Monetary Trends Without Stars*

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Abstract

We document that monetary policy announcements can induce secular variations in interest rates without the "long-run Fed guidance" channel emphasized by Hillenbrand (2025). During the announcement windows of the Fed and three other foreign central banks' monetary policies, China's Treasury yields exhibit secular trends that deviate substantially from the actual interest rate trend in China, allowing us to distinguish monetary policy from the r^* channel. Moreover, the trends closely track those in the announcement countries, suggesting the possibility of global monetary trends. We discuss challenges confronting standard models in explaining these facts and propose an explanation based on rational inattention.

Keywords: Monetary policy, global financial cycle, yield curve.
JEL Codes: E43, E52, F42

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1 Introduction

Recent studies demonstrate that U.S. monetary policy announcement windows account for a significant share of global interest rate trends. For example, Hillenbrand (2025) documents that the secular decline in the U.S. 10-year yield since the late 1980s occurred almost entirely during the three-day windows around FOMC announcements, and Hofmann et al. (2025) show that the same event windows can also explain over 70% of the secular interest rate trends in G10 countries. An open question, however, is whether the observed interest rate dynamics during FOMC windows reflect pure monetary policy shocks or the latent natural rate r^* revealed by the policy decisions? This challenge arises from the close alignment between long-run interest rate trends and FOMC window dynamics in advanced economies, coupled with the fact that monetary policy inherently responds to macroeconomic fundamentals. Indeed, Hillenbrand (2025) highlights the r^* channel as a potential explanation for the downward FOMC trend, labeling it as "long-run Fed guidance". In this paper, we present a case where a country's yield curve responses to monetary policy announcements are unlikely to be related to the r^* channel, yet highly resemble the patterns documented by Hillenbrand (2025) and Hofmann et al. (2025).

Figure 1 illustrates our main findings and the identification strategy. We sum up the daily yield changes in the U.S. and China over the three days surrounding FOMC announcements. Both yields are domestic currency nominal zero-coupon yields. The panel "USD 10Y" replicates Figure 1 of Hillenbrand (2025): the FOMC windows can explain almost the entire secular decline in the U.S. 10-year yield over the past three decades. We find that China's 10-year yield has also declined persistently during the FOMC windows over the past two decades.[1] Moreover, the yields in China and the U.S. are highly correlated during the FOMC windows. In contrast, the yield dynamics outside the FOMC windows are starkly different. The U.S. yield exhibits a flat trend outside FOMC windows, making the FOMC series resemble the actual long-run interest rate trend.[2] The Chinese yield increases persistently outside FOMC windows, making the actual long-run trend flat and departing from the FOMC series. Such a divergence suggests that the FOMC series in China is unlikely to be driven by the Chinese natural rate $r^*_{CN,t}$ or the U.S. natural rate $r^*_{US,t}$ revealed by the

[1] The Chinese sample is shorter because daily yield curve data only became available from March 1, 2006.
[2] Hofmann et al. (2025) document similar patterns for G10 countries during FOMC windows.

FOMC announcements, but has nonetheless constantly followed the yield decline in the U.S. during FOMC windows over the past two decades. We further show that macroeconomic data releases fail to generate persistent declines in China's interest rates. Therefore, the "long-run Fed guidance" channel is unlikely to explain the effects of U.S. monetary policy announcements on China's interest rates. The similarity in yield dynamics in China and the U.S. during the FOMC windows suggests the possibility that U.S. monetary policy shocks alone can explain the secular yield declines around the globe.

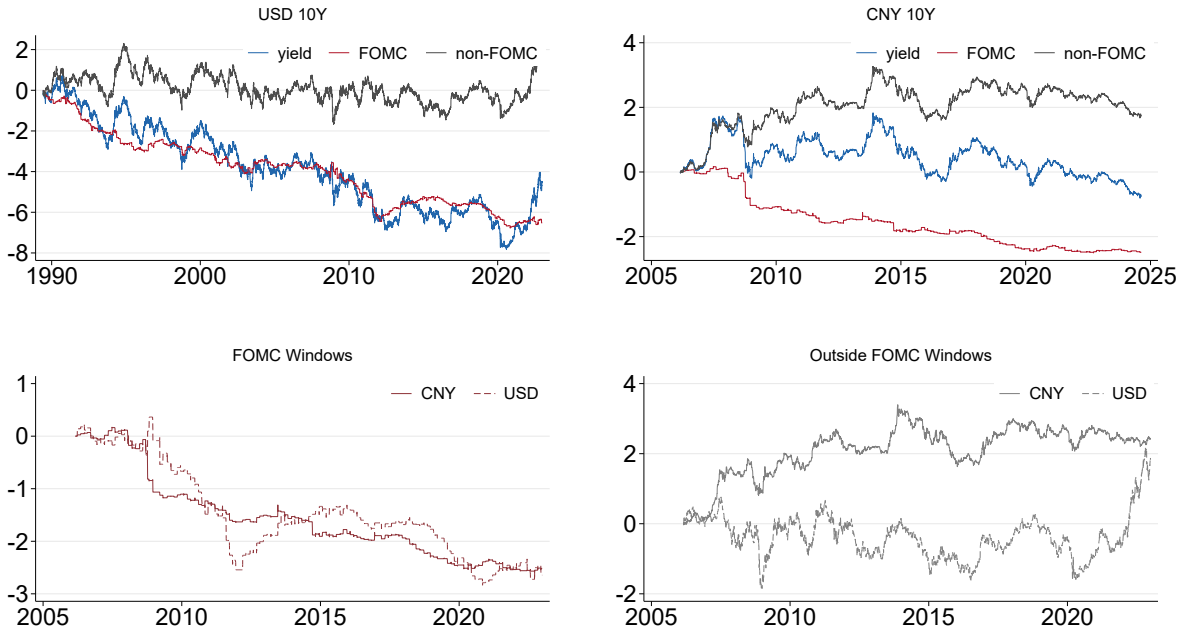


Figure 1: Cumulative effects of FOMC announcements on U.S. and Chinese 10-year yields.

Notes. In the top panels, the "yield" series is the actual yield relative to its initial value, the "FOMC" series is the sum of daily yield changes during three-day windows around FOMC announcements, and "non-FOMC" is the sum over the other days. The "USD 10Y" panel replicates Hillenbrand (2025), and the "CNY 10Y" panel does the same to Chinese yields. In the bottom panels, "CNY" and "USD" denote the sums of daily yield changes in China and the U.S. over the respective event windows.

