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# 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 1.5 to 2 times larger than those without releases. To identify the information channel, 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.

Keywords: Monetary Policy Shocks; High Frequency Identification; Empirical Monetary Economics
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# 1 Introduction

The identification of exogenous monetary policy shocks is a central challenge in macroeconomic research, with important implications for understanding how monetary policy transmits through the economy. Reliable identification of policy shocks is essential for measuring the causal effects of monetary policy. However, separating truly exogenous policy changes from endogenous responses to economic conditions has proven difficult using traditional approaches. Early studies relied on narrative methods (Romer and Romer, 1989, 2004) or recursive identification schemes in structural vector autoregressions (Bernanke and Blinder, 1992; Christiano et al., 1999), but these approaches faced criticism for their reliance on strong assumptions about timing and the orthogonality of policy shocks to other economic disturbances (Leeper et al., 1996; Uhlig, 2005). The identification challenge is particularly acute for studying the effects of monetary policy because central banks typically respond systematically to economic developments, making it difficult to isolate the independent effect of policy actions. These identification problems have motivated a substantial literature seeking more credible methods for isolating exogenous monetary policy variation.

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, recent research has revealed that even these measures may be contaminated by multiple distinct information components beyond pure policy shocks. Monetary policy surprises, measured as high-frequency interest rate changes around central bank announcements, may include the central bank's response to news (Bauer and Swanson, 2023a,b) and/or a central bank information effect (Jarociński and Karadi, 2020, 2025; Miranda-Agrippino and Ricco, 2021; Hoesch et al., 2023), in addition to a monetary policy shock.

In this paper we contribute to the growing literature on decomposing monetary policy surprises by incorporating an important feature of Fed communication—the intermittent release of projections through the Summary of Economic Projections (SEP). The recurring releases allow us to consider the central bank information effect as 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 release of a proxy of central bank forecasts to the private sector during every other meeting. Our framework shows that monetary policy surprises following a central bank forecast release are likely to be larger than those following a non-release. Furthermore, our framework implies that if the forecast release is a reasonably 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 across a range of commonly used high frequency monetary policy surprise measures.

In line with our theoretical results, we document that since 2009, the identified monetary "shocks" during regular FOMC meetings with SEP's are significantly larger than those from regular FOMC meetings without SEPs. We then use a Bloomberg survey that asks specifically about what financial market participants expect the Federal Reserve's projections to be. We generate SEP surprises as the difference between the Bloomberg survey and the median forecasts from the SEP. We use a modified Taylor Rule to identify the effects of SEP surprises on monetary policy surprises. SEP surprises explain up to 30 percent of the variation in monetary policy surprises during SEP meetings. This accounts for essentially all the difference between the magnitudes of SEP and non-SEP meeting monetary policy surprises. 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 indicate 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 LSAPs). 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 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 understanding and evaluating the FOMC forecasts. Going back to Romer (2010) there has been an interest in understanding the FOMCs forecasts with numerous subsequent papers including Sheng (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 (2025). We extend this 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 testable predictions. The third section illustrates the differences in monetary policy surprises between SEP and non-SEP meetings. Section 4 describes the data, the surveys, and how we construct SEP surprises. Section 5 discusses the methods we use to disentangle the effects of SEP surprises from monetary policy surprises and presents the results. Section 6 revisits whether monetary policy surprises matter for private forecast revisions. Finally, section 7 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 Simple Model with 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 exogenous 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 $\eta_t$ is exogenous. It is assumed, for simplicity, that the output gap evolves exogenously.

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 $\epsilon_t$ is exogenous and $\alpha > 0$ denotes the responsiveness to the output gap. The parameter $\alpha$ is known by the central bank but is not known or observed by the private sector.[1] All other parameters are known by all agents. $x_t$ and $i_t$ are observed by all agents but $\epsilon_t$ 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 $\alpha \sim N\left(\hat{\alpha}_t, \sigma_{\hat{\alpha}_t}^2\right)$, 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, $\epsilon_t$, is assumed to be the monetary policy shock.

[1] Note that Bauer and Swanson (2023b) extends the framework to allow for time-varying $\alpha_t$. 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, $\epsilon_t$, 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.[2] 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.[3] 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.

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

[3]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 forecasts release allows for this to be measured directly.

**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 and allow the central bank to update its forecasts at every meeting. Doing so adds an additional term in Eq. (13): $\alpha(\tilde{x}_t^{CB} - \rho\tilde{x}_{t-1}^{CB}) = \alpha(\eta_t + v_t^{CB} - \rho v_{t-1}^{CB})$, which represents the central bank's forecast update surprise. In this case, which we consider more generally in Appendix A.1, central bank forecast updates have limited impacts on the relative size of non-release surprises as long as the private sector continues to anchor their expectations to the forecast releases and the underlying data generation process is highly persistent.

The differences between the forecast release and non-release cases implies 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. This 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. Formally we should find on average that

$$\mathbb{E}(|mps_{t,R_t=1}|) \geq \mathbb{E}(|mps_{t,R_t=0}|).^{4}$$

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 on average.

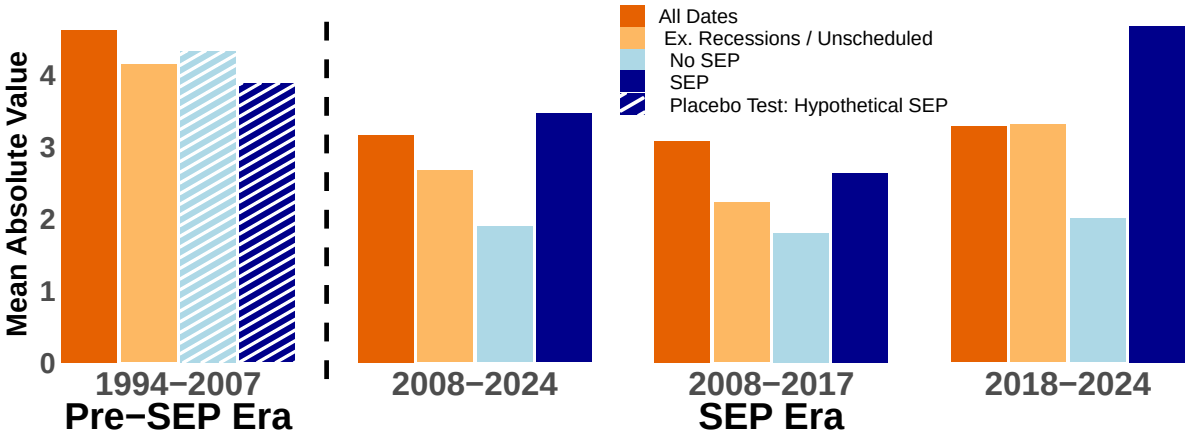
The rest of the paper is devoted to testing these two predictions. In the next section we assess whether the first prediction holds across a number of alternative measures of monetary policy surprises. The subsequent sections assess the relevance of the second prediction.

## 3 Monetary Policy Surprises Are Different for SEP Meetings

We start by examining 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 additional systematic information. We plot the mean absolute value of the series over the pre-SEP era from 1994-2007 and then the SEP era from 2008-2024 with sub-samples

[4] 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.

from 2008-2017 and 2018-2024. We focus on regularly scheduled meetings excluding recessions and decompose them into SEP and non-SEP meetings for the SEP era. We also consider a simple placebo test for the pre-SEP era.




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: Properties of Bauer and Swanson (2023)'s Orthogonalized Monetary Policy Surprise

Figure 1 shows that FOMC meetings which feature SEP releases (i.e., those following the March, June, September, and December meetings) exhibit larger surprises (in absolute terms) than FOMC meetings without SEPs (January or February, April or May, July or August, and October or November). This is especially true since 2018.[5]

Notably, as a control case, the pre-SEP era reveals that surprises are nearly identical between the meetings across the dates. If policy shocks or other meeting-specific factors were systematically larger in March/June/September/December for seasonal or institutional reasons unrelated to forecast releases, we should observe similar patterns before 2008. We do not. Furthermore, the results do not appear to be driven by press conferences, which initially only occurred following SEP meetings, since our results are even stronger post-2019 when all meetings have press conferences.

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. Specifically, the measures we include are from Kuttner (2001), Gürkaynak et al. (2005), Nakamura and Steinsson (2018), Bu et al. (2021), Bauer and Swanson (2023a), Jarociński (2024) and Jarociński and Karadi (2025).[6]

[5] Appendix Figure A.4 shows similar results for the standard deviations.

[6] Publicly available surprises are from Bauer and Swanson (2023a), Acosta et al. (2024), Brennan et al. (2024),

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

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

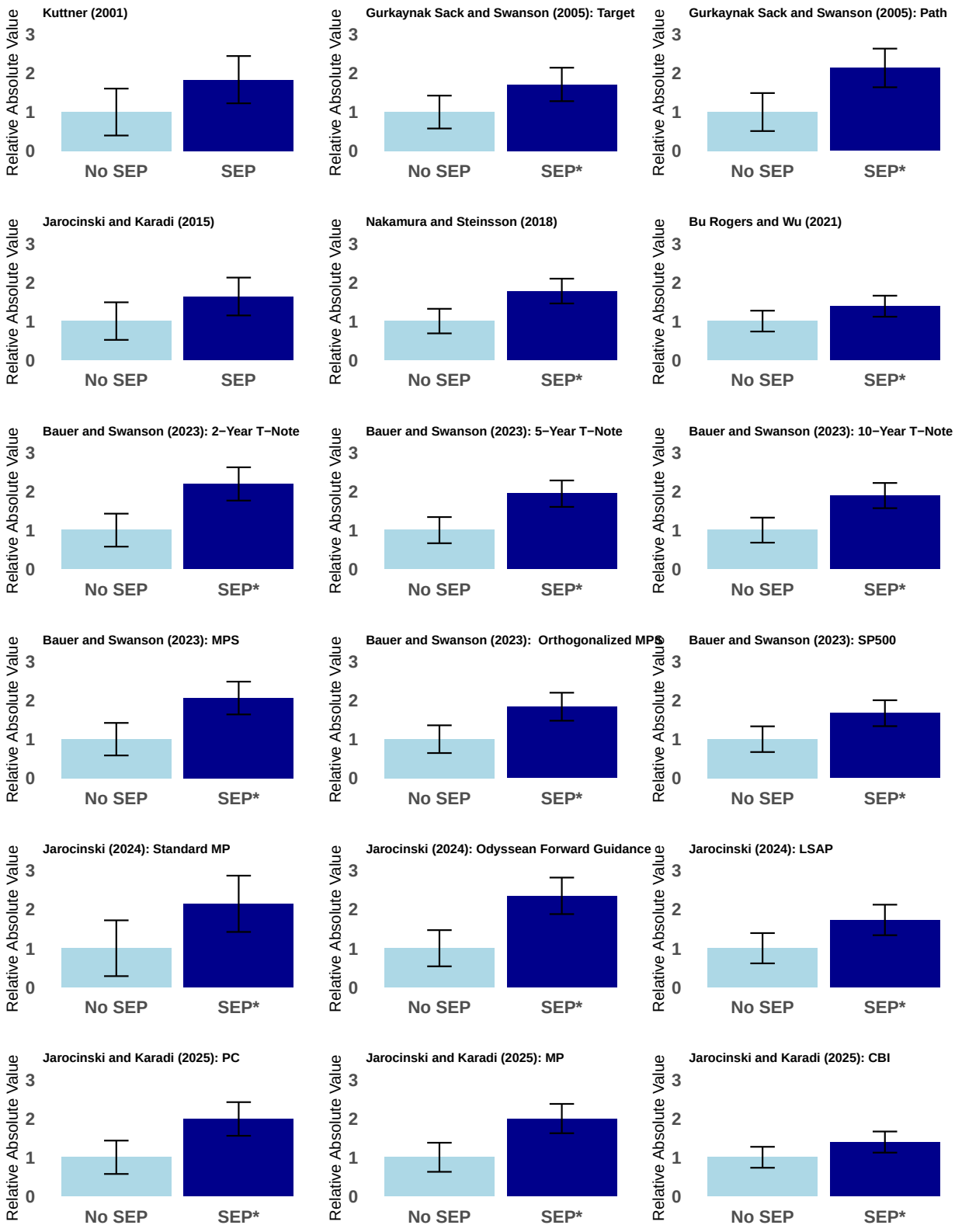
where $|mps_{i,t}|$ is the absolute value of some monetary policy surprise measure $i$ at time $t$, $\beta_{i,0}$ captures the measure-specific mean absolute value of the monetary policy surprises for regular FOMC meetings without SEP releases while $\beta_{i,1}$ captures how much the measure-specific 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 July 2009 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.

