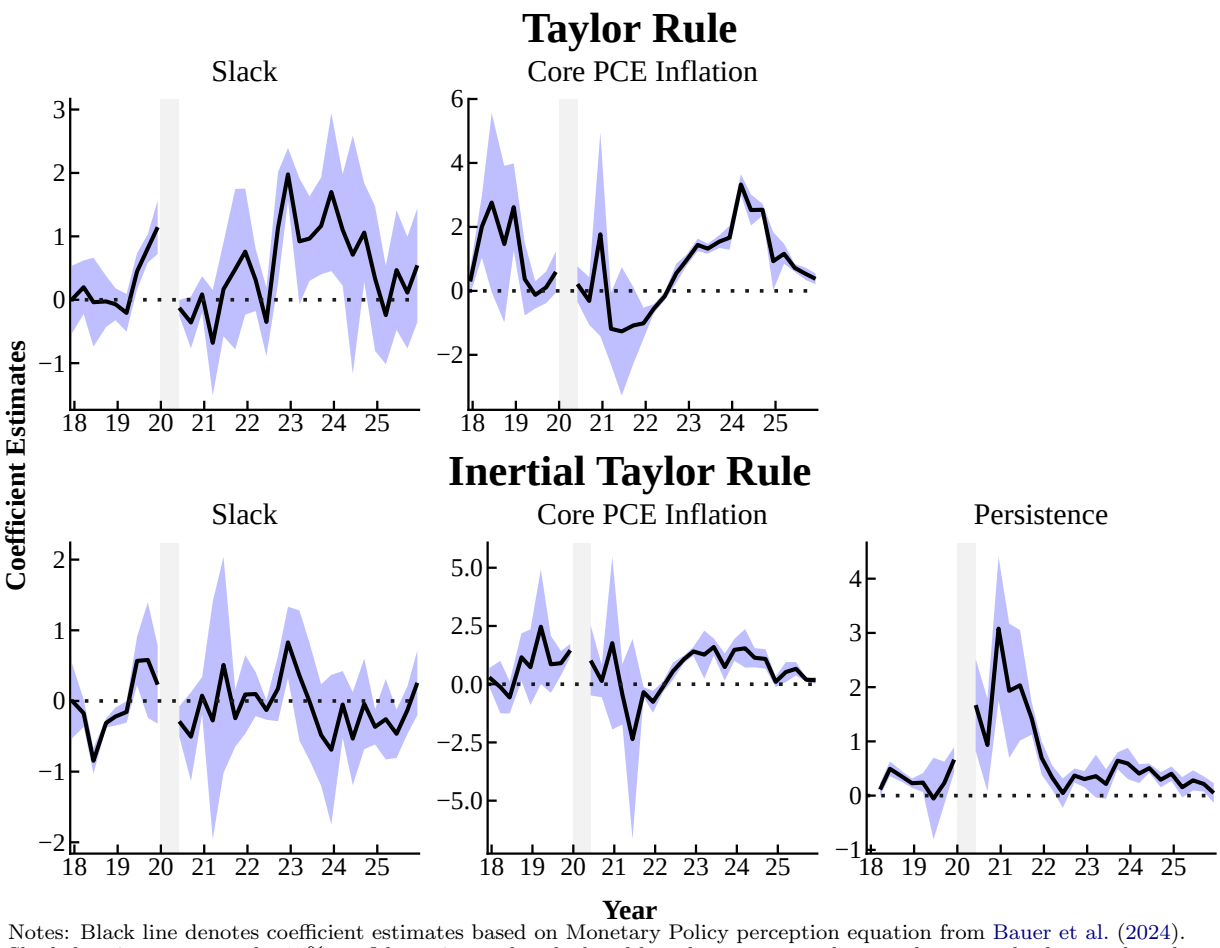
A.2 Bloomberg SEP Survey Perceptions of Monetary Policy

Following the approach and assumptions in Bauer et al. (2024) we can estimate market participant's perceptions of what the Fed's reaction function is. In particular, we estimate the following equation

$$\widetilde{FFR}^{PS}_{i,t,h} = \alpha_{i,t} + \hat{\gamma}_t \widetilde{UR}^{PS}_{i,t,h} + \hat{\beta}\widetilde{CPC}^{PS}_{i,t,h} + e_{i,t,h}, \tag{A.6}$$

which mirrors Bauer et al. (2024, Eq. (1)) where $\alpha_{i,t}$ is the forecaster fixed effects that allow for different beliefs about the natural rate of interest and long-run inflation, $\widetilde{UR}^{PS}_{i,t,h}$ captures individual expectations about SEP's forecast of the unemployment rate, which contrasts with the original formulation which used an output gap, $\widetilde{CPC}^{PS}_{i,t,h}$ captures individual expectations about the SEP's forecast of the inflation rate which we base off of Core PCE inflation instead of CPI inflation, $e_{i,t,h}$ is the error term which captures forecaster i's expectation of future monetary policy shocks over time t as well as any measurement and specification errors. We also construct an inertial version of the Taylor rule where the lags are based on the previous horizon as in Gonzalez-Astudillo and Tanvir (2026) rather than the previous survey.

