

Market's Time-Varying Sensitivity to Macro News and Monetary Policy: the Role of Attention

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Abstract

Market sensitivity to macroeconomic announcements (e.g., payrolls, CPI) varies substantially over time. Focusing on interest rate responses, I document that sensitivity increases during periods of high inflation, rising unemployment, and when the Federal Reserve emphasizes macroeconomic conditions. To uncover the fundamental driver, I distinguish between two hypotheses—changes in investor attention and variations in the perceived data dependence of the monetary policy rule—using an empirical strategy based on their differing implications for the transmission of monetary policy. Consistent with the attention hypothesis, I find that the impact of FOMC announcements is amplified in periods when market sensitivity to macroeconomic announcements is high. A standard New Keynesian model with cognitive discounting is used to illustrate the differences between the two mechanisms. Overall, this paper highlights the role of attention in the effectiveness of monetary policy and macro dynamics.

JEL classification: E43, E52, E58, G14, D83.

Keywords: Macroeconomic News Announcements, Attention, Interest Rates, FOMC, Central Bank Communication

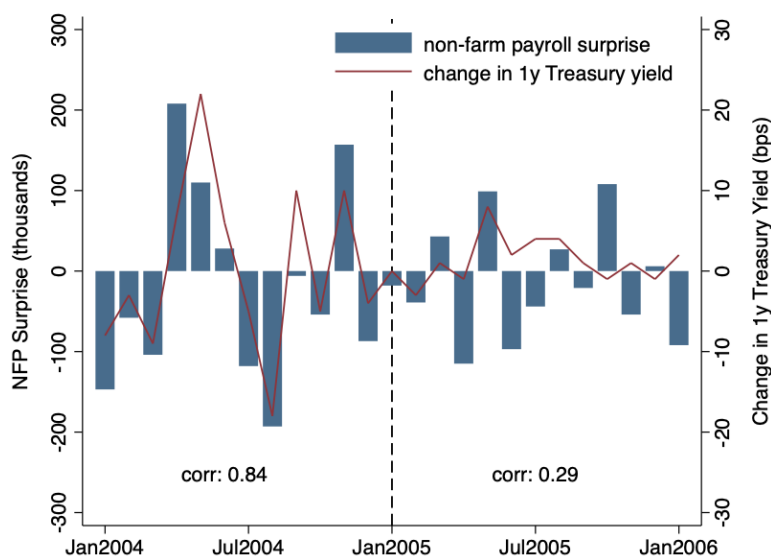
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1 Introduction

Market reactions to macroeconomic announcements (e.g., non-farm payrolls, CPI) play a central role in the transmission of monetary policy. While these reactions have been extensively studied, their time-variation—how they change over time and what drives this variation—remains poorly understood.

Market is not always responsive to macroeconomic news. At times, they closely scrutinize key macro indicators like job reports and prices reports, reacting strongly to surprises; at other times, they appear largely indifferent. Figure 1 illustrates this time-varying sensitivity—as captured by interest rate responses to non-farm payroll (NFP) news—using an example from 2004–05. It plots non-farm payroll (NFP) data announcement surprises alongside changes in 1-year Treasury yields on announcement dates.

Figure 1: Examples around 2004–05: Non-farm payroll surprises and 1-year Treasury yield changes on announcement dates



In 2004 and early 2005, the market response is strong and systematic: higher-than-expected payroll are followed by notable increases in 1-year Treasury yield. The strong correlation suggest markets actively update expectations about future interest rates using the NFP news. However, as we move into the second half of 2005, this correlation weakens significantly. The market doesn't respond to the data anymore.

This paper systematically examines the time-varying sensitivity of interest rates to macroeconomic announcements. Specifically, I ask: How does market sensitivity to macroeconomic news evolve over time? What is the fundamental driver of this variation? What are the implications for monetary policy?

I begin by documenting substantial time-variation in market sensitivity to macroeconomic announcements. The sensitivity is cyclical: it increases during periods of high inflation or rising unemployment. Beyond cyclical conditions, market sensitivity tends to intensify when the Federal Reserve frequently references macroeconomic condition in its communication.

While these patterns are descriptive, understanding the mechanisms that generate such time-variation pattern is essential—not only for interpreting asset price movements, but also for broader monetary policy analysis.

I consider two hypotheses. First, investor attention may vary over time, consistent with the rational inattention framework ([Sims, 2003](#)). In periods of high attention, markets are more sensitive to macroeconomic news. Second, the observed sensitivity may reflect shifts in perceived monetary policy rules, as the Fed is—or is perceived to be—more or less data-dependent over time (see, e.g., [Bauer, Pflueger and Sunderam \(2024\)](#); [Bauer and Swanson \(2023\)](#); [Gáti and Handlan \(2022\)](#)).

Both hypotheses are consistent with the broad empirical patterns of sensitivity I document. However, they imply distinct mechanisms in macro dynamics, more specifically, yield different predictions for how markets respond to monetary policy shocks. While both high attention and high Fed data dependence can generate heightened sensitivity to macroeconomic announcements, only high attention leads to greater sensitivity to FOMC surprises. Using a standard New Keynesian model with cogitative discounting à la [Gabaix \(2020\)](#), I qualitatively illustrate the difference between the two mechanisms.

This difference provides a natural identification strategy. I turn to the data to empirically examine how market sensitivity affects the transmission of monetary policy, and find strong support for the attention-based explanation: when market sensitivity to macroeconomic announcements is one standard deviation higher, the impact of FOMC surprises on treasury yields increases by 85%, making FOMC significantly more powerful in moving the yield curve. Additional evidence from Google Trends shows that investors search more actively for FOMC-related information during these high-sensitivity periods—consistent with the attention story.

Although the results strongly support the attention-based channel, I do not dismiss the importance of perceived monetary policy rules. In fact, the two mechanisms are not mutually exclusive: a more active or data-dependent Fed may increase investor attentiveness. Empirically, monetary policy rules also appear to modestly amplify the effects of FOMC surprises, but these effects disappear once market sensitivity is controlled for. While a large body of literature emphasizes the importance of monetary policy rule in the transmission of policy, these results suggest that its importance extends beyond the rule

itself—it also shapes market attention, thereby indirectly affecting how monetary policy impacts asset prices.

Overall, this research highlights the importance of investors’ attention in macro dynamics. I provide new insights into the interaction between attention, Fed communication, and the effectiveness of monetary policy.

1.1 Literature

This paper contributes to four main strands of literature.

First, it adds to the vast literature on market response to macroeconomic news (see, e.g., [Gürkaynak, Sack and Swanson \(2005\)](#)). On time-varying responses to macro data, [Swanson and Williams \(2014\)](#) examined the sensitivity of interest rates to macro news, testing the effect of the zero lower bound. Recently, [Elenev et al. \(2024\)](#) studied the time-varying stock market reaction to macro news. My paper conducts a systematic check on the empirical patterns and fundamental drivers of time-varying sensitivity. In this context, [Elenev et al. \(2024\)](#) and [Bauer, Pflueger and Sunderam \(2024\)](#) suggest that these variations can be attributed to shifting perceptions of monetary policy responsiveness. My work, however, highlights the role of attention.

This paper contributes to the growing literature providing empirical evidence on (in) attention. A large body of research—using survey data, randomized controlled trials (RCT), and text analysis—has documented attention patterns among households (e.g., [Bracha and Tang \(2024\)](#)), firms (e.g., [Weber et al. \(2025\)](#); [Flynn and Sastry \(2023\)](#); [Song and Stern \(2024\)](#)), professional forecasters (e.g., [Coibion and Gorodnichenko \(2015\)](#); [An, Abo-Zaid and Simon Sheng \(2023\)](#)), and the general public (e.g., [Korenok, Munro and Chen \(2023\)](#)). Despite the different approaches used in these papers, they provide consistent evidence that agents’ attention to macroeconomic conditions varies with the state of the economy. Very few investigate the financial markets, which play a crucial role in the transmission of monetary policy. Existing work on investor attention has largely focused on earnings announcements and equity markets.

A contemporaneous paper by [Kroner \(2025\)](#), which also examines the role of attention in financial markets, is closely related to this paper. [Kroner \(2025\)](#) focuses on CPI news, analyzing reactions across various financial assets during periods of high versus low inflation. In contrast, my work investigates interest rates’ sensitivity to a broader set of macroeconomic announcements over time, disentangles the effect of investor attention from that of perceived policy rules, and offers direct implications for monetary policy transmission.

This paper also relates to the extensive literature on the time-varying effects of monetary policy; see [Ramey \(2016\)](#) for a comprehensive overview. On the attention side, [Albrizio, Dizioli and Simon \(2023\)](#) construct a measure of firms’ attention to the central bank based on earnings calls, and show that higher attention enhances the effectiveness of monetary policy. [Song and Stern \(2024\)](#) use 10-K filings to capture firm-level attention to macroeconomic conditions and document heterogeneous responses to monetary policy shocks.

Finally, this paper highlights the role of Fed communication. Among many, [Hansen and McMahon \(2016\)](#) apply textual analysis to FOMC statements and show effect on both market and real economic. [Tang \(2017\)](#) examine the intensity of labor-related topics in FOMC statements and minutes, and find that such shifts significantly affect financial markets. [Swanson \(2023\)](#) emphasizes the importance of Fed Chair speeches as a monetary policy tool. My paper also examines Fed speeches: I use textual analysis to show that their influence operates not only through their policy content, but also through the way their thematic emphasis shapes market attention.

1.2 Roadmap

This paper is organized as follows. Section 2 constructs the time-varying sensitivity measure. Section 3 documents its empirical patterns. Section 4 investigates the fundamental drivers and identification strategy. Section 5 shows an illustrative model. Section 6 concludes.

2 Stylized Facts: Sensitivity of Interest Rates Overtime

In this section, I document the time variation overtime.