The results in Figure 2 show that the typical surprise associated with an SEP meeting is significantly larger (in an absolute sense) than non-SEP meeting surprises. Of the 18 measures of monetary policy surprises considered, only two do not show significant differences for SEP meetings. For example, focusing on the Gürkaynak et al. (2005) path surprise in the third column and first row of Figure 2 shows that the mean absolute value of SEP meeting surprises is more than 2-times larger than surprises in non-SEP meetings. While this is among the largest differences, across all measures the ratio is generally between 1.5 and 2 times larger than the non-SEP meetings. Interestingly, the measure of central bank information (CBI) from Jarociński and Karadi (2025) shows the smallest (albeit still statistically significant) difference between SEP and non-SEP meetings.[7]

Jarociński (2024), and Jarociński and Karadi (2025). Special thanks to the authors for making their data public.

[7] 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 information effects.




Notes: Sample includes all regularly scheduled meetings from July 2009 - October 2024 (or last available date prior to that) and excludes regular meetings in 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 95% confidence intervals around the estimates 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 2: Relative Size of Monetary Policy Surprises for SEP and non-SEP Meetings (2009-2024)

Overall, this section shows that most 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 the data followed by our approach for doing so.

# 4 Data

## 4.1 The Summary of Economic Projections

The Federal Open Market Committee (FOMC) has released the SEPs 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 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). Since then, the SEP has gone through several notable changes which have sought to increase clarity about the FOMC's views of the economy.[8]

The SEP was initially released 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. The first major change occurred in April 2009 when the FOMC added forecasts of the long-run for real GDP growth, the unemployment rate, and PCE inflation.[9] The next major change occurred in 2012 when the FOMC released forecasts of the Federal Funds Rate and changed the release schedule such that it became every other meeting in March, June, September, and December.[10] The latest change occurred in September 2015 when the FOMC started releasing median forecasts in addition to the central tendency and ranges.

[8] There are differing views on the effectiveness of these changes; e.g. see Bernanke (2016) and Sahm (2024).
[9] Long-run core PCE inflation forecasts are typically assumed to be 2%; see Gonzalez-Astudillo and Tanvir (2025).
[10] 3-year-ahead forecasts following both the September and December meetings.

### 4.2 The Bloomberg SEP Survey

Since December 2017, Bloomberg has conducted a regular survey of roughly 50 financial market participants and economists at major banks before each FOMC meeting. Prior to SEP meetings the survey specifically asks 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.[11]

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.[12] 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.[13] 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 robustness section 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.

[11] 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.

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

[13] 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).

### 4.3 SEP Surprises

We now 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

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

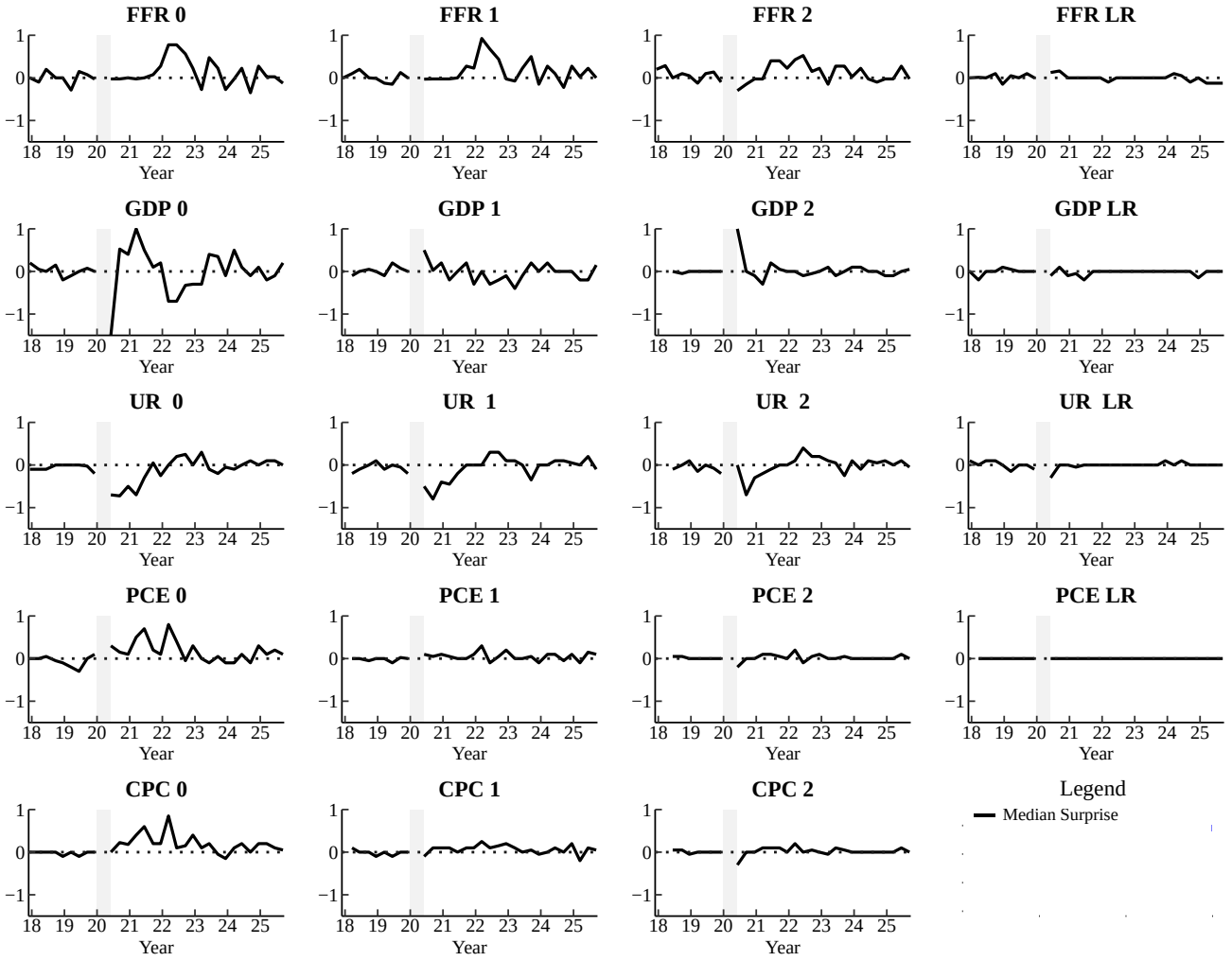
where $\tilde{x}^{PS}_{t,i,h}$ is the prediction of the SEP forecast at time $t$ by individual $i \in N_t$ in the Bloomberg survey sample of private forecasters for variable $x \in \{FFR, GDP, UR, PCE, CPC\}$ at forecast horizon $h \in \{0, 1, 2, LR\}$ while $med\left\{\tilde{x}^{PS}_{t,i,h}\right\}$ 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 $t$.[14] We use the median of individual survey participants to capture the typical private sector expectation without being distorted by outliers. 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 September 2025. Each row captures a different variable while each column denotes a different forecast horizon. The shaded gray area denotes the NBER recession in 2020 and coincides with the gap in the SEP surprises in March 2020 when the FOMC did not release a forecast. The FOMC also 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.[15]

[14] 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.

[15] 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 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. Shared area denotes NBER recession months. March 2020 is excluded because no SEP was released. The long-run Core PCE forecast is excluded because it 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 3: SEP Surprises by Horizon and Variable (December 2017 – September 2025)

While the surprises 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 any uncertainty about the private sector's beliefs. We can account for this by constructing the full range of survey disagreement about the SEP and the resulting surprises. This is shown in Appendix Figure A.5. 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 indicates continued private sector concern about the upside risk to inflation.

# 5 Disentangling SEP Surprises from 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 features such as forward guidance could also increase the size of the surprise. Our goal is to identify the unique effect of SEP surprises independent from other aspects of the information released during 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

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

where $mpso_{t,R_t=1}$ is the orthogonalized monetary policy surprise when the SEP is released. Our key focus is to identify the central bank information. One approach, following Jarociński and Karadi (2025), would be to use sign restrictions and heteroskedasticity to identify this information. Instead, we use the fact that the central bank releases its forecast to directly measure the surprises that are associated with that information.

However, we need to translate the theoretical framework into empirical practice. Our framework focuses on a single variable at a single horizon, i.e. the current output gap. In practice the central bank 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.

### 5.1 Modified Taylor Rule

We impose structure on the SEP surprises using a modified Taylor Rule. We assume, following Gonzalez-Astudillo and Tanvir (2025), that the FOMC uses a modified Taylor rule to set monetary policy and that the parameters of this Taylor rule can be elicited from the SEP's median forecasts. In particular, Gonzalez-Astudillo and Tanvir (2025) estimate a time-varying modified Taylor-rule for each forecast horizon using median SEP forecasts such that

$$\boldsymbol{FFR}_h = \boldsymbol{\rho} \odot \boldsymbol{FFR}_{h-1} + (1-\boldsymbol{\rho}) \odot (\boldsymbol{FFR}_{LR} + \boldsymbol{\alpha}^{\pi} \odot (\boldsymbol{CPC}_h - 2) + \boldsymbol{\alpha}^{y} \odot 2(\boldsymbol{UR}_{LR} - \boldsymbol{UR}_h)) + \boldsymbol{\gamma}_h + \boldsymbol{\psi} + \boldsymbol{\epsilon}_h, \tag{17}$$

where $\boldsymbol{FFR}_h$ is a T×1 vector of the federal funds rate target forecast for horizon h, while $\boldsymbol{FRR}_{h-1}$ is a T×1 vector of the federal funds rate target forecast for the previous horizon; $\boldsymbol{FRR}_{LR}$ is a T×1 vector with the long-run federal funds rate target projection; $\boldsymbol{CPC}_h$ is a T×1 vector with the core PCE inflation rate projection for horizon h where the target is assumed to be 2 percent; $\boldsymbol{UR}_{LR}$ is a T×1 vector with the long-run unemployment rate forecast while $\boldsymbol{UR}_h$ is a T×1 vector with the unemployment rate forecast for horizon h. The unemployment rate gap is translated to an output gap using typical Okun's law estimates of 2. The coefficients are time varying such that $\boldsymbol{\rho}$, $\boldsymbol{\alpha}^{\pi}$ and $\boldsymbol{\alpha}^{y}$ are also T×1 vectors. $\odot$ denotes the element-wise product and the final three terms capture the horizon and quarter specific fixed effects and the residual.

Gonzalez-Astudillo and Tanvir (2025) estimate Eq. (17) jointly across all forecast horizons using Bayesian methods over the period from January 2012 through June 2025. They show that the interest rate predictions generated by the model closely mirror those in the median SEP forecasts. Additionally, the authors conduct a real-time exercise in which they re-estimate the model and record the real-time parameter estimates reflecting only information up through that period.[16]

We can obtain the central bank information differential by taking Eq. (17) and the resulting real-time estimates as the FOMC's underlying model for generating the SEP. If we replace the forecasts in Eq. (17) with the corresponding SEP surprises and use the real-time estimates of the parameters, then the resulting equation summarizes all of the relevant information at each horizon

$$\tilde{\boldsymbol{\rho}} \odot \widehat{\boldsymbol{FFR}}_{h-1} + (1-\tilde{\boldsymbol{\rho}}) \odot \left( \widehat{\boldsymbol{FFR}}_{LR} + \tilde{\boldsymbol{\alpha}}^{\pi} \odot (\widehat{\boldsymbol{CPC}}_h - \widehat{\boldsymbol{CPC}}_{LR}) + \tilde{\boldsymbol{\alpha}}^{y} \odot 2(\widehat{\boldsymbol{UR}}_{LR} - \widehat{\boldsymbol{UR}}_h) \right), \tag{18}$$

where the tildes over the parameters denote the usage of real-time parameter estimates obtained

[16] In Appendix A.2 we follow the approach in Bauer et al. (2024) to obtain real-time time-varying estimates of the private sector's implicit perception of the monetary policy rule. These differ from those estimated for the FOMC in Gonzalez-Astudillo and Tanvir (2025) but are broadly similar to those estimated by Bauer et al. (2024) for other professional forecasters across alternative survey frequencies.

from Gonzalez-Astudillo and Tanvir (2025) at each point in time.[17] We construct $\widehat{\boldsymbol{CPC}}_{LR}$ by assuming that the FOMC's long-run core PCE forecast is always 2%. Our approach 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. (18). The current year is based on the non-inertial version of the rule 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 and Romer (2008) who found that differences between FOMC and Federal Reserve staff forecasts help explain monetary policy surprises. To the extent that Federal Reserve staff forecasts are related to private sector expectations of the FOMC forecasts, then we are likely 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 |

