The Pre-FOMC Drift and the Secular Decline in Long-Term Interest Rates

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Abstract

We document positive and significant returns on long-term U.S. Treasury bonds on the day before the FOMC announcements and attribute this pre-FOMC drift to the premium for heightened uncertainty. Unlike the pre-FOMC drift in U.S. equity, which is realized mostly on the day of the FOMC announcement, the pre-FOMC drift in long-term bond occurs earlier. On the day before the FOMC announcement, the 10-year bond yield drops by a significant 0.68 bps and contributes importantly to the secular decline in interest rates documented by Hillenbrand (2021). Unique to the day before the FOMC is a severe disconnect between the long- and short-term yields – an indication that the pre-FOMC pricing of long-term bonds is dominated by the risk-premium channel, not the monetary-policy decision on the target rate. We further capture the pre-FOMC heightened uncertainty using the ex-ante Macro Attention Index (MAI) of Fisher et al. (2022). Conditioning on above-median MAI on unemployment rates, the pre-FOMC reduction in 10-year yield increase significantly to 1.50 bps and is predictive of the subsequent pre-FOMC drift in equity. We further find a strong and positive relation between the pre-FOMC reduction in 10-year yield and the ratio of dissent among the FOMC committee.

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1 Introduction

This paper studies the pricing of long-term U.S. Treasury bonds in anticipation of the announcements of the Federal Open Market Committee (FOMC). Instead of focusing on the ex-post market reaction to the FOMC announcements (Kuttner (2001), Gurkaynak et al. (2005), Nakamura and Steinsson (2018)), we examine the ex-ante market pricing prior to the announcements. Our paper is motivated by two recent studies at the intersection of the Fed and the financial markets. The first paper is that of Lucca and Moench (2015), who document a strong pre-FOMC drift in the equity market over a 24-hour window before the FOMC announcements. Interestingly, they do not find a significant pre-FOMC drift in U.S. Treasury bonds, the market with the closest connection with monetary policy. The second and more recent paper by Hillenbrand (2021), however, affirms the connection between the Treasury market and the Fed via the striking finding that a three-day window around the FOMC announcements captures the secular decline in long-term U.S. Treasury yields.

Connecting these two emerging strands of literature, we make two important empirical observations. First, contrary to the conclusion of Lucca and Moench (2015), we find positive and significant returns (i.e., negative yield changes) on long-term Treasury bonds before the FOMC announcement. Our approach differs from that of Lucca and Moench (2015) in that, instead of examining the 24-hour window before the FOMC announcements, we focus our attention on the day before the FOMC, which is also the first day of the two-day FOMC meeting. Over the 24-hour window that ends at the market close of the day before the FOMC announcement, the 10-year bond yield drops by a significant 0.71 basis points, compared with a full-sample average of -0.04 basis points. Moreover, this significant pre-FOMC reduction in yield is unique and robust only for long-term bonds – over the same pre-FOMC window, the 2-year bond yield drops by an insignificant 0.20 basis points while the 3-month-ahead Fed fund futures rate increases by 0.33 basis points.

Second, the pre-FOMC drift contributes to a steady decline in long-term interest rates. From September 1994 through December 2022, the cumulative effect of the pre-FOMC reduction in yield amounts to -1.60%, the largest one-day contributor to the secular decline in interest rates documented by Hillenbrand (2021) using a three-day window that includes the days before, of, and after the FOMC announcement. Varying the 24-hour event window to other days surrounding the FOMC, including the days of and after the FOMC, we do not find significant reduction in yield. While Hillenbrand (2021) attributes the forward guidance provided by the Fed's announcements as the most important driver of the long-run path of interest rates, our pre-FOMC drift, realized prior to the FOMC announcements, indicates the presence of a second channel that is important in explaining the secular decline of long-term yields.

Risk and Return in Long-Term Bonds – The pre-FOMC drift offers a unique and concentrated window into the risk and return in long-term bonds, which are closely linked to macro and policy uncertainties. As indication that the pre-FOMC drift in long-term yield is dominated by the risk-premium channel, not the monetary-policy decision on the target rate, we document a severe disconnect between the long- and short-term yields that is unique only on the day before the FOMC announcement, when the pre-FOMC drift is realized.[1] Focusing further on the risk premium component, we use the 10-year term premium constructed by Adrian et al. (2013), which is the difference between the 10-year yield and the expectation of future short rates. We find that the pre-FOMC reduction in yield can be attributed almost entirely to the term premium component.[2]

To shed further light on the risk-premium channel, we build our hypothesis on the two-risk model of Hu et al. (2022), which attributes the pre-announcement drift to the resolution of heightened uncertainty prior to the announcement. Central to the model is the incorporation of an impact uncertainty, which controls the market impact of the announcement shock. To the extent that market participants are highly uncertain about an impending announcement, it is reflected in the model via a volatile impact uncertainty, which in turn drives up the premium for impact uncertainty. Upon the resolution of the heightened uncertainty prior to the announcement, the risk premium for impact uncertainty is also realized, giving rise to the pre-announcement drift.

Heightened Macro and Policy Uncertainties – Central to Hu et al. (2022) is the accumulation of heightened uncertainty and its subsequent resolution prior to the announcement. The model, however, is silent on exactly what kind of uncertainty is resolved. Taking advantage of the fact that the risk involved in bond pricing is substantially less complex than that in equity pricing, we are able to identify the macro and policy uncertainties that give rise to the pre-FOMC drift in long-term bonds.

To proxy for macro uncertainty, we use the macro attention index (MAI) developed by Fisher et al. (2022). A news-based measure, the MAI indices capture the newspapers' attention on a range of macroeconomic risks, including monetary MAI on monetary policy and unemployment MAI on labor market conditions. Compared with the uncertainty measures extracted from capital markets (e.g., the option-implied VIX and MOVE indices), the MAI

[1]Specifically, the importance of the slope factor, which captures the difference between the long- and short-term yields, jumps from a normal level of 14% to 37% and then quickly reverts back to the normal level, while the level factor, which captures the overall level of the yield curve, jumps downward from a normal level of 79% to 50%. In other words, on the day before the FOMC, when the pre-FOMC drift in long-term bond is realized, the driver of the long-term bond pricing is disconnected from the short-rate dynamics.

[2]On the day before the FOMC announcement, the average reduction in the 10-year zero coupon yield is 0.81 basis points with a t-stat of 2.42, while that of the 10-year term premium is 0.67 basis points with a t-stat of 2.10.

indices, with their dedicated focus on the respective macroeconomic fundamentals, offers a more precise link to the source of uncertainty. For example, an increase in the unemployment MAI indicates heightened uncertainty with respect to the labor market. As documented by Fisher et al. (2022), the unemployment MAI intensifies in response to higher unemployment rates and increases more when it is associated with bad news. Indeed, we find that, three days before the FOMC announcement, the correlation between the unemployment MAI and the contemporaneous unemployment rate intensifies, suggesting a heightened sensitivity to labor market conditions in anticipation of the FOMC announcements.[3] By contrast, while monetary MAI does increase steadily prior to the FOMC announcement, it does not pick up any increased correlation with macro fundamentals.

Focusing on unemployment MAI and monetary MAI, two uncertainty measures that are highly related to monetary policy, we examine their respective impact on the pre-FOMC drift in long-term bonds. Using the unemployment MAI three days before the FOMC announcement as a conditioning variable, we find that the pre-FOMC reduction in 10-year yield strengthens to a significant 1.46 basis points when the uncertainty with respect to the labor market condition is above median. By contrast, when the uncertainty is below median, the pre-FOMC change in 10-year yield is no longer significant and is in fact slightly positive with 0.04 basis points. These results indicate that the pre-FOMC drift is significant only under heightened uncertainty over the labor market condition, confirming the mechanism of premium for heightened uncertainty. Moreover, our approach also allows us to identify the nature of the uncertainty. Contrary to unemployment MAI, the uncertainty proxied by the monetary MAI does not have any impact on the pre-FOMC bond pricing, indicating that while uncertainty naturally increases in anticipation of the FOMC announcements, it is the heightened uncertainty with respect to the macro fundamentals such as the unemployment rate that drives the risk premium in long-term bonds.

To further capture the accumulation of heightened uncertainty, an important component in the model of Hu et al. (2022), we also trace the change of unemployment MAI from day -5 to -3 relative the the FOMC announcement. We find that higher the increase in uncertainty, stronger the pre-FOMC drift in long-term yields – a one standard deviation increase in changes in MAI is associated with an extra pre-FOMC reduction of 0.75 basis points in 10-year yield and 0.92 basis points in the term premium component of the 10-year yield. Overall, consistent with the prediction of the two-risk model of Hu et al. (2022),

[3]We match the daily unemployment MAI with both the current and past-month unemployment rate, and the results are similar, with that using the current month slightly stronger. The current month employment information is yet to be released, although the content of the information (i.e., the labor market condition) is already taking place contemporaneously. The past-month unemployment rate, however, is released in the current month.

increased macro uncertainties, as captured by both the level of the unemployment MAI and its change, are predictive of the pre-FOMC reduction in long-term yield.

In addition to heightened macro uncertainty, we further show that heightened policy uncertainty is also important in explaining the pre-FOMC drift in long-term yields. Using the extent of FOMC dissenting votes as a proxy, we find that a 1% increase in the ratio of dissenting votes is associated with a significant pre-FOMC reduction of 0.11 basis points in 10-year yield. Unlike the unemployment MAI, the magnitude of the dissenting vote is observed only after the FOMC announcement. Interesting, our results indicate that the pre-FOMC market pricing is influenced by the uncertainty associated with the dissenting votes.

Pre-FOMC Drift in Bond and Equity – While the premium for heightened uncertainty drives the pre-FOMC drift in both bond and equity, the exact content of uncertainty differs. For the equity market, the heightened uncertainty is best captured by the VIX index (Lucca and Moench, 2015). Regressing the pre-FOMC drift in the S&P 500 index on lagged VIX, the R-squared of this predictive regression is 14.99%, which is huge for a predictive regression of equity returns at this high frequency.[4] Similar to the result in Fisher et al. (2022), we also find higher increase of monetary MAI from day -5 to day -3 is associated with higher pre-FOMC stock return. Interestingly, neither the VIX index nor monetary MAI have any predictability for the pre-FOMC drift in long-term yield, indicating that, when it comes to the pre-FOMC pricing, the risk that matters for the equity market is not important for the bond market. The converse is also true. While the heightened uncertainty in the bond market can be best captured by the unemployment MAI, it is unimportant in explaining the pre-FOMC drift in equity.

As the pre-FOMC drift in bond is realized by the market close of day -1, while that in equity is observed afterwards, we further use the pre-FOMC drift in bond to predict that in equity. We find significant predictability only under heightened macro and policy uncertainties. In other words, it is only when the pre-FOMC drift in long-term yield is significant does it contain information for the subsequent pre-FOMC drift in equity. Specifically, when the unemployment MAI is above median, a one basis point pre-FOMC reduction in 10-year yield can predict a three basis points increase in the pre-FOMC return in the S&P 500 index, with an R-squared of 4.04%. Similarly, when at least one FOMC member votes against the action, one basis point pre-FOMC reduction in 10-year yield can predict a five basis points increase in the pre-FOMC return in the S&P 500 index, with an R-squared of 11.8%. By contrast, when unemployment MAI is below median or when the FOMC vote is unanimous,

[4]We calculate the pre-FOMC SPX return using the S&P 500 index from the market close of the day before the FOMC announcement to five minutes before the FOMC release.

there is no relation between the pre-FOMC drift in bond and equity.

Related Literature – Our paper belongs to the literature that documents, for a broad set of asset classes, sizable positive returns realized prior to FOMC announcements. This includes Lucca and Moench (2015) on the equity market and Mueller et al. (2017) on the foreign exchange market.[5] The parallel evidence for the Treasury bond market, however, is limited, which is puzzling given the bond market's central importance in the decision and operation of monetary policy. Following Lucca and Moench (2015), the general consensus prior to our paper is that the pre-announcement drift documented for the equity market does not exist in the bond market. Against this backdrop, our paper documents a significant pre-FOMC drift in long-term Treasury bonds by focusing on a pre-announcement window that has not been examined by the previous literature.

We also contribute to the growing literature on the economic driver of the pre-announcement drift, including the information channel of Cieslak et al. (2019) and the heightened uncertainty channel of Hu et al. (2022) and others.[6] While supportive of the heightened uncertainty channel of Hu et al. (2022), our paper differs in that, instead of using the market-based VIX index to measure heightened uncertainty, we take advantage of the news-based attention measures of Fisher et al. (2022), which allow use to identify exactly what kinds of uncertainty is resolved prior to the FOMC announcement. We find that the pre-FOMC drift in long-term bonds is significant only when uncertainty over the labor market condition is substantially high.

Our paper also adds to the literature on the secular decline in interest rates. A large literature has examined the decline in inflation that occurred after the great inflation (Bauer and Rudebusch, 2020; Drechsler et al., 2020). Closely related to our paper is that of Hillenbrand (2021), which shows that a narrow 3-day window around the FOMC announcement captures the secular decline in U.S. Treasury yields since 1989 and interprets the result as the dominating influence of the Fed's forward guidance released at the FOMC announcements. Our finding of the significant pre-FOMC drift breaks the 3-day window of Hillenbrand (2021) into before and after the FOMC announcements. More importantly, as the pre-FOMC drift is realized prior to the FOMC announcement, it cannot be a direct consequence of the forward guidance. Instead, we conclude that an important component of the secular decline

[5]See also Liu et al. (2022) on the options market, and Javadi et al. (2018) and Abdi and Wu (2018) on the corporate bond market.

[6]See also Ai and Bansal (2018) study the inter-temporal preferences that generates a nonnegative announcement premium, Wachter and Zhu (2022) build a model where agents learn the probability of an adverse economic state on announcement days, Bernile et al. (2016) investigate the informed trading prior to the announcements, Ying (2020) and Laarits (2019) study the arrival of new information during the pre-announcement period while Ai et al. (2021) model the endogenous information acquisition before FOMC announcements.

of interest rate captured by Hillenbrand (2021) originates from the resolution of heightened uncertainty on the day before the FOMC announcement.

Finally, by examining the risk and return in long-term bonds, our paper is also related the literature that study the factors influencing the bond risk premium. Predicting bond returns using the information on the yield curve, Fama and Bliss (1987), Campbell and Shiller (1991) and Cochrane and Piazzesi (2005) provide strong evidence of time-varying risk premium in the bond market. We add to this literature by focusing on a narrow pre-FOMC window and find significant pre-FOMC returns only for long-term bonds. More importantly, instead of using market-based yield curve information to predict bond returns, we link the long-term bond risk premium directly to the macro and policy uncertainties that emerge prior to the FOMC announcement.

The remainder of the paper is organized as follows. Section 2 describes the data we use in our analysis. Section 3 presents the pre-FOMC drift in long-term bonds and its implication for the secular decline of long-term interest rates. Section 4 investigates the heightened uncertainty that gives rise to the pre-FOMC drift in long-term bonds. Section 5 compares and contrasts the pre-FOMC drift in bond and equity. Section 6 concludes.

2 Data

Our analysis explores the US Treasury yield change and stock return around scheduled FOMC meetings and our main sample period for pre-FOMC drift in both markets is from September 1994 to December 2022, following the sample tradition in Lucca and Moench (2015). During this period, we have 226 scheduled releases of FOMC meetings. We also extend our sample period back to 1980 for US Treasury market.

Constant Maturity Yield: Daily constant maturity yield is obtained from the Federal Reserve Board website.[7] We also use the daily actual Treasury transaction data and daily return of the Fixed Term Index from CRSP to check the robustness of the result. In addition to the constant maturity yield, we also use the daily one-year forward rate beginning at 9-, 4-, 1- year from Gürkaynak et al. (2007) as well as the term premium at different maturities from Adrian et al. (2013). The forward rate is the yield at which an investor commits today to invest over a defined period in the future: for m-years beginning n years hence (Gürkaynak et al., 2007). One-year forward rate beginning at 9-year can be understood as buying 10-year Treasury and selling 9-year Treasury bond with corresponding portfolio weight. We define the pre-FOMC UST drift as the yield change from day -2 to day -1 prior to the FOMC announcement, which does not contain FOMC meeting's outcome.

[7] https://fred.stlouisfed.org/series/DGS10

High-Frequency Data: For stock return, we choose intraday S&P 500 index from NYSE Trade and Quote (TAQ). We calculate the pre-FOMC SPX return from the day before a scheduled FOMC announcement (4 pm) to five minutes prior to the exact release time (ann − 5min). We use the 10-Year U.S. Treasury Note futures, trading almost around the clock, to plot the pre-drift return in bond market before FOMC meeting.[8] We obtain the tick by tick data on E-mini Treasury futures from January 2004 to June 2022 from the Chicago Mercantile Exchange (CME). We also obtain E-mini S&P 500 index futures from CME. Followed Hu et al. (2022), we select the most active futures contract with the highest trading volume.