China's unique role in isolating the monetary trend from r^* is illustrated in Figure A1. The yields in G10 countries, non-G10 developed economies, and emerging market economies (excluding China) have all declined persistently during FOMC windows over the past three decades. Moreover, the FOMC dynamics highly resemble the downward trends of actual

yields in those countries. This pattern is consistent with the fact that financial hub countries' monetary policies significantly affect global asset prices (e.g., Gerko and Rey (2017), Gilchrist et al. (2019), Kearns et al. (2023), Hofmann et al. (2025)). On the other hand, it is challenging to distinguish the monetary trends from the natural rates for nearly all countries.

China's Treasury yields also exhibit "Hillenbrand-type" cumulative responses to monetary policy announcements from a group of other globally important central banks, including the Bank of Japan (BOJ), the European Central Bank (ECB), and the Bank of England (BOE), all departing from the actual long-run trends in China. These persistent cumulative responses are observed across all segments of the yield curve. Given that China maintains tight capital controls and a domestically oriented monetary policy, it is intriguing that its interest rates are significantly influenced by foreign monetary policy announcements.[3] Again, it's hard to argue that the Chinese natural rate $r^*_{CN,t}$ is revealed by these announcements, so the cumulative responses are likely to be purely monetary. We summarize our findings into two puzzles.

1. **Response puzzle.** China's Treasury yields changed constantly with monotonic trends during foreign monetary policy announcement windows over the past two decades. These trends diverge from the actual interest rate trends in China.

2. **Comovement puzzle.** China's Treasury yields are synchronized with the yields in the announcement countries almost one-to-one during foreign monetary policy announcements, with a stronger correlation than that between many developed open economies and the announcement country. However, such synchronization disappears outside monetary policy announcement windows. The dichotomy is a unique feature of China's interest rates, while the yields in advanced economies are highly correlated at all times.

We adopt a high-frequency approach similar to Kuttner (2001), Bernanke and Kuttner (2005), Gürkaynak et al. (2005), Hanson and Stein (2015), Nakamura and Steinsson (2018), Albagli et al. (2019), Bu et al. (2021), and Bauer and Swanson (2023). Instead of regressing

[3]China receives a normalized Chinn-Ito index of 0.16 (Chinn and Ito (2006)), lower than 75% of other countries in the Chinn-Ito dataset, indicating limited capital account openness. The People's Bank of China (PBoC) governors emphasize that China's monetary policy focuses on domestic issues, and its interest rates do not follow those of other countries.

high-frequency yield changes on monetary policy shocks, we accumulate daily changes in China's Treasury yields over three-day windows surrounding foreign central banks' monetary policy announcements. Another key difference from the literature is that most papers only study what happens *during* the monetary policy announcement windows, but we also emphasize the yield dynamics *outside* the windows.

The contrast between the windows and non-windows is the key to differentiating from the r^* channel, and this identification strategy is our contribution to the literature. For instance, suppose FOMC announcements signal the U.S. natural rate $r^*_{US,t}$, and China's natural rate $r^*_{CN,t}$ closely follows $r^*_{US,t}$ because of, e.g., strong trade linkages, then China's interest rates should also exhibit a stable trend between FOMC announcement windows like the U.S. counterparts. Consequently, interest rate trends in the two countries should not deviate outside FOMC windows. For example, the U.S. and EU yields are strongly correlated all the time, regardless of whether it is during monetary policy announcement windows.

Deepening our puzzle, we further investigate some potential channels through which foreign shocks affect China's yields. One channel is that investors actively arbitrage away the yield gaps when foreign yields respond to the shocks. The People's Bank of China may also pay close attention to the yield gaps during the monetary policy announcement days to stabilize the exchange rate. We examine whether trading activities in China's Treasury bond market spike during foreign monetary policy announcement windows. Surprisingly, the result is negative, and trading during the monetary policy windows was even less active than outside the windows before 2015. Therefore, the intensity of trading does not seem to explain the responses of China's Treasury yields to foreign monetary policy shocks.

Second, we find no evidence that macroeconomic news announcements explain the systematic yield responses to monetary policy announcements. According to standard monetary theories, monetary policy is a function of macroeconomic fundamentals such as the output gap and inflation. China's interest rates may respond to foreign monetary policy announcements because of the implied macroeconomic shocks. If this is true, then foreign macroeconomic news announcements such as the U.S. CPI or GDP data releases should also significantly affect China's interest rates. However, China's interest rates are almost constant during U.S. macroeconomic news announcement windows and equally inactive during Chinese macroeconomic news announcement windows, clearly dominated by the responses to monetary policy announcements.

The responses of China's long-term yields to foreign monetary policy announcements do not primarily reflect expected changes in China's short-term rate. This corroborates China's monetary policy independence and disfavors the r^* channel. We estimate an affine term structure model and study the dynamics of the model-implied term premia during the foreign monetary policy announcements. The risk-neutral rates have changed little during foreign monetary policy announcement windows, and the risk premia explain most of the responses of the long-term yields.

The distinct comovement patterns during and outside monetary policy announcement windows are challenging for standard explanations. On one hand, the standard arbitrage mechanism and economic integration can explain the strong cointegration pattern during the announcement windows, but struggle to explain why the investors do not exploit the yield gaps outside these periods. On the other hand, capital controls and independent monetary policy can explain why Chinese yields diverge from world interest rates most of the time, but it's puzzling why foreign monetary policy shocks are passed nearly 100% to Chinese yields.

We propose a model to rationalize the responses of Chinese yields to foreign monetary policy announcements. The model highlights an information channel. The home (Chinese) bond price depends on domestic and foreign factors. Home investors endogenously allocate attention between noisy signals about the home and foreign factors. Because foreign monetary policy announcements are highly informative about the foreign factor, home investors endogenously pay close attention to the foreign signal during the announcement windows, leading to a strong correlation between home and foreign bond prices. Outside the windows, home investors find it optimal to pay more attention to the home signal, reducing the international price correlation.

Our model implies that investors should pay more attention to monetary policy announcements than other macroeconomic announcements for interest rate news. We validate this implication using Chinese news articles. The keyword "interest rate" is 20% more likely to appear in articles during FOMC announcement windows than on days without monetary or macroeconomic news announcements. More interestingly, "interest rate" is 10% *less* likely to be mentioned in news articles during U.S. macroeconomic announcement windows than on non-announcement days. Therefore, interest rate news indeed attracts disproportionately more attention during monetary policy announcement windows in China.

This paper contributes to the ongoing discussion regarding whether U.S. monetary policy

has caused the secular decline in interest rates worldwide (see, for example, Borio (2024), Borio et al. (2022)). A recent strand of literature links the downward trend of long-term yields specifically to U.S. monetary policy. For instance, Hillenbrand (2025), Pan and Peng (2024), Bianchi et al. (2022a) and Bianchi et al. (2022b) focus on U.S. yields, while Hofmann et al. (2025) examine yields in G10 countries. We contribute to the literature by demonstrating that monetary policy announcements in financial hub countries can lead to interest rate trends worldwide without signaling the natural rate of the recipient country.