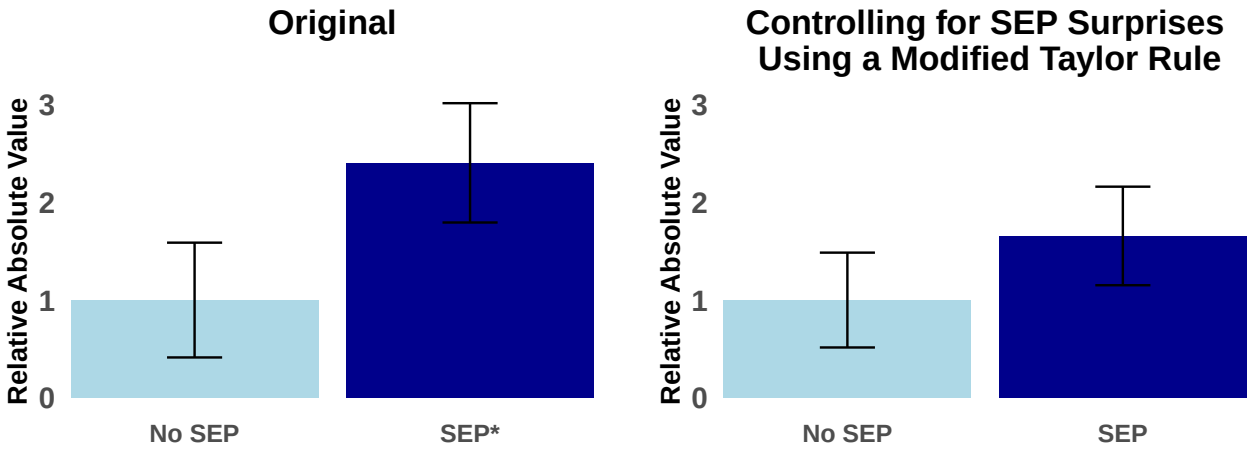
*Notes: 2018-2024. Standard errors in parentheses. Rejection of the null hypothesis based on critical values at 10% (+), 5% (*) and 1% (**) significance levels.*

Column (1) likely overstates the separately identifiable contribution of SEP surprises because Eq. (18) includes Federal Funds Rate (FFR) surprises which are a function of the monetary policy

[17] Note that this effectively allows for time-varying $\alpha_t$ 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.

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%.[18]

Next, we orthogonalize the monetary policy surprises with respect to the SEP surprises and examine how that changes the monetary policy surprises for SEP and non-SEP meetings. We focus on the inertial Taylor Rule estimated using instrumental variables. The results are shown in Figure 4 where the first panel shows the properties as before without controlling for SEP surprises while the second panel shows the properties after controlling SEP surprises.




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 4: Properties of Bauer and Swanson (2023)'s Orthogonalized Monetary Policy Surprises

Figure 4 illustrates that there is an economically meaningful and statistically significant difference between the SEP and non-SEP monetary policy surprises before controlling for the SEP surprises but not after. The differences are no longer significantly different visually or statistically. Thus, the results clearly suggest that monetary policy surprises during meetings where the SEP is released are contaminated by central bank information and it is possible to quantify and remove the extent of that contamination using our approach.

### 5.2 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,

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

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

$$\boldsymbol{S} = \boldsymbol{F}\boldsymbol{\Lambda} + \boldsymbol{\eta} \tag{19}$$

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.

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 the long-term.

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. While this is lower than the modified Taylor rule, it is a more realistic estimate of the actual central bank information since it excludes potential endogeneity stemming from the Federal Funds Rate surprises that were included in the modified inertial Taylor rule approach.

We also consider other forms of the principal components by estimating them separately by horizon or by variable. The results are shown in the second and third columns of Table 2 and again indicate that three principal components explain almost a third of the total variation of the monetary policy surprises. Overall, the 1-year-ahead surprises seem to be the most significant and the most relevant surprises by variable are the inflation surprises.[19]

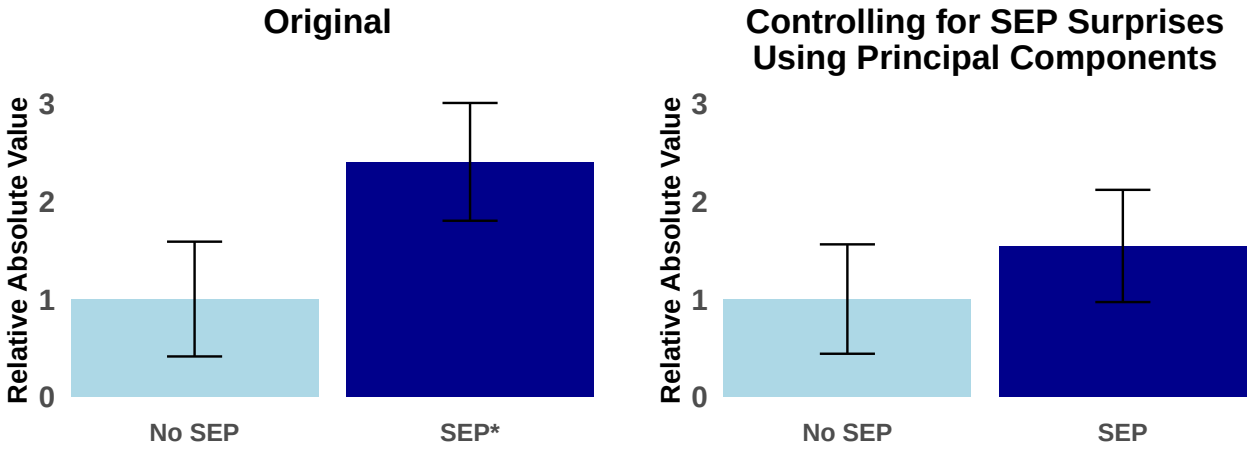
[19]See Appendix A.3 for an exploratory analysis where we consider each individual horizon and variable separately across a wide range of monetary policy surprises. We also considered a number of model selection procedures to select across variables and horizons (not shown). Overall, the results consistently 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.

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 again 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.




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.

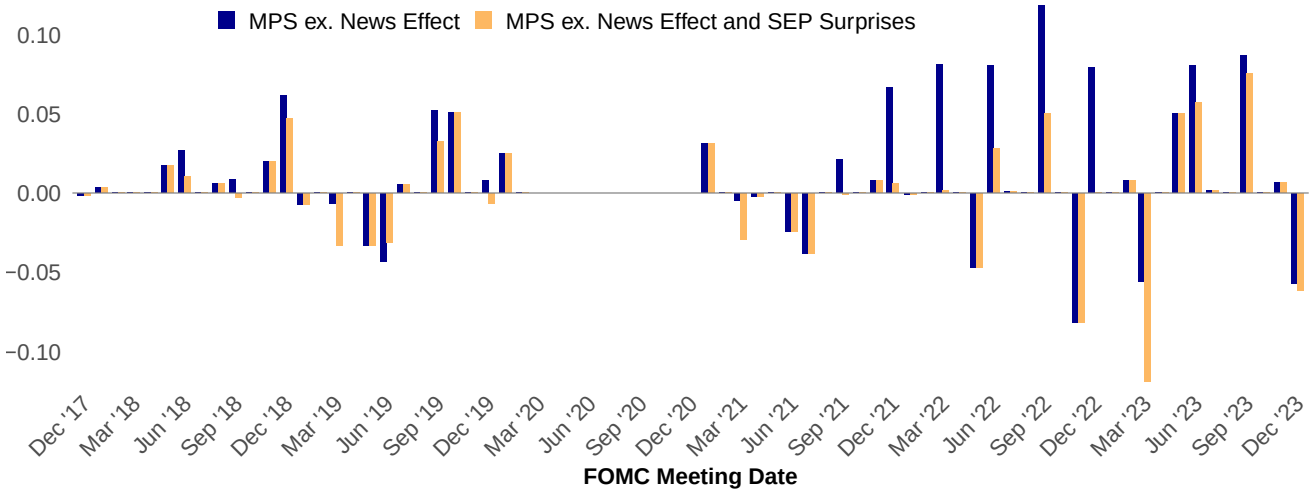
Figure 5: Properties of Bauer and Swanson (2023)'s Orthogonalized Monetary Policy Surprises

Figure 5 presents the results. Controlling for the SEP surprises substantively reduces the absolute value of the monetary policy surprises such that the differences between SEP and non-

SEP dates are no longer statistically significant. This again provides strong evidence consistent with our theoretical framework that we have identified and effectively removed the central bank information occurring due to the release of the forecasts from monetary policy surprises.

Next we examine the resulting time series of the monetary policy surprises to understand how removing the SEP surprises changes their profile. For this exercise we plot both the series from Bauer and Swanson (2023a) as well as our series which removes the SEP Surprises using principal components from December 2017 until 2024.

The results are shown in Figure 6. Prior to the pandemic the differences between the series are relatively small but clearly noticeable. March 2019 stands out as the largest pre-pandemic difference where removing the SEP surprise makes the monetary policy surprise more negative.




Notes: Surprises are identical prior to December 2017 and for all non-SEP meetings. Surprises are excluded from March-December 2020.

Figure 6: Comparing Effect of Removing SEP Surprises on Monetary Policy Surprises

The differences between the two monetary policy surprise series have become larger since 2021. If only news effects are excluded in 2022 then the series suggest that monetary policy surprises were consistently large and positive. However, after removing the SEP surprises they become much smaller. This implies that much of the unexpected tightening was due to faster than expected upward revisions in the FOMC inflation forecasts. The major exception was following the March 2023 FOMC meeting where in the midst of the large bank failures the FOMC revised down their forecasts by less than markets expected which limited the easing in the policy stance. Overall, this illustrates that there are key differences between the monetary policy surprises before and after controlling for SEP surprises and that these differences are economically meaningful.

### 5.3 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 change when using the rescaled SEP surprises to account for survey disagreement.

One way to capture disagreement within the surprise measure is to rescale the surprise based on the ex-ante uncertainty that the private sector had prior to the release of the SEP.[20] We thus reformulate eq. (15) as

$$\hat{x}^*_{t,h} = \frac{\tilde{x}^{CB}_{t,h} - med\left\{\tilde{x}^{PS}_{t,i,h}\right\}}{\widehat{\sigma}_{\tilde{x}^{PS}_{t,h}}} \tag{20}$$

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.

The results of these robustness exercises, as applied to the principal components of the SEPs, are presented in Table 3. 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 that there are no statistically significant differences between monetary policy surprises for SEP and non-SEP meetings after controlling for the SEP surprises.[21]

[20] 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) by rescaling ex-post errors by ex-ante uncertainty.

[21] See Appendix Figure A.6.

Table 3: Principal Components of SEP Surprises Explain Monetary Surprises

| | | | Partialing out the Effects of: | | | |
|---|---|---|---|---|---|---|
| | (1) Base | (2) Rescaled Surprises | (3) June 2022 | (4) Labor News | (5) Inflation News | (6) Growth News |
| Current-Year Forecasts: | 0.02 | 0.04 | 0.05 | 0.02 | 0.02 | -0.11 |
| | (0.14) | (0.12) | (0.14) | (0.14) | (0.15) | (0.19) |
| 1-Year-Ahead Forecasts: | 0.20* | 0.18 | 0.19* | 0.20* | 0.20 | 0.20* |
| | (0.08) | (0.09) | (0.09) | (0.09) | (0.10) | (0.08) |
| 2-Year-Ahead Forecasts: | 0.02 | -0.02 | -0.03 | 0.03 | 0.02 | 0.05 |
| | (0.13) | (0.11) | (0.16) | (0.15) | (0.14) | (0.13) |
| $R^2$ : | 0.27 | 0.23 | 0.24 | 0.27 | 0.21 | 0.31 |
| Observations (T): | 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 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.*

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.[22] Finally, we consider the entire sample.

The results are presented in Table 4. The first column corresponds to the first column of Table 3 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 4 shows that both the individual horizon coefficients at the total explanatory power falls considerably over this period. This is

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

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 4: 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.*

## 6 Revisiting Fed Information Effect Regressions

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

$$\Delta\tilde{x}^{PS}_{t,h} = (\tilde{x}^{PS}_{t,h} - \tilde{x}^{PS}_{t-1,h}) = \beta_h mps_t + v_{t,h} \tag{21}$$

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, $\beta_h$ 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.[23] 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.