2.1 Data

2.1.1 Macroeconomic news announcements

I focus on nine key macroeconomic announcement series that are widely recognized in the literature for their significant market impact: Non-Farm Payrolls (NFP), Core Consumer Price Index (Core CPI), Core Producer Price Index (Core PPI), Consumer Confidence, Purchasing Managers’ Index (PMI), Capacity Utilization, GDP Advance, Unemployment Rate, and Retail Sales excluding Autos. All series are released monthly, except for GDP

Advance, which is released quarterly.¹

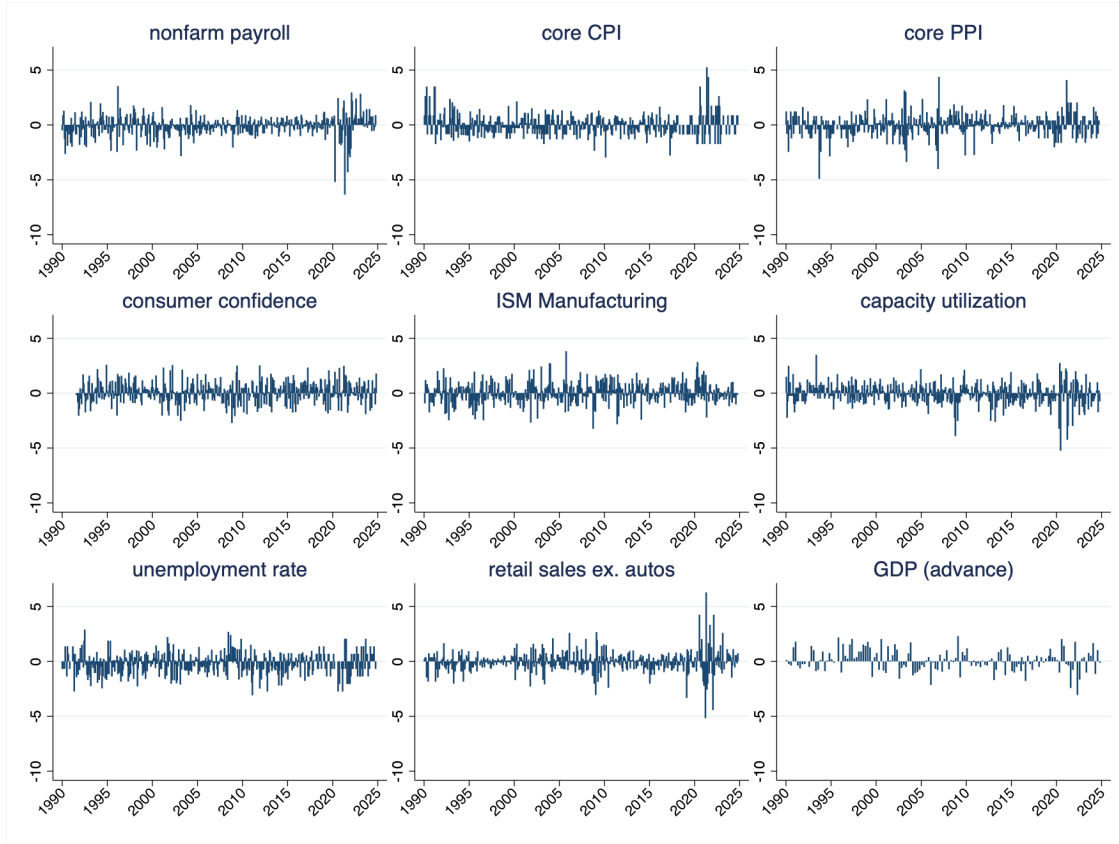
Following standard practice (see, e.g., [Gürkaynak, Sack and Swanson \(2005\)](#)), announcement surprises are measured as the difference between the actual release and market expectations, normalized by the full-sample standard deviation of each series. Market expectations are obtained from Money Market Services (MMS) and Bloomberg's U.S. Economic Calendar. Both sources compile survey forecasts from financial institutions and professional forecasters, and report the median forecast. MMS surveys are typically conducted on the Friday prior to each release, while Bloomberg forecasts can be updated until the night before the release. MMS data are available from 1990, while Bloomberg data begin later; accordingly, I use MMS for the earlier period and Bloomberg for the more recent years.

The sample spans from January 1990 to September 2024. I exclude extreme outliers during the COVID-19 outbreak. Specifically, I drop observations exceeding six standard deviations for each series. This trimming procedure leads to dropped observations for Non-Farm Payrolls, Unemployment Rate, and Retail Sales excluding Autos, while no observations are excluded for the remaining series.² [Figure 2](#) plots the standardized surprises over time.

¹Robustness checks using alternative sets of announcements yield similar results.

²The excluded outliers are: Retail Sales (June 2020, February 2021, May 2020), Non-Farm Payrolls (May 2020, June 2020, July 2020), and Unemployment Rate (April 2020, May 2020, June 2020, July 2020, September 2020, November 2020).

Figure 2: Standardized Macro Announcement Surprise Overtime



Note: January 1990 to September 2024.

2.1.2 Market reactions

To evaluate market reactions to macroeconomic news, I focus on the sensitivity of interest rates, specifically Treasury yields and Eurodollar futures.

Interest rates are directly linked to market expectations of overall economic conditions, and their sensitivity provides a relatively clean measure of how markets process macroeconomic information. Other financial assets, such as equities or exchange rates, in contrast, are more affected by sector-specific risks and, more importantly, often reflect multiple offsetting forces in response to macroeconomic news: responding to the news itself while simultaneously reacting to the expected monetary policy response. For example, a positive nonfarm payroll (NFP) surprise may signal stronger growth and thus support higher equity prices, while at the same time increasing the likelihood of monetary policy tightening, which would weigh negatively on equity valuations. These opposing forces may partially offset each other, resulting in a muted price reaction even when markets are indeed highly sensitive to the news.

This compounding effect complicates the interpretation of asset price responses, so that the observed price reaction does not necessarily reflect the underlying sensitivity to macroeconomic news. Interest rates, while also influenced by other factors, provide a more straightforward indicator of how markets absorb macroeconomic information. Beyond measurement considerations, interest rates play a central role in monetary transmission and aggregate economic activity. Interest rate responses to macroeconomic news can be viewed as a form of market-embedded monetary policy — that is, policy transmission that occurs automatically as market rates adjust to new information, even before any formal policy decision is implemented. Understanding its time variation is crucial for central bankers.

To capture the broader dynamics of interest rates sensitivity across different horizons, I consider interest rates for different maturities, specifically 3-month, 6-month, 1-year, and 2-year Treasury yields. I do not extend beyond the 2-year horizon due to the increasing influence of risk and term premia at longer maturities. I also include current-quarter and 1-, 2-, 3-quarter-ahead Eurodollar futures (ED1 to ED4). SOFR futures were used instead of Eurodollar futures starting from January 2022. (see [Acosta, Brennan and Jacobson \(2024\)](#)).

2.2 Estimating the Time-Varying Sensitivity

To estimate market sensitivity to macroeconomic news, I follow the nonlinear regression framework by [Swanson and Williams \(2014\)](#), which constructs a generic macroeconomic surprise by estimating a weighted combination of multiple announcement surprises. This framework enables a unified estimation of market sensitivity while mitigating small-sample limitations that arise when studying each announcement type separately.

Specifically, I begin by estimating the following regression using the full sample:

$$\Delta y_t = \alpha^{\tau_i} + \beta^{\tau_i} \gamma \mathbf{X}_t + \varepsilon_t$$

where Δy_t denotes the one-day change in Treasury yields, and $\mathbf{X}_t$ is a vector of surprise components for nine key macroeconomic announcements. The parameter vector γ captures the average weight placed on each news type, and β^{τ_i} reflects the overall sensitivity of yields in calendar year τ_i . The identification strategy is the average of β^{τ_i} over the sample equals one. The key assumption of this approach is that the relative importance of each news type (i.e., γ) remains constant.

Based on the estimated γ , I then estimate rolling regression that allow sensitivity to be fully flexibly over time. I re-estimate the same regression over a one-year rolling window

centered on each announcement day:

$$\Delta y_t = \alpha^\tau + \beta^\tau \gamma \mathbf{X}_t + \varepsilon_t^\tau$$

This rolling regression yields a time series of β^τ , which measures how strongly the market responds to generic macroeconomic news.

Figure 3 presents the estimated of the time-varying sensitivity coefficients for 3-month, 6-month, 1-year, and 2-year Treasury yields, as well as ED1 to ED4, from January 1990 to September 2024. Note that, by construction, each maturity's sensitivity is normalized to have a time-series average of one. Therefore, the levels in the figure represent deviations relative to its own sample average, rather than absolute sensitivity levels.

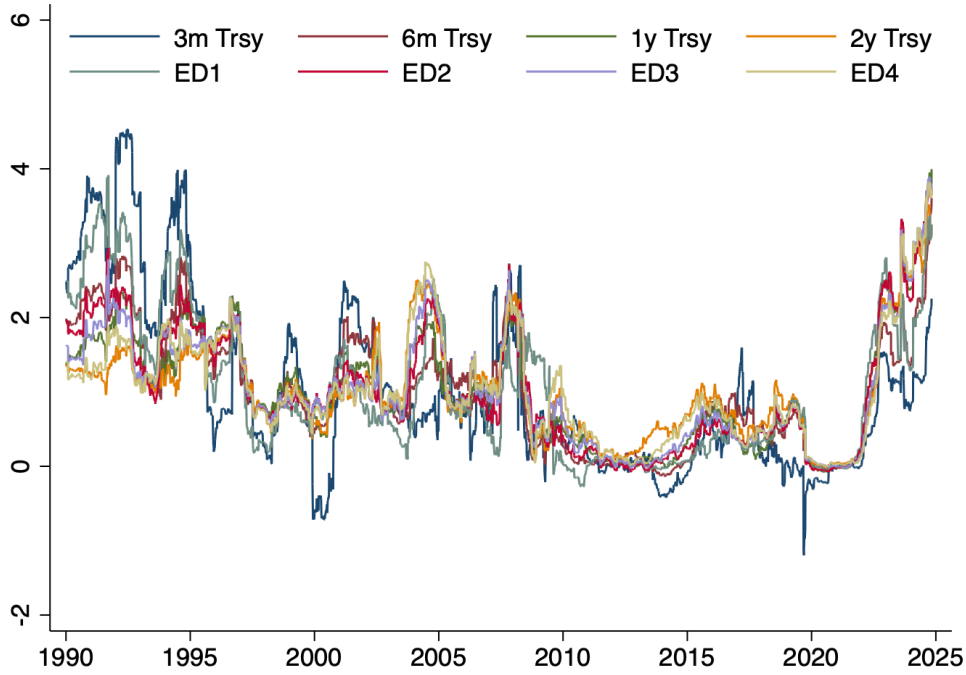


Figure 3: estimated over 1-year rolling windows centered around each announcement day from January 1990 through Sep 2024.

There are two main takeaways. First, sensitivities across different maturities exhibit strong co-movement, with the first principal component explaining over 85% of the variation. Although the 3-month Treasury yield often stands out visually, cross-maturity differences follow a systematic pattern tied to maturity, with sensitivities consistently ordered across horizons. This pattern reflects the evolving monetary policy inertia and the effects of forward guidance. When policy inertia is perceived to be high, short-term interest rates become more anchored and less responsive to incoming news, while longer-term

rates continue to adjust as they incorporate expectations about future policy. Overall, we find that shorter-term initially exhibited greater sensitivity in the earlier sample, but in recent years, longer-term yields have become relatively more responsive. This pattern is consistent with the upward shift in perceived policy inertia estimated by [Bauer, Pflueger and Sunderam \(2024\)](#).