This paper is also related to the global financial cycle literature, such as Bruno and Shin (2015), Rey (2015), Rey (2016), Gerko and Rey (2017), Dedola et al. (2017), Gilchrist et al. (2019), Albagli et al. (2019), Brusa et al. (2020), Miranda-Agrippino and Rey (2020), Miranda-Agrippino and Rey (2022), Miranda-Agrippino and Nenova (2022), and Kearns et al. (2023). The literature provides compelling evidence that the monetary policies of financial hub countries have significant spillover effects on the world financial market and macroeconomic conditions. Our findings regarding China are consistent with the literature and strengthen the notion of the global financial cycle. With a tightly regulated capital account and foreign investors holding less than 10% of China's total outstanding Treasury bonds, one might expect limited sensitivity of interest rates to external monetary policy shocks, as Han and Wei (2018) find using monthly data. Nevertheless, our findings imply an "impossible unity": despite the floating exchange rate and capital control, China's Treasury yields of all maturities are highly sensitive to financial hub countries' monetary policy shocks and are pegged to their yields during the monetary policy announcement windows. To be clear, China's monetary policy has substantial degrees of independence in the sense that China's interest rates are disconnected from foreign ones most of the time, but the monetary policy announcement windows of hub countries constitute a few yet important exceptions.

The rest of the paper is organized as follows. Section 2 introduces the institutional background of China's Treasury bond market. Section 3 presents the cumulative effects of foreign monetary policy announcements on China's Treasury yields and the yield comovements during and between announcement windows. Section 4 explores whether trading volume or macroeconomic news can explain the systematic responses of Chinese yields to foreign monetary policy announcements. Section 5 estimates the responses of risk-neutral rates and term premia to international monetary policy announcements. Section 6 presents our theoretical explanation of the yield comovements. Section 7 concludes.

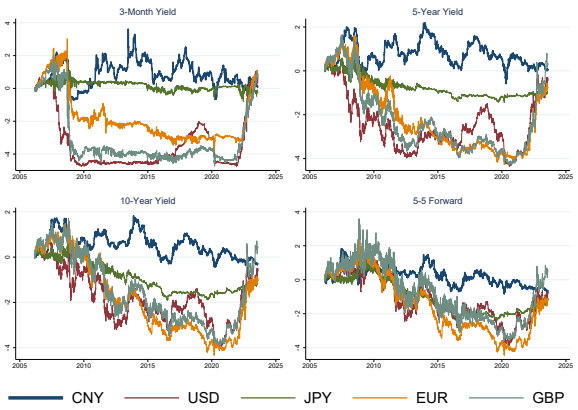
2 Institutional Background

In this section, we highlight three aspects of China's Treasury bond market: limited openness, disconnection with foreign interest rates, and an independent monetary policy. These features suggest that China's natural interest rate departs from those in the developed economies.

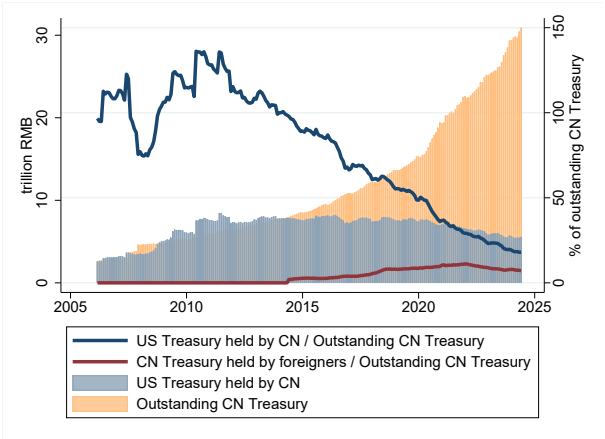
On March 1, 2006, China Central Depository & Clearing Co., Ltd. (www.chinabond.cn) started to estimate the Treasury yield curve to reflect the yield-to-maturity of onshore-traded RMB bonds. Since then, the yield curve data has been released at 5 PM every day and has become the official Chinese yield curve used by monetary and fiscal authorities and market participants. We use the zero-coupon yields for our exercise.

China's Treasury yields appear disconnected from those of developed economies. Figure 2a illustrates the time series of Chinese yields alongside those of the U.S., Japan, Eurozone, and the U.K., all normalized to start at zero. Obviously, the dynamics of Chinese yields are disconnected from those of foreign countries. The short-term rates in the U.S., Eurozone, and the U.K. experienced sharp declines in 2008 and 2009 in response to the Global Financial Crisis, while the long-term yields of all four foreign countries have continuously declined from 2006 to 2020. Notably, the long-term yields, particularly the 10-year yields and the 5-5 forward rates, exhibit a strong resemblance across these countries, reflecting the well-known comovement pattern of interest rates among developed economies. In contrast, Chinese yields across all maturities have remained stable over the past two decades. This stability suggests that Chinese yields are largely independent of those in developed economies. However, we will demonstrate that while this disconnection holds most of the time, there are significant exceptions during the monetary policy announcements of foreign central banks. During these periods, China's yields closely track the changes in the yields of the announcing countries, indicating a marked influence of foreign monetary policy on China's Treasury yields.

Treasury bonds are one of the key instruments of the People's Bank of China (PBoC) for monetary policy operations and enjoy large issuance and trading volumes with significant secondary market liquidity (Amstad and He (2020)). China's Treasury bond market has grown rapidly over the past two decades, and the value of outstanding Treasury securities increased from 2.6 trillion RMB in 2006 to 31 trillion RMB in 2024. Treasury securities



(a) Dynamics of Treasury yields.



(b) Outstanding Chinese Treasury securities and composition of holdings.

Figure 2: Yield dynamics and holdings composition.

Notes. (2a): Time series of Treasury yields, all normalized to start at zero on March 1, 2006. (2b): The left axis represents the market values of U.S. Treasury securities held by China, as well as the outstanding Chinese Treasury securities, measured in trillion RMB. The right axis indicates the fraction of outstanding Chinese Treasury securities held by foreign investors and the value of U.S. Treasury securities held by Chinese investors divided by the total value of outstanding Chinese Treasury securities.

are traded in two markets: the interbank market and the exchange market. The interbank market, often referred to as the China Interbank Bond Market (CIBM), was established in 1997 and has become the dominant market for bond issuance and trading in China. Over 95% of the outstanding Treasury bonds are traded in the interbank market. The interbank market was closed to international investors before 2010 but has gradually opened up since then.