The estimates from both the standard and the inertial Taylor Rules are shown in Figure A.2 where we plot the coefficient estimates for the unemployment rate and inflation for each survey over time along with the 95% confidence intervals around these estimates based on two-way clustering. The results, which are broadly consistent with Bauer et al. (2024) over a shorter sample, illustrate that the slack coefficient is relatively insignificant except around turning points, particularly in late 2019 and 2023 while the inflation coefficient is generally insignificant until mid-2022 as inflation peaked and the Fed started raising rates at which point the estimates become large and precise.



Notes: Black line denotes coefficient estimates based on Monetary Policy perception equation from Bauer et al. (2024). Shaded region captures the 95% confidence intervals calculated based on two-way cluster robust standard errors based on forecaster and horizon.The top row captures the Standard Taylor Rule estimates whereas the bottom row captures the inertial Taylor Rule where persistence is captured as in Gonzalez-Astudillo and Tanvir (2026).

Figure A.2: Estimates of Bloomberg SEP Survey Perceptions of Monetary Policy

A.3 Robustness Checks and Extensions

We consider a range of robustness checks to the main results in the section. In particular, we drop the June 2022 meeting given that information about the FOMC's views was leaked during the blackout period and likely contaminated markets views of the outcome, and also control for major new releases that occurred between when the Bloomberg FOMC survey was closed and the SEP was released. To do this we use Bloomberg's indices of data surprises for labor news, inflation news, and growth news which capture the standardized data surprises for relevant data releases; see An et al. (2025) and Galvão and van Roye (2023). We also examine whether the results are robust to using the rescaled SEP surprises to account for survey disagreement and also whether they are robust to controlling for FOMC SEP forecast uncertainty.

Disagreement can be captured by rescaling the original surprise with the ex-ante uncertainty

that the private sector had prior to the release of the SEP.[33] We thus reformulate eq. (15) as

$$\hat{x}^*_{t,h} = \frac{\tilde{x}^{CB}_{t,h} - med\left\{\tilde{x}^{PS}_{t,i,h}\right\}}{\widehat{\sigma}_{\tilde{x}^{PS}_{t,h}}}, \tag{A.7}$$

where $\widehat{\sigma}_{\tilde{x}^{PS}_{t,h}}$ is the estimated standard deviation of the individual Bloomberg forecasts at time t for variable x at forecast horizon h. The rescaled SEP surprise, $\hat{x}^*_{t,h}$, seeks to capture the certainty with which private sector expectations were being formed and effectively down weights periods where there was more disagreement about the FOMC's outlook.

We also control for the FOMC's SEP uncertainty. During each SEP round FOMC members are asked whether the uncertainty around their forecast is higher, lower, or about the same relative to the past 20 years. The SEP presents diffusion indexes of this uncertainty taking the difference between higher and lower over the total responses. While these measures are calculated for every SEP round, they have only been published since December 2020 (albeit with the indexes dating back to 2007). We treat the first principal component of the four indexes and as SEP uncertainty.

Table A.1: Principal Components of SEP Surprises Explain Monetary Surprises

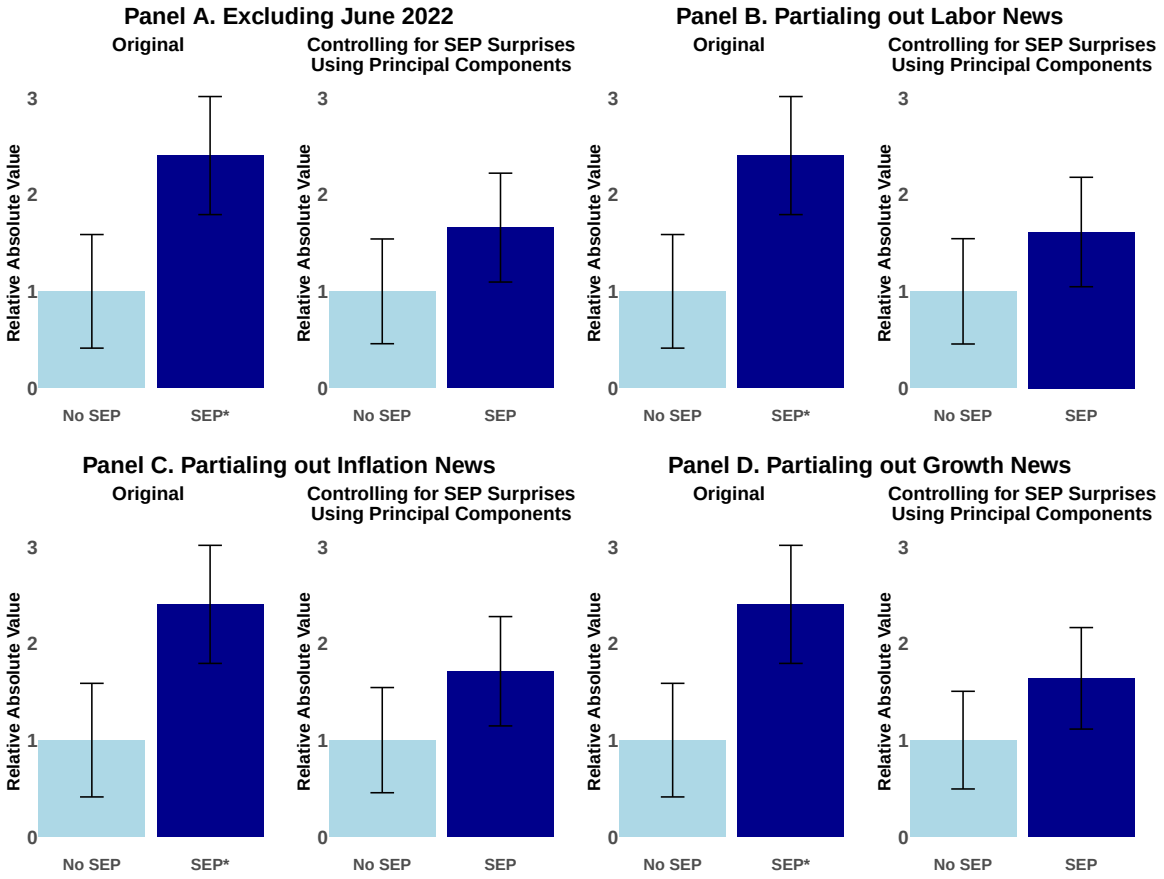
			Partialing out the Effects of:				
	(1) Base	(2) Rescaled Surprises	(3) SEP Uncertainty	(4) June 2022	(5) Labor News	(6) Inflation News	(7) Growth News
Current-Year:	0.02	0.04	0.01	0.05	0.02	0.02	0.02
	(0.14)	(0.12)	(0.14)	(0.14)	(0.14)	(0.15)	(0.15)
1-Year-Ahead:	0.20*	0.18$^+$	0.22$^+$	0.19*	0.20*	0.20$^+$	0.20$^+$
	(0.08)	(0.09)	(0.11)	(0.09)	(0.09)	(0.1)	(0.1)
2-Years-Ahead:	0.02	-0.02	0.02	-0.03	0.02	0.02	0.02
	(0.13)	(0.11)	(0.14)	(0.16)	(0.14)	(0.14)	(0.14)
R^2 :	0.27	0.23	0.22	0.24	0.26	0.21	0.21
Observations (T):	19	19	19	19	19	19	19