Second, interest rate sensitivities across all maturities exhibit substantial time variation. In the early 1990s, sensitivities were significantly above sample average. Subsequently, they remained highly volatile, with notable spikes—for instance, around 2004–2005 and 2007–2008. Following the Global Financial Crisis, sensitivities declined sharply during the zero lower bound (ZLB) period, when short term interest rate movement were constrained. This muted response became even more pronounced in the ZLB after the COVID-19 outbreak. During this unprecedented period, indeed, even longer-term yields, such as the 10-year Treasury, appeared largely unresponsive to macroeconomic news, different from the earlier ZLB. Market reactions appeared to focus on pandemic-related developments than on conventional macroeconomic data. Over the past two years, interest rate sensitivities have risen sharply—returning to levels comparable to those seen in the early 1990s. We are back to the heightened sensitive macro regime.

3 Empirical Patterns in Sensitivity

Having documented the substantial time variation in interest rate sensitivities, I now turn to its empirical patterns. In this section, I empirically examine the pattern of sensitivity, and show that it is both cyclical and linked to Fed communication.

3.1 Cyclical Variation

Is this time-varying sensitivity cyclical? To investigate this, I regress the estimated sensitivity on macroeconomic state variables—specifically, year-over-year core inflation and the 12-month change in the unemployment rate—which capture underlying economic conditions and business cycles. I also control for market uncertainty using VIX, and include two dummy variables corresponding to the zero lower bound (ZLB) periods.

Table 1: Sensitivity to Generic Surprise

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) ED1	(6) ED2	(7) ED3	(8) ED4
yoy core inflation	0.446*** (0.162)	0.286*** (0.072)	0.277*** (0.071)	0.143* (0.081)	0.500*** (0.090)	0.328*** (0.070)	0.247*** (0.073)	0.152* (0.080)
12m change in unemployment rate	0.199** (0.078)	0.129*** (0.039)	0.109*** (0.035)	0.077** (0.033)	0.167*** (0.049)	0.124*** (0.036)	0.122*** (0.038)	0.100** (0.039)
VIX	-0.146 (0.101)	-0.133** (0.054)	-0.116** (0.054)	-0.131** (0.053)	-0.099 (0.079)	-0.124** (0.053)	-0.144*** (0.054)	-0.154*** (0.057)
ZLB: 2009-2015	-0.648*** (0.200)	-0.802*** (0.120)	-0.707*** (0.140)	-0.583*** (0.155)	-0.606*** (0.137)	-0.724*** (0.135)	-0.683*** (0.151)	-0.618*** (0.176)
ZLB: 2020-2021	-1.362*** (0.243)	-1.248*** (0.122)	-1.246*** (0.108)	-1.146*** (0.102)	-1.285*** (0.149)	-1.271*** (0.112)	-1.222*** (0.117)	-1.173*** (0.122)
Constant	0.065 (0.403)	0.497** (0.204)	0.516** (0.217)	0.838*** (0.247)	-0.070 (0.254)	0.397* (0.216)	0.600*** (0.230)	0.836*** (0.255)
N	417	417	417	417	417	417	417	417
R-Squared	0.41	0.62	0.56	0.41	0.62	0.60	0.52	0.41

Note: Sensitivities are the monthly average of the estimated β^T . Sample from January 1990 to September 2024. Newey-West standard errors with 12 lags in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Results show that there is a strong correlation between sensitivity and economic conditions: the market responds more intensely to macro news during periods of high inflation or rising unemployment. These effects are more pronounced for shorter-maturity instruments. The coefficient on the VIX is negative and more significant for longer maturities. This suggests that during periods of elevated equity market volatility—typically associated with financial turmoil and heightened uncertainty—markets are less responsive to macroeconomic news. As shown in Table 1, taken together, these variables explain 40% to over 60% of the variation in sensitivity.

3.2 Robustness

volatility and uncertainty To ensure that the documented sensitivity patterns are not merely reflections of changing volatility or uncertainty, I conduct a series of robustness checks using different control variables in Table 2. Given the strong co-movement across maturities, I use the first principal component of the estimated sensitivities as the dependent variable. For reference, column (1) replicates the baseline specification from Table 1 using the principal component. In column (2), I include the federal funds rate to capture interest rate volatility. Prior literature suggests a positive correlation between the level and volatility of short-term rates (e.g., [Chan et al. \(1992\)](#)). The coefficient on the level of

federal funds rate is positive, indicating that interest rate volatility can explain part of the sensitivity variation, but the macroeconomic state variables remain strongly significant. Columns (3) and (4) consider alternative measures of uncertainty: macroeconomic uncertainty from [Jurado, Ludvigson and Ng \(2015\)](#) and monetary policy uncertainty (MPU) from [Husted, Rogers and Sun \(2020\)](#). Both variables also enter with negative coefficients, suggesting that broader uncertainty dampens the market's responsiveness to macro data releases.

Overall, across all specifications, the coefficients on inflation and unemployment remain positive and highly significant, confirming the robustness of the cyclical pattern in interest rate sensitivity.

Table 2: Sensitivity to Generic Surprise

	(1)	(2)	(3)	(4)	(5)
yoy core inflation	0.979*** (0.231)	0.775*** (0.247)	1.050*** (0.217)	0.999*** (0.222)	0.891*** (0.215)
12m change in unemployment rate	0.428*** (0.127)	0.277*** (0.092)	0.438*** (0.127)	0.272*** (0.089)	0.375*** (0.122)
FFR		0.285* (0.156)			0.210 (0.144)
VIX	-0.460*** (0.175)				-0.353* (0.191)
Macro Uncertainty			-0.502** (0.232)		-0.095 (0.252)
MPU				-0.376*** (0.146)	-0.191 (0.143)
ZLB:2009-2015	-2.366*** (0.470)	-1.639** (0.661)	-2.361*** (0.519)	-2.526*** (0.488)	-1.765*** (0.681)
ZLB:2020-2021	-4.334*** (0.398)	-3.568*** (0.659)	-3.541*** (0.541)	-4.334*** (0.326)	-3.322*** (0.655)
Constant	-1.807** (0.730)	-2.284*** (0.804)	-2.079*** (0.721)	-1.875*** (0.701)	-2.395*** (0.775)
N	417	417	414	414	414
R-Squared	0.59	0.60	0.60	0.60	0.64

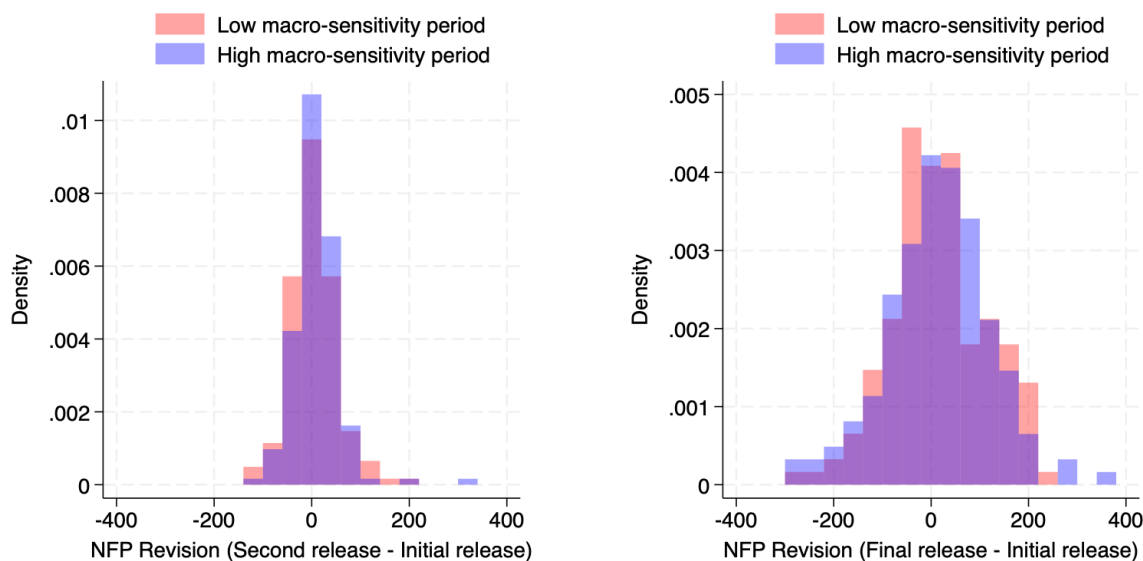
Note: The dependent variable is the first principal component of time-varying sensitivity estimates β^T across all maturities. VIX, Macro Uncertainty, and MPU are standardized. Newey-West standard errors with 12 lags in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample from January 1990 to September 2024.

distribution of news The time variation is not driven by the good/bad news, nor by the size of the news. [To be finalized]

accuracy of news Another possibility is that market sensitivity varies with the accuracy of data release. Many headline economic indicators are subject to revisions, and among them, the Nonfarm Payrolls (NFP) stands out as both the most closely followed and one of the most frequently revised. Since initial estimates are based on incomplete information, it is plausible that market participants discount them when large revisions are expected.

To assess this possibility, I examine NFP revisions and find no systematic relationship with sensitivity. For example, figure 4 shows the distribution of NFP revisions. The left panel plots the distribution of first revisions (second release minus initial release), while the right panel shows the final revisions (final value minus initial release). Each is split by periods of high (above medium) and low (below medium) market sensitivity, excluding ZLB episodes. Distributions are broadly similar, suggesting that revision unlikely to explain the observed time-variation in market responsiveness. Despite the potential for revisions, markets appear to treat the initial NFP release as the most timely and informative signal about the economic conditions.

Figure 4: NFP Revisions across Sensitivity Regimes



individual news I have focused on the sensitivity to overall news, assuming that the weights the market assigns to individual announcements (γ) remain constant over time. A Wald test fails to reject this assumption ($p = 1.00$), supporting the assumption of fixed announcement weights. Still, it is informative to see how the cyclical patterns documented above hold at the level of individual macro announcements.