Figure 2b depicts the evolution of China's Treasury bond market using CEIC data. The figure highlights three points:

1. The market capitalization of the Treasury bonds has grown rapidly over the past two decades.

2. The foreign participation rate is low. Since 2010, China has taken significant steps to liberalize foreign investors' access to the fixed-income market, particularly through the interbank market. Nevertheless, the foreign participation remains limited. The foreign holding share of Chinese Treasury securities peaked at 11% in February 2022

but subsequently declined to 7% by June 2024.

3. Chinese investors hold a significant amount of foreign Treasury bonds, especially the U.S. Treasuries. In 2011, Chinese investors held 8.47 trillion RMB worth of U.S. Treasury securities, amounting to 135% of the value of outstanding Chinese Treasury securities. Although foreign investors may have limited direct impacts on China's Treasury market, foreign interest rates can still influence China's bond market through the portfolio decisions of Chinese investors.

Global banks play a crucial role in transmitting financial hubs' monetary policy shocks worldwide (Miranda-Agrippino and Rey (2020), Bräuning and Ivashina (2020)). De Leo et al. (2022) argue that the domestic banks' reliance on foreign funding increases the correlation between the emerging markets' market rates and the U.S. interest rate. However, foreign liabilities only contribute to less than 5% of the total liabilities of China's banking sector.[4] Given the low foreign participation rate in China's Treasury bond market, it seems surprising how significantly its interest rates can be influenced by foreign monetary policy shocks through this channel.

On the other hand, China's monetary authority primarily aims to achieve its own economic growth targets, maintain price stability, and address other domestic policy goals.[5] The former Governor of the People's Bank of China (PBoC), Gang Yi, also asserted that "China's monetary policy has not simply followed (interest rates in major developed economies) but adhered to the 'domestic goals first rule', becoming more independent and effective." (Yi (2023).) Indeed, we do not observe changes in China's interest rates on PBoC monetary policy announcement days that follow foreign monetary policy announcements (Figure A3). The departure of China's interest rate trend from the world trend also suggests a limited correlation between domestic and international factors. This has led to the widespread belief that China's monetary policy operates independently of other countries. Thus, it is remarkable how market forces have aligned China's Treasury yields with foreign yields during short event windows, despite such a restrictive environment.

In summary, the limited openness of China's Treasury bond market, the wide gap between Chinese and foreign interest rate trends, and China's independent monetary policy imply

[4]According to the State Administration of Foreign Exchange, as of September 2024, the total foreign liabilities of China's banking sector were 1.5 trillion USD, while the total liabilities were 55.3 trillion USD.

[5]See, for example, the speech by the former PBoC governor Xiaochuan Zhou: Zhou (2016).

that the responses of China's interest rates to foreign monetary policy announcements are unlikely to be related to China's r^*.

3 The Two Puzzles

In this section, we present the baseline empirical results, highlighting that monetary policy announcements can lead to secular yield dynamics without revealing the r^*. First, we demonstrate that China's Treasury yields exhibit persistent changes during foreign monetary policy announcement windows, in directions that differ from their long-run trends. Second, we show that Chinese yields are highly correlated with the announcement country's yields during foreign monetary policy announcement windows, but not outside the windows.

3.1 Empirical Methodology

The Chinese yield curve data are sourced from China Central Depository & Clearing Co., Ltd, the authority that estimates China's Treasury yield curve every day. The sample comprises daily observations of zero-coupon yields from March 2006 to August 2024. The dates of monetary policy announcements are obtained from Bloomberg, and we manually verify them against the official websites of the respective central banks whenever possible.

Following Hillenbrand (2025), we define the monetary policy announcement window as the three days surrounding a monetary policy announcement. We manually verify that the foreign monetary policy announcement windows overlap minimally with Chinese monetary policy decisions. Our empirical results are essentially unaffected by excluding the overlapping windows, which are presented in the Online Appendix.

For each central bank, we compute the cumulative changes in Chinese Treasury yields according to

$$\nabla y_t^W = \sum_{s=t_0+1}^{t} (y_s - y_{s-1}) \, \mathbf{1}_{s \in W}, \tag{1}$$

where t and s denote daily dates, t_0 is the first date of the sample, y_s is the log n-year Treasury zero coupon yield on date s, $\mathbf{1}_{s \in W}$ is an indicator function for the set W, and $W \in \{window, non-window\}$ is either the set of monetary policy announcement window dates or remaining dates outside of central bank monetary policy announcement windows.

Since the two event windows are disjoint and span the full sample, for each time t, the total change in the yield relative to the initial value equals the cumulative sum of yield change over the MP windows plus the cumulative sum of yield change over the non-MP windows:

$$y_t - y_0 = \nabla y_t^{AllDates} = \nabla y_t^{window} + \nabla y_t^{non-window}. \tag{2}$$

In the remainder of the paper, we subtract the initial values from the observed yields, allowing $\nabla y_t^{AllDates}$ and y_t to be used interchangeably.

Why the Three-Day Window? Our specification of the monetary policy window consists of days -1, 0, and +1 relative to the announcement day, consistent with the specification of Hillenbrand (2025). Moreover, in Figure A2, we show that China's Treasury yields change in consistent directions during the three-day windows around foreign monetary policy announcements. Therefore, we choose this window to uniformly and maximally capture the interest rate trends associated with foreign monetary policies.

3.2 The Response Puzzle

Figure 3 presents the cumulative effects of each central bank's monetary policy announcements on Chinese Treasury yields. We focus on the 3-month, 5-year, 10-year, and 5-5 forward rates. The placebo confidence intervals are the [2.5$^{\text{th}}$, 97.5$^{\text{th}}$] and [16$^{\text{th}}$, 84$^{\text{th}}$] percentiles of 10,000 placebo simulation paths. Intuitively, the intervals indicate the range of cumulative yield changes that can be obtained from randomly drawing the same number of event windows as the monetary policy announcements each year. Effects outside these bounds indicate systematic yield responses rather than random variations.