Notes: Each block presents the coefficient estimate and its standard error. Columns denote individual regressions. Stars denote rejection of the null hypothesis using 10% (+), 5% (*), and 1% (**) significance levels. Rescaled Surprises denote the SEP surprises rescaled by the standard deviation in participant disagreement. Labor news is measured by the Bloomberg Index ECSULBUS while inflation news is the Bloomberg Index BCMPUSIF and growth news is measured by the Bloomberg Index BCMPUSGR.

The results of these robustness exercises, as applied to the principal components of the SEPs, are presented in Table A.1. Note that the first column corresponds to the second column in Table 2. The results illustrate that the coefficient on the principal component associated with the year-ahead SEP surprises generally remains statistically significant and similar sized across the different specifications. Furthermore, the explained variation never drops below 20% and we continue to find

[33] This is motivated by Lahiri and Sheng (2010) who argue that forecaster disagreement captures their uncertainty. Similar approaches are used in Clements (2014) and Martinez (2020).

that there are no statistically significant differences between monetary policy surprises for SEP and non-SEP meetings after controlling for the SEP surprises; see Appendix Figure A.3.



Notes: Sample is 2018-2024. Plots are standardized such that that the non-SEP bars are equal to one. Whiskers denote the 95% confidence intervals and * indicates that we reject the null hypothesis that surprises during SEP and non-SEP meetings have the same absolute magnitude on average with at least 95% confidence..

Figure A.3: SEP Surprises are robust to explaining differences between SEP and non-SEP meetings

We also assess the robustness of the results over a longer sample. While the Bloomberg SEP survey is only available since December 2017, a random walk (i.e. no change) forecast can also provide insight. In this context the focus shifts from SEP surprises to SEP changes or revisions and is no longer about identifying a central bank information effect but rather whether there is any information content in the SEPs. For this exercise we consider several different samples. First, we consider the exact same sample as the Bloomberg survey (December 2017-present). Next, we extend the forecasts back to when the FOMC started publishing the SEP median in September 2015. We then calculate the SEP median changes for the period from June 2009 - June 2015 as if financial markets had access to those changes.[34] Finally, we consider the entire sample.

[34]Prior to September 2015 we calculate median SEP forecasts from the subsequently released individual forecasts.

The results are presented in Table A.2. The first column corresponds to the first column of Table A.1 and the second column of Table 2. The second column provides a direct comparison over the same sample using principal components of the SEP changes rather than the SEP surprises. While none of the horizons are individually significant, they actually have an overall better explanatory power of the monetary policy surprise than the SEP surprises do. Extending the sample back to 2015 indicates that changes in the year-ahead SEP forecasts provide significant explanations of monetary policy surprises and reasonably good overall fit.

The relationship between the SEP changes and monetary policy surprises disappears when considering the pre-September 2015 sample. Column (4) of Table A.2 shows that both the individual horizon coefficients at the total explanatory power falls considerably over this period. This is consistent with the central tendency and the range being noisier measures of the FOMC forecasts and less informative for financial markets relative to the median SEP forecast. This also explains the poor performance over the full sample in Column (5) where one needs to account for the start of the publication of the median forecasts in 2015.