Macroeconomic Attention Indices: We obtain Macroeconomic Attention Indices proposed by Fisher et al. (2022).[9] They construct macroeconomic attention indices (MAI) based on news articles published in the New York Times and Wall Street Journal. Followed their approach, we first discard weekends and then demean the NYT and WSJ index by its sample mean after September 1994 and take the average of the demeaned NYT and WSJ indexes for topic monetary and unemployment rate. We use the monetary MAI and unemployment MAI three days before FOMC meeting in this paper as proxy for heightened uncertainty measure about Federal fund rate and unemployment rate. We also collect the relevant information such as timing, date, actual and survey number on unemployment rate data from Bloomberg Economic Calendar.

FOMC Dissents: In addition to the heightened uncertainty associated with macroeconomic fundamentals, we also use the dissenting vote data among the members of the Federal Open Market Committee responsible for setting US monetary policy as proxy for policy uncertainty. The FOMC comprises 12 voting members, consisting of the seven members of the Board of Governors and five Federal Reserve bank presidents. The president of the New York Fed is a permanent voting member, while the remaining 11 Reserve bank presidents serve as voting members on a rotating basis. We utilize the FOMC dissent data[10] from Thornton et al. (2014) and calculate the ratio of dissenting votes to the total votes.

Uncertainty and Volatility Measure: We use the VIX index of implied volatility from S&P500 options as well as the MOVE index as our benchmark index for market participants' uncertainty. Daily VIX and MOVE index are downloaded from Bloomberg. In addition to uncertainty Indices, we also calculate the volatility measure for bond market. We calculate the US Treasury volatility for 10-year and 2-year with daily yield change using exponentially

[8]We have missing futures trading data on several trading days in our sample period. One of these trading days, January 29, 2014, is a scheduled FOMC release day.

[9]We thank Jinfei Sheng for sharing the updated data with us

[10]https://www.stlouisfed.org/on-the-economy/2014/september/a-history-of-fomc-dissents

weighted moving average (EWMA) model where the decay factor is set to 0.98.

Table 1 provides summary statistics for the main variables used in our empirical analysis on pre-FOMC windows and at other times for the main variables used in our empirical analysis. Focusing on the sample for days other than the pre-FOMC window, we find that the daily yield changes for 10-, 2-year Treasury are -0.02 which are around the same magnitude. While for the pre-FOMC window which is one day before the FOMC announcements, the long-term yield decrease significantly more at -0.71 basis points compared with short-term yield change. Over the same pre-FOMC window, the 2-year bond yield drops by an insignificant 0.20 basis points while the 3-month-ahead Fed fund futures rate increases by 0.33 basis points. The contrasting behavior of long-term and short-term yield change before the FOMC meetings will be discuss in more details later. As for the term premium and forward rate, we find high correlation between the two whether on the pre-FOMC window or other days. For example, the correlation between the one-year forward rate beginning at 9-year and 10-year term premium is around 0.92 one day before the FOMC announcements and around 0.94 for other days. For various uncertainty and volatility measures, we choose to the pre-FOMC window at day -3 to form the ex-ante measure for the pre-FOMC drift. The unemployment MAI and monetary MAI three days before the FOMC announcements is on average smaller than other days because the MAI typically peak on the day after the announcements. The standard deviation of VIX and MOVE index is slightly higher at day -3 than other days.

3 The Pre-FOMC Drift in Long-Term Treasury Bonds

Scheduled eight times per year, the FOMC meetings serve as an informational central, where key monetary policy decisions are announced and the Fed's information and forecast of the macro economy revealed. The uniqueness and importance of FOMC meeting attracts attention not only from market participants but also academic researchers. Most studies focus on the post-FOMC window to explore the change of short-term Treasury bond price after the decision of Fed is public. In the early 2000s, Kuttner (2001) use the special setting of FOMC meeting to construct the monetary policy shock from the market. From then on, a number of papers make use of the post-FOMC setting to study the interplay between the Fed and the capital market, trying to extract the monetary policy shock and investigating the effectiveness of the monetary policy (Bernanke and Kuttner, 2005; Gurkaynak et al., 2005; Nakamura and Steinsson, 2018).

It is until Lucca and Moench (2015) document large average returns for U.S. and international equities over a 24-hour window before the FOMC announcements that people start to realize the pre-FOMC period is equally important and interesting. Not only the market

expectation of Fed's policy are formed, the risk and return dynamic is also prominent before the actual announcement of the FOMC meetings. The pre-FOMC literature emerges and focus on the pre-FOMC period for different asset markets (Javadi et al., 2018; Liu et al., 2022; Mueller et al., 2017).

3.1 The Pre-FOMC Drift in UST10

The pre-FOMC stock drift puzzle that why large stock return realized before but not after the FOMC announcement in Lucca and Moench (2015) arouses numerous efforts to explain (Cieslak et al., 2019; Hu et al., 2022). However, in this paper, we first want to address another puzzle in Lucca and Moench (2015) that receives less attention which is why there is no drift before the FOMC meeting in US Treasury market. The general consensus prior to our paper is that the pre-announcement drift documented for the equity market does not exist in the bond market (Balduzzi and Moneta, 2017; Cieslak and Pang, 2021).

The limited evidence for the parallel pre-FOMC drift for the Treasury bond market is puzzling given the bond market's central importance in the decision and operation of monetary policy. The monetary decision made by the Fed at FOMC meeting directly affects the Treasury market at the short end and hence the Treasury market is more important than the equity or currency market but instead shows no pre-FOMC drift. If FOMC meetings are so important that drive stock investors' attention and uncertainty, then why bond investors behave differently? By focusing on the pre-FOMC window in U.S. Treasury market, we find positive and significant returns (i.e., negative yield changes) on long-term Treasury bonds before the FOMC announcement. Our approach differs from that of Lucca and Moench (2015) in that, instead of examining the 24-hour window before the FOMC announcements, we focus our attention on the day before the FOMC, which is also the first day of the two-day FOMC meeting. The pre-FOMC drift happens earlier in bond market compared with the stock market.

Figure 1 shows both the average cumulative return of the UST future and the S&P500 index, minute by minute around FOMC announcements. The sample in this plot is from January 2004 to June 2022 due to the availability of UST future data, including only the scheduled FOMC meetings. To better compare the pre-FOMC drift on the stock and bond market, we normalize the return by their respective daily standard deviation. The solid blue line is the average normalized cumulative UST return from 4 pm of the previous four trading days prior to scheduled FOMC announcements to three days after. The blue-shaded areas are pointwise 95% confidence bands around the average cumulative UST returns while the red line and red shaded areas are for SPX return. The solid vertical line is set at 2:15 pm Eastern Time.

For the stock market, the upward drift mostly happens overnight before the FOMC release which is consistent with the works of prior literature. However, we can see an upward drift on the UST market from day -2 to day -1 before the FOMC announcements, which also happens mostly during the overnight period. Previous literature investigates how fix income securities react to the upcoming FOMC announcement and show there is no drift 24-hour window before the meeting or on the FOMC announcement day. Lucca and Moench (2015) show the pre-announcement drift does not exist in fixed-income securities. Cieslak and Pang (2021) present similar results and explain that the absence of a pre-FOMC drift in the bond market on the FOMC announcement day is due to the hedging premium.

However, prior literature only focuses on UST yield movement at the same pre-announcement window as equity, namely from 2 pm on the day before a scheduled FOMC announcement to 2 pm on the announcement day. Indeed, we can see from Figure 1 that the 10-Year U.S. Treasury does not move much during the same pre-announcement window as the pre-FOMC SPX. But if we push forward the pre-announcement window to day -2, we can see the Treasury bond at long end does react to the FOMC announcement with an upward jump. Skipping the overnight window two days before the FOMC announcement is the reason why earlier studies miss this important result. The pre-FOMC drift not only happens at the stock market (Lucca and Moench, 2015) and exchange rate market (Mueller et al., 2017), but also at the US Treasury market with an earlier pre-announcement window which is the day before the FOMC announcements.

We also extend our sample back to 1980 with the daily yield data in Figure 2. Following Lucca and Moench (2015), we assume that the decision in the pre-1994 sample is public one day after the FOMC meeting, defined as day 0 in the plot. After 1994, day 0 is the actual announcement day which is the second day of the two-day FOMC meetings. The blue line is the 10-year constant maturity yield from the Federal Reserve Board website and the red line is the actual transaction yield of the 10-year on-the-run Treasury from CRSP. We obtain Treasury auction data from U.S. Treasury Department and compute the on-the-run Treasury yield according to each auction.[11] The findings are consistent for both constant maturity yield and on-the-run Treasury yield, revealing a decline in the 10-year Treasury yield leading up to the FOMC announcement, specifically from day -2 to day -1. The decline in 10-year on-the-run Treasury yield also suggests that the pre-FOMC drift in Treasury market is unlikely due to any market microstructure or liquidity events.

We further investigate the change of Treasury yield for different maturities and for different window around the FOMC meetings in Table 2. The announcement day of the FOMC

[11]The earliest auction data is from 1980, so we start plotting yield change around FOMC from 1980 with on-the-run Treasury yield.

meetings is marked by FOMC[0] and The days preceding the announcements are marked by FOMC[-n]. The results indicate a noticeable pre-FOMC drift in the Treasury market, primarily observed in long-term bonds one day before the FOMC meetings. Specifically, over the 24-hour window that ends at the market close of the day before the FOMC announcement, the 10-year bond yield drops by a significant 0.71 basis points, compared with a full-sample average of -0.04 basis points. Moreover, this significant pre-FOMC reduction in yield is unique and robust only for long-term bonds – over the same pre-FOMC window, the 2-year bond yield drops by an insignificant 0.20 basis points while the 3-month-ahead Fed fund futures rate increases by 0.33 basis points. This different reaction between the long-end and short-end yields is intriguing, especially considering that 2-year and 3-month-ahead federal funds futures are typically more sensitive to monetary policy changes. This suggests that the pre-FOMC drift in the long-term U.S. Treasury bond is pricing in more about the non-monetary component preceding the FOMC meetings which we will explore further in the subsequent section.

To gain a more comprehensive understanding of the pattern between long-term and short-term yield changes around FOMC meetings, we extend our analysis to include daily one-year forward rate beginning at 9- and 1- year from Gürkaynak et al. (2007) as well as term premium at different maturities from Adrian et al. (2013) in Table 2 [12]. The results echo those observed for constant maturity yields. Specifically, the one-year forward rate beginning at 9 years experiences a significant drop of 0.99 basis points one day before the FOMC meetings with a t-stats at 2.51. Conversely, the decrease in the one-year forward rate beginning at 1 year is approximately 0.7 basis points, which does not reach statistical significance while economically meaningful. A similar pattern is observed for term premiums, where the 10-year term premium decreases by an average of 0.67 basis points the day before the FOMC announcements, while the 2-year term premium exhibits an insignificant decrease of 0.35 basis points. We perform the robustness check by excluding the financial crisis from 2008 to 2009 in Table A2. The pre-FOMC yield change of 10-year (2-year) bond excluding the financial crisis is around -0.57 (0.01) basis points which is smaller than the full sample while the 10-year term premium drops 0.76 basis points which is bigger in magnitude than the full sample. It shows the yield decrease during financial crisis is linked to short-term yield instead of the term premium which is the focus of our paper.

[12]We also repeat the same analysis on the term premium calculated by Kim and Wright (2005) and the results are similar.

3.2 Secular Decline in Long Term Interest Rates

As pointed out by Ben Bernanke, low-interest rate is part of the long-term trend instead of a short-term aberration[13]. Numerous papers try to explain the persistent decline in long-term yields, attributing it to factors such as lower inflation expectations, reduced productivity growth, and a global savings glut, among others. Hillenbrand (2021) studies the secular decline in long-term yield from a unique perspective that a narrow 3-day window around FOMC meetings captures the secular decline in U.S. long-term Treasury yields which strengthens the distinct significance of FOMC meetings and interprets the result as the dominating influence of the Fed's forward guidance released at the FOMC announcements. Our finding of the significant pre-FOMC drift breaks the 3-day window of Hillenbrand (2021) into before and after the FOMC announcements. We find one uniqueness of pre-FOMC UST is that it contributes significantly to the narrow 3-day window and indicates the presence of a second channel other than forward guidance in explaining the secular decline of long-term yields.

We first replicate and extend the Figure 1 in Hillenbrand (2021) from June 1989 to 2022, including the scheduled and unscheduled FOMC meetings and utilizing the constant maturity yield from the Fed [14]. The black line on the top of Figure 3 shows the actual evolution of the 10-year U.S. Treasury yield from 1989 and the red line is the hypothetical time series of cumulating yield changes of 10-year U.S. Treasury bond over the 3-day window for all FOMC meetings. It shows the secular decline in long-term bond yields appears to be concentrated in a narrow 3-day window around FOMC meeting.

What we are interested in this paper is the contribution of the pre-FOMC window to the narrow 3-day windows around the FOMC meeting to capture the secular decline in long-term bond yields. To investigate this, we plot the 2-day windows excluding the day -1 in Panel A of Figure 3 with blue color for all FOMC meetings. The cumulative yield change of 10-year yield from 1989 for the day before the FOMC announcements is around 3.02% while for the 3-day windows is around 6.82%. The result reveals that a substantial portion of the 3-day window yield decline originates from the pre-FOMC window from June 1989 to 2022. The same applies to the scheduled FOMC meetings in Panel B of Figure 3 which is the focus of our paper.

We further separate the 3-day window into pre-FOMC, FOMC, and post-FOMC windows capturing the 10-year U.S. Treasury yield in Panel A of Figure 4 for scheduled FOMC

[13]See "Why are interest rates so low?" by Ben Bernanke, Brookings Institute, 2015.

[14]Following the FOMC dates convention in the appendix of Hillenbrand (2021), we use the day after the meeting as day 0 for scheduled meetings before 1994. For unscheduled meetings before 1994, day 0 is the meeting day when the market learned about changes in the federal funds rate as identified by Kuttner (2001).

meetings from September 1994 to 2022. The 10-year yield in pre-FOMC windows shows a steady decline while the post-FOMC yield movement displays an interesting pattern with an upside trend between 2012 and 2016. One observation made in Hillenbrand (2021) against the risk premium explanation to explain the 3-day FOMC pattern is that the FOMC window captures the low-frequency long-term yield movements even when they tended to drift sideways or upwards. However, by separating the 3-day windows instead of grouping together, we can see the ability to capture the upward trend mostly come from the post-FOMC window rather than the pre-FOMC window. So, it does not rule out the risk premium channel behind the pre-FOMC long-term yield decline.

Another noteworthy observation is that the majority of the yield decline in the 3-day windows around FOMC meetings does not occur on FOMC announcement days. This observation offers insight into why prior literature find the absence of a pre-FOMC drift in the Treasury bond market. It's because they often focus solely on the FOMC announcement day. The results in Table 2 are consistent with the message in Figure 3 that the secular decline in long-term bond yield happens mostly on the day before FOMC, which makes the 10-year yield change during the pre-FOMC window on average significantly negative but not for the FOMC day or the day after the FOMC meeting. It further strengthens the importance of investigating the pricing of Treasury bond before rather than during or after the FOMC meetings.

The specialness of pre-FOMC window for long-term yield is more pronounced when comparing with the short-term yield change in Panel B of Figure 4. Unlike the steady decline in long-term yield, the short-term yield instead increases over the pre-FOMC window. The cumulative yield change of FF4 from 1994 for pre-FOMC window is positive around 0.8% and for the FOMC announcement days is negative around 0.8%. Comparing the short-term and long-term yield over the FOMC windows, we can clearly see that the decline for short-term yield happens mostly on FOMC announcement days while the decline for long-term yield occurs more on the pre-FOMC windows. It suggests that the yield decline during the FOMC windows for short-term yield is more linked to the monetary-policy decision on the target rate while for long-term yield is more associated with risk-premium channel.

3.3 The Disconnection between Long- and Short-Term Yields

The comparison between long- and short-term yield change on 3-day FOMC window in Figure 4 also indicates a divergence between long- and short-term yields prior to the FOMC meetings. The long-term yield decreases significantly while the short-term yield actually increases insignificantly one day before the FOMC announcements. To further explore this divergence, we test the correlation between the daily yield change of the 10-year Treasury

and the 3-month-ahead Fed funds future contract in Table 3 where the dependent variable is the daily 10-year Treasury yield change. The first column shows the 10-year yield will drop significant additional 0.68 basis points one day before the FOMC announcement while the second column shows a strong positive co-movement between long-term and short-term yield changes during normal times.