Panel (3a) plots the observed yields and the sum of their daily changes during the Federal Reserve's announcement windows or other days. The 5- and 10-year yields have monotonically declined by 1.99 and 2.11 percentage points, respectively, during the Federal Reserve's monetary policy announcement windows. Notably, the cumulative effects on the 10-year yield are more pronounced at the long end of the curve, as the 5-5 forward rate has decreased monotonically by 2.24 percentage points during these windows. The magnitudes of the cumulative effects are substantial. The average levels of the 5- and 10-year yields are 3.1 and 3.4, and the initial values are 2.40 and 2.98 percentage points. So, U.S. monetary

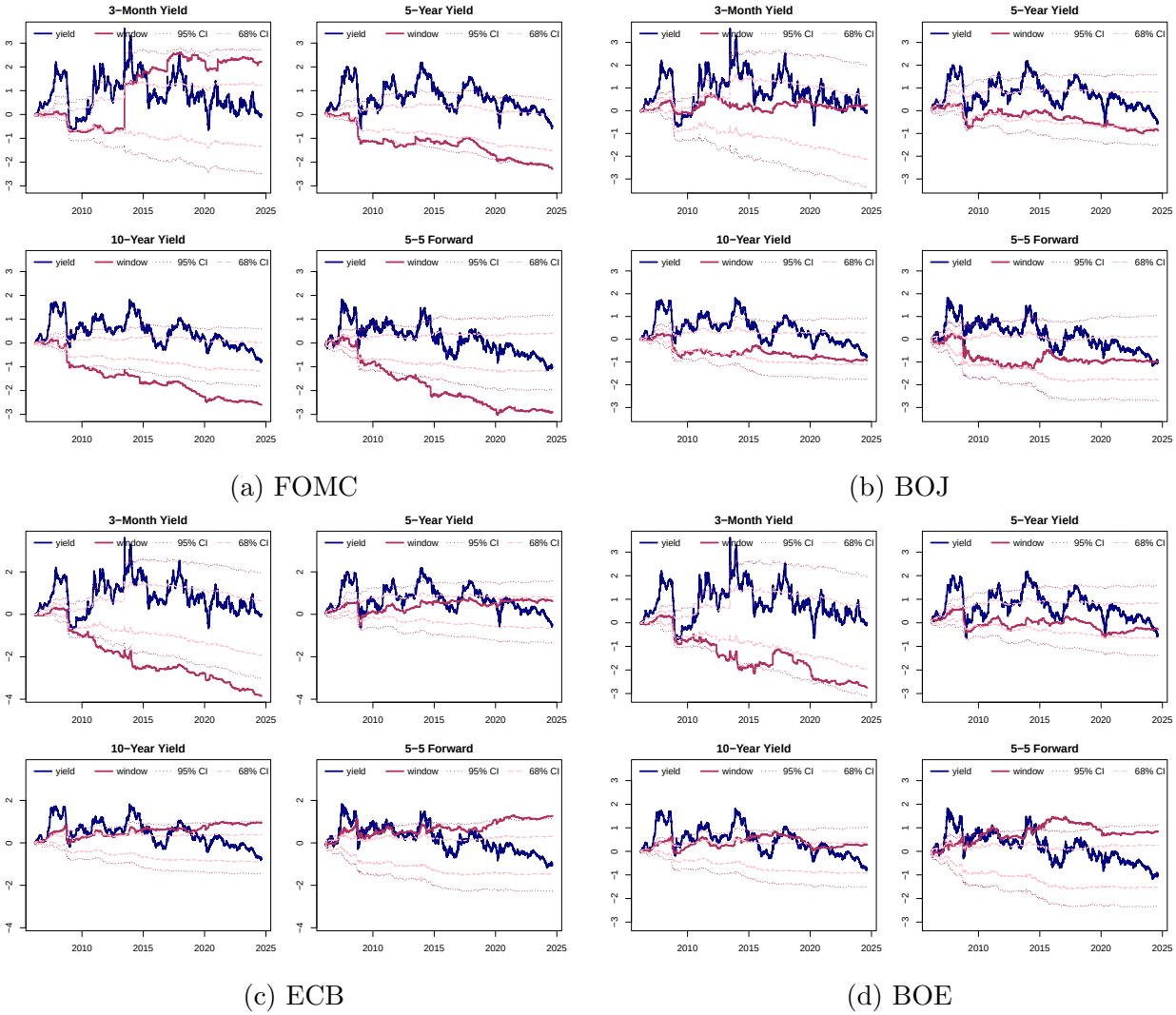
policy would have reduced China's long-term yields to the zero lower bound without adjustments between announcements. The cumulative effects of U.S. monetary policy on China's 3-month yield is U-shaped. The series continuously declined until June 18, 2013, by 64 basis points relative to its value on March 1, 2006. Then, on June 19, 2013, the 3-month yield jumped up by 1.61 percentage points and then continuously increased. By the end of August 2024, FOMC announcements have increased China's 3-month yield by 2.52 percentage points relative to its initial value.

Panel (3b) illustrates the cumulative effects of Japanese monetary policy announcements on the Chinese Treasury yield curve. The patterns are similar to the cumulative effects of U.S. monetary policy. The short-term rate has not been significantly affected by Japanese monetary policy. The long-term rates, however, have declined persistently during Japanese monetary policy announcements. The 5- and 10-year yields have declined by 1.38 and 1.19 percentage points during the Japanese monetary policy windows, and the effects are more concentrated on the short end. The 5-5 forward rate has declined by 1.01 percentage points during the windows.

Panels (3c) and (3d) present the cumulative effects of the European Central Bank's and the Bank of England's monetary policy announcements on Chinese interest rates, respectively. The patterns are similar: the 3-month rate has declined persistently during the monetary policy windows, but the long-term rates have not been reduced. The 5-5 forward rate has even increased persistently during the event windows.

In summary, the Fed's and BoJ's policy announcements have persistently reduced China's long-term yields, while the ECB's and BoE's monetary policy announcements have persistently reduced China's short-term rate. In the Online Appendix, we demonstrate that our baseline results are unaffected by removing the foreign monetary policy announcements that overlap with Chinese monetary policy announcements.

Monetary policy announcement windows do not witness exceptionally high yield volatility. Instead, the windows are special because the yields change constantly in specific directions. Table 1 presents the mean and standard deviation of daily yield changes during monetary policy windows compared to other days. The mean daily yield changes outside monetary policy announcement windows are nearly zero, but the mean daily yield changes during the monetary policy announcement windows can be ten times larger in absolute value than those outside the windows. However, these announcement windows are not exception-



(a) FOMC (b) BOJ

(c) ECB (d) BOE

Figure 3: Cumulative changes in Chinese Treasury yields during foreign monetary policy announcement windows.

Notes. The series "yield" is the actual daily yield minus its initial value; "window" is the sum of daily yield changes during the respective monetary policy announcement windows. The 95% and 68% confidence intervals are the [2.5$^{\text{th}}$, 97.5$^{\text{th}}$] and [16$^{\text{th}}$, 84$^{\text{th}}$] percentiles of placebo simulations.

ally volatile days for Chinese yields. Although the standard deviations of daily changes are slightly higher during the announcement windows, the difference is much less drastic than the variation in mean values. The comparison of mean and standard deviation suggests that the main difference between monetary policy announcement windows and other days is the

Table 1: Summary statistics of daily yield changes in China.