Table A.2: Principal Components of SEP Changes Explain Monetary Surprises since 2015

		SEP Changes (i.e. Random Walk Forecast Surprises)			
	(1) SEP Surprises	(2) Dec '17-Latest	(3) Sep '15-Latest	(4) Jun '09-Jun '15	(5) Jun '09-Latest
Current-Year Forecasts:	0.02	-0.09	-0.12	0.09	0.04
	(0.14)	(0.13)	(0.11)	(0.07)	(0.07)
1-Year-Ahead Forecasts:	0.20*	0.28	0.29*	0.02	0.10
	(0.08)	(0.14)	(0.11)	(0.06)	(0.07)
2-Year-Ahead Forecasts:	0.02	-0.03	0.01	-0.03	-0.00
	(0.13)	(0.08)	(0.07)	(0.05)	(0.05)
R^2 :	0.27	0.31	0.28	0.20	0.17
Observations (T):	19	19	30	24	54

Notes: Each block presents the coefficient estimate and its standard error. Columns denote individual regressions. Stars denote rejection of the null hypothesis using 5% (*) and 1% (**) significance levels.

A.4 Re-examining the Macroeconomic Effects of Monetary Policy

We compare how accounting for SEP surprises alters how monetary policy affects the macroeconomy. We follow the approach taken by Bauer and Swanson (2023b) who reanalyze the regressions in Gertler and Karadi (2015) using a range of methods. For our purposes here we focus on the Local Projections with Instrumental Variables (LP-IV) approach from Ramey (2016) and Stock

and Watson (2018). The regressions take the form

$$X_{t+h} = \alpha_h + A_h(L)X_{t-1} + \theta_h X_{TY,t} + D_t + \eta_{h,t} \tag{A.8}$$

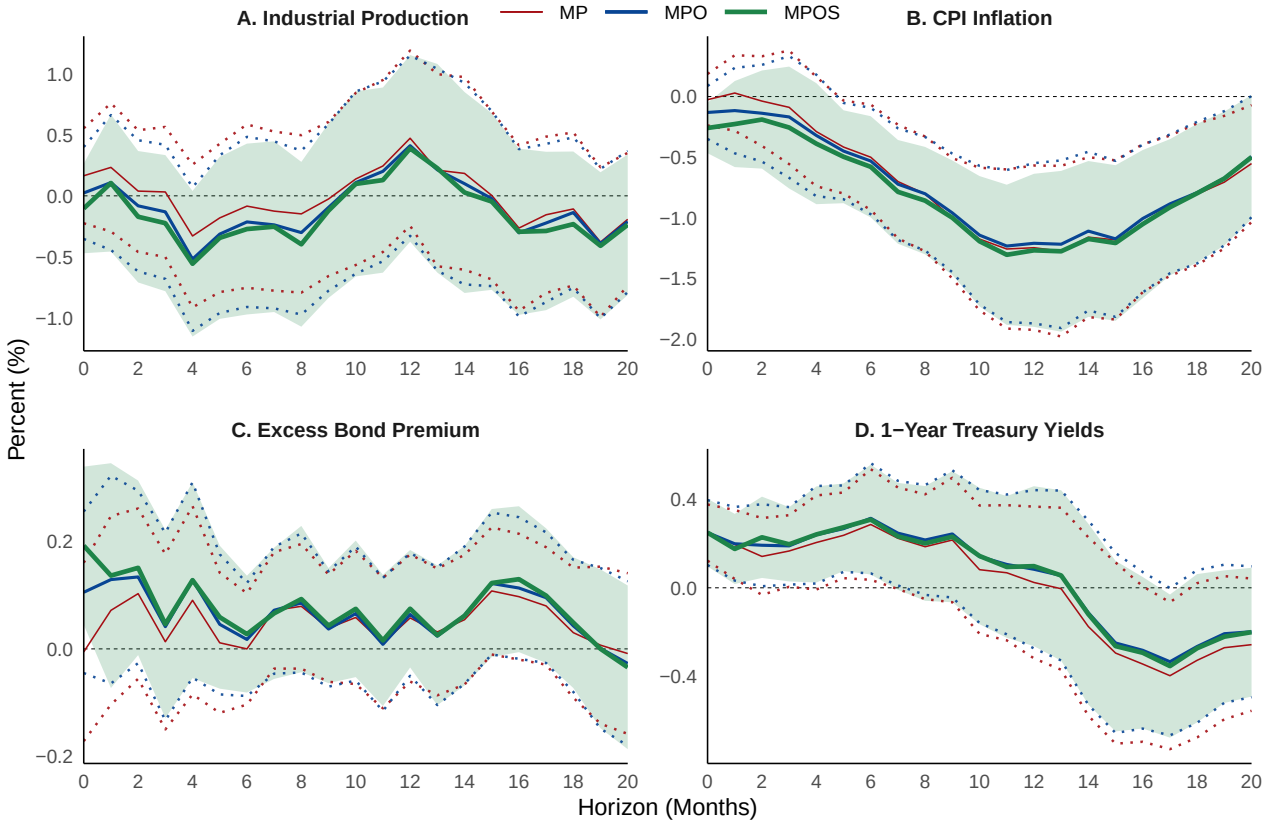
where X_t is a vector of four monthly variables at time t including the log of industrial production, the log of the consumer price index, the Gilchrist and Zakrajšek (2012) excess bond premium, and the Treasury yield.[35] The forecast horizon of the response function is denoted by h and is estimated separately for each variable and horizon where $A_h(L)$ is a matrix polynomial of degree 11 (allowing for 12 lags), θ_h is the coefficient of interest, $X_{TY,t}$ is the Treasury yield, D_t is a vector of dummy variables, and $n_{h,t}$ is the regression residual. We estimate the equation using two-stage least squares with three alternative monetary policy surprise measures: (1) the raw measure (mp), (2) just controlling for news effects (mpo), and (3) controlling for both news effects and SEP surprises (mpos). Speeches are excluded since they are not publicly available; see Swanson and Jayawickrema (2024). We choose the shortest sample while ensuring that the instruments remain strong. The sample is from January 2012 through December 2023 which primarily includes the period over which SEP surprises are available. We include dummy variables for each month from March 2020 - December 2021, similar to how others have modeled post-pandemic data; see Lenza and Primiceri (2022).[36] We compute standard errors as suggested in Montiel Olea and Plagborg-Møller (2021).