For each macroeconomic announcement series x_t (e.g., NFP, CPI), I estimate the following regression:

$$\Delta y_t = \alpha + \beta_H x_t 1_{\{t \in H\}} + \beta_L x_t 1_{\{t \in L\}} + \varepsilon_t,$$

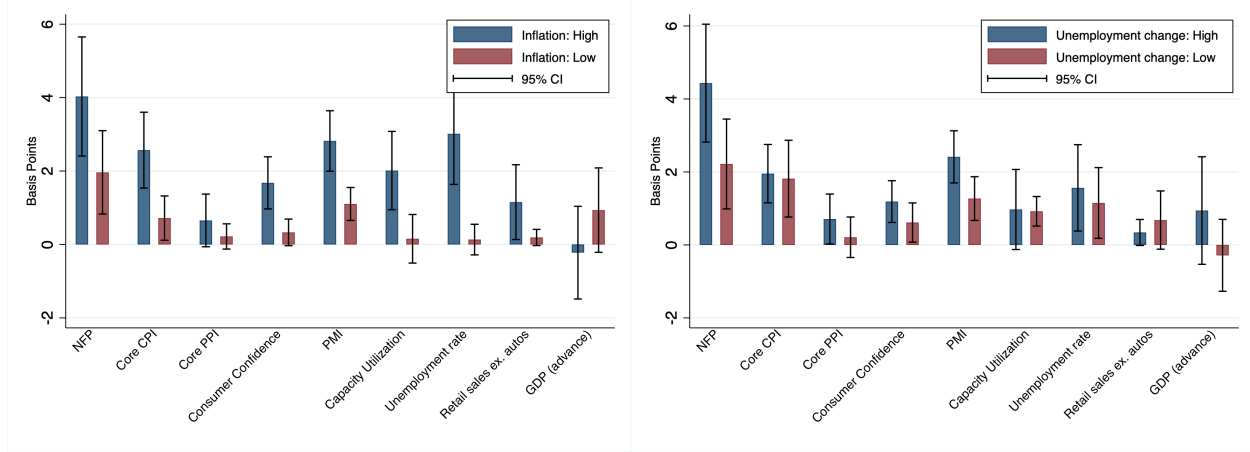
where Δy_t denotes the daily change in the Treasury yield. Given the co-movement across maturities, I focus on the 1-year Treasury. The indicator variables $1_{\{t \in H\}}$ and $1_{\{t \in L\}}$ denote high and low economic states, respectively, defined by whether year-over-year core inflation or 12-month changes in the unemployment rate are above or below their sample medians.

Figure 5 plots the estimated coefficients β_H and β_L for each announcement and state. Overall, the cyclical patterns observed at the aggregate level—stronger responses during periods of high inflation and rising unemployment—broadly hold across individual announcements. Looking at NFP surprises—the announcement to which markets respond most strongly—the estimated responses are approximately twice as large in high-inflation or high-unemployment states relative to low-state periods.

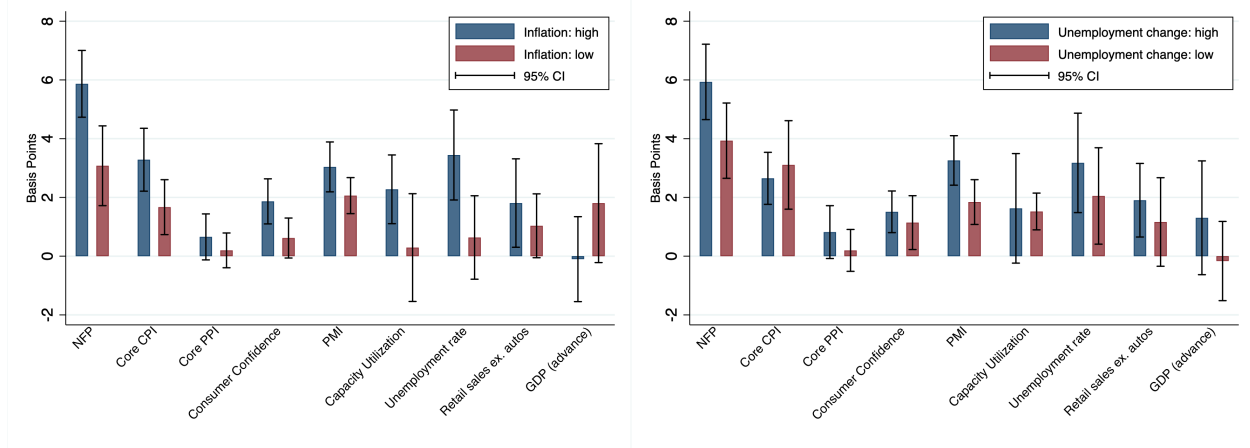
The responses to CPI and GDP surprises shows a slight different pattern, they exhibit state dependence along a single dimension—markets react more strongly to CPI when inflation is high and to GDP advances when unemployment is elevated. These patterns remain consistent with economic intuition and reinforce the broader view that macro sensitivity is highly state-dependent.

Figure 5: Sensitivity to Individual News

Panel A. Full sample



Panel B. Exclude ZLB



Note: Bars show the estimated coefficients (β_L and β_H), representing the effect of a one standard deviation surprise in the data release on the 1-year Treasury yield. Standard errors are heteroskedasticity-robust. Sample: January 1990 to September 2024.

3.3 The Role of Fed Communication

While the previous analysis reveals strong cyclical patterns in market sensitivity to macroeconomic news, these patterns fail to account for several notable spikes in responsiveness—such as those observed in 2004–2005 and 2007–2008. These large fluctuations suggest that additional factors beyond macroeconomic conditions may be at play.

Could the Federal Reserve play a role in here? Specifically, could shifts in the Fed’s communication strategy help explain the time-varying sensitivity of markets?

The Federal Reserve operates under a dual mandate of maximum employment and price stability. However, the emphasis it places on these goals may shift over time, particularly in response to evolving economic conditions. For instance, the Fed may sometimes focus more on financial markets—appearing “market dependent” rather than “data dependent,” as noted by a former Fed governor and cited in [Cieslak and Vissing-Jorgensen \(2021\)](#)—or turn its attention to immediate pressing issues or longer-term structural concerns.

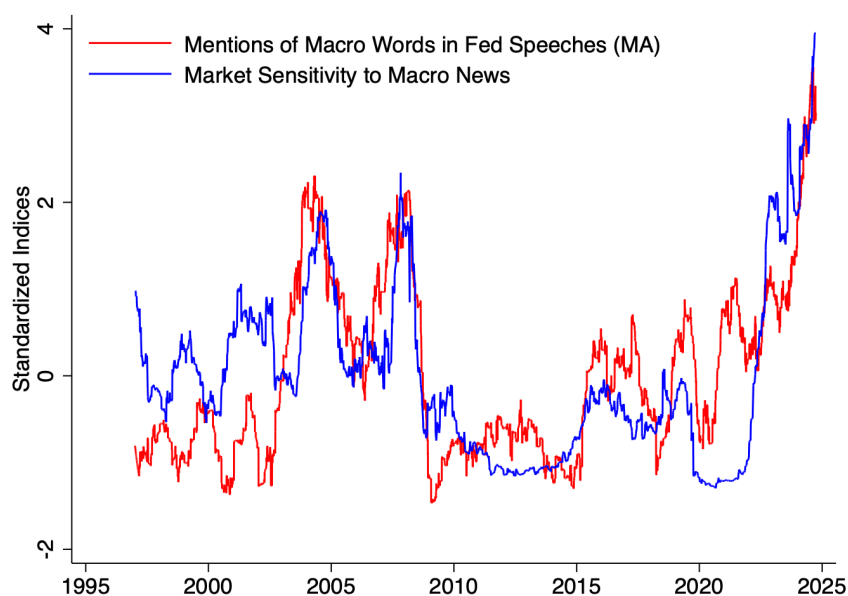
To explore this, I collect all speeches by the Fed Chair, Vice Chair, and Governors since 1997 from the Fed website. Fed officials deliver speeches year-round, addressing a broad range of topics, including monetary policy, fiscal policy, economic conditions, bank regulation, financial stability, ceremonial events, etc. Compared to other forms of Fed communication—such as FOMC statements, meeting minutes, or transcripts—speeches are more frequent, flexible in content, and immediately available to the public. FOMC statements and minutes are released on a fixed schedule and follow standardized language, offering limited variation in emphasis. Transcripts, while rich in detail, are released to the public with a five year lag.

To quantify Fed speeches focus, I start with a simple word-count approach. Though it lacks nuance, the simple method provides a clear baseline before applying more advanced techniques, and is well-suited to this context given the concreteness and specificity of the target terms. I search each speech for terms related to the nine macroeconomic announcements: “payroll(s),” “cpi,” “ppi,” “pmi,” “consumer confidence,” “capacity utilization,” “(un)employment,” “gdp,” “retail sales,” “inflat*,” “deflat*,” “price(s),” “labor,” and “job(s).”

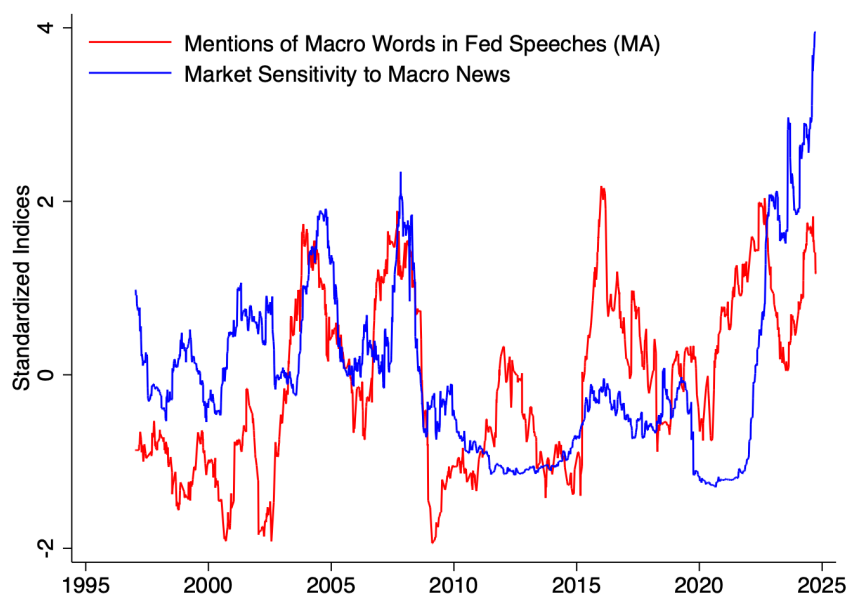
Figure 6 plots Fed speech’s mentioning of terms related to the 9 macroeconomic announcements along with market sensitivity to macro news. The red line represents the 1-year moving average of macroeconomic word counts in speeches, and the blue line is the first principal component of the estimated sensitivity across maturities.

Figure 6: Fed speech's mentioning of terms related to the 9 macroeconomic announcements vs market sensitivity to macro news

Panel A. Treat no-speech days as zero



Panel B. Exclude no-speech days



Note: The red line shows the one-year moving average of the word count of macroeconomic terms in Fed speeches. The blue line represents the first principal component of the estimated sensitivity across maturities. Both series are standardized. Sample: January 1997 to September 2024.

We begin with Panel (a), which treats days without Fed speeches as zero while calculating the moving average. This specification captures both the content and frequency of Fed communication, providing a more comprehensive measure of the public’s exposure to the Fed. A strong positive correlation emerges after 2000, suggesting that markets tend to be more sensitive to macroeconomic news when the Fed places greater emphasis on such topics in its public communication. Notably, the Fed’s heightened focus on macroeconomic terms during 2004–2005 and 2007–2008 aligns closely with peaks in market sensitivity—periods that are not fully explained by cyclical drivers such as inflation, unemployment, or market volatility examined earlier. In 2024, markets received more intensive macro-related communication from the Fed than ever before, coinciding with elevated sensitivity to macro news.