	3-Month Yield		5-Year Yield		10-Year Yield		5-5 Forward	
	Window	Others	Window	Others	Window	Others	Window	Others
	Mean							
Fed	0.55	-0.06	-0.54	0.04	-0.57	0.04	-0.60	0.04
BOJ	0.09	-0.01	-0.18	0.01	-0.17	0.01	-0.15	-0.00
ECB	-0.61	0.07	0.10	-0.02	0.19	-0.04	0.27	-0.06
BOE	-0.38	0.05	0.02	-0.01	0.12	-0.04	0.23	-0.06
	Standard Deviation							
Fed	9.02	4.45	3.66	3.14	3.34	2.74	4.57	4.18
BOJ	3.73	5.21	3.36	3.17	2.95	2.78	4.60	4.16
ECB	4.14	5.14	3.58	3.15	2.99	2.78	4.56	4.17
BOE	4.68	5.09	3.38	3.17	3.02	2.77	4.51	4.18

Notes. Each row corresponds to a central bank. "Window" refers to the three days surrounding the respective central bank's monetary policy announcement. "Others" refers to the remaining days. The units are annualized basis points.

sign of yield changes. The yields change in a more uniform direction during announcement windows, preventing them from canceling out on average as they do outside these windows.

Relationship with Hillenbrand (2025) Consistent with Hillenbrand (2025) and Hofmann et al. (2025), our analysis suggests that Federal Reserve monetary policy announcement windows are associated with persistent declines in China's long-term yields, mirroring patterns observed in the U.S. and other G10 countries. Unlike the G10, however, Chinese yields do not exhibit a sustained downward trajectory, implying that the cumulative effect of FOMC announcements does not align with the long-run trend of actual yields. This pattern is consistent with the view that U.S. monetary policy exerts persistent downward pressure on global interest rates, yet does not primarily operate through the fundamental factors determining China's yields. If FOMC announcements conveyed information about China's natural rate $r^*_{CN,t}$, yield changes within these windows would correspond to $r^*_{CN,t}$, and yields would fluctuate around $r^*_{CN,t}$ between windows. Instead, yields rise persistently in non-announcement periods, widening the gap between the actual yield series and the FOMC-window series in Figure 3a. Taken together, these findings suggest that the declines observed during announcement windows are unlikely to reflect $r^*_{CN,t}$ and are more plausibly

attributable to a pure monetary policy shock channel.

3.3 The Comovement Puzzle

China implements a managed floating exchange rate regime and imposes tight controls on international capital flows, limiting arbitrage opportunities. Therefore, in principle, Chinese interest rates could be isolated from foreign interest rate fluctuations. In this section, we show that Chinese Treasury yields are tightly related to foreign yields during foreign monetary policy announcement windows, and the observed widening yield gaps are mainly formed outside the monetary policy announcement windows.

Figure 4 illustrates the cumulative changes in Chinese and foreign 10-year yields during or outside the Fed or ECB monetary policy announcement windows. We compute the cumulative yield changes in each country over a central bank's monetary policy cycle, and then compute the day-wise averages across cycles. Furthermore, we separately compute the average changes over the announcement windows and outside the windows.

During the announcement windows, the Chinese yield closely cointegrates with the yield in the announcement country. For example, the average U.S. yield change is within the 95% confidence interval of the average Chinese yield change during the Fed announcement window. Interestingly, the gap between the Chinese and the announcement country's yields during the window is smaller than the gap between the U.S. and the EU yields, indicating a strong sensitivity of the Chinese yield to foreign monetary policy announcements.

Despite China relaxing its currency peg and restricting capital flow, our results indicate that the autonomy of China's yield curve is effectively absent. This phenomenon suggests that the impossible trinity may be more accurately characterized as an "impossible unity".

The impossible unity is a conditional property, which is only observed during the tight windows around foreign monetary policy announcements. The gaps between Chinese and world interest rates have continuously widened between 2006 and 2021, and the divergence can be largely attributed to the days outside monetary policy windows, as illustrated in the right column of Figure 4. The U.S. and EU yields are still strongly cointegrated, suggesting a strong trans-Atlantic interest rate comovement that holds unconditionally. But both yields are far outside the 95% confidence interval of the Chinese yield. The contrast between monetary policy announcement windows and other days is the uniqueness of how Chinese

yields cointegrate with world interest rates.

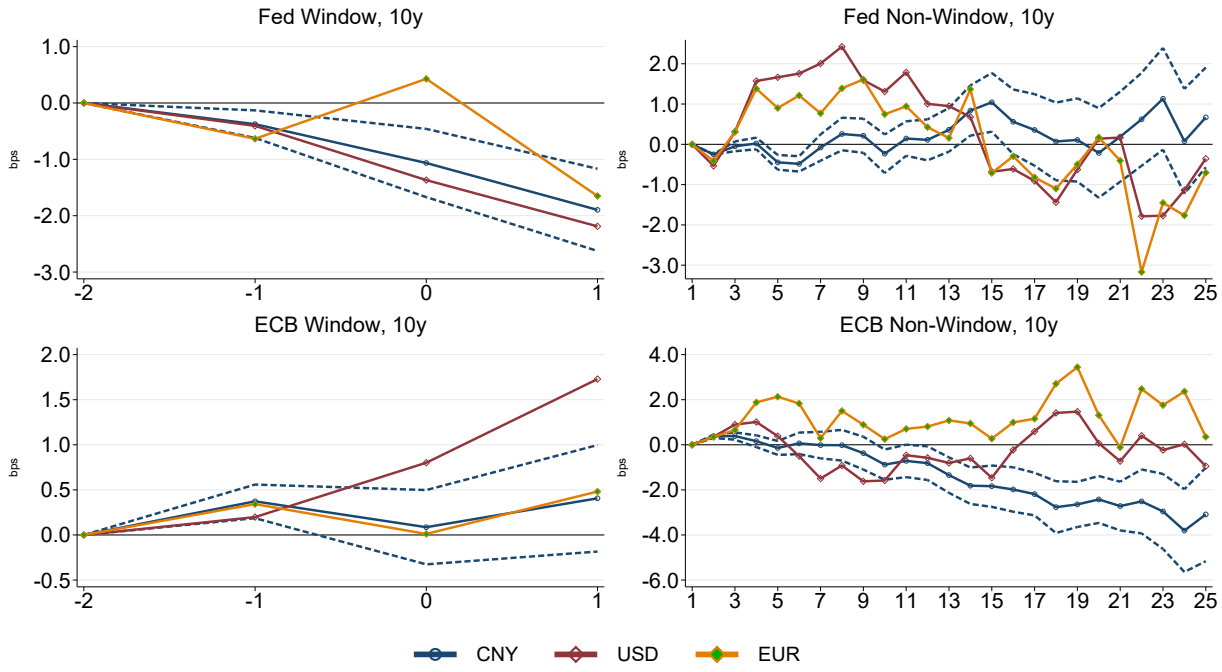


Figure 4: Cointegration during or outside monetary policy windows.