The third column presents evidence of the disconnection between the long-term yield change and the short-term yield change on the day before the FOMC meetings, showing the uniqueness of the pre-FOMC window. The interaction term between FF4 and FOMC[-1] is -0.41, significant at the 1% confidence level, indicating that the correlation between the 10-year yield and the 3-month-ahead federal funds future yield weakens one day before the FOMC meetings. This disconnection arises from the significant decreasing long-term yield as well as insignificant increasing short-term yield as shown in Table 2.

On normal days, the strong positive co-movement between long-term and short-term yield changes is primarily attributed to the level factor. A shock to the level factor impacts interest rates across various maturities almost uniformly, leading to a parallel shift that alters the overall level of the yield curve. The disconnection between long-term and short-term prior to the FOMC meetings on the other hand shows the effect of slope factor, which impacts the long-term and short-term interest rates differently so that the slope of the yield curve changes.

To better understand the specialness of the pre-FOMC window for Treasury bond, we perform principal component analysis (PCA) approach on the covariance matrix of the yield changes ranging from 1-month to 10-year yields. In addition to doing PCA on all trading days as usual, we take a step further by focusing on the FOMC windows. Specially, we first extract the yield change on FOMC announcement day from September 1994 to December 2022 which amounts to 226 observation days in total. We then apply the PCA analysis on the covariance matrix estimated using the yield changes on the FOMC announcement days and calculate the explanatory powerful of the first principal component (PC1) and second principal component (PC2). We repeat the same process for the FOMC window from day -6 to day +1 around FOMC meetings and plot the relative importance of PC1 and PC2 in the Figure 5. We also calculate the relative importance of PC1 and PC2 for all trading days and plot in with dash black line.

The PCA analysis on FOMC windows confirms the uniqueness of the day before the FOMC meetings for Treasury bond. On the normal trading days from 1994 to 2022, the first PC accounts for 76% of the total variance and the second PC accounts for 14% as shown by the black dash line in Figure 5. On the day before the FOMC announcements, the relative importance of PC1 represented by the blue line decreases to 52% and the relative importance of PC2 represented by the red line increases to 37%. This finding demonstrates that the co-

movement in the entire yield curve, captured by the level factor, weakens one day before the FOMC announcements, while the disconnection, captured by the slope factor, strengthens. This is primarily driven by the declining long-term yield, occurring not on or after the FOMC announcement day but rather in the period leading up to the announcement. Traditionally, investors and academia, especially in the field of fixed income, have focused more on the announcement day of the Fed's policy and how asset prices react to the monetary policy afterward (Bauer and Swanson, 2023; Brooks et al., 2018; Gurkaynak et al., 2005; Kuttner, 2001; Nakamura and Steinsson, 2018). This paper highlights the distinctive nature of the disconnection across the yield curve in the pre-FOMC window, emphasizing the need to study the Treasury market thoroughly before FOMC meetings.

4 The Drivers of the Pre-FOMC UST

We show evidence that the positive pre-FOMC returns on UST occur earlier than stock market which is one day before the FOMC meeting announcements. To delve into the underlying mechanisms of these pre-FOMC drift, we will investigate the underlying main drivers for the drift. The pre-FOMC drift offers a unique and concentrated window into the risk and return in long-term bonds, which are closely linked to macro and policy uncertainties.

The severe disconnect we document between the long- and short-term yields, which is unique only on the day before the FOMC announcement, indicates that the pre-FOMC drift in long-term yield is dominated by the risk-premium channel, not the monetary-policy decision on the target rate. The short-term yield such as 3-month-ahead federal funds future rate (FF4) prior to the FOMC meetings is known to do price discovery of the Fed's monetary policy decision in the future. The insignificant FF4 one day before the FOMC announcement shows the information discovery channel because the monetary decision could be easing or tightening and on average cancel out each other, especially for the sample between 1994 to 2022 in our paper. On the contrary, the significant positive pre-FOMC stock and long-term bond return indicate an additional risk premium channel to generate the persistent positive return as risk compensation that investors require for bearing the risk before the announcements of the FOMC meetings.

To shed further light on the risk-premium channel, we build our hypothesis on the two-risk model of Hu et al. (2022), which attributes the pre-announcement drift to the resolution of heightened uncertainty prior to the announcement. Central to the model is the incorporation of an impact uncertainty, which controls the market impact of the announcement shock. To the extent that market participants are highly uncertain about an impending announcement, it is reflected in the model via a volatile impact uncertainty, which in turn drives up the

premium for impact uncertainty. Upon the resolution of the heightened uncertainty prior to the announcement, the risk premium for impact uncertainty is also realized, giving rise to the pre-announcement drift.

At the heart of Hu et al. (2022) is the accumulation of heightened uncertainty and its subsequent resolution prior to the announcement. The model, however, is silent on exactly what kind of uncertainty is resolved. This prompts the question: what specific risks do investors need to be compensated for when holding long-term yields prior to the FOMC meetings? As highlighted by Cochrane et al. (2005), it is crucial to understand the macroeconomic risks underlying the factor risk premia. Taking advantage of the fact that the risk involved in bond pricing is substantially less complex than that in equity pricing, we are able to identify the macro and policy uncertainties that give rise to the pre-FOMC drift in long-term bonds.

4.1 Macroeconomic Attention Indices: Unemployment Rate

We first introduce the macro attention index (MAI) proposed by Fisher et al. (2022) as a proxy for uncertainty measure. The MAI is derived from news articles in prominent publications such as the New York Times and Wall Street Journal, offering novel metrics of attention to various macroeconomic risks, including unemployment and monetary policy. Consistent with endogenous information acquisition, Fisher et al. (2022) observe investors' attention about monetary policy rises roughly three days before scheduled FOMC announcements and show high pre-announcement attention to monetary policy predicts high announcement-date stock market returns.

We first replicate and extend the MAI pattern around FOMC meetings in Fisher et al. (2022) to relate the monetary MAI as well as the unemployment MAI to FOMC meetings using the regression:

$$MAI_{f,t} = \alpha + \sum_{\delta=-7}^{\delta=3} \beta_\delta FOMC_{t+\delta} + \epsilon_t$$

where $MAI_{f,t}$ is the macroeconomic attention index for attention topic about monetary or unemployment. The variables $FOMC_{t+\delta}$ equal one if there is an FOMC meeting on day $t+\delta$ and zero otherwise. Figure 6 shows the monetary MAI starts to increase four days ahead of the FOMC meeting and spikes on the day after the announcement, given a one-day lag for news articles to be printed. Alongside the escalation in the monetary MAI, there is a notable increase in the unemployment MAI, which exhibits a significant response two days before the FOMC meeting.[15] This pattern indicates that investors are not only attentive

[15]The unemployment MAI on average increases and responds significantly two days before the FOMC

to monetary information but also to macroeconomic fundamentals leading up to the FOMC meeting. It further reflects the complex mixture of information gathering and uncertainty sources surrounding one of the most crucial global events.

One advantage of using the MAI as proxy for attention or uncertainty measure lies in its close connection to different macroeconomic fundamentals and volatility measure. Compared with the uncertainty measures extracted from capital markets (e.g., the option-implied VIX and MOVE indices), the MAI indices, with their dedicated focus on the respective macroeconomic fundamentals, offers a more precise link to the source of uncertainty. Each MAI is associated with a specific category of macroeconomic news, offering insights into the particular aspect of the economy that investors are paying attention to or are uncertain about. For example, an increase in the unemployment MAI indicates heightened uncertainty with respect to the labor market condition.

We show earlier that unemployment MAI will increase before the FOMC meetings and next we want to investigate whether the link between unemployment MAI and its underlying macro fundamental is stronger around the FOMC announcements. We match daily unemployment MAI with the contemporaneous monthly unemployment rate, given the unemployment rate is monthly series. The current month employment information is yet to be released, although the content of the information (i.e., the labor market condition) is already taking place contemporaneously. We also use the unemployment rate from previous month as the robustness check and the results are similar. Regarding volatility, our focus is on exploring volatility within the Treasury bond market at different maturities, which help us understand whether the volatility of long-term or short-term bond are more connected to uncertainty about macro fundamentals. We compute daily realized volatility for the 10-year (2-year) Treasury bond using the exponentially weighted moving average (EWMA) model, employing a decay factor of 0.98. This particular decay factor is chosen to mitigate noise at the daily frequency.

The first three columns in Panel A of Table 4 show the exact contemporaneous relationship between unemployment MAI with unemployment rate as well as the Treasury volatility. When the contemporaneous unemployment rate is elevated, the unemployment MAI also experiences a significant increase with a R-squared around 17%. It is consistent with the findings in Fisher et al. (2022) that employment attention intensifies in response to higher unemployment rates and increases more when it is associated with bad news. The column (2) shows if the 10-year Treasury volatility increases, the unemployment MAI will also be higher with a statistically significant coefficient around 0.39. Interestingly, the coefficient

meeting while the skewness and kurtosis of unemployment MAI is highest three days before the FOMC announcements as shown in Table A1.

of 2-year Treasury volatility is negative showing that higher short-term Treasury volatility will lead to lower unemployment attention. This implies that the escalation of employment attention is more closely linked to increased long-term Treasury bond volatility.

In our subsequent analysis, we explore whether the relationship between unemployment MAI and the unemployment rate intensifies during the FOMC window, given the heightened focus on labor market conditions preceding FOMC meetings. Our findings, illustrated in column (4) of Table 4, reveal a significantly positive interaction term between the unemployment rate and the FOMC[-3] at a 1% confidence level. This interaction suggests an amplification in the correlation between daily unemployment MAI and the contemporaneous unemployment rate, with the coefficient of the interaction term experiences an additional increase of 0.10 over the normal day coefficient of 0.22, showing enhanced correlation at three days before FOMC announcements compared to regular daily correlations. To make it more comprehensive, we directly calculate the Pearson correlation and find the normal correlation between unemployment MAI and the unemployment rate is around 0.41 while this correlation increases to 0.59 at three days before the FOMC meetings. The observed pattern is visually presented in the top panel of Figure 7, where the unemployment MAI three days before the FOMC announcements closely mirrors the contemporaneous unemployment rate. Furthermore, this distinct co-movement is uniquely observed at three days before the FOMC announcements, with no similar patterns detected in other FOMC windows, as evidenced by the analysis in columns (5) through (8) of Panel A in Table 4.

We also repeat the same analysis for the monetary MAI in Panel B of Table 4. Our findings reveal a positive correlation between monetary MAI and the unemployment rate, albeit weaker compared to that of unemployment MAI. Specifically, an increase in the contemporaneous unemployment rate is associated with a significant yet modest rise in monetary MAI, as indicated by a low R-squared value of 0.47%. Furthermore, our analysis distinguishes the relationships of monetary MAI with Treasury bond volatility across maturities. In contrast to the negative correlation observed between unemployment MAI and short-term bond volatility, monetary MAI exhibits a positive link with both long-term and short-term bond volatilities. What's more interesting is that the pronounced co-movement between unemployment rate and unemployment MAI three days before the FOMC announcements is absent in the case of monetary MAI. While monetary MAI does increase steadily prior to the FOMC announcement, it does not pick up any increased correlation with macro fundamentals.

4.2 The Pre-FOMC UST and Unemployment MAI

As highlighted in Lucca and Moench (2015) and Mueller et al. (2017), market uncertainty emerges as a pivotal factor in explaining the pre-FOMC return of stock and exchange rate.

We investigate whether the heightened uncertainty or attention is the main channel not only for pre-FOMC SPX (Hu et al., 2022) but also for pre-FOMC UST. Given this heightened co-movement between unemployment MAI and unemployment level, we try to explore whether the unemployment MAI three days before the FOMC meetings as a proxy for heightened macro uncertainty can help to explain the pre-FOMC drift in long-term yield. Fisher et al. (2022) construct the MAI by gauging the percentage of articles on a given day with content related to the macroeconomic fundamentals of interest. Their fundamental assumption posits that editorial efforts are driven by the readers' demand for different types of macroeconomic information, thereby driving the changes in attention. Moreover, investors' attention is closely related to the the macro economy and underlying market volatility which help us identify the source of the uncertainty behind the pre-FOMC drift.

Reported in Table 5 are the results of explaining the pre-FOMC UST by the unemployment MAI three days before the FOMC announcements. HMAI is a dummy variable equaling 1 if the unemployment MAI three days before the FOMC announcements is above its median value. The first column in Panel A shows that the yield change of 10-year constant maturity Treasury bond (UST10[-1]) will decrease on average additional 1.5 basis point significant at 5% level from day -2 to day -1 before the FOMC meetings when the previous unemployment MAI is high. By contrast, when the uncertainty is below median, the pre-FOMC change in 10-year yield is no longer significant and is in fact slightly positive with 0.04 basis points. These results indicate that the pre-FOMC drift is significant only under heightened uncertainty over the labor market condition, confirming the mechanism of premium for heightened uncertainty. This pattern holds true for the one-year forward rate beginning at 9 years (FUST10[-1]), exhibiting a significant additional drop of 2.41 basis points, and for the 10-year term premium (TP10[-1]), showing a significant additional decrease of 2.06 basis points one day before the FOMC meetings when the preceding unemployment MAI is high.

When examining the impact of heightened unemployment attention on pre-FOMC short-term yield , we observe a decreasing effect from long-term to short-term yield. The HMAI dummy is no longer significant at explaining the yield change of 2-year constant maturity (UST2[-1]) and forward rate (FUST2[-1]), while it remains significant at differentiating the 2-year term premium (TP2[-1]) changes one day before the FOMC meetings. Specifically, when the unemployment MAI three days before the FOMC meetings is high, the 2-year term premiums will decrease by additional 1.26 basis points.

To further capture the accumulation of heightened uncertainty, an important component in the model of Hu et al. (2022), we also trace the change of unemployment MAI from day -5 to -3 relative the the FOMC announcement in Panel B of Table 5. It's difficult to determine when is the build-up period since we don't know the exact timing of the buildup uncertainty starts which may differ substantially across announcements (Hu et al., 2022).

In our empirical tests, we measure the unemployment MAI build-up (ΔMAI Urate) over a two-day accumulation period which is from day -5 to day -3, given that the unemployment MAI starts increasing on average from five days before the FOMC announcements in Figure 6. The result in Panel B shows that the build-up of the unemployment MAI can negatively predict the pre-FOMC long-term yield change. The coefficient for ΔMAI Urate to predict the pre-FOMC long-term yield decline is statistically significant, and the economic magnitude is large. A one-standard-deviation increase in ΔMAI Urate is associated with an extra pre-FOMC reduction of 0.75 basis points in 10-year yield and 0.92 basis points in the term premium component of the 10-year yield. Overall, consistent with the prediction of the two-risk model of Hu et al. (2022), increased macro uncertainties, as captured by both the level of the unemployment MAI and its change, are predictive of the pre-FOMC reduction in long-term yield. We also test the robustness of using the unemployment MAI to explain the pre-FOMC yield changes by excluding financial crisis in Table A2 and find the results are similar.

Moreover, our approach also allows us to identify the nature of the uncertainty. Contrary to unemployment MAI, the uncertainty proxied by the monetary MAI in Panel C does not have any impact on the pre-FOMC bond pricing, whether at the long end or short end. Both economically and statistically, the impact of unemployment MAI is more pronounced than that of monetary MAI, particularly in explaining pre-FOMC UST at the long end. This finding suggests that while uncertainty naturally increases in anticipation of the FOMC announcements, it is the heightened uncertainty with respect to the macro fundamentals such as the unemployment rate that drives the risk premium in long-term bonds.

We show earlier that a large fraction of the secular decline in long-term yields happens before the scheduled FOMC meetings. More importantly, we find this pre-FOMC yield decline in long-term yields is primarily associated with higher unemployment MAI. This pattern diverges from the conventional view that attributes the secular decline around FOMC meetings to long-run Fed guidance, as proposed by Hillenbrand (2021). If forward guidance information were the primary driver of the long-term yield decline, sorting by previous unemployment MAI, a proxy for heightened attention, should not yield such significant differences between high- and low-MAI groups. Our pre-FOMC drift, realized prior to the FOMC announcements with heightened macro uncertainty, indicates the presence of a second channel that is important in explaining the secular decline of long-term yields.

As reported in Panel A of Table 3 that there exists a disconnection between the long- and the short-term yield change one day before the FOMC announcements. Building on this, we investigates whether this disconnection is more pronounced during periods of heightened macro uncertainty in Panel B of Table 3. We categorize FOMC meetings into high- and low-MAI groups separately based on whether the unemployment MAI three days be-

fore the FOMC announcements is above or below its median value. We then repeat the same regression setting as in Panel A. The finding in column (4) of Panel B shows a significant additional drop of 1.44 basis points, compared with normal days, in the 10-year yield before FOMC meetings with high unemployment MAI. Furthermore, the interaction term in column (6) between FF4 and FOMC[-1] is -0.58, significant at the 1% level, confirming that the divergence between long-term and short-term yield changes happening before the FOMC announcements is indeed associated with higher macro attention to the unemployment rate. This pattern vanishes for FOMC meetings associated with low unemployment MAI, as indicated in Panel C.