Panel (b) excludes days without Fed speeches, focusing only on the intensity of macroeconomic mentions within speeches. While this specification abstracts from variation in speech frequency, the positive correlation with market sensitivity remains robust.

Together, these patterns suggest that shifts in Fed communication play a key role in shaping how markets respond to macroeconomic data.

Robustness: GPT-Based Assessment

As a robustness check, I complement the word-based analysis using recent advances in large language models (LLMs).

Specifically, I apply a prompt-based approach using OpenAI’s GPT-4o model to capture the semantic emphasis placed on macroeconomic topics in each speech. This allows me to go beyond surface-level mentions and evaluate whether the Fed is merely referencing macroeconomic terms or actively engaging with them in a meaningful way.

The following prompt format is used to query GPT:

```
You are analyzing a Federal Reserve speech to assess attention to **
Macroeconomic Conditions**, separated into two categories:

1. **Pure Macroeconomic Discussion:**
   - Discussion of macroeconomic indicators without referencing or implying
     monetary policy decisions.
2. **Data Dependence in Monetary Policy:**
   - Instances where macroeconomic data is used to justify current or future
     monetary policy decisions.

**Tasks:**
```

```

- Provide an **Overall Attention Score (0-100%)** for macroeconomic conditions
.
- Provide an **Attention Score (0-100%)** for each subcategory.
- Include **one example sentence** from the speech that best represents each
category. If no relevant content exists, state "None."
- Briefly explain why the assigned scores are appropriate.

**Important:**
- If the speech does not relate to macroeconomic conditions (e.g., focuses on
education, diversity, or non-economic topics), assign an **Overall
Attention Score of 0%**
- Ensure that the sum of the subcategory scores equal to the overall
macroeconomic attention score.

**Output Format:**
{{
  "overall_attention_score": <score>,
  "pure_macro_economic_discussion": {{
    "attention_score": <score>,
    "example_sentence": "<sentence>"
  }},
  "data_dependence_in_monetary_policy": {{
    "attention_score": <score>,
    "example_sentence": "<sentence>"
  }},
  "overall_explanation": "<concise explanation covering both categories>"
}}

**Speech:**
{speech_text}

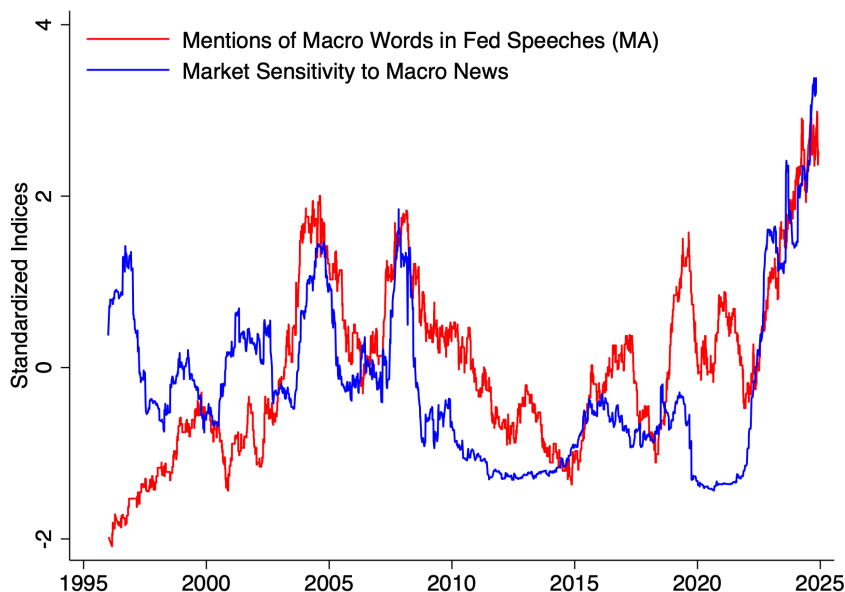
```

In the prompt, I ask the model to assess the Fed's attention to macroeconomic conditions and to distinguish between two types: (1) pure macroeconomic discussion, and (2) data dependence in monetary policy. I also instruct the model to provide example sentences and justify the assigned scores. These instructions are essential to ensure that the model returns accurate responses. For GPT model parameters, I set the temperature to 0 to enhance consistency and reproducibility.

Figure 7 plots the one-year moving average of GPT-generated macroeconomic attention scores, summing across the two subcategories. The GPT series exhibits a strikingly similar pattern to the earlier word-count results. The similarity holds not only for the aggregate series, but also between the two sub-components, which track each other closely over time. For brevity, I omit separate plots for each subcategory.

Once again, we observe a strong positive correlation between Fed communication and market sensitivity to macroeconomic news.

Figure 7: Using GPT-4o



4 Interpreting the Sensitivity

I have documented clear empirical patterns in when markets respond more strongly to macroeconomic news. An important question remains: what is the fundamental driver of these fluctuations in sensitivity? This section investigates the underlying mechanism, proposes an identification strategy, and highlight the role of market attention.

4.1 Two Hypotheses, One Identification Strategy

Two competing hypotheses may account for the observed fluctuations in market sensitivity.

The first is time varying market *attention*. While information is abundant, attention is scarce. Investors face a continual stream of data but only react to a select few. When macroeconomic conditions are unfavorable—such as high inflation or increasing unemployment—or when the Fed frequently emphasizes macroeconomic developments in its communication, markets become more attentive to incoming macroeconomic data. Conversely, during relatively calm periods, investor attention to macro news releases tends

to decline. This is in line with rational inattention ([Sims \(2003\)](#)).

The alternative is shifts in the *monetary policy rule*, i.e., the Fed’s perceived data dependence. When monetary policy is expected to respond aggressively to economic developments, markets are more likely to react strongly to related news. This mechanism has been emphasized in recent work by [Bauer, Pflueger and Sunderam \(2024\)](#). Importantly, the perceived degree of data dependence may itself exhibit some cyclical pattern: when inflation or unemployment deviates substantially from the Fed’s dual mandate, the Fed may adopt a more active policy stance to bring the economy back on track. In addition, when the Fed consistently underscores economic conditions in its communication, it can reinforce the impression that policy decisions are tightly linked to incoming data.

Although both hypotheses are in line with the empirical patterns documented in earlier sections, they imply very different macroeconomic dynamics. In particular, they lead to contrasting predictions about the market’s responsiveness to monetary policy shocks. If sensitivity to macro news is driven by market attention, then high sensitivity to macro data releases should also lead to an amplified response to FOMC announcements. By contrast, under the monetary policy rule hypothesis, no such amplification should occur.

This distinction motivates a natural empirical strategy. In the following subsections, I implement this strategy and examine how time-varying sensitivity shapes the transmission of monetary policy.

4.2 Market Reactions to FOMC Announcements

I estimate the effects of FOMC announcements on asset prices using a standard event-study design (e.g., [Nakamura and Steinsson \(2018\)](#)), augmented with interaction terms to allow for state-dependent effects. The regression specification is as follows:

$$\Delta y_t = \alpha + \beta_1 mps_t + \beta_2 (mps_t \times sensitivity_t) + \beta_3 sensitivity_t + \varepsilon_t$$

where Δy_t denotes the one-day change in Treasury yields around FOMC announcements. mps_t is high-frequency FOMC announcement surprises from [Bauer and Swanson \(2023\)](#). $sensitivity_t$ is the first principal component of maturity-specific sensitivities to macroeconomic news, standardized for interpretability, and constructed using a 1-year trailing window (rather than centered) to mitigate endogeneity.

The coefficient of interest is β_2 , which captures the interaction effect when prevailing sensitivity is one standard deviation above its mean. A positive β_2 indicates an amplification effect—suggesting that attention plays a dominant role in shaping the market response to monetary policy. The baseline sample spans from January 1991 to December

2023. Given that market sensitivity is constrained during the ZLB periods, they are excluded from the baseline regressions.

Table 3: sensitivity to mps, exclude ZLB

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	28.580*** (10.935)	42.401*** (9.010)	45.076*** (9.342)	53.625*** (10.934)	43.890*** (9.931)	23.592*** (8.502)
mps $\times$ sensitivity	36.487*** (10.546)	39.166*** (9.029)	39.113*** (10.222)	34.103*** (11.869)	24.850** (10.684)	20.267** (8.091)
sensitivity	-0.826 (0.611)	-0.853 (0.548)	-0.966 (0.625)	-0.582 (0.692)	-0.385 (0.693)	-0.201 (0.545)
Constant	-2.337*** (0.423)	-2.140*** (0.342)	-1.395*** (0.380)	-0.797 (0.503)	-0.920* (0.507)	-0.710* (0.429)
N	213	213	213	213	213	213
R-Squared	0.24	0.41	0.41	0.35	0.24	0.15

Heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3 presents the regression results. I examine both short-term and long-term yields to capture different dimensions of monetary policy transmission. The estimated β_2 coefficients are positive across all maturities. For instance, when market sensitivity is one standard deviation above its mean, for the 3-month horizon, the response increases from 29 to 65 basis points; for the 10-year horizon, it rises from 24 to 44 basis points. On average, a one-standard-deviation increase in market sensitivity amplifies the yield response to monetary policy surprises by approximately 85 percent.

The results are robust to alternative specifications. Using the full sample and controlling for ZLB —by adding a ZLB dummy and its interaction with mps_t —yields nearly identical amplification estimates. The findings are also stable when controlling for the level of Treasury yields, which accounts for both ZLB effects and changing interest rate volatility (see Table 4 and Table 5).