Notes. The figure plots the day-wise average cumulative yield changes over a Fed or ECB announcement cycle. The horizontal axis denotes days since the announcement (denoted by 0), and the vertical axis denotes cumulative yield changes in basis points. The dashed lines denote the 95% confidence interval for the Chinese yield change.

Quantitative Analysis We systematically compare the yield gaps between each country and the announcement country during or outside the three-day announcement windows. We measure the yield gaps by the root mean squared difference:

$$RMSD_{i,a} = \sqrt{\frac{1}{T}\sum_{t=1}^{T}\left(\nabla y_{i,t}^{W} - \nabla y_{a,t}^{W}\right)^2}, \tag{3}$$

where $W \in \{window, non-window\}$, and a denotes the announcement country.

Table 2 reports the RMSD results. Each panel corresponds to a central bank's announcements, and each column presents the distance between the column country's yield and the

announcement country's yield. Two systematic patterns arise:

1. The yield gap between China and the announcement country is significantly smaller during announcement windows than outside the windows. For other countries, the differences are much smaller.

2. During the Fed and ECB announcement windows, the gap between China and the announcement country is smaller than the gaps between other countries and the announcement country. For example, the CNY-EUR gap in the 10-year yield during ECB windows is 0.33 percentage points, while the USD-EUR gap is more than four times as large.

The dichotomy associated with monetary policy announcement windows suggests that foreign monetary policy shocks affect Chinese yields differently from other macroeconomic shocks that arrive outside monetary policy windows. For example, as shown by Figure 7, U.S. macroeconomic announcements have limited impacts on Chinese yields. While China's interest rates appear insulated from the latter—aligning with the prevailing view of China's monetary policy independence—they behave similarly to those of fully open economies during announcement windows of globally important central banks. More strikingly, China's interest rates appear to be the most responsive to U.S. and EU monetary policy shocks among all the interest rates in our sample. This is strong evidence that foreign monetary policy shocks are transmitted to China independently of the macroeconomic fundamentals.

3.4 CNH Yields

The onshore RMB (CNY) and Treasury bond markets are subject to capital controls. To assess whether the responses to foreign monetary announcements result from regulations and the lack of liquidity, we study the dynamics of the Hong Kong offshore RMB (CNH) yields over FOMC cycles. The CNH yields are implied by the CIP relationship using the CNH/USD spot and forward exchange rates and the USD yields. The data are obtained from Bloomberg and are only available after 2010.

CNH can be freely converted to foreign currencies, and its forward exchange contracts are highly liquid. Because China's Treasury securities are not traded in the Hong Kong market, the CIP-implied CNH yields are widely used by market participants as the benchmark

Table 2: Root mean squared yield differences.

	CNY	USD	EUR	JPY	GBP	CNY	USD	EUR	JPY	GBP
	Fed Window					Fed Non-Window				
3m	4.65	0.00	0.77	0.85	0.64	2.58	0.00	1.47	4.33	0.90
5y	0.62	0.00	0.35	1.23	0.82	2.89	0.00	1.04	1.09	1.12
10y	0.46	0.00	0.36	1.32	0.53	2.71	0.00	0.77	0.75	0.85
f5-5	1.05	0.00	0.41	1.43	1.05	2.66	0.00	0.82	1.24	1.36
	ECB Window					ECB Non-Window				
3m	0.83	1.14	0.00	0.99	1.13	3.34	2.90	0.00	1.78	0.75
5y	0.53	1.77	0.00	0.76	0.64	3.01	1.95	0.00	1.21	0.69
10y	0.33	1.41	0.00	0.96	2.09	2.68	1.30	0.00	2.20	2.47
f5-5	0.30	1.07	0.00	2.46	4.72	2.42	0.75	0.00	3.25	5.53
	BOJ Window					BOJ Non-Window				
3m	5.78	2.94	3.37	0.00	3.05	5.08	6.76	5.60	0.00	6.59
5y	0.64	0.86	0.58	0.00	0.43	1.09	2.68	1.38	0.00	1.69
10y	0.47	0.43	1.07	0.00	2.12	1.94	0.96	0.74	0.00	1.51
f5-5	1.45	1.31	1.69	0.00	4.07	2.86	1.14	1.35	0.00	4.26
	BOE Window					BOE Non-Window				
3m	2.21	2.41	0.82	2.73	0.00	2.60	2.77	1.46	1.17	0.00
5y	0.84	1.28	0.29	1.39	0.00	2.58	1.49	0.32	0.72	0.00
10y	1.31	1.05	0.59	0.61	0.00	1.40	1.33	0.79	1.23	0.00
f5-5	1.92	1.24	1.15	1.76	0.00	1.38	1.48	1.45	1.92	0.00

Notes: The table reports the root mean squared yield differences between the column country and the announcement country. The unit is percentage points per annum. "Window" denotes the cumulative yield changes during the three-day announcement windows; "Non-Window" denotes the cumulative yield changes outside the three-day announcement windows.

CNH yield curve. Since the CIP relationship is based on the CNH/USD pair, we focus on the FOMC windows. Among the various horizons, short-term forward contracts are more developed than long-term ones. Due to data limitations, we use the 5-year CNH forward implied yield to represent the long-term yield.

Figure 5a presents the cumulative changes in the 3-month and 5-year yields during FOMC windows. The CNH and CNY yields exhibit similar patterns during the FOMC window: the short rate increases persistently, while the long rate decreases consistently. The CNH yields have changed more than the CNY yields. So, if anything, the capital controls and illiquidity in the onshore market may have slightly dampened the responses of China's interest rates to FOMC announcements.