We further adopt the same sorting when applying the PCA approach on the covariance matrix of the yield changes around FOMC windows, as depicted in Panel B of Figure 5. The solid line represents high-MAI FOMC meetings, while the dashed line represents low-MAI FOMC meetings. It's evident that the relative contributions of the first principal component (PC1) are lower and second principal component (PC2) are higher for the high-MAI groups one day before the FOMC meetings. This observation suggests that the relationship between long-term and short-term yield changes becomes more disconnected before FOMC meetings when attention to the unemployment rate is higher and supports the notion of heightened uncertainty in driving the divergence between long- and short-term yields ahead of FOMC announcements

4.3 The Pre-FOMC UST and FOMC Dissents

In addition to the heightened macro uncertainty associated with macroeconomic fundamentals, heightened policy uncertainty is is also important in explaining the pre-FOMC drift in long-term yields. We use the extent of FOMC dissenting votes as a proxy which is the disagreements among the members of the Federal Open Market Committee responsible for setting US monetary policy. The FOMC comprises 12 voting members, consisting of the seven members of the Board of Governors and five Federal Reserve bank presidents. The president of the New York Fed is a permanent voting member, while the remaining 11 Reserve bank presidents serve as voting members on a rotating basis.

We utilize the FOMC dissent data[16] from Thornton et al. (2014) and calculate the ratio of dissenting votes to the total votes. We first regress the pre-FOMC yield change for different maturities on the ratio of dissenting votes. Panel D of Table 5 presents evidence that the decline in pre-FOMC yields in the Treasury bond market is more pronounced when FOMC meetings are characterized by a higher ratio of dissenting votes. Specifically, when

[16]https://www.stlouisfed.org/on-the-economy/2014/september/a-history-of-fomc-dissents

the dissenting vote increases 1%, the 10-year maturity yield will decreases 0.11 basis points from day -2 to day -1 before the FOMC announcements.

Unlike the effect of unemployment MAI which is most significant on pre-FOMC long-term yield change, the dissenting vote has a larger impact on the medium term maturity bond. This pattern can be seen more clearly when comparing the results for FUST10[-1] and FUST2[-1], which are the one-year forward yield change beginning at 9 and 1 years one day prior to the FOMC announcements. 1% increases in ratio of dissenting vote will lead to a significant decrease of 0.1 basis points in FUST2[-1] while fail to explain the FUST10[-1]. After we controlling for the unemployment MAI in Panel E, the results still hold. Different from the unemployment MAI, the magnitude of the dissenting vote is observed only after the FOMC announcement. Interesting, our results indicate that the pre-FOMC market pricing is influenced by the uncertainty associated with the dissenting votes.

5 The Pre-FOMC Drift in Bond and Equity

5.1 Differing Uncertainty Measures for Bond and Equity

While the premium for heightened uncertainty drives the pre-FOMC drift in both bond and equity, the exact content of uncertainty differs. Moving forward, our aim is to investigate the difference and the shared common component between pre-FOMC UST and SPX, providing a more comprehensive dynamic regarding the pre-FOMC drift in both markets. We reveal that distinct sources of uncertainty contribute to the risk premium in both the bond and stock markets prior to FOMC meetings by first examining the traditional market-based uncertainty measures such as VIX and MOVE index extracted from the option market. As documented in Lucca and Moench (2015) and Mueller et al. (2017), VIX index as a proxy for market uncertainty emerges as a pivotal factor in explaining the pre-FOMC return of stock and exchange rate. To test their relationship with the pre-FOMC drift, we choose the VIX index and MOVE index at day -3 to explain the pre-FOMC drift, similar to that of MAI index.

We compare the explanatory power of option-extracted uncertainty measures for pre-FOMC drift in bond and stock market in Table 6 by regressing the pre-FOMC drift on the lagged VIX and MOVE index. The results presented in column (1) and (2) of Table 6 reveal that option-extracted uncertainty measures can explain the pre-FOMC drift in stock market well but not for the drift in long-term Treasury bond market, showing the different sources of uncertainty under the risk premium in pre-FOMC SPX and UST.

The VIX level is positively and statistically significantly correlated with the pre-FOMC SPX, which is well documented in Lucca and Moench (2015). A one-standard-deviation

increase in the VIX level results in a significant increase of 24.62 basis points in pre-FOMC stock return with the R-squared around is 14.99%, which is huge for a predictive regression of equity returns at this high frequency. However, the VIX level fails to explain the pre-FOMC drift in the Treasury bond market. The coefficient on the pre-FOMC UST10 is estimated to be negative 0.27 basis points, which is statistically insignificant. The same holds true for the MOVE index, extracted from options on US Treasury bonds.

In addition to the option-extracted uncertainty measures, we also find the increase of monetary MAI from day -5 to day -3 can help to explain the pre-FOMC stock return. Higher increase in attention to monetary policy will lead to high pre-FOMC stock return, which is similar to the result in Fisher et al. (2022) that pre-announcement monetary attention positively predicts the excess market returns on the FOMC announcement date. However, the monetary MAI whether in the level or in change have no impact on the pre-FOMC bond pricing as documented in Table 6.

Interestingly, neither the VIX index nor monetary MAI have any predictability for the pre-FOMC drift in long-term yield, indicating that, when it comes to the pre-FOMC pricing, the risk that matters for the equity market is not important for the bond market. The converse is also true. While the heightened uncertainty in the bond market can be best captured by the unemployment MAI, it is unimportant in explaining the pre-FOMC drift in equity. The unemployment MAI and its change as well as FOMC dissenting ratio in column (3), (4) and (7) of Table 6 can explain the pre-FOMC UST bot not the pre-FOMC SPX. The contrasting explanation power of option-extracted uncertainty measure versus MAI and dissenting vote unveils the different sources of the risk premium in pre-FOMC drift in stock and bond market.

5.2 Predicting the Pre-FOMC SPX Using Pre-FOMC UST

As the pre-FOMC drift in bond is realized by the market close of day -1, while that in equity is observed afterwards, which is stock returns from 4 pm at day -1 to five minutes before the release time, we further use the pre-FOMC drift in bond to predict that in equity to investigate the shared common component. We shed some light on the puzzling stock market movements before FOMC announcements using the yield movement in the US Treasury market.

Given that we find the pre-FOMC change in 10-year yield is significant only when the uncertainty with respect to the labor market condition is above median, we sort the FOMC meetings into two groups in Panel A of Table 7: a high-MAI group on the left, including meetings with above-median unemployment MAI three days before the FOMC announcements, and a low-MAI group on the right, comprising the rest. The predictability of long-term yield

such as UST10[-1] on pre-FOMC SPX is evident only when the previous unemployment MAI is high.

In the high-MAI group, a one-basis-point decrease in the 10-year constant maturity yield one day before the FOMC announcements leads to a 3.11 basis point increase in the pre-FOMC return in the S&P 500 index, with an R-squared of 4.04%. When examining the predictability of different maturity yield changes on pre-FOMC SPX, we find that the coefficients monotonically decrease as the maturity period shortens. This pattern underscores the distinctive role of the heightened uncertainty channel associated with long-term Treasury yields before FOMC meetings where the longer duration yield contains higher risk premium component, coming from the elevated macro fundamental uncertainty risks preceding the announcements. It's also evidence for the full sample in Table A3 where the pre-FOMC stock return is regressed on the yield change of forward rate and term premium. Only the one-year forward rate beginning at 9-year (FUST10[-1]) and the 10-year term premium (TP10[-1]) can negatively predict the pre-FOMC SPX. A one-basis-point decrease in FUST10[-1] (TP10[-1]) will result in approximately 2.01 (2.50) basis points increase in pre-FOMC stock return. When putting the FUST10[-1] (TP10[-1]) and the VIX level together, the coefficient of FUST10[-1] drops to around -1.5 (-2.09) basis points but still significant at 10% level. It shows VIX level can't drive out the additional explanatory power coming from the long-term yield decline.

In the low-MAI group, the point estimate indicates that the 10-year Treasury yield change is not significant at predicting the pre-FOMC SPX. The differential predictability of UST10[-1] on pre-FOMC SPX in the high- and low-MAI groups further underscores the uncertainty channel behind the pre-FOMC drift in long-term yield. The persistently highly positive pre-FOMC stock return is attributed to the resolution of heightened uncertainty before the announcements of the FOMC meetings (Hu et al., 2022). The observation that the yield change of long-term Treasury bonds one day before the FOMC announcements can predict the following stock return in the high-MAI sample suggests that one source of the uncertainty comes from the heightened attention about the unemployment rate which leads to a decrease in long-term yield, and then resulting in a higher pre-FOMC stock return.

We further split the sample according to whether the FOMC meetings contain any dissenting vote and repeat the same regression setting in Panel B of the Table 7. Similarly, the predictability of pre-FOMC yield on subsequent stock return shows up when at least one member voting against the action during FOMC meetings. In the dissenting FOMC sample, a one-basis-point decrease in the 10-year constant maturity yield one day before the FOMC announcements leads to a 5 basis point increase in the pre-FOMC drift in the stock market with a R square value around 12%. However, the pre-FOMC yield change can't explain the following stock return when the FOMC vote is unanimous.

One interesting difference between sorting by unemployment MAI and dissenting vote is that pre-FOMC medium-term yield change can also predict pre-FOMC return in the S&P 500 index in the dissenting FOMC sample. More specifically, a one-basis-point decrease in the 2-year constant maturity yield leads to a 5.09 basis points increase in the pre-FOMC returns when at least one FOMC member votes against the action. This pattern corresponds to the previous result that the dissenting vote has a larger impact on the medium-term maturity yield change and unemployment MAI has bigger effect on the long-term maturity yield change one day prior to the FOMC announcements.

6 Conclusions

In this paper, we find positive and significant returns on long-term Treasury bonds by zooming in the day before the FOMC announcements. Unlike the pre-FOMC drift in stock market examining the 24-hour window prior to the announcements, the drift in UST market happens one day before the FOMC announcements which is from day -2 to day-1. Varying across the yield curve, we find that this significant reduction in yield is unique and robust only for long-term bonds and the magnitude of the pre-FOMC yield decline decreases as the maturity gets shorter. Over the 24-hour window that ends at the market close of the day before the FOMC announcement, the 10-year bond yield drops by a significant 0.71 basis points, compared with a full-sample average of -0.04 basis points. Over the same pre-FOMC window, the 2-year bond yield drops by an insignificant 0.20 basis points while the 3-month-ahead Fed fund futures rate increases by 0.33 basis points.

Our result on the pre-FOMC drift in the long term bond also completes the finding in Hillenbrand (2021) by showing that the pre-FOMC yield decline contributes importantly to the secular decline in long-term interest rates over the three-day window. Varying the event window to other days surrounding the FOMC announcements, we find that the pre-FOMC reduction in yield is significant only over the event window of day -2 to day -1 before the FOMC announcement, while the change in yield over the announcement-day window is negative but insignificant. This observation offers insight into why prior literature find the absence of a pre-FOMC drift in the Treasury bond market. It's because they often focus solely on the FOMC announcement day. Hillenbrand (2021) attributes the forward guidance provided by the Fed's announcements as the most important driver of the long-run path of interest rates, our pre-FOMC drift, realized prior to the FOMC announcements, indicates the presence of a second channel which is important in explaining the secular decline of long-term yields.

Behind this significant positive pre-FOMC returns on UST, we find the risk premium

channel that investors require compensation for bearing the risk before the announcements of the FOMC meetings. By leveraging the relative simplicity of bond versus equity risk, we are able to identify the macro and policy uncertainties that give rise to the pre-FOMC drift in long-term bonds. To proxy for macro uncertainty, we use the macro attention index (MAI) developed by Fisher et al. (2022). We establish that it's the unemployment MAI has the explanatory power for pre-FOMC long-term yield. We find that the 10-year Treasury decreases on average additional 1.5 basis point significant at 5% confidence level from day -2 to day -1 before the FOMC meetings when the unemployment MAI at day -3 is higher than its median. Contrary to unemployment MAI, the uncertainty proxied by the monetary MAI does not have any impact on the pre-FOMC bond pricing, indicating that while uncertainty naturally increases in anticipation of the FOMC announcements, it is the heightened uncertainty with respect to the macro fundamentals such as the unemployment rate that drives the risk premium in long-term bonds. We further show the dissenting vote in FOMC meetings is a source of policy uncertainty in explaining the pre-FOMC drift in long-term yields. We find that a 1% increase in the ratio of dissenting votes is associated with a significant pre-FOMC reduction of 0.11 basis points in 10-year yield.

While the pre-FOMC drift in both bond and equity is driven by the premium for heightened uncertainty, the exact content of uncertainty differs. For equities, heightened uncertainty is effectively captured by the VIX index where the R-squared of regressing the pre-FOMC SPX on lagged VIX is 14.99%. In addition to the option-extracted uncertainty measures, we also find the increase of monetary MAI from day -5 to day -3 can help to explain the pre-FOMC stock return. Interestingly, neither the VIX index nor monetary MAI have any predictability for the pre-FOMC drift in long-term yield, indicating that, when it comes to the pre-FOMC pricing, the risk that matters for the equity market is not important for the bond market. The converse is also true. While the heightened uncertainty in the bond market can be best captured by the unemployment MAI, it is unimportant in explaining the pre-FOMC drift in equity.

Moreover, we find the resolution of uncertainty often takes place in the long term bond market first and then in the equity market. This connection between pre-FOMC UST and SPX happens only under heightened macro and policy uncertainties. For instance, when unemployment MAI is above its median, a one basis point decrease in the 10-year yield pre-FOMC predicts a three basis point increase in the S&P 500's pre-FOMC return, with an R-squared of 4.04%. Similarly, when at least one FOMC member votes against the action, one basis point pre-FOMC reduction in 10-year yield can predict a five basis points increase in the pre-FOMC return in the S&P 500 index, with an R-squared of 11.8%. In contrast, this predictive relationship dissipates when unemployment MAI is low or the FOMC vote is unanimous, underscoring the uncertainty channel behind the pre-FOMC drift in long-term

yield.

References

Abdi, F. and B. Wu (2018). Pre-FOMC information asymmetry. *NYU Stern School of Business*.

Adrian, T., R. K. Crump, and E. Moench (2013). Pricing the term structure with linear regressions. *Journal of Financial Economics 110*(1), 110–138.

Ai, H. and R. Bansal (2018). Risk preferences and the macroeconomic announcement premium. *Econometrica 86*(4), 1383–1430.

Ai, H., R. Bansal, and L. J. Han (2021). Information acquisition and the pre-announcement drift. *Available at SSRN 3964349*.

Balduzzi, P. and F. Moneta (2017). Economic risk premia in the fixed-income markets: The intraday evidence. *Journal of Financial and Quantitative Analysis 52*(5), 1927–1950.

Bauer, M. D. and G. D. Rudebusch (2020). Interest rates under falling stars. *American Economic Review 110*(5), 1316–1354.

Bauer, M. D. and E. T. Swanson (2023). An alternative explanation for the "Fedinformation effect". *American Economic Review 113*(3), 664–700.

Bernanke, B. S. and K. N. Kuttner (2005). What explains the stock market's reaction to federal reserve policy? *The Journal of Finance 60*(3), 1221–1257.

Bernile, G., J. Hu, and Y. Tang (2016). Can information be locked up? informed trading ahead of macro-news announcements. *Journal of Financial Economics 121*(3), 496–520.

Brooks, J., M. Katz, and H. Lustig (2018). Post-FOMC announcement drift in US bond markets. Technical report, National Bureau of Economic Research.

Campbell, J. Y. and R. J. Shiller (1991). Yield spreads and interest rate movements: A bird's eye view. *The Review of Economic Studies 58*(3), 495–514.

Cieslak, A., A. Morse, and A. Vissing-Jorgensen (2019). Stock returns over the FOMC cycle. *The Journal of Finance 74*(5), 2201–2248.

Cieslak, A. and H. Pang (2021). Common shocks in stocks and bonds. *Journal of Financial Economics 142*(2), 880–904.

Cochrane, J. H. et al. (2005). Financial markets and the real economy. *Foundations and Trends® in Finance 1*(1), 1–101.

Cochrane, J. H. and M. Piazzesi (2005). Bond risk premia. *American Economic Review 95*(1), 138–160.

Drechsler, I., A. Savov, and P. Schnabl (2020). The financial origins of the rise and fall of american inflation. *NYU Stern School of Business*.

Fama, E. F. and R. R. Bliss (1987). The information in long-maturity forward rates. *The American Economic Review*, 680–692.

Fisher, A., C. Martineau, and J. Sheng (2022). Macroeconomic attention and announcement risk premia. *The Review of Financial Studies 35*(11), 5057–5093.