Figure A.4 presents the results. Each panel represents the estimated impulse response functions for the respective monetary policy surprises. The results show the largest differences for the consumer price index (Panel B) and the excess both premium (Panel C). The raw monetary policy surprise has no immediate impact on inflation. Controlling for news suggests an immediate decline of 0.15 percentage points while controlling for both news and SEP surprises indicates an immediate decline of 0.25 percentage points and shows somewhat stronger declines than the other measures for the first five months. The raw monetary policy surprise has no immediate effect on the excess both premium while controlling for news only implies an increase of roughly 10 basis points while controlling for both news and SEP surprises shows an immediate increase of 20 basis points. Monetary policy also has a more negative effect on industrial production when controlling for both news and SEP surprises. Overall, the results illustrate that removing the SEP surprises is consistent with

[35] We obtained the latest vintages of the data as of end-September 2025 from FRED (codes INDPRO and CPIAUCSL) and the Federal Reserve Board. We consider both 1-year and 2-year Treasury yields. We use the end-of-month values following Bauer and Swanson (2023b).

[36] The F-statistics on the strength of each monetary surprise measure as an instrument are 13.03, 11.69, and 10.96 respectively. The results are volatile but the instruments are stronger if only dummy variables for 2020 are included.

removing central bank information effects (Jarociński and Karadi, 2020) and provides a stronger signal of the effects of monetary policy on the macroeconomy.



Notes: Sample period: 2012:1–2023:12 with dummy variables from 2020:3-2021:12. MP: Raw monetary policy surprise. MPO: controlling for news only. MPOS: controlling for news and SEP surprises. MPO and MPOS are identical prior to December 2017 and for all non-SEP meetings. IRFs are normalized to be a response to a 25 bps increase in the yield of the 1-Year Treasury Yield. Shaded area and dotted lines denote the point-wise 90% confidence intervals.

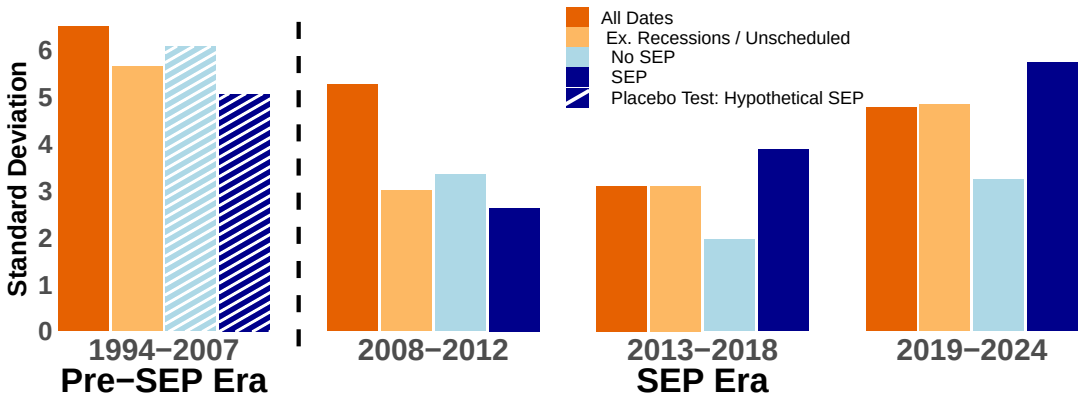
Figure A.4: Estimated Impulse Response Functions for Alternative Monetary Policy Surprises