We use the Bloomberg Economic survey in part because it allows us to link individual participants to participants in the Bloomberg SEP survey. Almost half of the unique participants to the SEP survey between December 2017 to September 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.[24] 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), 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.

Table 5: Fed Information Effect Regressions: Aggregate Revisions of Core PCE Q4/Q4

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| MPS | 0.63** | | | |
| | (0.17) | | | |
| Orthogonalized MPS (MPSO) | | 0.36 | | |
| | | (0.40) | | |
| MPSO (Excluding SEP Surprises) | | | −0.04 | |
| | | | (0.37) | |
| MPSO (Only SEP Surprises) | | | 1.24+ | |
| | | | (0.70) | |
| Common SEP Surprise (h=1) | | | | 0.46** |
| | | | | (0.14) |
| $\hat{\sigma}$ | 0.10 | 0.09 | 0.09 | 0.08 |
| $R^2$ | 0.10 | 0.09 | 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.*

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

[24] 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.

We start by focusing on the consensus forecast revisions. The results are presented in Table 5. The first two major rows mirror those of Bauer and Swanson (2023a) where, without cleaning for news, a monetary policy surprise (MPS) has a positive and statistically significant effect on forecast revisions of Core PCE. However, once the response to news effect is removed, i.e. MPSO, this relationship disappears. Thus, effects of monetary policy on forecast revisions appear to be driven by news.[25]

Digging deeper reveals a more complex story. Column (3) in Table 5 shows that after decomposing MPSO, using the methods described above, into a SEP surprise component and the rest, the surprise component has a positive and (weak) statistically significant effect on core PCE forecast revisions. Furthermore, using the common SEP surprise directly without filtering through the monetary policy surprise measure (or controlling for news effects), provides stronger evidence that professional forecasters revise their core PCE forecasts in response to an SEP surprise. Overall, the results indicate that even after controlling for news effects, monetary policy surprises contain information about SEP surprises that private forecasters learn from and react to.

While the aggregate survey results provide evidence of an effect of SEP surprises on forecast revisions, a causal interpretation may be distorted by aggregation and sampling issues. We re-run and then 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 understand both how common and individual SEP surprises filter through to individual forecast revisions.

The results for this exercise are shown in Table 6. The first four columns replicate the consensus results in Table 5 for individual forecasters. The results are broadly similar. Raw monetary policy shocks have a significantly positive effect on core PCE forecast revisions. Accounting for news reduces this effect by half and makes it insignificant. However, decomposing the resulting shock into the contribution due to SEP surprises and non-SEP surprises shows that SEP surprises induce a large and statistically significant response. Looking at common SEP surprises directly, without fltering through monetary policy surprises, also shows a positive significant effect on inflation forecast revisions. Thus, we find strong evidence that individual forecasters revise their expectations of core PCE inflation in response to common SEP surprises.

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

Table 6: Fed Information Effect Regressions: Individual Revisions of Core PCE Q4/Q4

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| MPS | 0.76** | | | | | |
| | (0.27) | | | | | |
| Orthogonalized MPS (MPSO) | | 0.30 | | | | |
| | | (0.25) | | | | |
| MPSO (ex SEP Surprises) | | | -0.15 | | | |
| | | | (0.19) | | | |
| MPSO (SEP Surprises) | | | 1.31** | | | |
| | | | (0.33) | | | |
| Common SEP Surprise (h=1) | | | | 0.40** | | |
| | | | | (0.07) | | |
| Individual SEP Surprise (h=1) | | | | | 0.47** | |
| | | | | | (0.12) | |
| Individual Market Differential (h=1) | | | | | 0.47** | |
| | | | | | (0.11) | |
| Individual FFR Surprise (h=1) | | | | | | 0.06 |
| | | | | | | (0.04) |
| Individual GDP Surprise (h=1) | | | | | | −0.05 |
| | | | | | | (0.04) |
| Individual UR Surprise (h=1) | | | | | | 0.04* |
| | | | | | | (0.02) |
| Individual PCE Surprise (h=1) | | | | | | −0.11** |
| | | | | | | (0.04) |
| Individual CPC Surprise (h=1) | | | | | | 0.12** |
| | | | | | | (0.04) |
| $\hat{\sigma}$ | 0.22 | 0.21 | 0.21 | 0.21 | 0.22 | 0.22 |
| $R^2$ | 0.04 | 0.02 | 0.03 | 0.04 | 0.03 | 0.03 |
| Observations ($NxT$) | 2,957 | 2,569 | 2,569 | 2,569 | 1,994 | 1,991 |

*Notes: Sample is December 2017 - December 2023. Individual forecasters: N=51. 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.*

The last two columns in Table 6 illsutrate how individuals revise their forecasts in response to their own SEP surprises. We first decompose the common surprise (FOMC - median) into an individual surprise (FOMC - own) and a market differential (own - median) using the common PCA weights. Column (5) shows that both components matter equally. Thus, individuals revise their forecasts to close the gap with the FOMC even as they increase the market differential.

Next, we examine how individual 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. However, forecasters also respond in statistically significant ways to differences with the FOMC's forecasts for the unemployment rate as well as headline PCE surprises. Appendix Table A.5 shows that our results are robust to controlling for news releases. It also shows that information effects are observable in forecast revisions of real GDP growth and the unemployment rate, but not for headline PCE inflation.[26]

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 preliminary results in Appendix A.4 show that after controlling for SEP surprises, monetary policy has larger near-term effects on the excess bond premium, inflation, and industrial production consistent with controlling for information effects (Jarociński and Karadi, 2020). This 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 the SEP surprise component of 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).[27]

[26] Our results for core PCE and unemployment rate forecasts are also robust when including time fixed effects.

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

# 7 Conclusion

This paper advances the identification of exogenous monetary policy shocks by incorporating two key realistic features of central bank communication that existing frameworks have not yet incorporated. 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 by incorporating the realistic feature 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 should be systematically larger following projection releases, but controlling for projection surprises should eliminate these magnitude differences.

Our empirical analysis strongly confirms these theoretical predictions. Across 18 alternative monetary policy surprise measures, 16 show statistically significant differences between SEP and non-SEP meetings, with SEP meeting shocks typically 1.5 to 2 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 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 a deeper question about the shock identification literature itself. 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 measured surprises we study, after removing news and information effects, exhibit less variation in order to capture policy experiments suitable for estimating causal effects. Our contribution demonstrates that even state-of-the-art shock measures contain quantifiable information effects after controlling for news. While there are ongoing efforts to increase the variation of monetary policy surprises, for example by focusing on speeches (Swanson and Jayawickrema, 2024), it remains to be seen whether these new measures are contaminated by additional 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

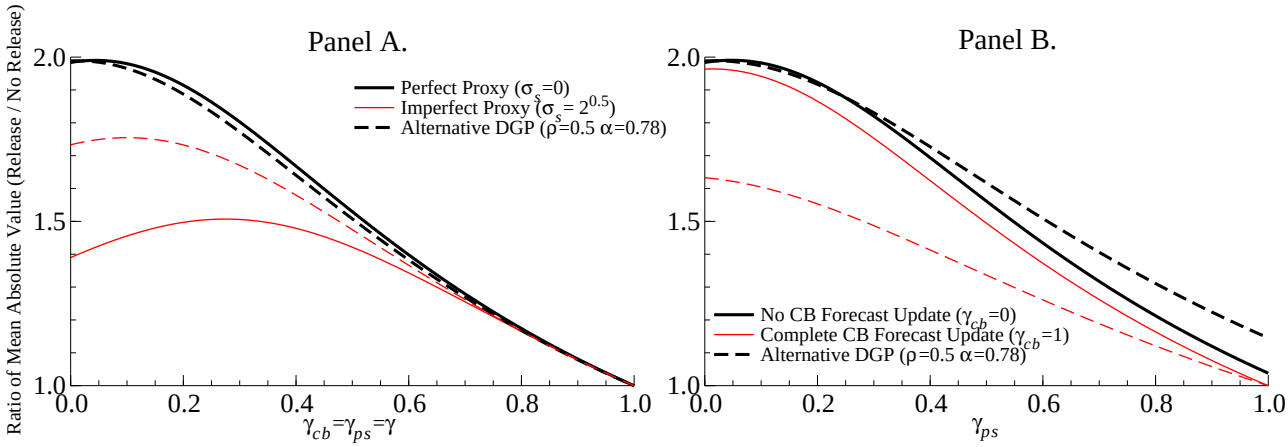
$$mps_{t,R_t=0} \equiv i_t - \mathbb{E}_t \left[ i_t | \tilde{x}_t^{PS}, \mathbb{I}_{t-1}^{PS}, s_{t-1}, R_t = 0 \right] = (\alpha - \hat{\alpha}_t) \bar{x}_t^{PS} + \alpha(\bar{x}_t^{CB} - \bar{x}_t^{PS}) + \epsilon_t, \tag{A.4}$$

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 $\gamma_{CB}$ and $\gamma_{PS}$ could be any value between [0,1] and could differ from one another.[28]

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 $\gamma_{CB}$ and $\gamma_{PS}$ 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.[29]

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

[28] Although it is likely that $\gamma_{PS}$ is a function of the private sector's estimate of $\gamma_{CB}$.

[29] 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 $\rho$, 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. $\rho$ is large), then forecast updates have relatively little impact.

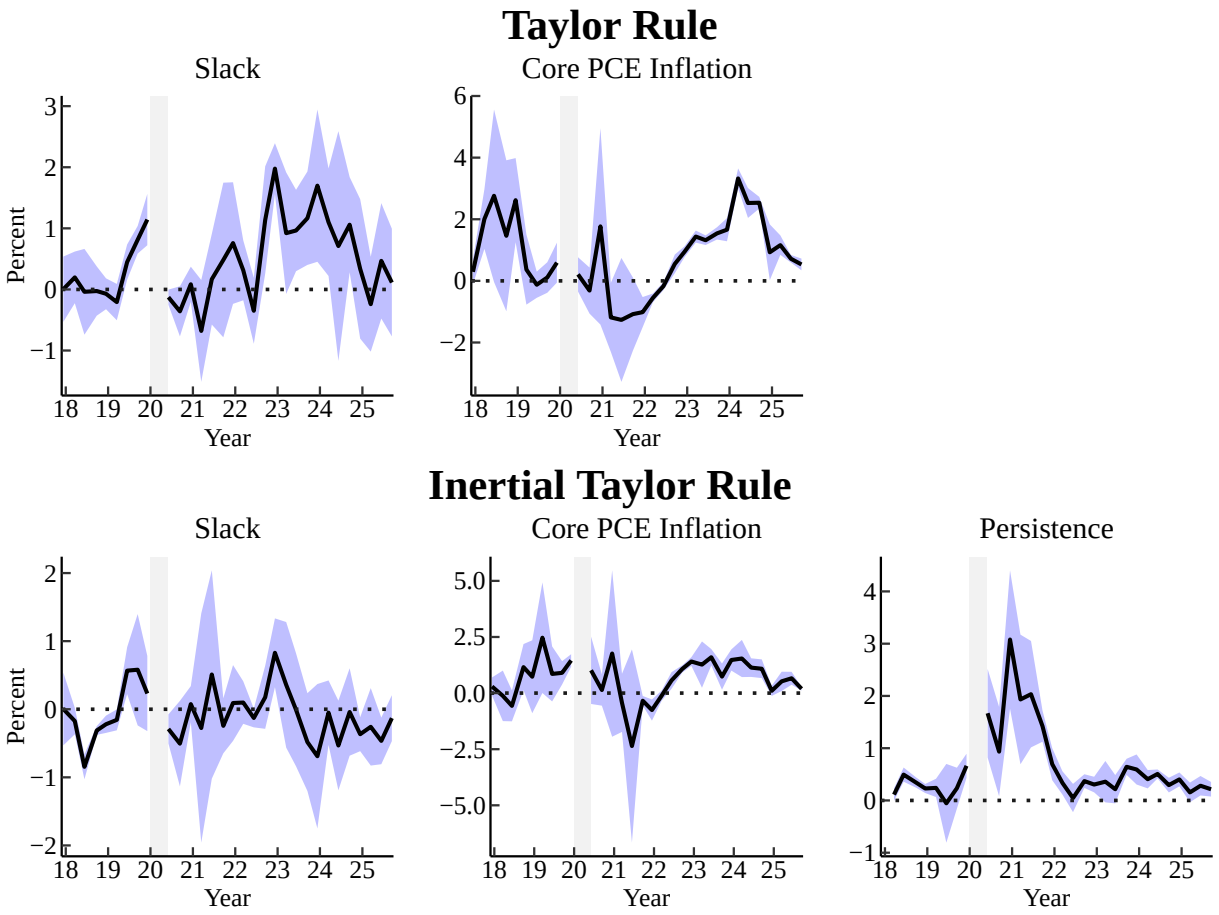
## A.2 Bloomberg SEP Survey Perceptions of Monetary Policy

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 (2025) 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 (2025).