Gurkaynak, R., B. Sack, and E. Swanson (2005). Do actions speak louder than words? the response of asset prices to monetary policy actions and statements. *International Journal of Central Banking 1*(1), 55–93.

Gürkaynak, R. S., B. Sack, and J. H. Wright (2007). The US Treasury yield curve: 1961 to the present. *Journal of monetary Economics 54*(8), 2291–2304.

Hillenbrand, S. (2021). The Fed and the secular decline in interest rates. *Available at SSRN 3550593*.

Hu, G. X., J. Pan, J. Wang, and H. Zhu (2022). Premium for heightened uncertainty: Explaining pre-announcement market returns. *Journal of Financial Economics 145*(3), 909–936.

Javadi, S., A. Nejadmalayeri, and T. L. Krehbiel (2018). Do FOMC actions speak loudly? evidence from corporate bond credit spreads. *Review of Finance 22*(5), 1877–1909.

Kim, D. H. and J. H. Wright (2005). An arbitrage-free three-factor term structure model and the recent behavior of long-term yields and distant-horizon forward rates.

Kuttner, K. N. (2001). Monetary policy surprises and interest rates: Evidence from the Fed funds futures market. *Journal of Monetary Economics 47*(3), 523–544.

Laarits, T. (2019). Pre-announcement risk. *NYU Stern School of Business*.

Liu, H., X. Tang, and G. Zhou (2022). Recovering the FOMC risk premium. *Journal of Financial Economics 145*(1), 45–68.

Lucca, D. O. and E. Moench (2015). The pre-FOMC announcement drift. *The Journal of Finance 70*(1), 329–371.

Mueller, P., A. Tahbaz-Salehi, and A. Vedolin (2017). Exchange rates and monetary policy uncertainty. *The Journal of Finance 72*(3), 1213–1252.

Nakamura, E. and J. Steinsson (2018). High-frequency identification of monetary non-neutrality: the information effect. *The Quarterly Journal of Economics 133*(3), 1283–1330.

Thornton, D. L., D. C. Wheelock, et al. (2014). Making sense of dissents: a history of FOMC dissents. *Federal Reserve Bank of St. Louis Review 96*(3), 213–227.

Wachter, J. A. and Y. Zhu (2022). A model of two days: Discrete news and asset prices. *The Review of Financial Studies 35*(5), 2246–2307.

Ying, C. (2020). The pre-FOMC announcement drift and private information: Kyle meets macro-finance. *Available at SSRN 3644386*.

Table 1: Summary Statistics

Pre-FOMC: Day -1							Other						
	Obs	Mean	Std	Min	Median	Max		Obs	Mean	Std	Min	Median	Max
Panel A: Yield Change													
UST10	226	-0.71	4.90	-27.00	0.00	11.00	UST10	6852	-0.02	5.79	-51.00	0.00	34.00
UST5	226	-0.70	5.02	-38.00	0.00	11.00	UST5	6852	-0.02	6.03	-46.00	0.00	34.00
UST2	226	-0.20	4.75	-45.00	0.00	11.00	UST2	6852	-0.02	5.34	-54.00	0.00	38.00
FF4	226	0.33	4.43	-20.50	0.00	36.50	FF4	6852	-0.01	3.29	-44.00	0.00	40.00
FUST10	226	-0.99	5.92	-28.74	-0.53	12.92	FUST10	6852	-0.03	6.64	-44.74	-0.23	52.35
FUST5	226	-0.95	6.00	-23.07	-0.62	19.40	FUST5	6852	-0.03	7.02	-69.55	-0.20	36.09
FUST2	226	-0.70	5.59	-46.98	-0.32	12.06	FUST2	6852	-0.01	6.77	-50.03	0.06	44.49
TP10	226	-0.67	4.80	-24.47	-0.41	12.81	TP10	6852	-0.02	5.21	-41.84	-0.14	41.88
TP5	226	-0.59	3.58	-17.82	-0.59	10.94	TP5	6852	-0.02	3.99	-32.94	-0.16	32.63
TP2	226	-0.35	2.90	-20.12	-0.26	7.94	TP2	6852	-0.01	3.10	-41.90	-0.09	37.62
Panel B: Pairwise Correlations Between Forward Rate and Term Premium													
	FUST10	FUST5	FUST2	TP10	TP5	TP2		FUST10	FUST5	FUST2	TP10	TP5	TP2
FUST10	1.00						FUST10	1.00					
FUST5	0.76	1.00					FUST5	0.79	1.00				
FUST2	0.48	0.67	1.00				FUST2	0.53	0.75	1.00			
TP10	0.92	0.70	0.23	1.00			TP10	0.94	0.75	0.34	1.00		
TP5	0.92	0.76	0.37	0.98	1.00		TP5	0.94	0.84	0.51	0.97	1.00	
TP2	0.76	0.43	0.46	0.76	0.81	1.00	TP2	0.80	0.60	0.62	0.78	0.83	1.00
Panel C: Uncertainty and Volatiltiy Measure													
Pre-FOMC: Day -3							**Other**						
	Obs	Mean	Std	Min	Median	Max		Obs	Mean	Std	Min	Median	Max
MAI Urate	226	0.05	0.97	-1.22	-0.11	4.64	MAI Urate	6853	0.12	0.96	-1.22	-0.06	6.17
MAI Monetary	226	0.12	1.06	-1.80	-0.03	3.14	MAI Monetary	6853	0.16	1.26	-1.80	-0.03	10.68
UST10 Vol	226	5.52	1.54	3.07	5.33	10.58	UST10 Vol	6853	5.53	1.56	3.06	5.33	12.04
UST2 Vol	226	4.80	2.27	1.36	4.46	12.99	UST2 Vol	6853	4.80	2.26	1.26	4.47	13.82
VIX Index	226	20.06	8.34	9.36	18.30	79.13	VIX Index	6853	20.12	8.29	9.14	18.51	82.69
MOVE Index	226	91.34	30.58	42.48	86.63	239.40	MOVE Index	6853	90.17	29.32	36.62	87.10	264.60

This table reports summary statistics for pre-FOMC drift in basis point of Treasury bond market which is from day -2 to day -1 before the scheduled FOMC meetings as well as for the Non FOMC sample where we exclude the day before the FOMC meetings. UST10 (UST2) is the daily 10- (2-) year Treasury yield change and FF4 is the yield change of 3-month-ahead federal funds future contract. FUST10 (FUST2) is the daily one-year forward rate beginning at 9- (1-) year. TP10 (TP2) are 10- (2-) year term premium. We also report different uncertainty measures three days before the FOMC announcements in Panel C. MAI Urate and MAI Monetary are macroeconomic attention indexes for unemployment rate and monetary policy. UST10 Vol, UST2 Vol in basis point are realized volatility estimated from daily yield change by EWMA method with decay factor of 0.98. The sample period is September 1994 to December 2022.

Table 2: Average Daily Changes in Yield around FOMC Announcements

	CMT Yield			Forward Yield		Term Premium	
	UST10	UST2	FF4	FUST10	FUST2	TP10	TP2
FOMC[-7]	0.01	0.14	-0.08	0.01	0.12	-0.17	-0.11
	[0.03]	[0.37]	[-0.38]	[0.02]	[0.26]	[-0.53]	[-0.56]
FOMC[-6]	-0.04	0.19	0.25	-0.34	-0.04	-0.29	-0.2
	[-0.12]	[0.62]	[0.87]	[-0.90]	[-0.10]	[-0.98]	[-1.07]
FOMC[-5]	0.48	0.32	-0.03	0.21	0.55	0.18	0.25
	[1.42]	[1.09]	[-0.20]	[0.52]	[1.50]	[0.56]	[1.44]
FOMC[-4]	0.03	-0.03	0.02	-0.01	-0.02	0.01	-0.12
	[0.08]	[-0.08]	[0.11]	[-0.02]	[-0.04]	[0.03]	[-0.60]
FOMC[-3]	-0.07	0.32	-0.16	-0.2	0.35	-0.24	0.08
	[-0.19]	[0.96]	[-0.99]	[-0.49]	[0.81]	[-0.77]	[0.39]
FOMC[-2]	0.46	0.53	0.24	0.47	0.41	0.26	0.12
	[1.17]	[1.47]	[0.95]	[1.10]	[0.90]	[0.80]	[0.61]
FOMC[-1]	**-0.71**	-0.2	0.33	**-0.99**	-0.7	**-0.67**	-0.35
	[-2.18]	[-0.63]	[1.12]	**[-2.51]**	[-1.88]	**[-2.10]**	[-1.82]
FOMC[0]	-0.53	-0.59	-0.33	0.01	-0.33	-0.15	0.18
	[-1.18]	[-1.38]	[-1.12]	[0.02]	[-0.61]	[-0.38]	[0.86]
FOMC[1]	-0.45	-0.01	-0.2	-0.78	0.24	-0.43	0.21
	[-0.95]	[-0.03]	[-0.84]	[-1.30]	[0.49]	[-0.86]	[0.82]
All days	-0.04	-0.02	0.00	-0.06	-0.04	-0.04	-0.02
	[-0.58]	[-0.32]	[-0.00]	[-0.76]	[-0.50]	[-0.65]	[-0.54]

Reported are the daily changes in basis points of treasury yield, forward rate and term premium around FOMC windows. FOMC[-i] denotes the i-th trading day before the scheduled FOMC announcement. UST10 and UST2 are the daily 10- and 2-year treasury yield change. FF4 is the yield change of three-month-ahead federal funds future contract. FUST10 and FUST2 are the daily one-year forward rate beginning at 9- and 1- year. TP10 and TP2 are 10- and 2-year term premium. Reported in the squared brackets are the respective t-statistics. The sample period is from September 1994 to December 2022.

Table 3: The Disconnect between Long- and Short-Term Yields

Dependent: Changes in 10-Year Yield (Δ UST10)										
Sorting Variable= MAI Urate at Day -3										
Panel A: Full Sample				**Panel B: High MAI**				**Panel C: Low MAI**		
	(1)	(2)	(3)		(4)	(5)	(6)		(7)	(8)	(9)
const	-0.02	-0.04	-0.01	const	-0.02	-0.04	-0.01	Const	-0.04	-0.04	-0.04
	[-0.31]	[-0.66]	[-0.17]		[-0.30]	[-0.66]	[-0.14]		[-0.66]	[-0.66]	[-0.70]
FOMC[-1]	-0.69**		-0.80**	FOMC[-1]	-1.44***		-1.55***	FOMC[-1]	0.09		0.18
	[-2.07]		[-2.45]		[-3.10]		[-3.31]		[0.20]		[0.46]
FF4		0.68***	0.70***	FF4		0.68***	0.70***	FF4		0.68***	0.68***
		[15.24]	[15.20]			[15.24]	[15.45]			[15.24]	[15.01]
FF4*FOMC[-1]			-0.41**	FF4*FOMC[-1]			-0.58***	FF4*FOMC[-1]			0.01
			[-2.58]				[-5.57]				[0.03]
R-sqrd (%)	0.04	15.58	15.95	R-sqrd (%)	0.1	15.58	16.16	R-sqrd (%)	0	15.58	15.58
N	7079	7079	7079	N	7079	7079	7079	N	7079	7079	7079

Reported are the relationship between the change of long-term and short-term yields. The dependent variable is the daily 10-year treasury yield change. FOMC[-1] equals 1 if it is one day before the scheduled FOMC announcement. FF4 is the yield change of 3-month-ahead federal funds future contract. Scheduled FOMC meetings are sorted by unemployment MAI three days before the FOMC announcements, with "High" containing the above median FOMC and "Low" containing the rest. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags.

Table 4: The Relationship between MAI, Urate Level and Volatility

	Panel A: Dependent Variable = MAI Urate Level								Panel B: Dependent Variable = MAI Monetary Level							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Urate	0.22***			0.21***	0.22***	0.22***	0.22***	0.22***	0.05***			0.05***	0.04***	0.05***	0.05***	0.05***
	[27.36]			[26.87]	[27.24]	[27.22]	[27.02]	[27.54]	[3.83]			[3.83]	[3.63]	[3.88]	[3.91]	[3.90]
UST10 Vol		0.39***								0.47***						
		[12.00]								[9.97]						
UST2 Vol			-0.13***								0.37***					
			[-4.18]								[6.54]					
FOMC[-3]				-0.62***								0.07				
				[-3.30]								[0.28]				
FOMC[-2]					0.04								-0.38			
					[0.24]								[-1.46]			
FOMC[-1]						0.17								0.18		
						[0.86]								[0.68]		
FOMC[0]							-0.14								0.48*	
							[-0.75]								[1.71]	
FOMC[1]								0.52*								1.53***
								[1.91]								[4.65]
FOMC[-3]*Urate				0.10***								-0.02				
				[2.86]								[-0.49]				
FOMC[-2]*Urate					0.02								0.08*			
					[0.70]								[1.85]			
FOMC[-1]*Urate						-0.05								-0.01		
						[-1.36]								[-0.29]		
FOMC[0]*Urate							0.03								-0.01	
							[1.00]								[-0.18]	
FOMC[1]*Urate								0								0.04
								[-0.08]								[0.70]
Const	-1.12***	0.24***	0.06***	-1.10***	-1.12***	-1.13***	-1.12***	-1.14***	-0.11	0.31***	0.31***	-0.11	-0.1	-0.12	-0.13*	-0.16**
	[-24.46]	[11.17]	[2.84]	[-23.89]	[-24.39]	[-24.34]	[-24.18]	[-25.00]	[-1.46]	[10.15]	[8.26]	[-1.47]	[-1.30]	[-1.54]	[-1.69]	[-2.20]
R-sqrd (%)	16.83	4.33	0.48	16.95	16.94	16.88	16.85	17.66	0.47	3.62	2.1	0.48	0.54	0.5	0.85	6.45
N	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079	7079

This table reports the relationship between Treasury volatility, the unemployment rate level and Macro Attention Index (MAI). The dependent variable is the daily unemployment MAI level in Panel A and monetary MAI level in Panel B. Urate is the contemporaneous unemployment rate level for the current month. UST10 Vol (UST2 Vol) is the 10-year (2-year) Treasury bond realized volatility estimated by exponentially weighted moving average (EWMA) model from daily yield change with 0.98 decay factor. FOMC[-i] equals 1 if it is the i-th trading day before the scheduled FOMC announcement. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags.

Table 5: Predicting the Pre-FOMC Yield Change

	UST10[-1]	UST2[-1]	FUST10[-1]	FUST2[-1]	TP10[-1]	TP2[-1]
Panel A: MAI Urate Level						
Const	0.04	0.04	0.21	-0.25	0.37	0.28
	[0.09]	[0.08]	[0.56]	[-0.40]	[1.26]	[1.37]
HMAI	-1.50**	-0.5	-2.41***	-0.9	-2.06***	-1.26***
	[-2.18]	[-0.68]	[-3.41]	[-1.11]	[-3.51]	[-3.50]
R-sqrd (%)	2.37	0.27	4.17	0.65	4.64	4.72
N	226	226	226	226	226	226
Panel B: Δ MAI Urate						
	UST10[-1]	UST2[-1]	FUST10[-1]	FUST2[-1]	TP10[-1]	TP2[-1]
Const	-0.65*	-0.18	-0.90**	-0.63*	-0.59*	-0.29
	[-1.96]	[-0.57]	[-2.18]	[-1.75]	[-1.82]	[-1.43]
ΔMAI Urate	-0.75**	-0.35	-1.17***	-0.85***	-0.92***	-0.77***
	[-2.47]	[-1.51]	[-3.24]	[-2.66]	[-3.22]	[-4.46]
R-sqrd (%)	2.39	0.54	4	2.34	3.72	7.11
N	226	226	226	226	226	226
Panel C: MAI Urate and MAI Monetary						
	UST10[-1]	UST2[-1]	FUST10[-1]	FUST2[-1]	TP10[-1]	TP2[-1]
Const	-0.68**	-0.22	-0.91**	-0.65*	-0.61**	-0.28
	[-2.06]	[-0.69]	[-2.31]	[-1.77]	[-1.97]	[-1.47]
MAI Urate	-0.96***	-0.08	-1.64***	-0.35	-1.36***	-0.66***
	[-2.87]	[-0.28]	[-3.72]	[-1.06]	[-3.64]	[-3.83]
MAI Monetary	0.04	0.17	-0.14	-0.26	-0.01	-0.34
	[0.13]	[0.59]	[-0.42]	[-0.76]	[-0.03]	[-1.23]
R-sqrd (%)	3.44	0.15	7.25	0.68	7.33	6.96
N	226	226	226	226	226	226
Panel D: FOMC Dissents						
	UST10[-1]	UST2[-1]	FUST10[-1]	FUST2[-1]	TP10[-1]	TP2[-1]
Const	-0.22	-0.06	-0.53	-0.27	-0.19	-0.08
	[-0.57]	[-0.15]	[-1.16]	[-0.59]	[-0.53]	[-0.33]
Dissent Ratio	-0.11**	-0.03	-0.1	-0.09***	-0.11	-0.06*
	[-2.21]	[-1.09]	[-1.22]	[-2.69]	[-1.48]	[-1.85]
R-sqrd (%)	2.29	0.21	1.36	1.32	2.23	1.95
N	226	226	226	226	226	226
Panel E: MAI Urate and FOMC Dissents						
	UST10[-1]	UST2[-1]	FUST10[-1]	FUST2[-1]	TP10[-1]	TP2[-1]
Const	-0.21	-0.06	-0.52	-0.27	-0.17	-0.07
	[-0.57]	[-0.15]	[-1.17]	[-0.59]	[-0.50]	[-0.30]
MAI Urate	-0.92***	-0.04	-1.64***	-0.36	-1.34***	-0.70***
	[-2.93]	[-0.14]	[-4.00]	[-1.08]	[-3.94]	[-4.25]
Dissent Ratio	-0.10**	-0.03	-0.09	-0.09***	-0.1	-0.06*
	[-2.22]	[-1.10]	[-1.20]	[-2.66]	[-1.48]	[-1.89]
R-sqrd (%)	5.5	0.22	8.3	1.7	9.24	7.18
N	226	226	226	226	226	226

Reported are the time-series regressions of pre-FOMC yield change on Macro Attention Index (MAI) about unemployment rate and monetary. MAI Urate (Monetary) is the unemployment (monetary) MAI level on day -3. HMAI equals to 1 if the MAI Urate is above its median value. ΔMAI Urate is the change of unemployment MAI from day -5 to day -3. Dissent Ratio is the ratio in percent of the FOMC dissenting votes over the total votes. UST10[-1] (UST2[-1]) is the daily 10-year (2-year) yield change from day -2 to day -1. Likewise for FUST and TP which represent one-year forward rate and term premium, respectively. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags.