B Supplemental Tables and Figures

Table A.3: Monetary Surprise Properties by Subsample

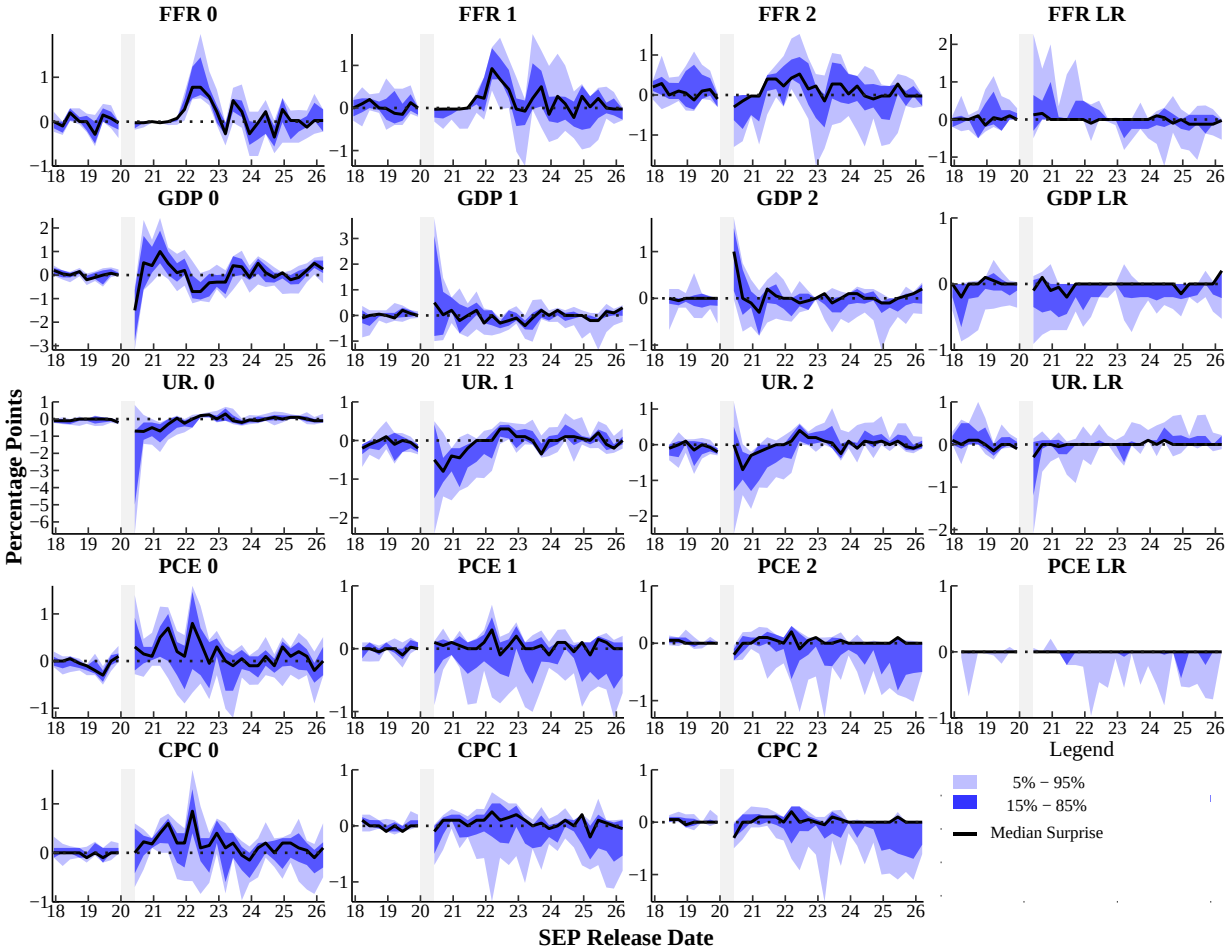
	Pre-SEP ('94-'07)			SEP ('08-'12)			'13-'18			'19-'24		
	T	**AM**	σ	**T**	**AM**	σ	**T**	**AM**	σ	**T**	**AM**	σ
Kuttner (2001)	108	3.96	7.67	42	3.14	8.22	48	0.63	1.29	46	1.97	4.6
No Recession + Unscheduled	97	2.75	4.78	28	0.54	0.71	48	0.63	1.29	44	1.39	2.53
No SEP	97	2.75	4.78	14	0.68	0.88	24	0.32	0.37	22	0.85	1.28
SEP				14	0.39	0.52	24	0.94	1.81	22	1.93	3.39
Gurkaynak Sack and Swanson (2005): Target	104	2.87	4.73	40	1.98	4.11	48	0.74	1.28	42	1.33	1.93
No Recession + Unscheduled	97	2.63	4.45	28	0.64	0.68	48	0.74	1.28	41	1.3	1.88
No SEP	97	2.63	4.45	14	0.72	0.73	24	0.35	0.35	21	0.95	1.45
SEP				14	0.56	0.65	24	1.13	1.8	20	1.66	2.27
Gurkaynak Sack and Swanson (2005): Path	104	7.75	11.11	40	5.26	7.46	48	3.94	5.78	42	7.44	11.67
No Recession + Unscheduled	97	7.67	11.11	28	3.96	5.91	48	3.94	5.78	41	7.53	11.81
No SEP	97	7.67	11.11	14	5.25	7.63	24	2.33	3.27	21	3.17	4.58
SEP				14	2.68	3.38	24	5.55	7.45	20	12.1	16.21
Gertler and Karadi (2015)	108	3.21	5.78	42	2.42	4.66	48	0.89	1.45	46	2.16	3.82
No Recession + Unscheduled	97	2.36	3.89	28	0.59	0.89	48	0.89	1.45	44	1.84	3
No SEP	97	2.36	3.89	14	0.64	0.98	24	0.48	0.8	22	1.45	2.33
SEP				14	0.54	0.81	24	1.29	1.88	22	2.23	3.58
Nakamura and Steinsson (2018)	108	2.83	4.35	42	2.19	3.81	48	1.24	1.52	46	2.05	2.94
No Recession + Unscheduled	97	2.32	3.26	28	1.03	1.37	48	1.24	1.52	44	1.89	2.43
No SEP	97	2.32	3.26	14	1.27	1.79	24	0.8	0.76	22	1.15	1.45
SEP				14	0.79	0.76	24	1.68	1.99	22	2.63	3.1
Bu Rogers and Wu (2021)	117	3.23	4.25	42	6.21	8.65	48	3.41	4.28	46	4.82	5.97
No Recession + Unscheduled	105	3	3.85	28	5.07	7.11	48	3.41	4.28	44	4.69	5.92
No SEP	105	3	3.85	14	4.86	7.49	24	2.69	3.33	22	3.7	4.23
SEP				14	5.28	6.4	24	4.12	5.11	22	5.68	7.33
Bauer and Swanson (2023): 2Y T-Note	119	4.43	6.51	43	3.2	4.51	48	2.6	3.59	46	3.58	5.57
No Recession + Unscheduled	105	3.83	5.47	28	2.32	3.32	48	2.6	3.59	38	3.54	5.32
No SEP	105	3.83	5.47	14	2.73	3.98	24	1.33	1.99	19	1.71	2.81
SEP				14	1.91	2.48	24	3.87	4.65	19	5.37	6.92
Bauer and Swanson (2023): 5Y T-Note	119	3.92	5.63	43	3.95	5.7	48	3.36	4.6	46	3.42	5.11
No Recession + Unscheduled	105	3.6	5.21	28	3.09	4.19	48	3.36	4.6	38	3.2	4.45
No SEP	105	3.6	5.21	14	3.76	4.97	24	1.77	2.39	19	1.66	2.54
SEP				14	2.43	3.32	24	4.96	6.06	19	4.75	5.74