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

### A.3 Exploratory analysis using univariate and multivariate regressions

In this subsection we present the results of the simple regression using the SEP surprises one variable and horizon at a time across a number of different monetary policy surprises. The results are shown in Table A.1 where we present the estimated coefficient and standard errors along with $R^2$ and the sample size. For ease of interpretation, we have highlighted those cells where the coefficient is statistically significant at the 95% confidence level to be yellow.

Overall, there are several key things that stand out in the results. First, across all of the different monetary policy surprises, generally only the SEP surprises for PCE and Core PCE inflation matter for explaining the monetary policy surprises (Federal Funds Rate surprises matter but are not shown here). GDP growth and unemployment rate surprises are almost never statistically significant and rarely explain much of the variation of the monetary policy surprise in our sample.

Second, SEP surprises that are statistically significant are so across almost all measures of monetary policy surprises equally with two or three exceptions. The main exception is for the Jarociński and Karadi (2025) CBI shock identified using heteroskedasticity which only loads significantly on current year surprises of the unemployment rate. Interestingly, the Jarociński and Karadi (2025) MP shock identified using heteroskedasticity which should be purged of any information is strongly related to the PCE and Core PCE surprises.

Third, individual SEP surprises can explain a substantial amount of variation in monetary policy surprises. For example, the PCE inflation surprises typically explain between 20% and 35% of the variation. Relating this back to the differences in the average size of the shock between SEP and non-SEP meetings, given that SEP-meeting shocks are on average 2x larger than non-SEP meeting shocks, this suggests that individual SEP surprises could explain almost all of the differences between them.

Finally, we estimate the effects of the all SEP surprises jointly on each individual monetary policy surprise. This explains up to 95% of the variation in the monetary policy surprises themselves but individual parameters are mostly insignificant and there is likely overfitting as a result of the small sample sizes. See results in Table A.2.

Table A.1: Univariate Results

| | GDP Growth | | | | Unemployment Rate | | | | PCE Inflation | | | CPCE Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| h→ | 0 | 1 | 2 | LR | 0 | 1 | 2 | LR | 0 | 1 | 2 | 0 | 1 | 2 |
| GSS, Tar: | 0 | -0.01 | 0.01 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | -0.02 | −0.13* | -0.11 | −0.04* | −0.1* | -0.09 |
| | (0.01) | (0.02) | (0.02) | (0.06) | (0.02) | (0.02) | (0.02) | (0.05) | (0.02) | (0.04) | (0.06) | (0.02) | (0.05) | (0.05) |
| $R^2$ : | 0.01 | 0.01 | 0.01 | 0.01 | 0.08 | 0.04 | 0.04 | 0 | 0.06 | 0.32 | 0.15 | 0.17 | 0.19 | 0.13 |
| T: | 23 | 22 | 21 | 23 | 23 | 22 | 21 | 23 | 23 | 22 | 21 | 23 | 22 | 21 |
| GSS, Pat: | -0.03 | -0.1 | -0.11 | 0.01 | 0.02 | 0.08 | 0.12 | 0 | 0.23* | 0.92* | 0.68 | 0.33* | 0.92* | 0.65 |
| | (0.06) | (0.16) | (0.14) | (0.43) | (0.11) | (0.12) | (0.15) | (0.37) | (0.1) | (0.29) | (0.41) | (0.11) | (0.29) | (0.34) |
| $R^2$ : | 0.01 | 0.02 | 0.03 | 0 | 0 | 0.02 | 0.03 | 0 | 0.18 | 0.32 | 0.11 | 0.27 | 0.32 | 0.15 |
| T: | 23 | 22 | 21 | 23 | 23 | 22 | 21 | 23 | 23 | 22 | 21 | 23 | 22 | 21 |
| NS: | -0.01 | -0.03 | -0.02 | 0.01 | 0.01 | 0.02 | 0.03 | 0.01 | 0.05* | 0.16* | 0.11 | 0.06* | 0.17* | 0.11 |
| | (0.01) | (0.03) | (0.03) | (0.08) | (0.02) | (0.02) | (0.03) | (0.07) | (0.02) | (0.06) | (0.08) | (0.02) | (0.06) | (0.07) |
| $R^2$ : | 0.02 | 0.03 | 0.02 | 0 | 0.01 | 0.03 | 0.05 | 0 | 0.2 | 0.25 | 0.07 | 0.23 | 0.26 | 0.1 |
| T: | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 24 | 23 |
| BRW: | 0 | 0.09 | 0.01 | -0.08 | -0.01 | -0.02 | -0.04 | -0.03 | 0.05 | 0.33* | 0.42* | 0.11 | 0.11 | 0.29 |
| | (0.03) | (0.07) | (0.07) | (0.2) | (0.05) | (0.06) | (0.07) | (0.16) | (0.05) | (0.14) | (0.18) | (0.06) | (0.16) | (0.16) |
| $R^2$ : | 0 | 0.07 | 0 | 0.01 | 0 | 0 | 0.01 | 0 | 0.04 | 0.18 | 0.19 | 0.14 | 0.02 | 0.13 |
| T: | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 24 | 23 |
| BS, TN2: | -0.01 | -0.02 | -0.05 | -0.01 | 0.01 | 0.04 | 0.04 | 0.03 | 0.09 | 0.38* | 0.28 | 0.14* | 0.33* | 0.28 |
| | (0.03) | (0.07) | (0.06) | (0.18) | (0.05) | (0.05) | (0.06) | (0.16) | (0.05) | (0.13) | (0.18) | (0.05) | (0.13) | (0.14) |
| $R^2$ : | 0 | 0 | 0.03 | 0 | 0 | 0.02 | 0.02 | 0 | 0.16 | 0.31 | 0.11 | 0.26 | 0.23 | 0.16 |
| T: | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 21 | 20 |
| BS, TN5: | 0 | -0.01 | -0.03 | -0.14 | 0.01 | 0.02 | 0.02 | 0.06 | 0.08* | 0.27* | 0.23 | 0.12* | 0.25* | 0.24 |
| | (0.02) | (0.06) | (0.05) | (0.15) | (0.04) | (0.04) | (0.05) | (0.13) | (0.04) | (0.11) | (0.15) | (0.04) | (0.11) | (0.12) |
| $R^2$ : | 0 | 0 | 0.01 | 0.04 | 0 | 0.01 | 0.01 | 0.01 | 0.18 | 0.22 | 0.11 | 0.28 | 0.19 | 0.17 |
| T: | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 21 | 20 |
| BS, T10: | 0.01 | -0.01 | -0.02 | -0.13 | 0 | 0 | 0 | 0.04 | 0.06* | 0.18* | 0.16 | 0.08* | 0.17* | 0.16 |
| | (0.01) | (0.04) | (0.03) | (0.1) | (0.03) | (0.03) | (0.04) | (0.09) | (0.02) | (0.07) | (0.1) | (0.03) | (0.07) | (0.08) |
| $R^2$ : | 0.01 | 0 | 0.02 | 0.08 | 0 | 0 | 0 | 0.01 | 0.22 | 0.23 | 0.12 | 0.31 | 0.21 | 0.17 |
| T: | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 21 | 20 |
| BS, TBO: | 0.01 | 0 | 0 | −0.14* | -0.02 | -0.03 | -0.02 | 0.01 | 0.05* | 0.13* | 0.09 | 0.06* | 0.12* | 0.09 |
| | (0.01) | (0.03) | (0.02) | (0.06) | (0.02) | (0.02) | (0.02) | (0.06) | (0.02) | (0.05) | (0.07) | (0.02) | (0.05) | (0.05) |
| $R^2$ : | 0.02 | 0 | 0 | 0.19 | 0.07 | 0.07 | 0.05 | 0 | 0.34 | 0.25 | 0.09 | 0.35 | 0.22 | 0.11 |
| T: | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 21 | 20 |
| BS, MPs: | -0.02 | -0.05 | -0.04 | 0.04 | 0.03 | 0.06 | 0.08 | 0.02 | 0.09* | 0.37* | 0.24 | 0.13* | 0.36* | 0.24 |
| | (0.03) | (0.06) | (0.06) | (0.18) | (0.04) | (0.05) | (0.06) | (0.15) | (0.04) | (0.12) | (0.17) | (0.05) | (0.12) | (0.14) |
| $R^2$ : | 0.02 | 0.03 | 0.03 | 0 | 0.02 | 0.07 | 0.07 | 0 | 0.18 | 0.31 | 0.09 | 0.25 | 0.31 | 0.13 |
| T: | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 22 | 21 | 20 | 22 | 21 | 20 |
| BS, MPO: | -0.04 | -0.02 | -0.18 | 0.21 | 0.04 | 0.09 | 0.1 | -0.06 | 0.03 | 0.28* | 0.09 | 0.05 | 0.26* | 0.2 |
| | (0.03) | (0.07) | (0.12) | (0.17) | (0.06) | (0.06) | (0.08) | (0.19) | (0.04) | (0.11) | (0.21) | (0.05) | (0.12) | (0.2) |
| $R^2$ : | 0.07 | 0 | 0.11 | 0.08 | 0.02 | 0.11 | 0.1 | 0.01 | 0.04 | 0.25 | 0.01 | 0.06 | 0.2 | 0.05 |
| T: | 19 | 18 | 17 | 19 | 19 | 18 | 17 | 19 | 19 | 18 | 17 | 19 | 18 | 17 |
| JK, SP5: | 0.15 | 0.42 | 0.57 | -0.66 | -0.71 | −0.91* | -0.97 | -1.25 | -0.42 | -2.25 | −3.21* | -0.89 | -1.99 | -2.11 |
| | (0.23) | (0.6) | (0.53) | (1.65) | (0.39) | (0.43) | (0.54) | (1.34) | (0.42) | (1.22) | (1.53) | (0.47) | (1.25) | (1.32) |
| $R^2$ : | 0.02 | 0.02 | 0.05 | 0.01 | 0.12 | 0.16 | 0.12 | 0.03 | 0.04 | 0.12 | 0.16 | 0.13 | 0.1 | 0.1 |
| T: | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 24 | 23 |
| JK, PC: | -0.02 | -0.06 | -0.03 | 0.01 | 0.01 | 0.03 | 0.06 | 0.03 | 0.09* | 0.3* | 0.21 | 0.11* | 0.32* | 0.17 |
| | (0.02) | (0.05) | (0.05) | (0.15) | (0.04) | (0.04) | (0.05) | (0.12) | (0.03) | (0.1) | (0.14) | (0.04) | (0.1) | (0.12) |
| $R^2$ : | 0.03 | 0.05 | 0.01 | 0 | 0.01 | 0.03 | 0.06 | 0 | 0.24 | 0.28 | 0.08 | 0.24 | 0.31 | 0.08 |
| T: | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 24 | 23 |
| JK, MP: | -0.02 | -0.05 | -0.05 | 0.04 | 0.05 | 0.07 | 0.09 | 0.09 | 0.07 | 0.28* | 0.3 | 0.11* | 0.28* | 0.21 |
| | (0.02) | (0.06) | (0.05) | (0.16) | (0.04) | (0.04) | (0.05) | (0.13) | (0.04) | (0.11) | (0.15) | (0.04) | (0.11) | (0.13) |
| $R^2$ : | 0.03 | 0.04 | 0.03 | 0 | 0.06 | 0.1 | 0.11 | 0.02 | 0.12 | 0.21 | 0.15 | 0.2 | 0.2 | 0.11 |
| T: | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 24 | 23 |
| JK, CBI: | 0 | 0 | 0.02 | -0.04 | −0.04* | -0.04 | -0.03 | -0.06 | 0.02 | 0.02 | -0.09 | 0 | 0.04 | -0.04 |
| | (0.01) | (0.03) | (0.02) | (0.07) | (0.02) | (0.02) | (0.02) | (0.06) | (0.02) | (0.06) | (0.07) | (0.02) | (0.06) | (0.06) |
| $R^2$ : | 0 | 0 | 0.03 | 0.01 | 0.16 | 0.15 | 0.05 | 0.04 | 0.06 | 0 | 0.06 | 0 | 0.02 | 0.02 |
| T: | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 23 | 25 | 24 | 23 |