Table 6: Predict Pre-FOMC Drift in Bond and Stock via Uncertainty Measures

Panel A: Dependent Variable = Pre-FOMC Changes in 10-Year Yield (basis points)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VIX	-0.27							-0.1
	[-0.69]							[-0.27]
MOVE		-0.46						
		[-1.56]						
MAI Urate			-0.95***					-0.90***
			[-2.83]					[-2.77]
ΔMAI Urate				-0.75**				
				[-2.47]				
MAI Monetary					-0.08			
					[-0.24]			
ΔMAI Monetary						-0.28		
						[-1.06]		
Dissent Ratio							-0.11**	-0.10**
							[-2.21]	[-2.25]
Const	-0.71**	-0.69**	-0.67**	-0.65*	-0.70**	-0.6	-0.22	-0.2
	[-2.12]	[-2.09]	[-2.10]	[-1.96]	[-1.99]	[-1.61]	[-0.57]	[-0.57]
R-sqrd (%)	0.3	0.95	3.43	2.39	0.03	0.57	2.29	5.53
N	226	226	226	226	226	226	226	226
Panel B: Dependent Variable = Pre-FOMC Returns in SPX (basis points)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VIX	24.62***							24.90***
	[4.70]							[4.57]
MOVE		16.84***						
		[3.08]						
MAI Urate			1.65					
			[0.26]					
ΔMAI Urate				-4.16				
				[-1.09]				
MAI Monetary					4.9			
					[1.32]			
ΔMAI Monetary						6.43**		7.02***
						[2.47]		[2.74]
Dissent Ratio							-0.35	
							[-0.47]	
Const	28.50***	27.81***	28.30***	28.68***	27.79***	25.85***	29.94***	25.76***
	[6.62]	[5.91]	[5.19]	[5.23]	[5.08]	[4.52]	[4.87]	[5.84]
R-sqrd (%)	14.99	7.43	0.06	0.43	0.65	1.73	0.14	17.05
N	226	226	226	226	226	226	226	226

The pre-FOMC change in 10-year yield is realized between the closes of day -2 to day -1, while the pre-FOMC return in SPX is realized between the close of day -1 to 5 min before the FOMC announcement. The option-implied VIX and MOVE indices are measured at the close of day -3 and standardized to zero mean and variance of one. MAI Urate is the unemployment MAI level on day -3, and ΔMAI Urate is its change from day -5 to day -3. Likewise for MAI monetary and its change. Dissent Ratio is the ratio in percent of the FOMC dissenting votes over the total votes. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. T-statistics are based on standard errors that are Newey-West (1987) adjusted with 4 lags, and are reported in brackets.

Table 7: Predicting Pre-FOMC SPX by Pre-FOMC UST

Dependent Variable = Pre-FOMC Returns in SPX (basis points)								
Panel A: Sorting by MAI Urate								
	High MAI FOMC Sample				**Low MAI FOMC Sample**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Const	25.12**	29.05***	29.97***	-47.31***	27.07***	27.07***	26.64***	-17.73
	[2.43]	[2.80]	[2.93]	[-3.22]	[4.39]	[4.40]	[4.61]	[-0.89]
UST10[-1]	-3.11**			-3.01***	0			0.13
	[-2.30]			[-2.67]	[-0.00]			[0.12]
UST2[-1]		-1.33				-0.09		
		[-0.77]				[-0.09]		
FF4[-1]			-0.41				-3.1	
			[-0.54]				[-1.33]	
VIX level				3.33***				2.44*
				[4.26]				[1.98]
R-sqrd (%)	4.04	0.4	0.07	21.88	0	0.01	5.2	9.91
N	113	113	113	113	113	113	113	113
Panel B: Sorting by FOMC Dissents								
	Dissent FOMC Sample				**Agree FOMC Sample**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Const	17.13**	21.63**	23.41**	-33.25	31.46***	31.58***	31.79***	-26.67**
	[2.14]	[2.44]	[2.57]	[-1.27]	[4.81]	[4.81]	[4.83]	[-2.13]
UST10[-1]	-5.00**			-4.02**	-0.04			-0.12
	[-2.50]			[-2.60]	[-0.03]			[-0.11]
UST2[-1]		-5.09**				0.68		
		[-2.29]				[0.83]		
FF4[-1]			-2.89				-0.67	
			[-0.66]				[-0.78]	
VIX level				2.66*				2.84***
				[1.71]				[4.15]
R-sqrd (%)	11.8	6.98	2.97	19.46	0	0.34	0.25	16.66
N	85	85	85	85	141	141	141	141

The high MAI Urate sample contains FOMC announcements with above median MAI Urate three days before the announcements and the low MAI Urate sample captures the rest. The pre-FOMC SPX is the stock return from 4 pm on the pre-FOMC day to five minutes before the release time. UST10[-1] is the daily 10-year yield change from day -2 to day -1 before the FOMC. Likewise for other maturity yield and other FOMC windows. FF4 is the yield change of 3-month-ahead federal funds future contract. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags.

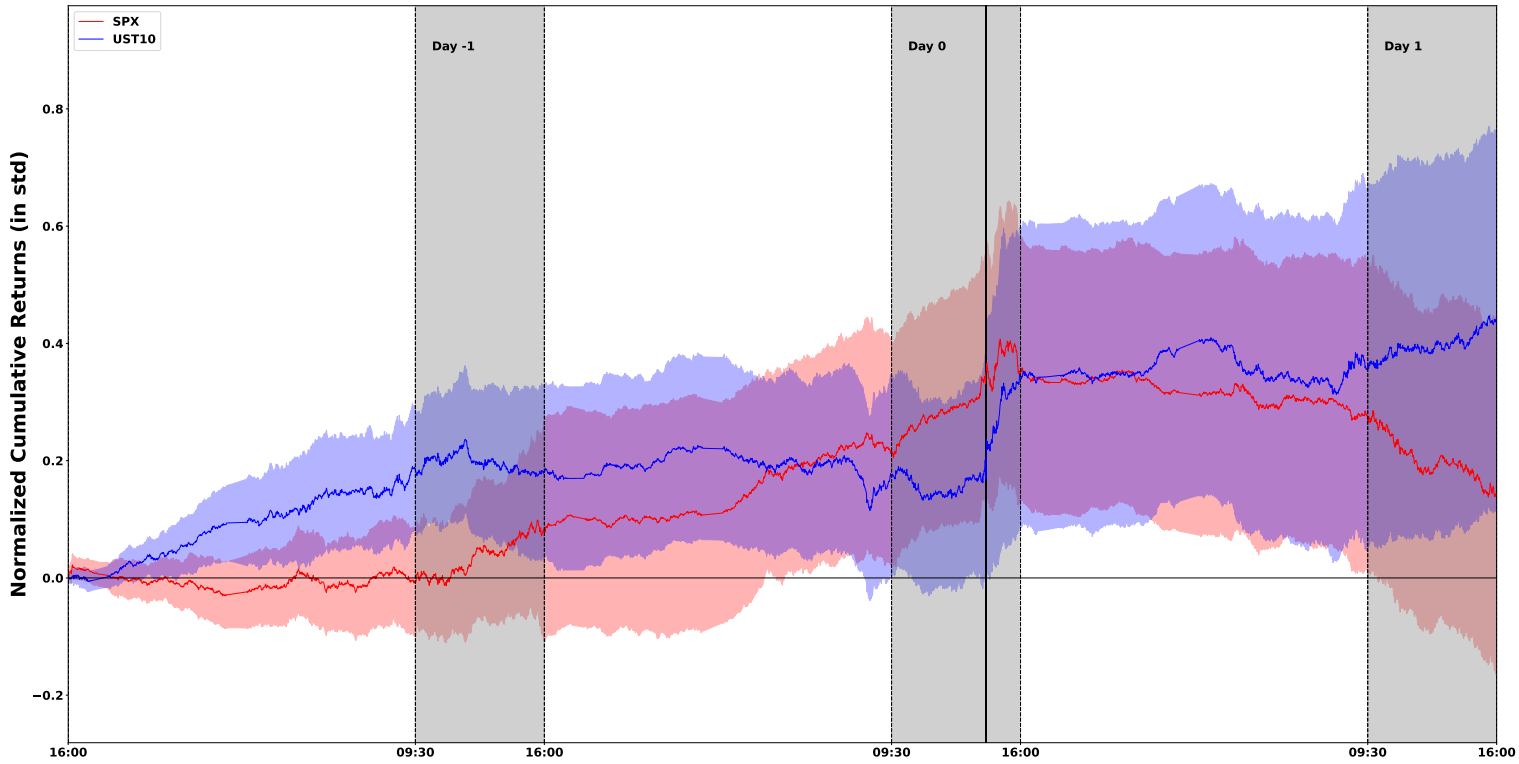


Figure 1: Cumulative returns on the UST future and the S&P500 index Normalized by STD. The figure shows the average cumulative bond and stock return on three-day windows normalized by their respective daily standard deviation. The blue line is the return of 10-year treasury future and red line is for S&P500 index. The shaded areas are pointwise 95% confidence bands around the average returns. The sample period is from January 2004 to June 2022. The solid vertical line is set at 2:15 pm ET.

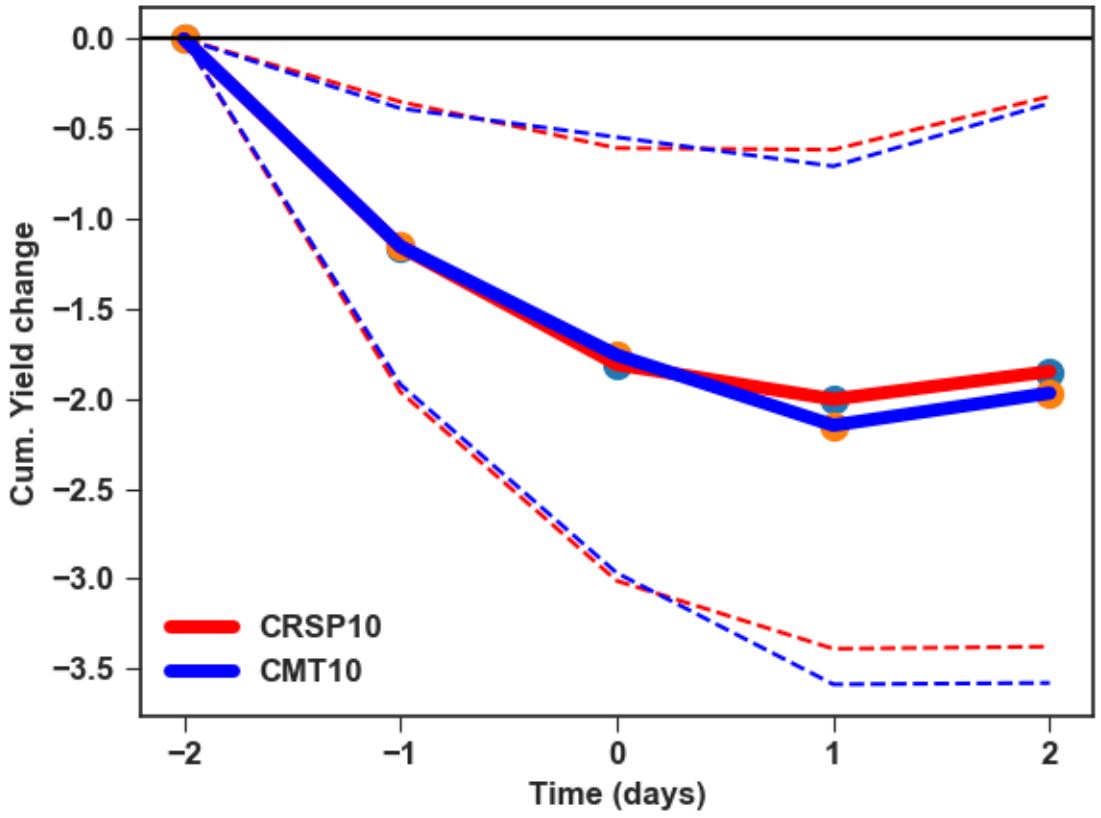


Figure 2: Daily Yeild Change around FOMC. The figure shows the average cumulative 10-year treasury yield change on three-day windows. Blue line is the 10-year constant maturity yield from Federal Reserve Board website and red line is the actual transaction yield of 10-year on-the-run Treasury from CRSP. The dash line are pointwise 95% confidence bands around the average yield change. The sample period is from January 1980 to December 2022.

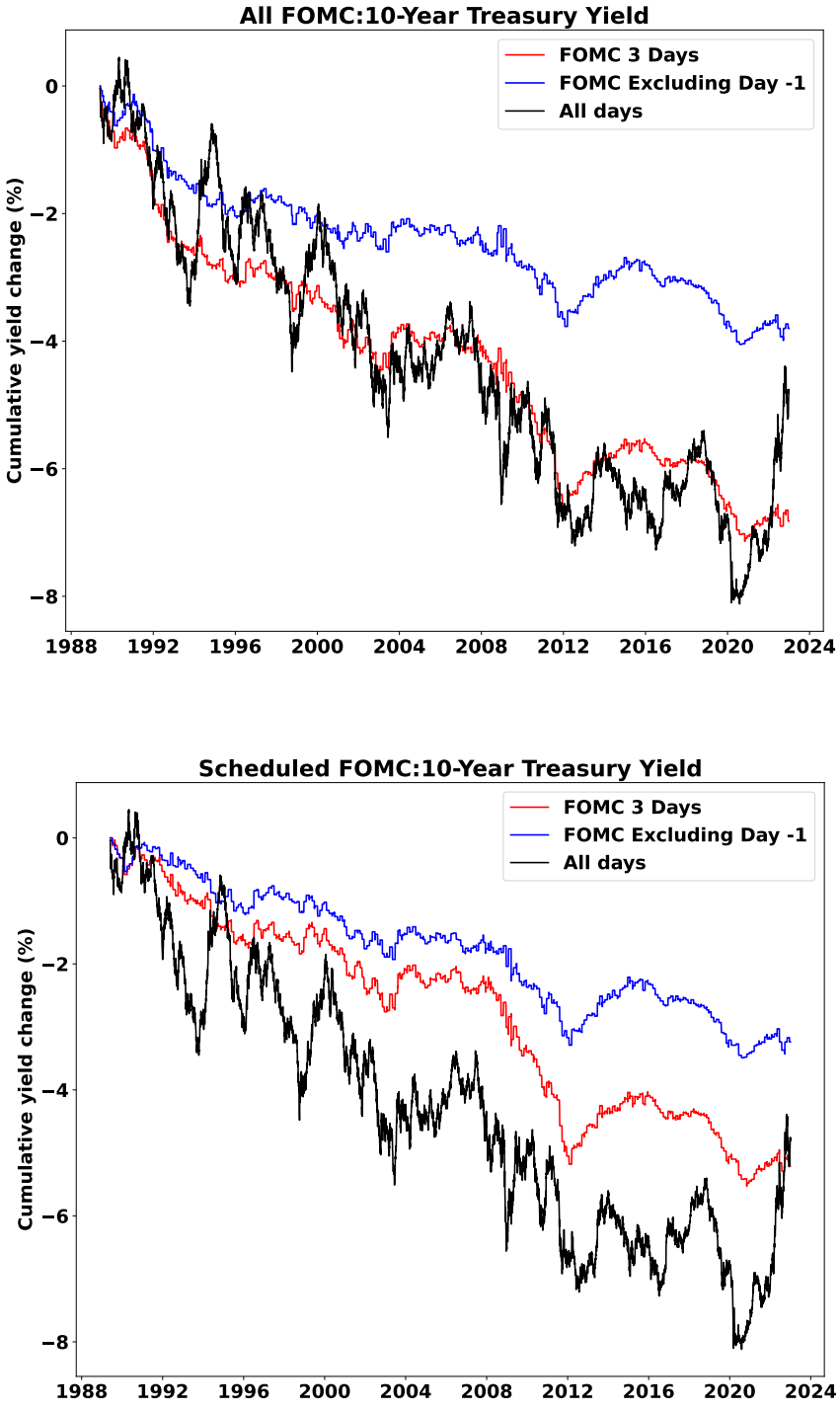


Figure 3: The Decline in Long-Term Interest Rates around FOMC Meetings. The figure documents that a 3-day window around FOMC meetings captures the secular decline of the 10-year U.S. Treasury yield. Panel A contains scheduled and unscheduled FOMC meetings while Panel B only includes scheduled FOMC meetings. This 3-day window includes, for every FOMC meeting, the day before the meeting, the FOMC day and the day after the meeting. The black gray line shows the actual evolution of the 10-year U.S. Treasury yield. The red line in the plot is the hypothetical time series of cumulating yield changes of 10-year U.S. Treasury bond over the 3-day FOMC window. The blue line is for the 2-day window excluding the pre-FOMC window. The sample period is from June 1989 to December 2022.