Table 4: full sample, control ZLB

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	28.060** (11.063)	41.945*** (9.102)	44.279*** (9.508)	52.600*** (11.149)	43.240*** (10.134)	22.966*** (8.634)
mps $\times$ sensitivity	37.992*** (10.752)	41.000*** (9.287)	39.426*** (10.426)	32.693*** (11.913)	24.082** (10.787)	21.603*** (8.179)
sensitivity	-0.777 (0.616)	-0.730 (0.553)	-0.745 (0.628)	-0.378 (0.687)	-0.103 (0.699)	0.050 (0.557)
mps $\times$ ZLB	47.823 (29.994)	31.567 (21.651)	43.017* (25.437)	83.797*** (29.291)	117.702** (47.071)	104.135** (48.837)
ZLB	1.129 (0.834)	1.029 (0.709)	0.180 (0.856)	-0.849 (1.100)	-0.615 (1.448)	-0.088 (1.426)
Constant	-2.339*** (0.428)	-2.099*** (0.346)	-1.325*** (0.383)	-0.689 (0.508)	-0.820 (0.513)	-0.608 (0.436)
N	284	284	284	284	284	284
R-Squared	0.27	0.43	0.41	0.35	0.23	0.15

heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: full sample, control interest rate level

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	32.791 (19.998)	47.461*** (15.601)	55.148*** (17.887)	99.373*** (24.110)	110.006*** (27.397)	78.712*** (23.994)
mps $\times$ sensitivity	32.522** (13.970)	38.051*** (11.046)	36.155*** (11.887)	35.645** (14.094)	30.463** (15.125)	26.112** (12.443)
sensitivity	-1.145 (0.694)	-0.873 (0.588)	-0.582 (0.657)	0.092 (0.769)	-0.219 (0.901)	-0.622 (0.763)
mps $\times$ level	0.070 (6.313)	-0.701 (4.802)	-1.910 (5.079)	-11.091* (6.431)	-13.974** (6.673)	-10.314* (5.427)
level	-0.004 (0.248)	-0.133 (0.186)	-0.169 (0.200)	-0.182 (0.266)	0.099 (0.353)	0.354 (0.338)
Constant	-2.021** (0.816)	-1.460** (0.663)	-0.780 (0.750)	-0.269 (1.013)	-1.263 (1.522)	-2.078 (1.564)
N	284	284	284	284	284	284
R-Squared	0.26	0.43	0.41	0.35	0.21	0.12

heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

These findings suggest that FOMC announcements exert significantly greater impact during periods of heightened market sensitivity, supporting the attention hypothesis.

These results also have important implications for monetary policy implementation, and contribute to the literature on state-dependent monetary transmission by identifying investor attention as a distinct channel. Notably, sensitivity varies substantially over time—reaching about two standard deviations above its historical mean in episodes such as the early 1990s and recent years. It is therefore crucial for policymakers to take this factor into account when conducting monetary policy.

4.3 Testing the MP Rule Channel

Although the previous results strongly support the attention hypothesis, it is important to empirically test the identifying strategy, which relies on the prediction that changes in the perceived monetary policy rule should not generate amplification in market reactions to FOMC announcements.

To do so, I repeat the event study using market perceived monetary policy rule from [Bauer, Pflueger and Sunderam \(2024\)](#), who estimate time-varying Taylor rules—both with and without inertia—based on panel data of professional forecasts of macroeconomic conditions and interest rates. I use their inertial rule specification.

[Bauer, Pflueger and Sunderam \(2024\)](#) focus on the coefficient on the output gap as a summary measure of perceived data dependence, arguing that it reflects responsiveness to both real activity and inflation over the sample period. I follow their paper to use the output gap coefficient as the baseline measure, but as a robustness check, I also consider the inflation coefficient, which has gained importance in recent years.

To mitigate simultaneity concerns, I use lagged values of the estimated policy rule coefficients. For consistency with earlier specifications and to facilitate magnitude comparisons, all policy rule measures are standardized. Table 6 and 7 report the results using the output gap and inflation coefficients, respectively. The sample ends in May 2023.

Table 6: sensitivity to mps, MP rule: output gap coefficient

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	44.947*** (10.884)	60.291*** (9.499)	62.278*** (9.033)	67.613*** (9.459)	53.906*** (8.599)	32.250*** (7.312)
mps $\times$ MP rule	12.049** (5.777)	11.605*** (4.373)	14.347*** (4.570)	13.864*** (4.924)	5.022 (5.986)	6.684 (6.446)
MP rule	0.514 (0.517)	0.307 (0.489)	0.157 (0.581)	-0.075 (0.608)	-0.077 (0.663)	0.125 (0.520)
Constant	-2.975*** (0.479)	-2.684*** (0.410)	-1.887*** (0.431)	-1.033* (0.537)	-0.980* (0.549)	-0.755* (0.454)
N	208	208	208	208	208	208
R-Squared	0.19	0.34	0.34	0.32	0.21	0.12

heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7: sensitivity to mps, MP rule: inflation coefficient

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	46.055*** (10.442)	60.591*** (9.491)	62.443*** (9.082)	67.557*** (9.345)	53.796*** (8.336)	32.725*** (7.093)
mps $\times$ MP rule	11.207 (9.590)	5.014 (8.747)	3.577 (8.236)	-0.439 (8.744)	-4.844 (8.066)	0.271 (6.116)
MP rule	0.409 (0.443)	0.195 (0.403)	-0.342 (0.452)	-1.138** (0.560)	-1.225** (0.561)	-0.948** (0.441)
Constant	-2.846*** (0.483)	-2.580*** (0.421)	-1.779*** (0.440)	-0.938* (0.508)	-0.913* (0.512)	-0.658 (0.427)
N	208	208	208	208	208	208
R-Squared	0.18	0.32	0.32	0.32	0.24	0.14

heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The results show some evidence of amplification related to the perceived MP rule. However, the magnitude is substantially smaller than that observed when using the market sensitivity. This weaker amplification may reflect the fact that the Fed's perceived responsiveness and market attention are themselves correlated: when the Fed signals greater responsiveness to macroeconomic conditions, it may naturally attract increased investor attention. Indeed, the correlation between the estimated MP rule (output gap coefficient) and sensitivity is 0.39 in the full sample and 0.25 when excluding the ZLB period.

Considering this, I estimate a horse-race regression that includes both market sensi-

tivity and the perceived MP rule. Table 8 and Table 9 present the results. The coefficient on the sensitivity interaction term remains stable in both magnitude and significance, compared with the baseline results in Table 3.

By contrast, the interaction between monetary policy surprises and MP rule becomes statistically insignificant and often turns negative—for both the output gap and inflation coefficients. This pattern suggests that the weaker amplification effects observed earlier are primarily driven by correlated market attention, rather than changes in the perceived policy rule itself.

Results using the no-inertia Taylor rule specification yield similar conclusions. While the interaction term between the MP rule and monetary policy surprises is slightly larger in this case, it becomes smaller when sensitivity is included in the regression, and the amplification effect of sensitivity remains robust. I also verify robustness by using contemporaneous values or a trailing 12-month moving average for the MP rule.

Taken together, the evidence supports the identification strategy and indicates that variation in market sensitivity reflects changes in investor attention, beyond simply capturing time-varying perceptions of the policy rule.

Table 8: Including MP rule: output gap coefficient

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	28.183** (10.996)	42.121*** (9.192)	45.778*** (9.712)	55.080*** (11.749)	43.505*** (10.332)	23.911*** (8.547)
mps $\times$ sensitivity	35.873*** (11.855)	39.637*** (9.739)	35.889*** (10.815)	28.357** (12.997)	24.050** (11.363)	19.613** (8.631)
sensitivity	-1.020 (0.632)	-0.856 (0.537)	-0.812 (0.586)	-0.254 (0.680)	-0.038 (0.676)	0.079 (0.540)
mps $\times$ MP rule	4.710 (7.377)	3.391 (5.880)	6.923 (5.209)	7.847 (4.953)	-0.151 (5.471)	2.423 (6.216)
MP rule	0.610 (0.490)	0.352 (0.430)	0.206 (0.498)	-0.124 (0.559)	-0.159 (0.623)	0.034 (0.501)
Constant	-2.420*** (0.446)	-2.155*** (0.361)	-1.397*** (0.402)	-0.765 (0.542)	-0.807 (0.545)	-0.647 (0.453)
N	208	208	208	208	208	208
R-Squared	0.25	0.42	0.41	0.35	0.23	0.15

heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Including MP rule: inflation coefficient

	(1) 3M	(2) 6M	(3) 1Y	(4) 2Y	(5) 5Y	(6) 10Y
mps	28.642*** (10.627)	40.667*** (8.870)	43.054*** (9.230)	51.203*** (11.000)	41.147*** (10.158)	22.638** (8.835)
mps $\times$ sensitivity	36.632*** (11.676)	42.573*** (10.147)	41.605*** (10.879)	36.321*** (12.219)	28.674*** (10.968)	23.214*** (8.658)
sensitivity	-0.928 (0.658)	-0.786 (0.576)	-0.692 (0.638)	-0.070 (0.695)	0.189 (0.691)	0.296 (0.549)
mps $\times$ MP rule	3.770 (8.168)	-3.734 (6.913)	-5.000 (7.113)	-8.120 (8.593)	-10.996 (8.515)	-4.762 (6.467)
MP rule	0.434 (0.441)	0.191 (0.370)	-0.354 (0.413)	-1.208** (0.545)	-1.307** (0.555)	-1.031** (0.433)
Constant	-2.317*** (0.422)	-2.070*** (0.341)	-1.307*** (0.381)	-0.716 (0.511)	-0.825 (0.513)	-0.637 (0.435)
N	208	208	208	208	208	208
R-Squared	0.25	0.42	0.41	0.37	0.27	0.18

heteroskedasticity-robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.4 Additional Evidence from Attention Proxies

To provide further supporting evidence, I examine search-based proxies of market attention to assess whether markets exhibit greater attention to FOMC announcements during periods of elevated sensitivity.

Specifically, I use Google Trends, which reports the relative popularity of search terms — that is, the share of total Google searches in a given region and time that are associated with a particular query. Google Trends has been widely adopted in the literature as a proxy for investor attention (see, e.g., [Da, Engelberg and Gao \(2011\)](#); [Ben-Rephael, Da and Israelsen \(2017\)](#)). I focus on the Google Trends index for the topic “Federal Open Market Committee”, which is designed to capture instances when investors actively seek information related to the FOMC, thereby reflecting their information demand for FOMC.

Google restricts daily data extraction to windows of at most 269 days, also instead reports a normalized index that scales the highest observed search popularity within each requested period to 100. To construct a consistent daily series over the full sample period, I apply a standard overlapping-window stitching procedure. Specifically, I collect daily search data using rolling 269-day windows with overlapping 100-day sub-periods. For each overlapping window pair, I normalize the data using the maximum value within the overlap to align the relative scales across windows. After stitching, the full daily series is

re-scaled so that the maximum value equals 100 across the entire sample.