*Notes: Each block presents the coefficient estimate and its standard error the $R^2$ and the number of observations. Cells are shaded and have a * if the estimate is statistically significant with at least 95% confidence. The Monetary Policy Surprises are as follows Gürkaynak et al. (2005, "GSS"): (Tar) Target and (Pat) Path; Nakamura and Steinsson (2018, "NS"); Bu et al. (2021, "BRW"); Bauer and Swanson (2023a, "BS"): (TN2): 2-year T-Note (TN5): 5-year T-Note (T10): 10-year T-Note (TBO): T-Bond (MPs): Monetary Policy Shock (MPO) Orthogonalized Monetary Policy Shock; Jarociński and Karadi (2025, "JK") (SP5): S&P500, (PC1) (MPm): Monetary Policy Shock, (CBI): Central Bank Information. We exclude SEP surprises for long-run PCE and core PCE because (a) the long-run PCE suprise has always been zero across our sample and (b) the long-run Core PCE forecast is not published by the FOMC.*

Table A.2: Multivariate Results

| | GDP Growth | | | | Unemployment Rate | | | | PCE Inflation | | | CPCE Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| h→ | 0 | 1 | 2 | LR | 0 | 1 | 2 | LR | 0 | 1 | 2 | 0 | 1 | 2 |
| GSS, Tar: | 0.02 | 0.02 | −0.09* | 0.04 | 0.17* | -0.14 | 0.05 | 0.07 | 0.04 | -0.07 | -0.05 | 0.1 | -0.18 | −0.45* |
| | (0.02) | (0.03) | (0.04) | (0.08) | (0.04) | (0.07) | (0.06) | (0.06) | (0.03) | (0.09) | (0.11) | (0.04) | (0.08) | (0.11) |
| $R^2$ : | 0.87 | | | | | | | | | | | | | |
| T: | 23 | | | | | | | | | | | | | |
| GSS, Pat: | -0.05 | -0.11 | 0.1 | -0.06 | -0.23 | 0.17 | 0.09 | -0.11 | 0.11 | 1.38 | -1.34 | -0.43 | 0.24 | 2.25 |
| | (0.18) | (0.3) | (0.43) | (0.88) | (0.51) | (0.82) | (0.65) | (0.65) | (0.33) | (0.99) | (1.24) | (0.51) | (0.9) | (1.28) |
| $R^2$ : | 0.63 | | | | | | | | | | | | | |
| T: | 23 | | | | | | | | | | | | | |
| NS: | 0 | -0.03 | -0.01 | 0 | 0.03 | -0.06 | 0.06 | 0 | 0.05 | 0.32 | -0.34 | -0.08 | -0.05 | 0.36 |
| | (0.03) | (0.06) | (0.08) | (0.17) | (0.1) | (0.16) | (0.13) | (0.12) | (0.06) | (0.18) | (0.23) | (0.1) | (0.18) | (0.24) |
| $R^2$ : | 0.56 | | | | | | | | | | | | | |
| T: | 25 | | | | | | | | | | | | | |
| BRW: | -0.06 | 0.01 | 0.14 | -0.14 | -0.16 | 0.27 | -0.22 | -0.13 | -0.08 | 0.33 | 0.17 | -0.06 | -0.15 | 0.86 |
| | (0.08) | (0.14) | (0.2) | (0.41) | (0.23) | (0.37) | (0.3) | (0.28) | (0.15) | (0.44) | (0.55) | (0.23) | (0.42) | (0.58) |
| $R^2$ : | 0.57 | | | | | | | | | | | | | |
| T: | 25 | | | | | | | | | | | | | |
| BS, TN2: | 0.07 | 0.05 | 0.05 | 0.1 | 0.01 | 0.2 | -0.07 | 0.07 | 0.11 | 0.86 | -1.05 | -0.08 | -0.13 | 0.75 |
| | (0.1) | (0.14) | (0.19) | (0.39) | (0.22) | (0.36) | (0.28) | (0.28) | (0.14) | (0.45) | (0.57) | (0.22) | (0.38) | (0.54) |
| $R^2$ : | 0.67 | | | | | | | | | | | | | |
| T: | 22 | | | | | | | | | | | | | |
| BS, TN5: | 0.08 | 0.06 | 0.07 | -0.03 | 0.08 | 0.2 | -0.16 | 0.17 | 0.13 | 0.74 | -1.04 | -0.02 | -0.18 | 0.53 |
| | (0.08) | (0.11) | (0.15) | (0.31) | (0.18) | (0.29) | (0.23) | (0.22) | (0.12) | (0.36) | (0.46) | (0.17) | (0.31) | (0.44) |
| $R^2$ : | 0.69 | | | | | | | | | | | | | |
| T: | 22 | | | | | | | | | | | | | |
| BS, T10: | 0.05 | 0.03 | 0.02 | -0.08 | 0.08 | 0.09 | -0.1 | 0.15 | 0.09 | 0.51 | −0.7* | -0.01 | -0.16 | 0.3 |
| | (0.05) | (0.07) | (0.09) | (0.19) | (0.11) | (0.18) | (0.14) | (0.14) | (0.07) | (0.22) | (0.28) | (0.11) | (0.19) | (0.27) |
| $R^2$ : | 0.72 | | | | | | | | | | | | | |
| T: | 22 | | | | | | | | | | | | | |
| BS, TBO: | 0.02 | 0 | -0.02 | -0.13 | 0.09 | -0.04 | -0.04 | 0.13 | 0.06 | 0.33* | −0.45* | 0.01 | -0.14 | 0.15 |
| | (0.03) | (0.04) | (0.05) | (0.11) | (0.06) | (0.1) | (0.08) | (0.08) | (0.04) | (0.13) | (0.17) | (0.06) | (0.11) | (0.16) |
| $R^2$ : | 0.8 | | | | | | | | | | | | | |
| T: | 22 | | | | | | | | | | | | | |
| BS, MPs: | 0.04 | 0.01 | 0.06 | 0.13 | -0.03 | 0.21 | -0.06 | 0.02 | 0.13 | 0.74 | -0.86 | -0.15 | 0 | 0.7 |
| | (0.09) | (0.12) | (0.17) | (0.35) | (0.19) | (0.32) | (0.25) | (0.25) | (0.13) | (0.4) | (0.51) | (0.19) | (0.34) | (0.49) |
| $R^2$ : | 0.71 | | | | | | | | | | | | | |
| T: | 22 | | | | | | | | | | | | | |
| BS, MPO: | 0.13 | -0.04 | -0.17 | -0.76 | 0.15 | 0.26 | 0.21 | -0.44 | 0.26* | 1.51* | -0.36 | −0.69* | -0.49 | 1.06* |
| | (0.05) | (0.07) | (0.13) | (0.32) | (0.11) | (0.16) | (0.18) | (0.22) | (0.08) | (0.29) | (0.3) | (0.19) | (0.21) | (0.32) |
| $R^2$ : | 0.95 | | | | | | | | | | | | | |
| T: | 19 | | | | | | | | | | | | | |
| JK, SP5: | 0.45 | -0.33 | 1.95 | 1.62 | -0.8 | 0.24 | -0.24 | -0.69 | 0.12 | -3.17 | -0.79 | -1 | 2.94 | 1.59 |
| | (0.77) | (1.28) | (1.87) | (3.83) | (2.19) | (3.52) | (2.81) | (2.63) | (1.42) | (4.12) | (5.15) | (2.17) | (3.92) | (5.42) |
| $R^2$ : | 0.45 | | | | | | | | | | | | | |
| T: | 25 | | | | | | | | | | | | | |
| JK, PC: | -0.01 | -0.08 | 0.02 | 0.01 | 0 | -0.04 | 0.08 | 0.05 | 0.1 | 0.5 | -0.39 | -0.17 | 0 | 0.56 |
| | (0.06) | (0.1) | (0.15) | (0.31) | (0.18) | (0.28) | (0.22) | (0.21) | (0.11) | (0.33) | (0.41) | (0.17) | (0.31) | (0.43) |
| $R^2$ : | 0.57 | | | | | | | | | | | | | |
| T: | 25 | | | | | | | | | | | | | |
| JK, MP: | -0.03 | -0.02 | -0.1 | -0.09 | 0.05 | -0.03 | 0.05 | 0.06 | 0.04 | 0.44 | -0.15 | -0.03 | -0.18 | 0.18 |
| | (0.07) | (0.12) | (0.18) | (0.36) | (0.21) | (0.34) | (0.27) | (0.25) | (0.14) | (0.39) | (0.49) | (0.21) | (0.37) | (0.52) |
| $R^2$ : | 0.46 | | | | | | | | | | | | | |
| T: | 25 | | | | | | | | | | | | | |
| JK, CBI: | 0.02 | -0.06 | 0.13 | 0.1 | -0.05 | 0 | 0.03 | -0.02 | 0.06 | 0.06 | -0.24 | -0.15 | 0.18 | 0.37 |
| | (0.03) | (0.04) | (0.07) | (0.13) | (0.08) | (0.12) | (0.1) | (0.09) | (0.05) | (0.14) | (0.18) | (0.08) | (0.14) | (0.19) |
| $R^2$ : | 0.63 | | | | | | | | | | | | | |
| T: | 25 | | | | | | | | | | | | | |

*Notes: Each block presents the coefficient estimate and its standard error. The $R^2$ and the number of observations correspond to the major row. Cells are shaded and have a * if the estimate is statistically significant with at least 95% confidence. The Monetary Policy Surprises are as follows Gürkaynak et al. (2005, "GSS"): (Tar) Target and (Pat) Path; Nakamura and Steinsson (2018, "NS"); Bu et al. (2021, "BRW"); Bauer and Swanson (2023a, "BS"): (TN2): 2-year T-Note (TN5): 5-year T-Note (T10): 10-year T-Note (TBO): T-Bond (MPs): Monetary Policy Shock (MPO) Orthogonalized Monetary Policy Shock; Jarociński and Karadi (2025, "JK") (SP5): S&P500, (PC1) (MPm): Monetary Policy Shock, (CBI): Central Bank Information. We exclude SEP surprises for long-run PCE and core PCE because (a) the long-run PCE surprise has always been zero across our sample and (b) the long-run Core PCE forecast is not published by the FOMC.*

## 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

$$X_{t+h} = \alpha_h + A_h(L)X_{t-1} + \theta_h X_{TY,t} + \eta_{h,t} \tag{A.7}$$

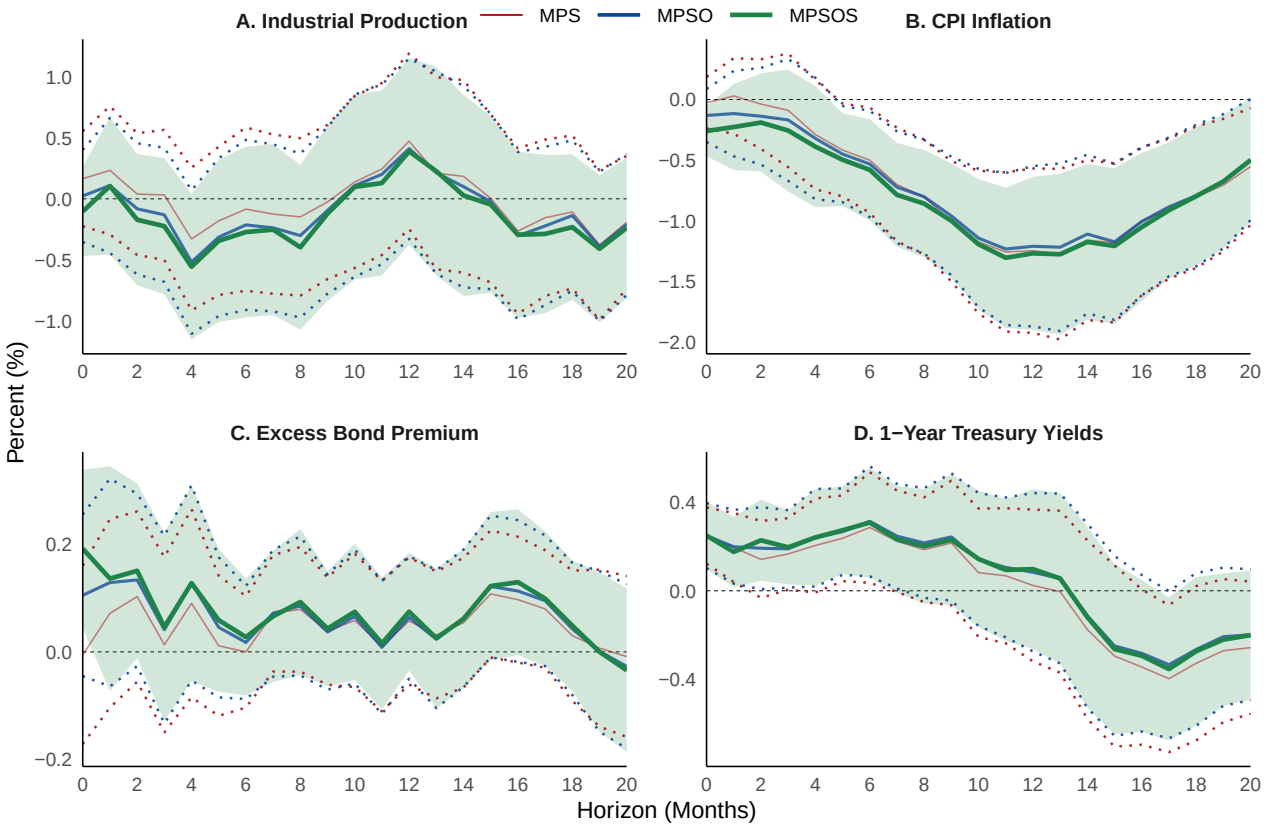
where $X_t$ is a vector of four monthly variables at time t including the log of industrial production, the log of the consumer price index, the Gilchrist and Zakrajšek (2012) excess bond premium, and the Treasury yield.[30] The forecast horizon of the response function is denoted by $h$ and is estimated separately for each variable and horizon where $A_h(L)$ is a matrix polynomial of degree 11 (allowing for 12 lags), $\theta_h$ is the coefficient of interest, $X_{TY,t}$ is the Treasury yield, 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 (mps), (2) just controlling for news effects (mpso), and (3) controlling for both news effects and SEP surprises (mpsos). We exclude speeches since they are not publicly available; see Swanson and Jayawickrema (2024). We choose the shortest possible sample while also ensuring that the instruments are strong. Our sample goes from January 2012 through December 2023 which focuses primarily on the period over which SEP surprises are available and includes dummy variables for each month from March 2020 - December 2021, which is similar to how others have modeled post-pandemic data; see Lenza and Primiceri (2022).[31] We compute standard errors as suggested in Montiel Olea and Plagborg-Møller (2021).