Bauer and Swanson (2023): 10Y T-Note	119	2.81	4.06	43	3.51	5.99	48	2.43	3.29	46	2.32	3.42
No Recession + Unscheduled	105	2.66	3.86	28	2.34	3.07	48	2.43	3.29	38	2.06	2.85
No SEP	105	2.66	3.86	14	2.7	3.44	24	1.34	1.69	19	1.07	1.58
SEP				14	1.98	2.6	24	3.52	4.34	19	3.05	3.72
Bauer and Swanson (2023): T-Bond	119	2.22	3.2	43	3.6	6.23	48	1.69	2.18	46	1.65	2.74
No Recession + Unscheduled	105	2.22	3.22	28	2.79	3.88	48	1.69	2.18	38	1.27	1.88
No SEP	105	2.22	3.22	14	2.59	3.47	24	1.05	1.28	19	0.74	1.15
SEP				14	2.99	4.09	24	2.32	2.83	19	1.79	2.43
Bauer and Swanson (2023): MP	118	4.88	7.2	43	3.59	5.74	48	2.19	2.95	46	3.97	6.21
No Recession + Unscheduled	105	4.13	5.85	28	1.92	2.82	48	2.19	2.95	38	3.67	5.15
No SEP	105	4.13	5.85	14	2.44	3.71	24	1.28	1.48	19	1.77	2.56
SEP				14	1.41	1.52	24	3.1	3.84	19	5.56	6.6
Bauer and Swanson (2023): MPO	118	4.62	6.51	43	3.65	5.26	48	2.32	3.1	34	3.72	4.77
No Recession + Unscheduled	105	4.14	5.65	28	1.97	3	48	2.32	3.1	33	3.77	4.84
No SEP	105	4.14	5.65	14	2.03	3.35	24	1.57	1.95	17	2.23	3.24
SEP				14	1.91	2.63	24	3.07	3.87	16	5.42	5.74
Bauer and Swanson (2023): SP500	89	1.39	2.27	43	1.3	1.87	48	0.69	0.99	46	1.27	2.64
No Recession + Unscheduled	76	0.99	1.26	28	0.69	0.94	48	0.69	0.99	38	0.88	1.19
No SEP	76	0.99	1.26	14	0.84	1.15	24	0.47	0.65	19	0.47	0.65
SEP				14	0.53	0.67	24	0.9	1.15	19	1.29	1.55
Jarocinski and Karadi (2025): MP+CBI	120	5.03	7.9	43	3.77	6.03	48	1.82	2.69	48	3.11	4.81
No Recession + Unscheduled	106	4.01	5.67	28	1.55	2.41	48	1.82	2.69	44	2.91	4.32
No SEP	106	4.01	5.67	14	2.03	3.13	24	0.88	1.31	22	1.7	2.53
SEP				14	1.06	1.4	24	2.76	3.52	22	4.13	5.56
Jarocinski and Karadi (2025): MP	120	4.38	7.29	43	3.47	5.37	48	2.25	3.18	48	3.16	4.6
No Recession + Unscheduled	106	3.4	4.73	28	2.13	2.9	48	2.25	3.18	44	3.13	4.45
No SEP	106	3.4	4.73	14	2.82	3.85	24	1.2	1.73	22	1.57	2.49
SEP				14	1.43	1.56	24	3.31	3.97	22	4.7	5.79
Jarocinski and Karadi (2025): CBI	120	2.47	3.59	43	2.3	3.64	48	1.42	1.96	48	1.58	2.01
No Recession + Unscheduled	106	1.99	2.69	28	1.57	2.24	48	1.42	1.96	44	1.56	1.94
No SEP	106	1.99	2.69	14	1.83	2.64	24	1.02	1.34	22	1.14	1.4
SEP				14	1.31	1.59	24	1.82	2.39	22	1.98	2.4
Boehm and Kroner (2025)	94	0.64	0.83	42	1.16	1.46	48	0.9	1.09	46	0.92	1.1
No Recession + Unscheduled	87	0.62	0.8	28	1.18	1.45	48	0.9	1.09	44	0.92	1.1
No SEP	87	0.62	0.8	14	1.22	1.5	24	0.78	0.91	22	0.97	1.14
SEP				14	1.14	1.33	24	1.02	1.24	22	0.88	1.09