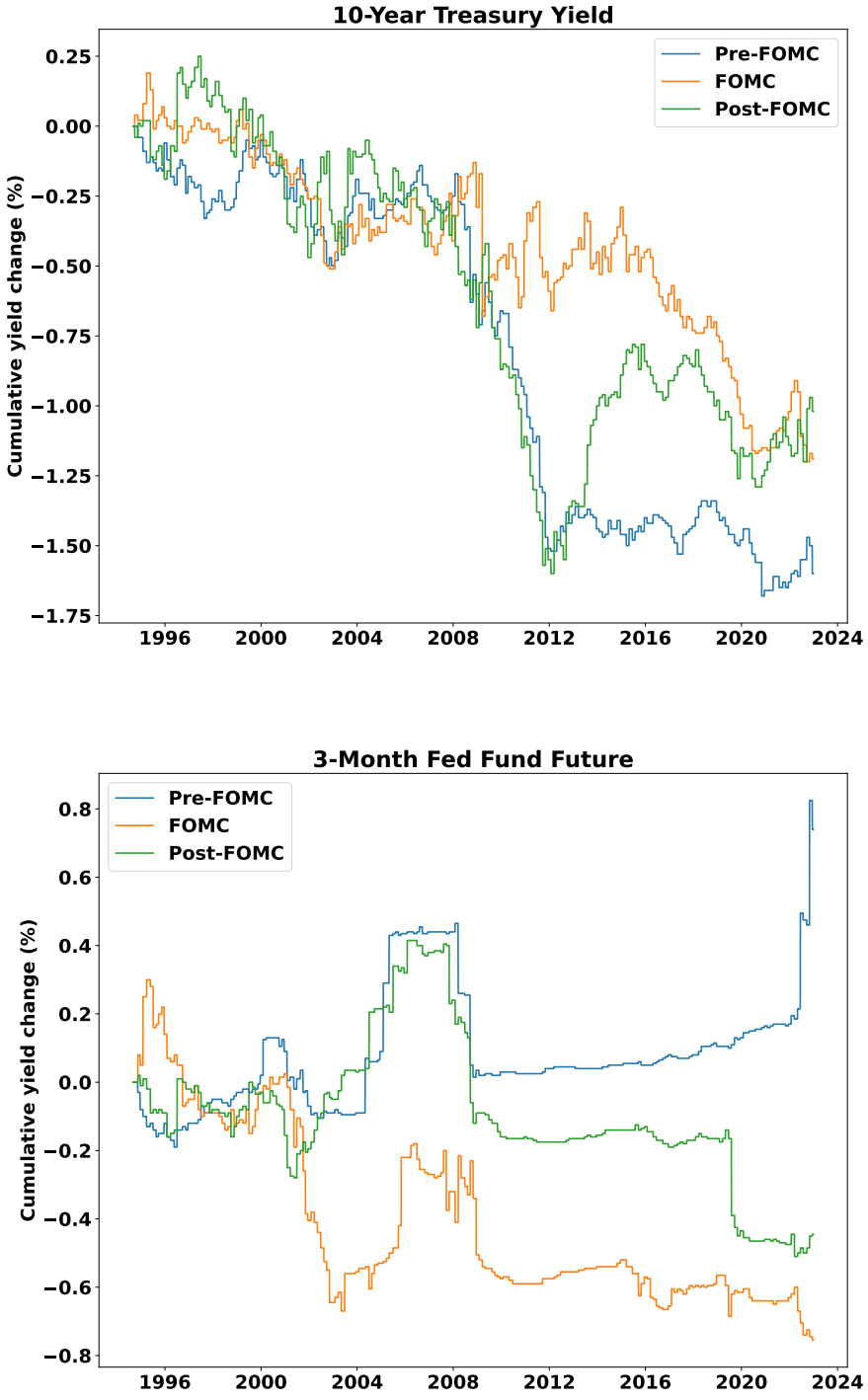


Figure 4: The Decline in Long- and Short-Term Interest Rates around FOMC Meetings. The figure separates the 3-day window around scheduled FOMC meetings into pre-FOMC, FOMC and post-FOMC windows with different colors. Panel A is for the 10-year U.S. Treasury yield while Panel B is for the 3-month ahead Fed Fund future yield. The analysis includes scheduled FOMC meetings from September 1994 to December 2022.

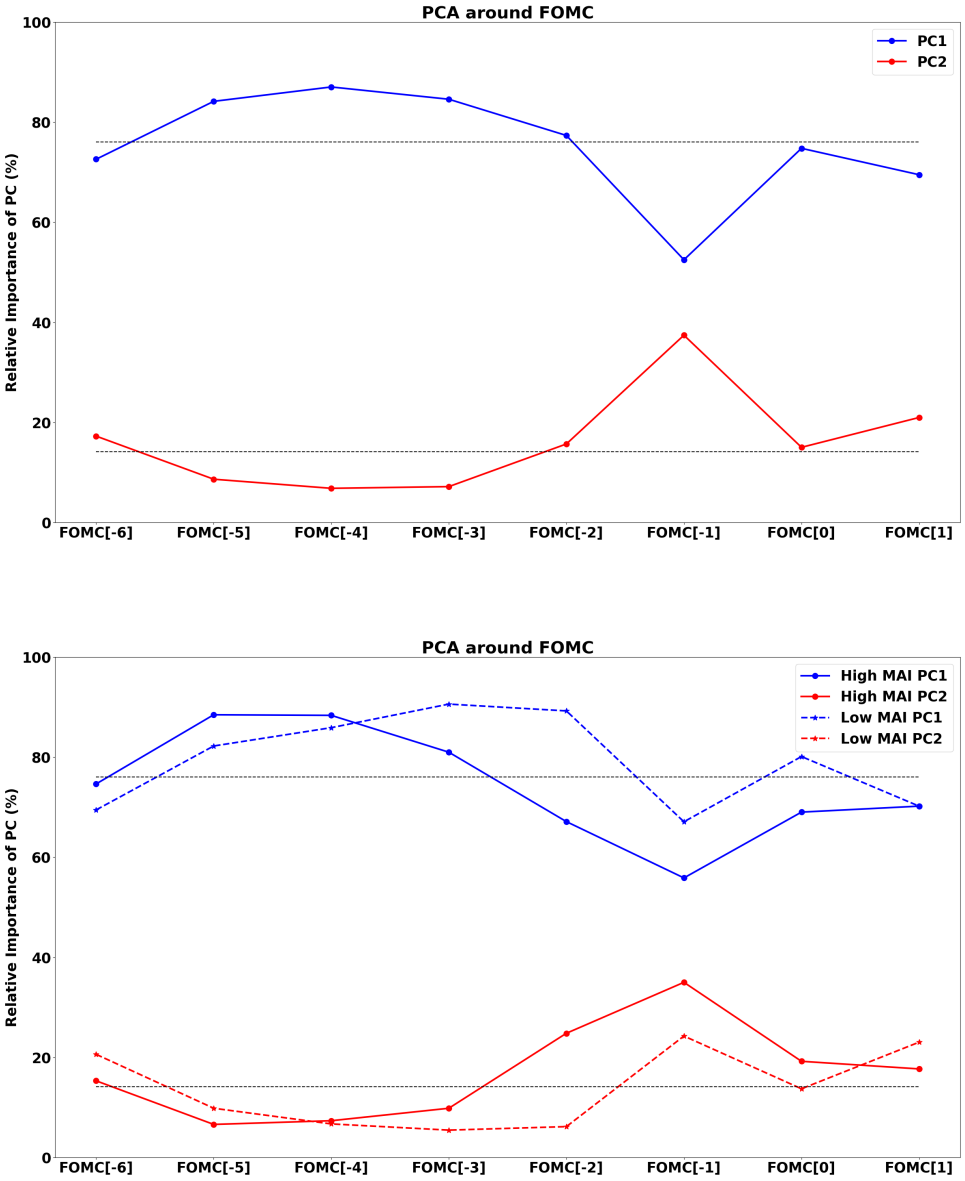


Figure 5: Principal Component Analysis on Treasury Yield. This figure shows principal component analysis on the covariance matrix of yield change of 2-year, 5-year, 10-year Treasury and 1-month-ahead, 3-month-ahead Fed funds future contract. Reported in Panel A are the relative importance of PC1 and PC2 around FOMC announcements while in Panel B are sorted by unemployment MAI three days before the FOMC announcements, with "High" containing the above median FOMC meetings and "Low" containing the rest. The horizontal dash line is the principal component for all trading days. The sample period is from September 1994 to December 2022.

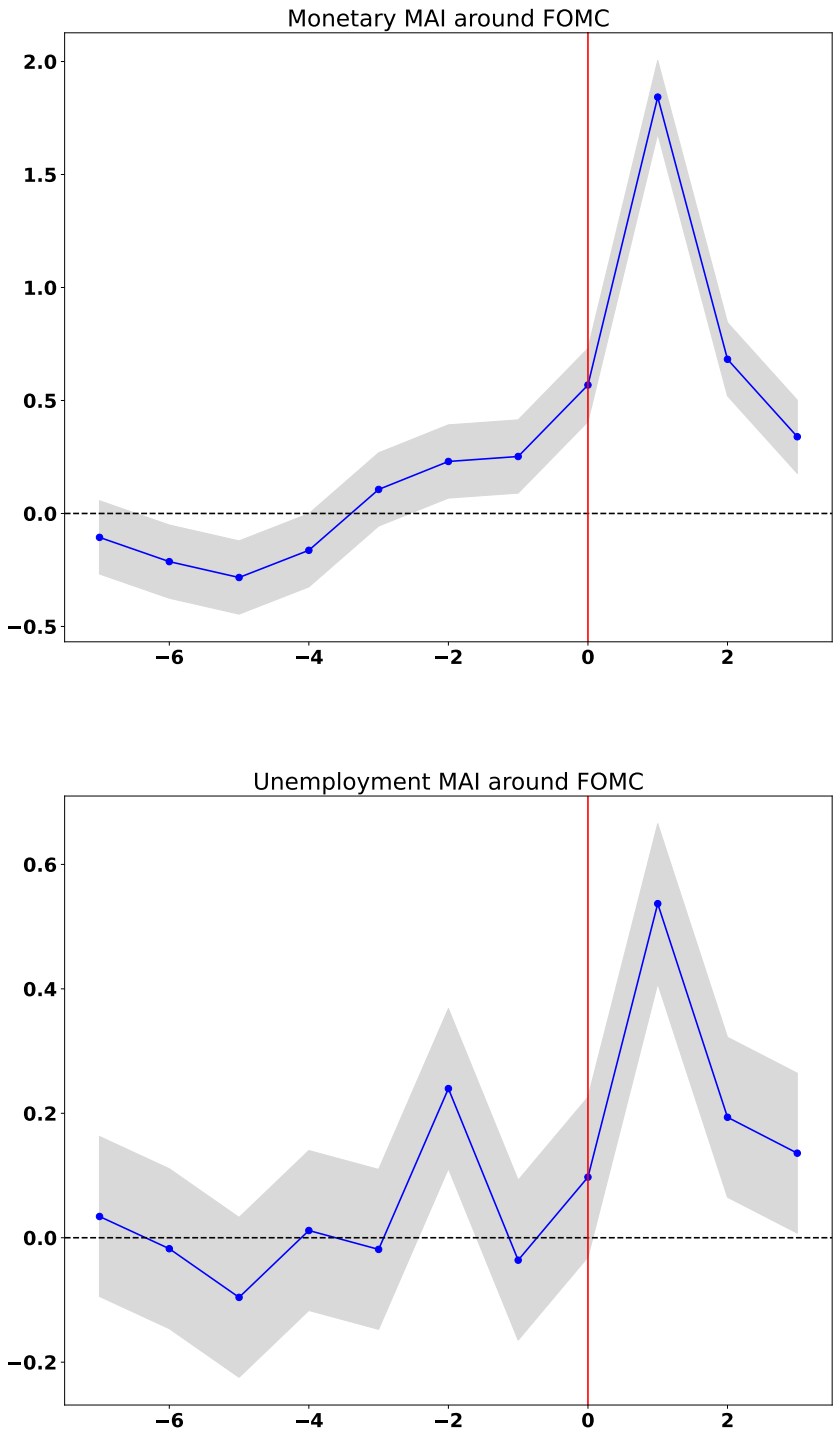


Figure 6: Macroeconomic attention around FOMC. This figure shows the lag and forward estimated coefficients β_δ from the following regression: $MAI_{f,t} = \alpha + \sum_{\delta=-7}^{\delta=3} \beta_\delta FOMC_{t+\delta} + \epsilon_t$, where $MAI_{f,t}$ is the macroeconomic attention index for attention topic about monetary or unemployment. The variables $FOMC_{t+\delta}$ equal one if there is an FOMC meeting on day $t+\delta$ and zero otherwise. The shaded area corresponds to the 95% confidence interval around the estimated coefficients. The x-axis corresponds to the number of days since the announcement. The sample period is from September 1994 to December 2022.