Figure A.3 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

[30] 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).

[31] 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.

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




Notes: Surprises are identical prior to December 2017 and for all non-SEP meetings. Sample period: 2012:1–2023:12 with dummy variables from 2020:3-2021:12. MPS: Raw monetary policy surprise. MPSO: controlling for news only. MPSOS: controlling for news and SEP surprises. 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.

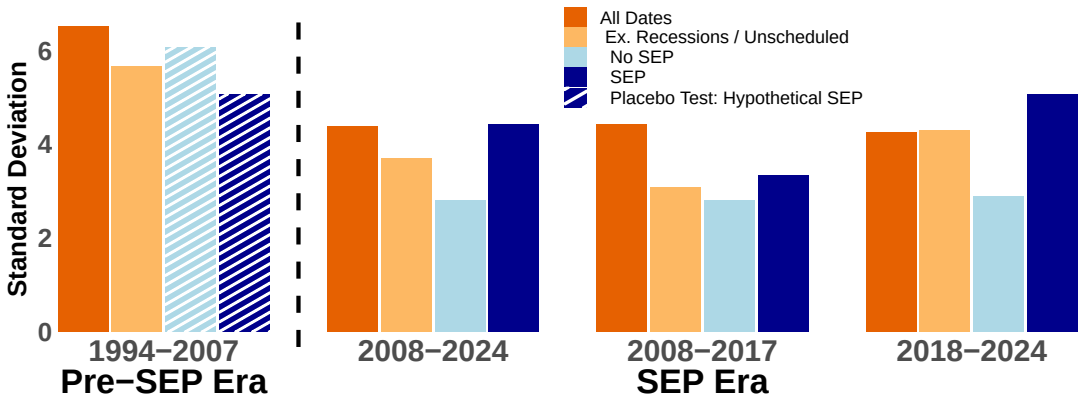
Figure A.3: Estimated Impulse Response Functions for Alternative Monetary Policy Surprises

# B Supplemental Tables and Figures

Table A.3: Monetary Surprise Properties by Subsample

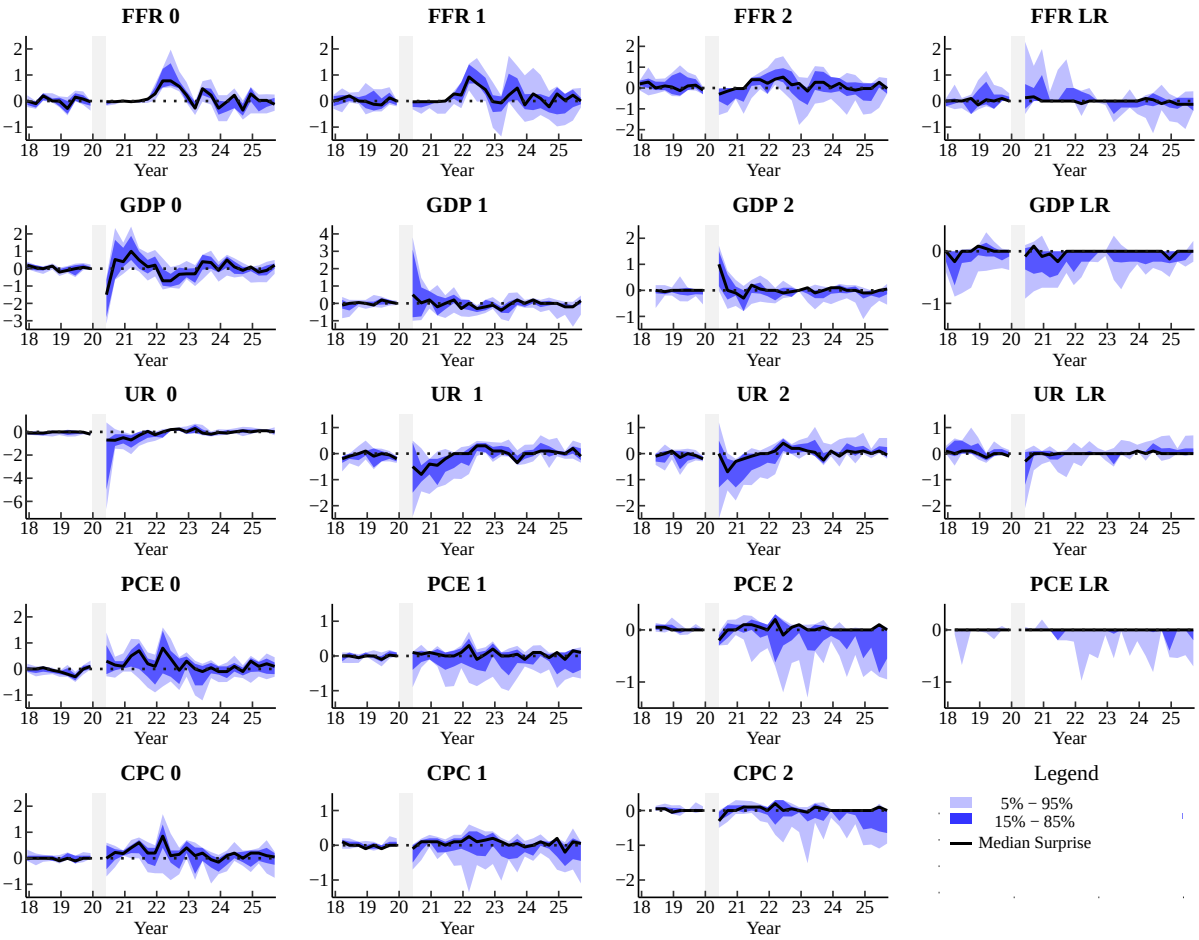
| | Pre-SEP ('94-'07) | | | SEP ('08-'24) | | | '08-'17 | | | '17-'24 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **T** | **AM** | $\sigma$ | **T** | **AM** | $\sigma$ | **T** | **AM** | $\sigma$ | **T** | **AM** | $\sigma$ |
| **Kuttner (2001)** | 108 | 3.96 | 7.67 | 136 | 1.86 | 5.35 | 78 | 2 | 6.11 | 58 | 1.67 | 4.13 |
| No Recession + Unscheduled | 97 | 2.75 | 4.78 | 120 | 0.89 | 1.76 | 64 | 0.61 | 1.14 | 56 | 1.21 | 2.28 |
| No SEP | 97 | 2.75 | 4.78 | 60 | 0.6 | 0.9 | 32 | 0.48 | 0.63 | 28 | 0.74 | 1.14 |
| SEP | | | | 60 | 1.18 | 2.33 | 32 | 0.74 | 1.5 | 28 | 1.68 | 3.04 |
| **GSS (2005): Target** | 104 | 2.87 | 4.73 | 130 | 1.31 | 2.63 | 76 | 1.4 | 3.1 | 54 | 1.19 | 1.76 |
| No Recession + Unscheduled | 97 | 2.63 | 4.45 | 117 | 0.91 | 1.43 | 64 | 0.71 | 1.12 | 53 | 1.16 | 1.72 |
| No SEP | 97 | 2.63 | 4.45 | 59 | 0.65 | 0.95 | 32 | 0.52 | 0.57 | 27 | 0.8 | 1.28 |
| SEP | | | | 58 | 1.18 | 1.79 | 32 | 0.89 | 1.47 | 26 | 1.53 | 2.07 |
| **GSS (2005): Path** | 104 | 7.75 | 11.11 | 130 | 5.48 | 8.62 | 76 | 4.83 | 6.89 | 54 | 6.39 | 10.42 |
| No Recession + Unscheduled | 97 | 7.67 | 11.11 | 117 | 5.2 | 8.4 | 64 | 4.18 | 6.05 | 53 | 6.43 | 10.51 |
| No SEP | 97 | 7.67 | 11.11 | 59 | 3.32 | 5.06 | 32 | 3.75 | 5.81 | 27 | 2.81 | 4.11 |
| SEP | | | | 58 | 7.11 | 10.81 | 32 | 4.6 | 6.33 | 26 | 10.2 | 14.33 |
| **JK (2015)** | 108 | 3.21 | 5.78 | 136 | 1.79 | 3.51 | 78 | 1.74 | 3.57 | 58 | 1.85 | 3.44 |
| No Recession + Unscheduled | 97 | 2.36 | 3.89 | 120 | 1.17 | 2.07 | 64 | 0.8 | 1.3 | 56 | 1.59 | 2.7 |
| No SEP | 97 | 2.36 | 3.89 | 60 | 0.88 | 1.55 | 32 | 0.56 | 0.9 | 28 | 1.23 | 2.07 |
| SEP | | | | 60 | 1.46 | 2.5 | 32 | 1.03 | 1.58 | 28 | 1.95 | 3.2 |
| **NS (2018)** | 108 | 2.83 | 4.35 | 136 | 1.81 | 2.88 | 78 | 1.8 | 3.02 | 58 | 1.82 | 2.64 |
| No Recession + Unscheduled | 97 | 2.32 | 3.26 | 120 | 1.43 | 1.87 | 64 | 1.2 | 1.53 | 56 | 1.69 | 2.18 |
| No SEP | 97 | 2.32 | 3.26 | 60 | 1.04 | 1.31 | 32 | 1.05 | 1.34 | 28 | 1.03 | 1.29 |
| SEP | | | | 60 | 1.82 | 2.31 | 32 | 1.36 | 1.69 | 28 | 2.35 | 2.77 |
| **BRW (2021)** | 117 | 3.23 | 4.25 | 136 | 4.75 | 6.48 | 78 | 5.05 | 7.15 | 58 | 4.35 | 5.53 |
| No Recession + Unscheduled | 105 | 3 | 3.85 | 120 | 4.26 | 5.69 | 64 | 4.3 | 5.93 | 56 | 4.23 | 5.45 |
| No SEP | 105 | 3 | 3.85 | 60 | 3.57 | 4.9 | 32 | 3.59 | 5.49 | 28 | 3.55 | 4.09 |
| SEP | | | | 60 | 4.96 | 6.38 | 32 | 5.01 | 6.21 | 28 | 4.91 | 6.61 |
| **BS (2023): 2-Year T-Note** | 119 | 4.43 | 6.51 | 137 | 3.12 | 4.58 | 79 | 3.1 | 4.23 | 58 | 3.14 | 5.05 |
| No Recession + Unscheduled | 105 | 3.83 | 5.47 | 114 | 2.84 | 4.17 | 64 | 2.69 | 3.65 | 50 | 3.03 | 4.73 |
| No SEP | 105 | 3.83 | 5.47 | 57 | 1.8 | 2.86 | 32 | 2.03 | 3.14 | 25 | 1.5 | 2.52 |
| SEP | | | | 57 | 3.89 | 5.17 | 32 | 3.36 | 4.13 | 25 | 4.57 | 6.12 |
| **BS (2023): 5-Year T-Note** | 119 | 3.92 | 5.63 | 137 | 3.57 | 5.1 | 79 | 3.91 | 5.41 | 58 | 3.1 | 4.68 |
| No Recession + Unscheduled | 105 | 3.6 | 5.21 | 114 | 3.24 | 4.42 | 64 | 3.52 | 4.7 | 50 | 2.88 | 4.04 |
| No SEP | 105 | 3.6 | 5.21 | 57 | 2.22 | 3.21 | 32 | 2.73 | 3.8 | 25 | 1.56 | 2.32 |
| SEP | | | | 57 | 4.27 | 5.39 | 32 | 4.32 | 5.51 | 25 | 4.21 | 5.16 |
| **BS (2023): 10-Year T-Note** | 119 | 2.81 | 4.06 | 137 | 2.73 | 4.32 | 79 | 3.16 | 5.03 | 58 | 2.14 | 3.16 |
| No Recession + Unscheduled | 105 | 2.66 | 3.86 | 114 | 2.28 | 3.08 | 64 | 2.57 | 3.4 | 50 | 1.92 | 2.63 |
| No SEP | 105 | 2.66 | 3.86 | 57 | 1.58 | 2.19 | 32 | 2.01 | 2.64 | 25 | 1.04 | 1.47 |
| SEP | | | | 57 | 2.98 | 3.78 | 32 | 3.13 | 4.05 | 25 | 2.8 | 3.39 |
| **BS (2023): T-Bond** | 119 | 2.22 | 3.2 | 137 | 2.27 | 4.02 | 79 | 2.8 | 4.84 | 58 | 1.56 | 2.55 |
| No Recession + Unscheduled | 105 | 2.22 | 3.22 | 114 | 1.82 | 2.63 | 64 | 2.26 | 3.14 | 50 | 1.26 | 1.79 |
| No SEP | 105 | 2.22 | 3.22 | 57 | 1.33 | 1.98 | 32 | 1.81 | 2.47 | 25 | 0.71 | 1.07 |
| SEP | | | | 57 | 2.31 | 3.15 | 32 | 2.7 | 3.7 | 25 | 1.81 | 2.32 |
| **BS (2023): MPS** | 118 | 4.88 | 7.2 | 137 | 3.23 | 5.11 | 79 | 3.05 | 4.72 | 58 | 3.46 | 5.59 |
| No Recession + Unscheduled | 105 | 4.13 | 5.85 | 114 | 2.62 | 3.81 | 64 | 2.2 | 3.02 | 50 | 3.15 | 4.55 |
| No SEP | 105 | 4.13 | 5.85 | 57 | 1.73 | 2.52 | 32 | 1.85 | 2.73 | 25 | 1.57 | 2.27 |
| SEP | | | | 57 | 3.51 | 4.76 | 32 | 2.55 | 3.28 | 25 | 4.73 | 5.82 |
| **BS (2023): Orthogonalized** | 118 | 4.62 | 6.51 | 125 | 3.16 | 4.39 | 79 | 3.08 | 4.43 | 46 | 3.28 | 4.25 |
| No Recession + Unscheduled | 105 | 4.14 | 5.65 | 109 | 2.67 | 3.7 | 64 | 2.22 | 3.09 | 45 | 3.31 | 4.3 |
| No SEP | 105 | 4.14 | 5.65 | 55 | 1.89 | 2.81 | 32 | 1.8 | 2.8 | 23 | 2 | 2.88 |
| SEP | | | | 54 | 3.46 | 4.43 | 32 | 2.63 | 3.34 | 22 | 4.68 | 5.07 |
| **BS (2023): SP500** | 89 | 55.7 | 90.63 | 137 | 42.96 | 77.15 | 79 | 42.16 | 61.76 | 58 | 44.05 | 94.76 |
| No Recession + Unscheduled | 76 | 39.75 | 50.57 | 114 | 30.04 | 41.62 | 64 | 29.19 | 40.23 | 50 | 31.13 | 43.51 |
| No SEP | 76 | 39.75 | 50.57 | 57 | 22.47 | 32.3 | 32 | 27.56 | 37.2 | 25 | 15.96 | 22.92 |
| SEP | | | | 57 | 37.61 | 49.08 | 32 | 30.82 | 39.02 | 25 | 46.3 | 56.94 |
| **JK (2025): PC** | 120 | 5.03 | 7.9 | 139 | 2.87 | 4.66 | 79 | 3 | 4.85 | 60 | 2.69 | 4.35 |
| No Recession + Unscheduled | 106 | 4.01 | 5.67 | 120 | 2.16 | 3.32 | 64 | 1.85 | 2.69 | 56 | 2.51 | 3.88 |
| No SEP | 106 | 4.01 | 5.67 | 60 | 1.45 | 2.28 | 32 | 1.44 | 2.34 | 28 | 1.45 | 2.25 |
| SEP | | | | 60 | 2.87 | 4.13 | 32 | 2.25 | 2.99 | 28 | 3.57 | 4.97 |
| **JK (2025): MP** | 120 | 4.38 | 7.29 | 139 | 2.94 | 4.42 | 79 | 3.01 | 4.52 | 60 | 2.85 | 4.24 |
| No Recession + Unscheduled | 106 | 3.4 | 4.73 | 120 | 2.55 | 3.62 | 64 | 2.32 | 3.14 | 56 | 2.81 | 4.08 |
| No SEP | 106 | 3.4 | 4.73 | 60 | 1.71 | 2.6 | 32 | 2.02 | 2.89 | 28 | 1.37 | 2.22 |
| SEP | | | | 60 | 3.38 | 4.43 | 32 | 2.62 | 3.11 | 28 | 4.25 | 5.31 |
| **JK (2025): CBI** | 120 | 2.47 | 3.59 | 139 | 1.75 | 2.59 | 79 | 1.96 | 3.02 | 60 | 1.47 | 1.92 |
| No Recession + Unscheduled | 106 | 1.99 | 2.69 | 120 | 1.51 | 2.01 | 64 | 1.56 | 2.14 | 56 | 1.44 | 1.87 |
| No SEP | 106 | 1.99 | 2.69 | 60 | 1.25 | 1.75 | 32 | 1.47 | 2.05 | 28 | 1 | 1.26 |
| SEP | | | | 60 | 1.76 | 2.21 | 32 | 1.65 | 2.08 | 28 | 1.89 | 2.35 |