Notes: T denotes sample size. AM denotes absolute mean while σ is the standard deviation for each sample respectively.



Notes: Each bar represents the standard deviation of the respective sample. Striped bars denote placebo test for hypothetical SEP dates based on the typical March, June, September, December schedule.

Figure A.5: Standard Deviation in Monetary Policy Surprises by Era and Subsample



Notes: Constructed as the difference between the FOMC's SEP projection less the Bloomberg SEP projection. Negative (positive) values imply that the private sector expectations were higher (lower) than the FOMC. Ranges denote the degree of cross-sectional disagreement about the forecast. Shared area denotes NBER recession months. March 2020 is excluded because no SEP was released. long-run Core PCE forecast is never published in the SEP. FFR: Federal Funds Rate, GDP: Real GDP Growth, UR: Unemployment Rate, PCE: Personal Consumption Expenditures Inflation Rate, CPC: Core PCE Inflation.

Figure A.6: SEP Surprises and Uncertainty (December 2017 – March 2025)

Table A.4: Bloomberg SEP Surprise Properties (Relative to Random Walk SEP Surprises)

	Mean Absolute Error				Root Mean Square Error			
	0	**1**	**2**	**LR**	**0**	**1**	**2**	**LR**
Federal Funds Rate	0.53**	0.50**	0.57	1.12	0.52*	0.52	0.46	0.87
Real GDP Growth	0.46	0.55	0.73	1.75	0.27	0.31	0.63	1.36
Unemployment Rate	0.45	0.63	0.61	1.43	0.25	0.42	0.48	1.54
PCE Inflation	0.58*	0.65**	0.88		0.54	0.68	0.83	
Core PCE Inflation	0.58**	0.75	1.11		0.61*	0.71	1.00	

Notes: Sample June 2018 - March 2026. Values less than 1 imply that the Bloomberg SEP forecasts are more accurate the a random walk forecast. Stars denote that the differences are statistically significant following Diebold and Mariano (1995) using a 95% confidence (*) and a 99% confidence (**) level.

Table A.5: Individual Fed Information Effect Regressions by Variable

	(1) GDP	(2) UR	(3) PCE	(4) CPC
FFR	−0.15*	0.06	0.01	0.02
	(0.07)	(0.03)	(0.06)	(0.04)
GDP	0.01	-0.02	0.06	-0.04
	(0.05)	(0.04)	(0.05)	(0.04)
UR	−0.16**	0.16*	0.04	0.05**
	(0.06)	(0.07)	(0.04)	(0.01)
PCE	0.07	-0.07	-0.03	−0.1**
	(0.07)	(0.05)	(0.13)	(0.04)
CPC	-0.09	0.08	0.07	0.11**
	(0.07)	(0.07)	(0.06)	(0.04)
$\hat{\sigma}$	0.31	0.17	0.24	0.22
R^2	0.13	0.07	0.06	0.05
Forecasters (N)	63	60	51	52
Observations (NxT)	2,425	2,387	2,003	2,041

Notes: Sample: December 2017 - December 2023. All regressions exclude March 2020 - December 2020. All regressions include forecaster fixed effects and controls for labor news, inflation news and growth news. Labor news is measured by the Bloomberg Index ECSULBUS while inflation news is the Bloomberg Index BCMPUSIF and growth news is measured by the Bloomberg Index BCMPUSGR Forecast horizon is either the percent change over 4 quarters 4 quarters from now or the annual average over the next 4 quarters (UR). Standard errors are clustered by forecaster and time. Stars denote rejection of the null hypothesis using 10% (+), 5% (*) and 1% (**) significance levels.

Table A.6: Individual Fed Information Effect Regressions by Variable (Time Fixed Effects)

	(1) GDP	(2) UR	(3) PCE	(4) CPC
FFR	0	-0.01	0.01	-0.05
	(0.05)	(0.05)	(0.05)	(0.04)
GDP	0.01	-0.01	0.04	-0.05
	(0.06)	(0.04)	(0.05)	(0.04)
UR	-0.12	0.13*	0.04	0.06**
	(0.07)	(0.05)	(0.04)	(0.02)
PCE	0.03	-0.05	-0.06	−0.08*
	(0.08)	(0.05)	(0.1)	(0.04)
CPC	-0.07	0.06	0.07	0.09**
	(0.06)	(0.08)	(0.08)	(0.03)
$\hat{\sigma}$	0.3	0.16	0.24	0.21
R^2	0.21	0.19	0.12	0.11
Forecasters (N)	63	60	51	52
Observations (NxT)	2,425	2,387	2,003	2,041

Notes: Sample: December 2017 - December 2023. All regressions exclude March 2020 - December 2020. All regressions include forecaster and time fixed effects. Forecast horizon is either the percent change over 4 quarters 4 quarters from now or the annual average over the next 4 quarters (UR). Standard errors are clustered by forecaster and time. Stars denote rejection of the null hypothesis using 10% (+), 5% (*) and 1% (**) significance levels.