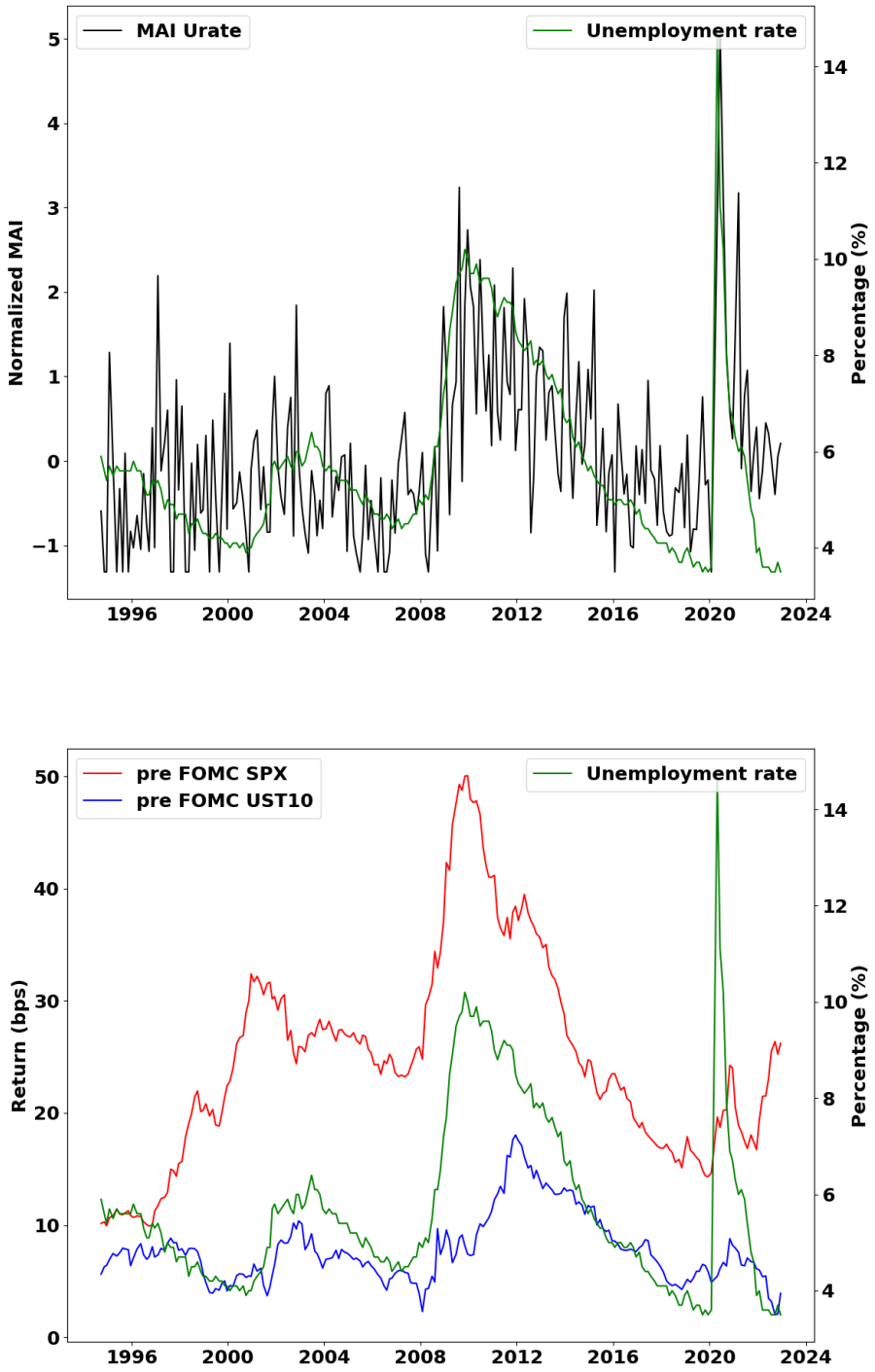


Figure 7: Time-series of MAI, Pre-FOMC Drift and Unemployment Rate. Panel A plots the unemployment MAI three days before the FOMC announcements in black and the next publicly available unemployment rate level after the FOMC meetings in green. Panel B plots the pre-FOMC drift together with unemployment rate. The red line is the time-series of pre-FOMC SPX smoothed by the EWMA method with 0.98 decay factor and the blue line is for pre-FOMC UST10. The green line is the contemporaneous unemployment rate level. The sample period is from September 1994 to December 2022.

A Additional Summary Statistics

Table A1: The Distribution of MAI

	Mean	Std	Skew	Kurt		Mean	Std	Skew	Kurt
MAI Urate[-7]	0.002	1.01	1.17	1.90	MAI Monetary[-7]	-0.16	0.84	0.74	0.91
MAI Urate[-6]	-0.05	0.93	0.71	0.03	MAI Monetary[-6]	-0.25	0.76	0.45	-0.25
MAI Urate[-5]	-0.13	0.93	1.16	1.60	MAI Monetary[-5]	-0.30	0.95	**3.66**	**29.38**
MAI Urate[-4]	-0.02	0.96	1.11	1.38	MAI Monetary[-4]	-0.21	0.82	1.12	2.86
MAI Urate[-3]	-0.05	0.98	**1.23**	**2.43**	MAI Monetary[-3]	0.004	0.84	0.59	0.18
MAI Urate[-2]	**0.21**	0.93	0.77	0.84	MAI Monetary[-2]	0.10	0.93	0.78	1.07
MAI Urate[-1]	-0.07	0.97	1.03	1.06	MAI Monetary[-1]	0.12	0.96	0.55	0.15
MAI Urate[0]	0.07	1.01	0.84	0.58	MAI Monetary[0]	**0.37**	1.07	0.79	0.82
MAI Urate[1]	**0.52**	1.14	0.93	2.07	MAI Monetary[1]	**1.37**	1.36	0.65	0.63

This table reports the distribution of unemployment MAI and monetary MAI around FOMC announcement. MAI Urate[-i] (MAI Monetary[-i]) is the unemployment (monetary) MAI i-th trading day before the scheduled FOMC announcement. The sample period is from September 1994 to December 2022.

Table A2: The Robustness Check

Panel A: Monetary Policy Cycle							
	UST10[-1]	FUST10[-1]	TP10[-1]	UST2[-1]	FUST2[-1]	TP2[-1]	FF4[-1]
Const	-0.38	-0.82*	-0.56	0.12	-0.31	-0.36	1.18*
	[-1.03]	[-1.69]	[-1.58]	[0.41]	[-0.77]	[-0.96]	[1.70]
Dummy Easing	-0.51	-0.26	-0.16	-0.51	-0.6	0.02	-1.35*
	[-0.83]	[-0.34]	[-0.27]	[-0.96]	[-0.90]	[0.05]	[-1.82]
R2	0.25	0.05	0.03	0.27	0.27	0	2.14
N	226	226	226	226	226	226	226
Panel B: Excluding 2008-2009							
	UST10[-1]	FUST10[-1]	TP10[-1]	UST2[-1]	FUST2[-1]	TP2[-1]	FF4[-1]
Mean	-0.57	-0.94	-0.76	0.01	-0.47	-0.38	0.53
	[-1.90]	[-2.48]	[-2.44]	[0.04]	[-1.53]	[-1.93]	[1.89]
N	210	210	210	210	210	210	210
	UST10[-1]	FUST10[-1]	TP10[-1]	UST2[-1]	FUST2[-1]	TP2[-1]	FF4[-1]
Const	-0.67**	-1.08***	-0.87***	-0.02	-0.54*	-0.44**	0.54*
	[-2.18]	[-2.60]	[-2.65]	[-0.10]	[-1.97]	[-2.06]	[1.78]
MAI Urate	-1.17***	-1.56***	-1.27***	-0.36**	-0.76***	-0.66***	0.08
	[-4.00]	[-3.73]	[-3.50]	[-2.09]	[-3.56]	[-3.84]	[0.50]
R2	6.66	7.28	7.22	0.96	2.61	4.9	0.03
N	210	210	210	210	210	210	210
	UST10[-1]	FUST10[-1]	TP10[-1]	UST2[-1]	FUST2[-1]	TP2[-1]	FF4[-1]
Const	-0.52	-0.87**	-0.70**	0.03	-0.41	-0.32	0.51*
	[-1.61]	[-2.04]	[-2.10]	[0.15]	[-1.50]	[-1.55]	[1.74]
ΔMAI Urate	-0.62**	-0.98***	-0.80***	-0.3	-0.77***	-0.70***	0.25
	[-2.32]	[-2.94]	[-2.84]	[-1.52]	[-2.69]	[-3.98]	[1.63]
R2	2.02	3.08	3.07	0.7	2.89	6.04	0.36
N	210	210	210	210	210	210	210

This table reports the results of explaining the pre-FOMC UST by dummy variables for periods of monetary policy easing in Panel A. Tightening cycle is defined as the first rate hike until the Fed cuts the interest rate. Easing cycle is the rest and Dummy Easing equals 1 if the FOMC meetings fall into easing cycle. We also show the robustness check of the main result by excluding the sample period from 2008 to 2009.

Table A3: Predicting Pre-FOMC SPX

Dependent Variable = Pre-FOMC Returns in SPX (basis points)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
const	27.22***	28.27***	26.37***	28.10***	26.70***	27.35***	-30.09***	-30.77***
	[4.95]	[5.07]	[4.81]	[5.03]	[4.80]	[4.94]	[-2.94]	[-3.05]
UST10[-1]	-1.61							
	[-1.62]							
UST2[-1]		-0.46						
		[-0.42]						
FUST10[-1]			-2.01**				-1.49**	
			[-2.36]				[-2.01]	
FUST2[-1]				-0.37				
				[-0.48]				
TP10[-1]					-2.50**			-2.09**
					[-2.32]			[-2.08]
TP2[-1]						-2.89		
						[-1.53]		
VIX level							2.84***	2.88***
							[4.68]	[4.80]
R2	1.5	0.12	3.41	0.1	3.47	1.69	16.85	17.41
N	226	226	226	226	226	226	226	226

This table reports the results of explaining the pre-FOMC UST by pre-FOMC UST. The pre-FOMC SPX is the stock return from 4 pm on the pre-FOMC day to five minutes before the release time. FUST10 and FUST2 are the daily one-year forward rate beginning at 9- and 1- year. TP10 and TP2 are 10- and 2-year term premium. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags. The sample period is from September 1994 to December 2022.

B Predicting Post-FOMC UST: Information Channel

There is a co-movement between the pre-FOMC UST10 with the post-FOMC UST10 in Panel A of Figure 4 where the post-FOMC yield follows the pre-FOMC yield closely except the period from 2012 to 2016. We examine this predictability in Table A4 by regressing the post-FOMC yield on pre-FOMC yield. In the full sample, the pre-FOMC yield change one day before the FOMC announcements can predict the post-FOMC yield one day after across the yield curve. A one-basis-point increase in UST10[-1] will result in approximately 0.28 basis points increase in UST10[1] and 0.24 basis points increase in UST2[1]. Not only the pre-FOMC long-term yield change has the predictability, but also the short-term yield change with larger coefficients. A one-basis-point increase in UST2[-1] will result in approximately 0.32 basis points increase in UST10[1] and 0.43 basis points increase in UST2[1].

We show evidence of risk premium channel when the unemployment MAI is high three days before the FOMC announcements that a one-basis-point decrease in the UST10[-1] leads to a 3.11 basis point increase in the pre-FOMC drift in the stock market. Next, we investigate more about the pre-FOMC UST when the unemployment MAI is low. Similarly, we categorized FOMC meetings into two groups in Table A4: a low-MAI group, including meetings with below-median unemployment MAI three days before the FOMC announcements, and a high-MAI group comprising the rest. The predictability of pre-FOMC yield change such as UST10[-1] on post-FOMC UST is evident only when the unemployment MAI three days before the FOMC meetings is low. In the low-MAI group, a one-basis-point increase in the UST10[-1] leads to a 0.38 (0.53) basis points increase in the UST10[1] (UST2[1]) with a R square value around 6% (14%). In contrast, the point estimate indicates that the 10-year Treasury yield change, in the univariate regression setting, is not significant at predicting the post-FOMC UST in the high-MAI group.

In contrast to the risk premium channel under high unemployment MAI, we instead find the information channel when the unemployment MAI is low where the pre-FOMC UST can actually predict post-FOMC UST. What's more interesting is that the information channel is across the whole yield curve and not limited to the long-term yield unlike the risk premium channel. It further strengthens the disconnection we documented in the paper the day before the FOMC announcements. When the unemployment MAI is high, the long-term yield is acting different from the short-term yield through the risk premium channel and is predictive for the pre-FOMC SPX. When the unemployment MAI is low, the long-term yield is aligned with the short-term yield through the information channel and is predictive for the post-FOMC UST.

The similar pattern is found when we split the sample according to whether the FOMC contains any dissenting vote and repeat the same regression setting in Table A5. The pre-

dictability of pre-FOMC UST on post-FOMC UST shows up when all FOMC members vote the same. In the non dissenting FOMC sample, a one-basis-point increase in the 10-year constant maturity yield one day before the FOMC announcements leads to a 0.39 (0.29) basis point increase in the UST10[1] (UST2[1]) with a R square value around 8.19% (6.64%). However, the pre-FOMC UST change can't explain the post-FOMC UST in the dissenting FOMC sample.

Table A4: Predicting Post-FOMC UST: Sort by MAI Urate

	Full Sample				Low MAI				High MAI			
	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]
const	-0.25	-0.08	0.16	-0.2	0.42	0.31	0.16	-0.06	-1.12*	-0.79	-0.26	-0.50**
	[-0.56]	[-0.17]	[0.42]	[-0.86]	[0.76]	[0.53]	[0.30]	[-0.15]	[-1.78]	[-1.35]	[-0.61]	[-2.12]
UST10[-1]	0.28***	0.24**	0.24**	0.09	0.38***	0.45***	0.53***	0.2	0.14	0.03	-0.04	-0.02
	[3.10]	[2.58]	[2.02]	[1.20]	[2.97]	[3.60]	[2.97]	[1.32]	[1.29]	[0.24]	[-0.33]	[-0.26]
R2	3.74	2.99	3.93	1.74	6.36	8.46	13.92	4.85	1.06	0.04	0.13	0.16
N	226	226	226	226	113	113	113	113	113	113	113	113
	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]
const	-0.39	-0.18	0.08	-0.22	0.42	0.31	0.16	-0.06	-1.18*	-0.71	-0.15	-0.46**
	[-0.86]	[-0.39]	[0.20]	[-0.97]	[0.74]	[0.52]	[0.31]	[-0.17]	[-1.85]	[-1.20]	[-0.35]	[-2.07]
UST2[-1]	0.32***	0.36***	0.43***	0.19**	0.30***	0.39***	0.55***	0.26***	0.34*	0.27	0.13	0.03
	[3.58]	[4.76]	[4.62]	[2.14]	[3.08]	[4.57]	[8.44]	[2.78]	[1.79]	[1.59]	[0.74]	[0.28]
R2	4.56	6.21	11.77	7.22	5.57	9.12	20.89	11.43	3.09	2.31	0.86	0.24
N	226	226	226	226	113	113	113	113	113	113	113	113

The high MAI Urate sample contains FOMC announcements with above median MAI Urate three days before the announcements and the low MAI Urate sample captures the rest. The pre-FOMC SPX is the stock return from 4 pm on the pre-FOMC day to five minutes before the release time. UST10[-2,-1] is the daily 10-year yield change from day -2 to day -1 before the FOMC. Likewise for other maturity yield and other FOMC windows. FF4 is the yield change of 3-month-ahead federal funds future contract. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags.

Table A5: Predicting Post-FOMC UST

Panel A: Sorting by FOMC Dissents								
	Agree FOMC				**Dissent FOMC**			
	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]
const	-0.45	-0.32	0.26	0.04	-0.11	0.13	-0.11	-0.71
	[-0.88]	[-0.59]	[0.56]	[0.15]	[-0.13]	[0.18]	[-0.18]	[-1.41]
UST10[-1]	0.39***	0.36***	0.29**	0.15	0.07	0.02	0.12	-0.04
	[3.23]	[3.38]	[2.14]	[1.50]	[0.40]	[0.15]	[0.85]	[-0.65]
R2	8.19	7.25	6.64	5.34	0.18	0.02	0.85	0.28
N	141	141	141	141	85	85	85	85
	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]
const	-0.57	-0.42	0.2	0.01	-0.07	0.24	-0.1	-0.67
	[-1.08]	[-0.75]	[0.43]	[0.05]	[-0.09]	[0.33]	[-0.17]	[-1.42]
UST2[-1]	0.31***	0.34***	0.41***	0.25***	0.38	0.44	0.50*	-0.02
	[2.82]	[3.92]	[4.19]	[2.90]	[1.47]	[1.59]	[1.96]	[-0.19]
R2	5.61	7.39	14.38	15.93	3.16	4.68	8.14	0.05
N	141	141	141	141	85	85	85	85
Panel B: Sorting by Pre-FOMC UST10								
	UST10[-1]>0				**UST10[-1]<=0**			
	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]
const	-2.55*	-2.26*	-1.18	-0.39	-0.89	-0.49	0.35	0.27
	[-1.91]	[-1.81]	[-1.20]	[-0.60]	[-1.31]	[-0.71]	[0.42]	[0.43]
UST10[-1]	0.92***	0.83***	0.54*	0.08	0.1	0.11	0.24	0.18
	[2.96]	[2.68]	[1.95]	[0.52]	[0.87]	[0.77]	[0.98]	[1.03]
R2	8.82	7.39	4.3	0.35	0.37	0.46	3.1	3.77
N	91	91	91	91	135	135	135	135
	UST10[1]	UST5[1]	UST2[1]	FF4[1]	UST10[1]	UST5[1]	UST2[1]	FF4[1]
const	-0.65	-0.78	-0.6	-0.1	-0.83	-0.3	0.31	0.15
	[-0.57]	[-0.73]	[-0.82]	[-0.24]	[-1.44]	[-0.57]	[0.73]	[0.47]
UST2[-1]	0.6	0.63*	0.57*	0	0.22***	0.30***	0.43***	0.27***
	[1.60]	[1.69]	[1.98]	[-0.03]	[3.49]	[5.85]	[3.84]	[2.98]
R2	4.31	4.98	5.7	0	3.06	6.23	16.91	15.17
N	91	91	91	91	135	135	135	135

The FOMC Dissent Sample contains FOMC announcements with dissenting vote against action. UST10[-1] is the daily 10-year yield change from day -2 to day -1 before the FOMC. Likewise for other maturity yield and other FOMC windows. The sample period is from September 1994 to December 2022. ***Significant at 1%, **significant at 5%, *significant at 10%. Reported in the squared brackets are the respective t-statistics, computed using standard errors that are Newey-West (1987) adjusted with 4 lags.