Figure 8 plots the Google search volume for the “Federal Open Market Committee” topic alongside the estimated market sensitivity. Search activity exhibits clear spikes on FOMC announcement days, with smaller increases observed around the release of FOMC minutes, while remaining low on most non-announcement days. Importantly, search volume co-moves positively with the estimated market sensitivity over time: periods of elevated sensitivity to macroeconomic news generally coincide with higher levels of investor attention to the FOMC, consistent with an attention-based interpretation of the sensitivity estimates.^{3 4}

Figure 8: Google Searches for Topic ‘Federal Open Market Committee’ Over Time

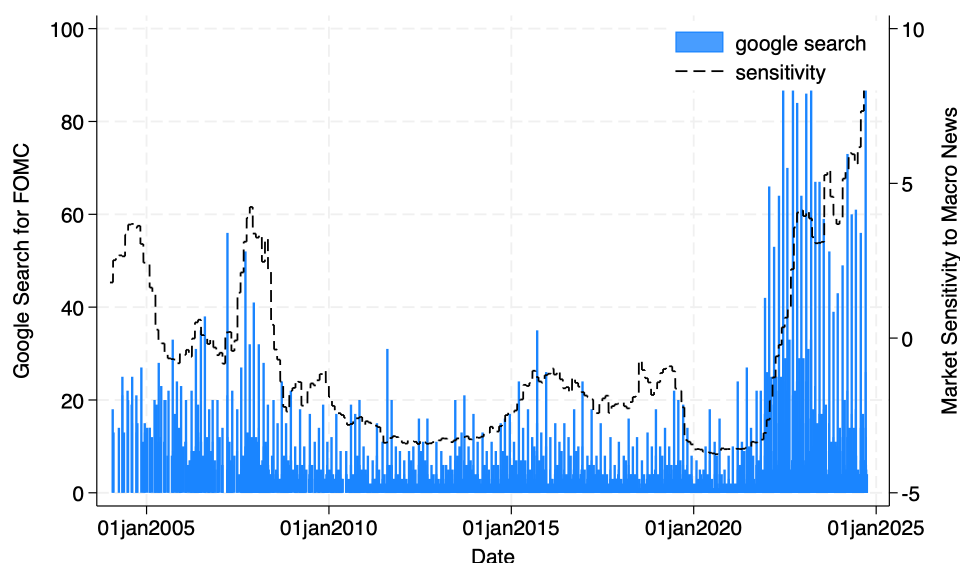


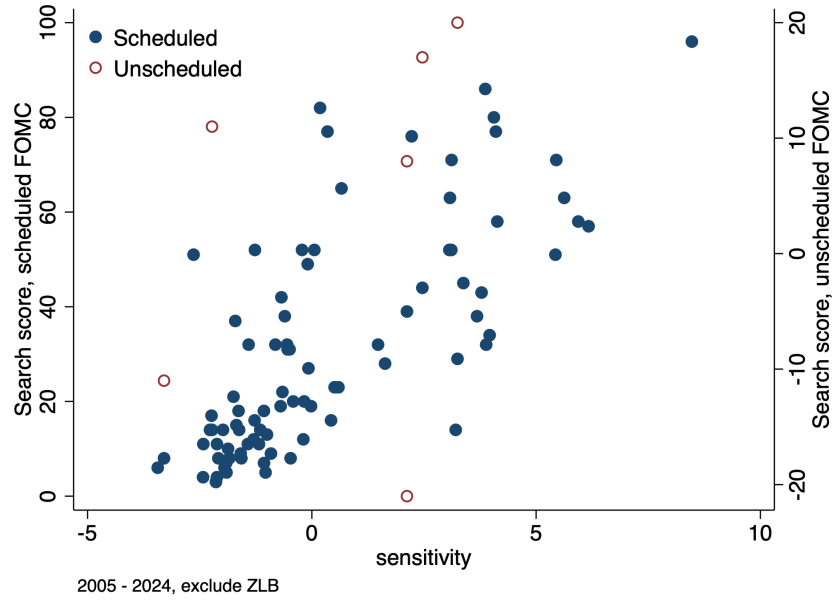
Figure 9 plots the cumulative change in Google search activity over a 3-day window surrounding FOMC announcements ($t-1$ to $t+1$), relative to the pre-announcement baseline ($t-2$). This captures shifts in investor attention prompted by policy events.

Consistent with the earlier figure, periods of elevated market sensitivity are associated with larger increases in search intensity.

³Due to relatively low baseline search volume and potential algorithmic updates, early-period Google Trends data may be less stable and should be interpreted with caution.

⁴Additionally, “FOMC” search intensity is highest in regions with a high concentration of financial activity—such as Washington D.C., New York, and New Jersey—and lowest in West Virginia. This geographic distribution provides supporting evidence that the Google Trends measure proxy market attention.

Figure 9: Google Searches Increase for Topic 'Federal Open Market Committee' around FOMC Days



Note: Two negative unscheduled observations are from August 10, 2007, which followed a scheduled meeting Aug 7, 2007; October 11, 2019, followed by a release of previous FOMC minutes.

5 An Illustrative Model

I now provide a qualitative illustration of how investor attention and monetary policy responsiveness shape market reactions to different shocks, using a standard three-equation New Keynesian framework (Clarida, Galí and Gertler, 1999; Woodford, 2003). The model is augmented with two key parameters: the degree of Fed data dependence and the level of market attention.

I simulate the responses of Treasury yields to output, inflation, and monetary policy shocks under different levels of these parameters, highlighting the distinct mechanisms implied by attention- versus rule-based channels. This section further reinforces the identification strategy in earlier section.

5.1 Model

To model attention, there are many different theoretical framework, e.g. sticky-information (Mankiw and Reis (2002)), where agents update their information infrequently, noisy-information models such as Woodford (2001), Sims (2003), and Maćkowiak and Wiederholt (2009), where they therefore form and update beliefs based on noisy information,

this noisiness, however, can be reduced through increased attention. And various paper proposed behavioral adjustment to standard New Keynesian model. Here, I adopt the cogitative discounting à la [Gabaix \(2020\)](#).

Cognitive discounting captures the idea that agents progressively shrink events in the distant future toward steady-state values. The key assumption is captured in the following lemma:

Lemma 1 [Gabaix], *For any variable $z(\mathbf{X}_t)$ with $z(0) = 0$, the beliefs of the behavioral agent satisfy, for all $k \geq 0$, and linearizing:*

$$\mathbb{E}_t^{BR} [z(\mathbf{X}_{t+k})] = \bar{m}^k \mathbb{E}_t [z(\mathbf{X}_{t+k})], \quad (11)$$

where $\bar{m} \in [0, 1]$ is cognitive discounting. The cognitive discounting can be micro-founded using “noisy simulations”, where $\bar{m}$ depends on the probability that agent receive the correct signal about the state of economy, as discussed in [Gabaix \(2020\)](#).

This formulation allows me to represent attention using a reduced-form parameter, $\bar{m}$, making it simple and effective for illustration purposes. Assuming uniform attention across agents, I incorporate $\bar{m}$ into the forward-looking components in both the Phillips curve and the IS curve. Additionally, to capture the central bank’s overall data dependence, I introduce θ in the Taylor rule. This results in the following system:

$$\begin{aligned} \pi_t &= \beta \bar{m} \mathbb{E}_t \pi_{t+1} + \kappa x_t + u_t \\ x_t &= \bar{m} \mathbb{E}_t x_{t+1} - \sigma (i_t - \bar{m} \mathbb{E}_t \pi_{t+1}) + v_t \\ i_t &= \rho i_{t-1} + (1 - \rho) \theta (\phi_\pi \pi_t + \phi_y y_t) + \varepsilon_t \end{aligned}$$

To better understand how $\bar{m}$ affects the system, solve forward IS curve and obtain:

$$x_t = -\sigma \sum_{j=0}^{\infty} \bar{m}^j \mathbb{E}_t (i_{t+j} - \bar{m} \pi_{t+j+1})$$

Under standard NK setting, output gap depends on the expected path of future interest rates. Now with behavior agent, the output gap depends on behavior expectations of future interest rates. In other words, economic decisions are made based on the discounted fluctuation of future interest rates.

Following the expectations hypothesis, Treasury yield depends on agents’ expectations of future short-term interest rates. For behavioral agents, the M -period yield to maturity i_t^M is given by:

$$i_t^M = \frac{1}{M} \sum_{j=0}^{M-1} E_t^{BR}[i_{t+j}] + \phi^M = \frac{1}{M} \sum_{j=0}^{M-1} \bar{m}^j E_t[i_{t+j}] + \phi^M$$

where ϕ^M denotes a term premium, constant overtime.

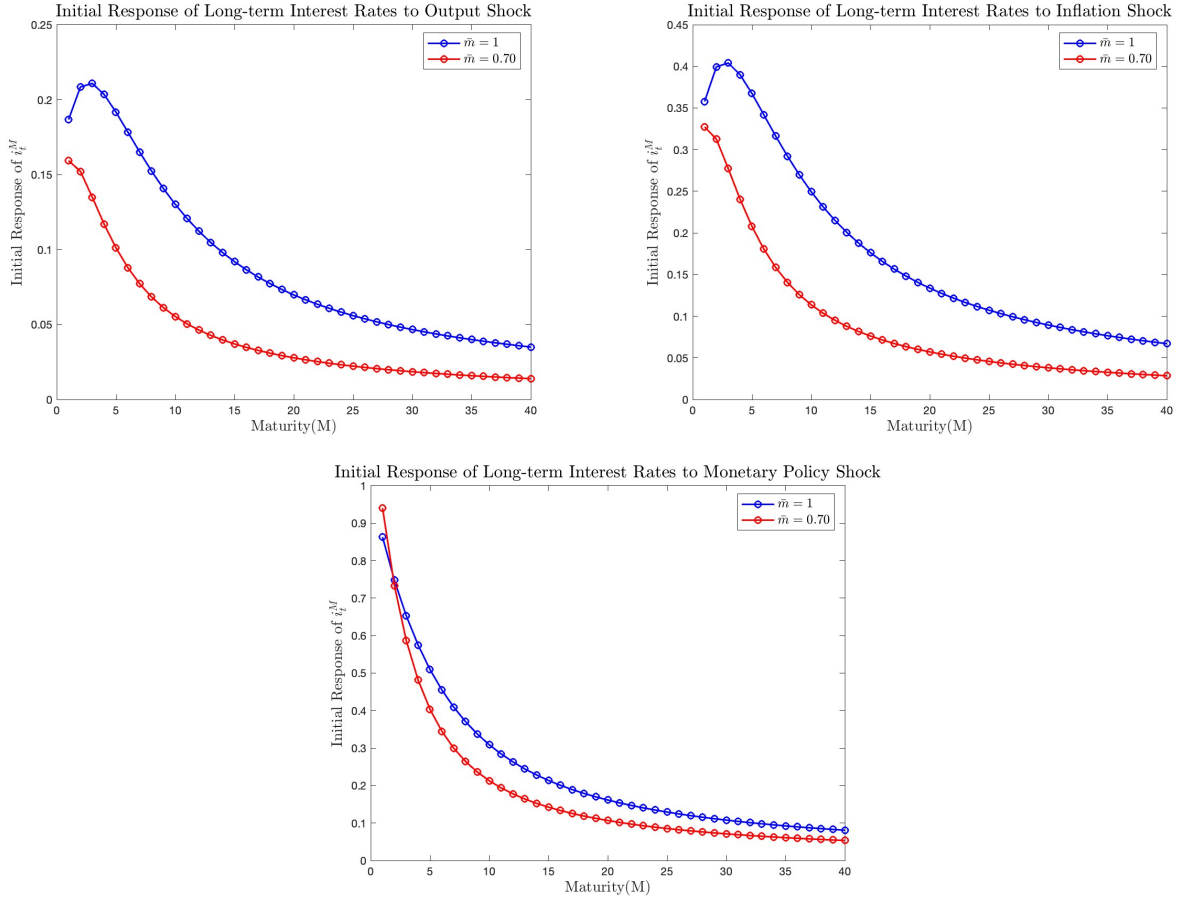
I set $\beta = 0.99$; $\sigma = 0.2$; $\kappa = 0.11$, following [Gabaix \(2020\)](#), and for monetary policy rules parameters set $\rho = 0.85$; $\phi_\pi = 1.5$; $\phi_y = 0.5$. Inflation shock u_t and output shock v_t follow AR(1) processes, with persistence 0.5. For $\bar{m}$ and θ , I consider the case when $\bar{m} = 1$ (no cognitive discounting, full attention), vs $\bar{m} = 0.7$ (low attention). For θ , I use $\theta = 1$, and $\theta = 0.7$, less data responsive Fed.