*Notes: T denotes sample size. AM denotes absolute mean while $\sigma$ 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.4: Properties of Bauer and Swanson (2023)'s Orthogonalized Monetary Policy Surprise



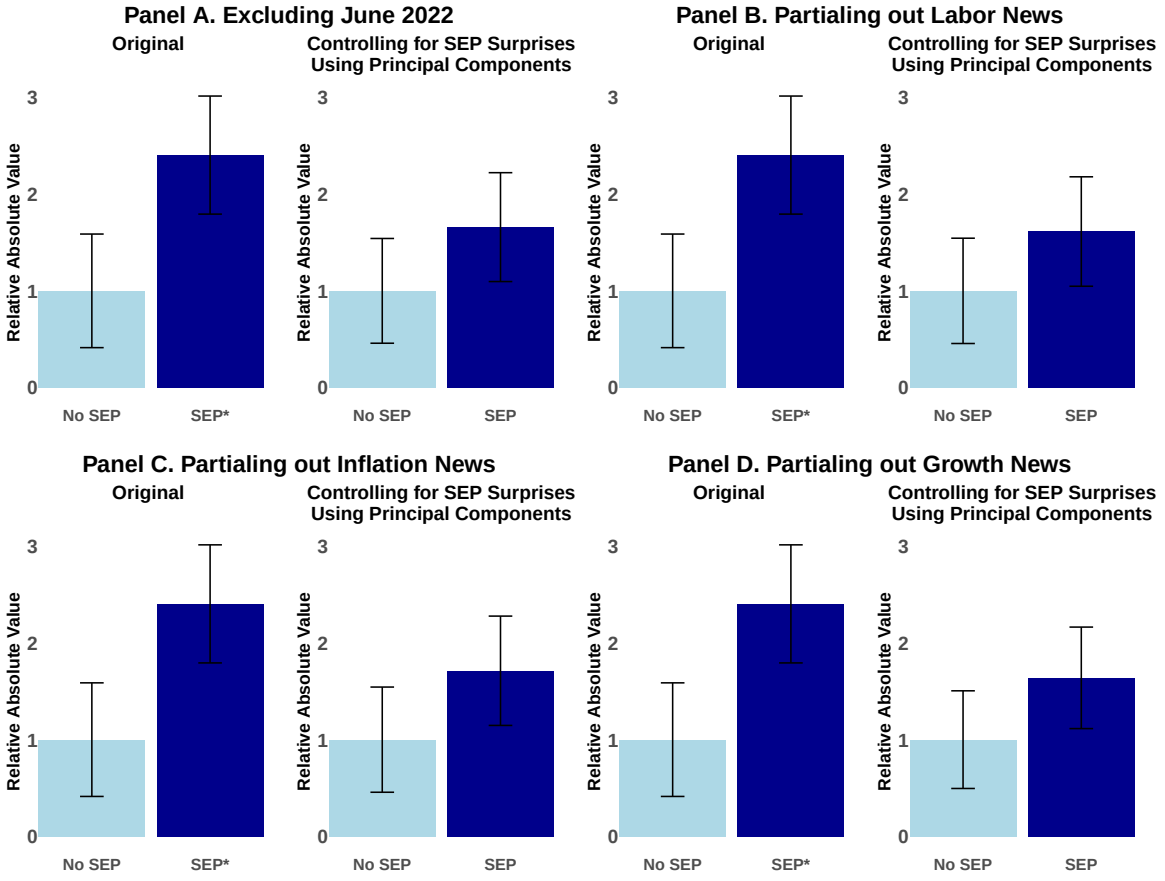

Notes: Constructed as the difference between the FOMC's SEP projection less the Bloomberg SEP projection. Negative (positive) values imply that the private sector expectations were higher (lower) than the FOMC. Ranges denote the degree of cross-sectional disagreement about the forecast. Shared area denotes 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.5: SEP Surprises and Uncertainty (December 2017 – September 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** | 0.49** | 0.57 | 1.09 | 0.52* | 0.52 | 0.46 | 0.85 |
| **Real GDP Growth** | 0.44 | 0.52 | 0.71 | 2.12 | 0.27 | 0.30 | 0.62 | 1.64 |
| **Unemployment Rate** | 0.43 | 0.62 | 0.60 | 1.43 | 0.25 | 0.41 | 0.48 | 1.54 |
| **PCE Inflation** | 0.59* | 0.67** | 0.88 | | 0.54 | 0.69 | 0.83 | |
| **Core PCE Inflation** | 0.58** | 0.76 | 1.11 | | 0.61* | 0.71 | 1.00 | |

*Notes: Sample June 2018 - September 2025. 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.*




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.6: Properties of Bauer and Swanson (2023)'s Orthogonalized Monetary Policy Surprises

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

| | (1) GDP | (2) UR | (3) PCE | (4) Core PCE |
|---|---|---|---|---|
| Individual FFR Surprise (h=1) | $-0.16^{*}$ | 0.06 | 0.01 | 0.02 |
| | (0.08) | (0.03) | (0.06) | (0.04) |
| Individual GDP Surprise (h=1) | 0.01 | $-0.02$ | 0.06 | $-0.04$ |
| | (0.06) | (0.04) | (0.05) | (0.04) |
| Individual UR Surprise (h=1) | $-0.17^{**}$ | $0.17^{*}$ | 0.04 | $0.05^{**}$ |
| | (0.06) | (0.07) | (0.04) | (0.01) |
| Individual PCE Surprise (h=1) | 0.07 | $-0.07$ | $-0.03$ | $-0.10^{**}$ |
| | (0.07) | (0.05) | (0.13) | (0.04) |
| Individual Core PCE Surprise (h=1) | $-0.10$ | 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 ($N$) | 61 | 59 | 51 | 51 |
| Observations ($NxT$) | 2,340 | 2,338 | 2,002 | 1,991 |

*Notes: Sample: December 2017 - December 2023. All regressions exclude March 2020 - December 2020. All regressions include 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). Regressions include forecaster fixed effects and controls for news releases based on Bloomberg news surprises. Standard errors are clustered by forecaster and time. Stars denote rejection of the null hypothesis using 10% (+), 5% (*) and 1% (**) significance levels.*