5.2 Sensitivity to shocks

Figure 10 show the instantaneous response in period 1 of the yield curve to an output shock (v_t), inflation shock (u_t), and monetary policy shock (ε_t), under high vs low attention ($\bar{m}$).

When $\bar{m}=1$, agents are fully attentive to all future fluctuations, incorporating the shock's effects into their economic decisions, leading to a greater response of expected interest rates to all types of shocks, and consequently, a fully responsive yield curve. In contrast, when attention is low ($\bar{m}=0.70$), agents discount future movements, failing to fully incorporate the shock into their expectation formation, resulting in a muted response.

Figure 10: Initial response in period 1 of the yield curve to different shocks under high and low mbar



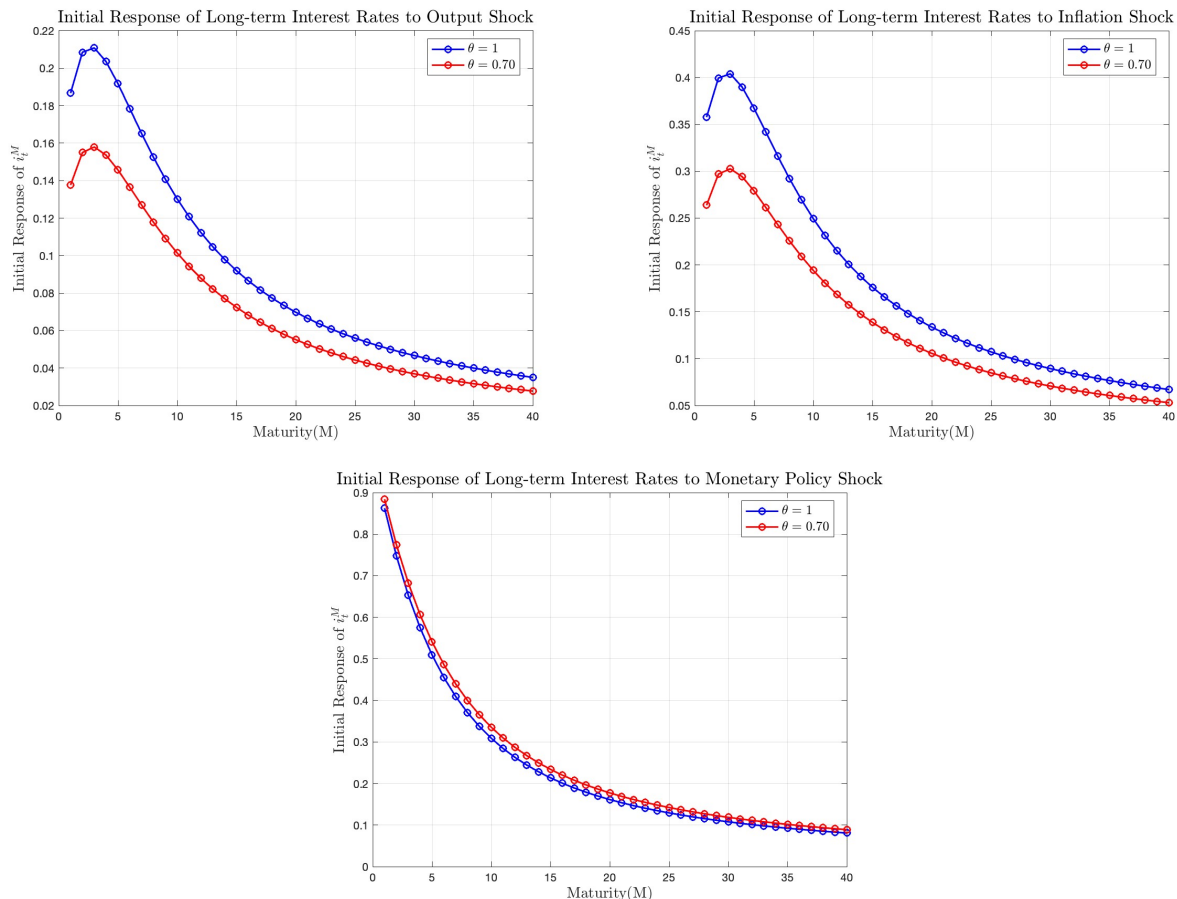
Note: Instantaneous response in period 1 of the yield curve to an output shock (v_t), inflation shock (u_t), and monetary policy shock (ε_t). Horizontal axis denote yield maturity.

Figure 11 demonstrates the effect of different values of θ . When the central bank is more responsive ($\theta = 1$), the yield curve becomes more sensitive to output and inflation shocks. This is because a more aggressive central bank response to economic fluctuations leads to sharper adjustments in short-term interest rates, which in turn causes more pronounced movements of the entire yield curve.

However, θ does not have a much noticeable impact on the response to monetary policy shocks. In fact, a higher θ leads to a slightly muted response, in contrast to its effect on output and inflation shocks. Intuition is, when there is a positive monetary policy shock, output and inflation decline. When the Fed is highly data-dependent, markets anticipate that it will soon reverse course and lower interest rates in response to the evolving macroeconomic conditions, leading to a smaller increase in medium and long-term inter-

est rates.

Figure 11: Initial response in period 1 of the yield curve to different shocks under high and low θ



Note: Instantaneous response in period 1 of the yield curve to an output shock (v_t), inflation shock (u_t), and monetary policy shock (ϵ_t). Horizontal axis denote yield maturity.

So, both high $\bar{m}$ and high θ increase the sensitivity of the interest rate to macroeconomic shocks. However, only high $\bar{m}$ leads to a stronger response to monetary policy shocks. That said, the difference between high and low $\bar{m}$ in response to a contemporaneous monetary policy shock, while in the expected direction, is relatively modest in magnitude.

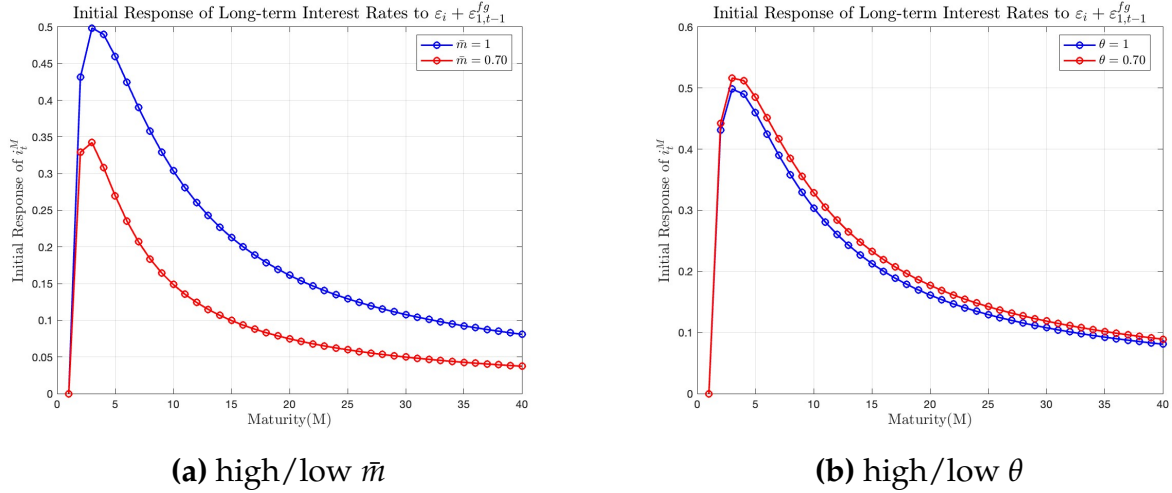
In practice, FOMC announcements rarely reflect purely contemporaneous policy shocks. Instead, they often contain information about the expected future path of policy—i.e., forward guidance. In the empirical section, high-frequency FOMC announcement shocks likely reflect a mix of both contemporaneous and forward-looking components.

I now consider a monetary policy shock that affects the nominal interest rate one quar-

ter ahead. Figure 12 shows the initial response of M -period yield to maturity i_t^M (i_t^M) to an anticipated positive policy shock ($\varepsilon_{1,t-1}^{fg}$), offset by a contemporaneous shock (ε_t) such that the current short-term rate remains unchanged.

$$i_t = \rho i_{t-1} + (1 - \rho)\theta (\phi_\pi \pi_t + \phi_y y_t) + \varepsilon_t + \varepsilon_{1,t-1}^{fg}$$

Figure 12: Yield Curve response to an anticipated positive nominal interest rate shock occurring one quarter ahead, keeping current rate unchanged.



The effect of θ remains negligible. By contrast, the impact of $\tilde{m}$ becomes substantially more pronounced: the gap between high and low $\tilde{m}$ is much larger than in the contemporaneous case.

This result is intuitive. Because the forward guidance shock affects interest rates further in the future, it is more heavily discounted by inattentive agents. As a result, the difference in yield responses across different levels of $\tilde{m}$ becomes more pronounced. In this simple illustrative model, the further into the future the shock is expected to hit, the greater the expected divergence in responses.

6 Conclusion

This paper systematically examines a long-standing but under-explored area—how market reactions to macroeconomic announcements vary over time. I show that market sensitivity is shaped by economic conditions and also by central bank communication. The time-varying sensitivity has significant macroeconomic implications. When markets are

highly sensitive to macro news, they also respond more strongly to FOMC announcements—monetary policy shocks become significantly more powerfully in moving the yield curve during these periods.

I show that investor attention is the fundamental driver behind these dynamics.

For policymakers, this raises important considerations. Central bank communication can increase investor attentiveness and thereby strengthen policy transmission. But attention is not always beneficial—excessive attention may amplify undesirable volatility in response to data release.

All good things in moderation, including attention. Central banks should engage more actively when market attention is low, but exercise caution during periods of heightened sensitivity.

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