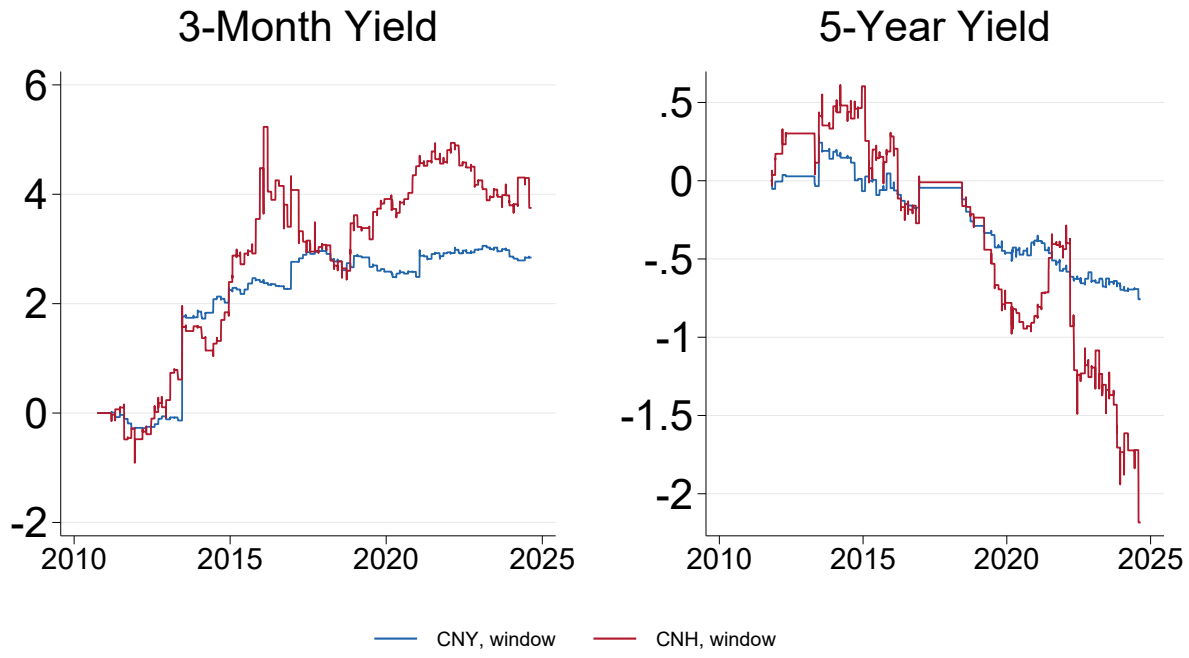
Figure 5b compares the average changes in the CNH and USD yields over an FOMC cycle. During the announcement window, CNH and USD yields generally move in the same direction, especially before the announcement. Outside the window, the CNH yields diverge from the USD yields.[6]

In general, the response puzzle and the comovement puzzle we document for the CNY yields are also observed in the CNH yields. Therefore, the puzzles are not artifacts of the capital controls in China's mainland market.

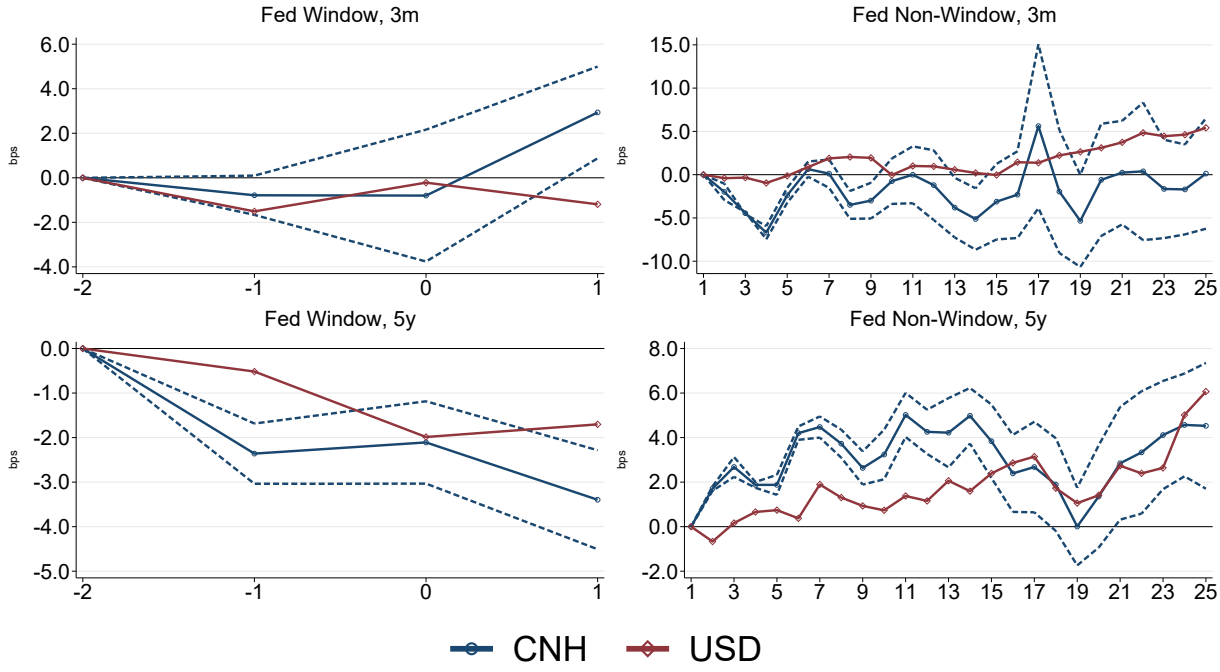
4 Trading Volume and Macroeconomic News

In this section, we investigate two mechanisms that can potentially explain the sensitivity of China's interest rates to foreign monetary policy announcements. One mechanism is that investors actively arbitrage away the yield gaps during foreign monetary policy announcement windows. Another mechanism is that foreign monetary policy announcements reveal information about foreign macroeconomic fundamentals. Because the announcement countries/regions are China's largest trading partners, their macroeconomic fundamentals may affect China's macroeconomic variables, which ultimately affect China's interest rates.

[6]The U.S. yields appear to increase outside the Fed window because the sample period is from 2010 to 2024, and the U.S. yields increased sharply between 2021 and 2023, higher than the 2010 levels.



(a) CNH cumulative change.



(b) CNH-USD yield comovement.

Figure 5: CNH yields over FOMC cycles.

Notes. CNY denotes the onshore Chinese Treasury yields, and CNH denotes the Hong Kong offshore RMB yields. Panel (a) plots cumulative changes over time, and panel (b) presents average changes over an FOMC cycle.

4.1 Trading Volume

A possible transmission mechanism is that the investors rebalance their portfolios to exploit arbitrage opportunities when foreign interest rates are changed by monetary policy announcements. For example, Miranda-Agrippino and Rey (2020) and the global financial cycle literature emphasize the role of global banks' portfolio choices in transmitting U.S. monetary policy shocks worldwide. China's Treasury bonds are often held by commercial banks until maturity, so secondary market trading is limited (Schipke (2019)). It is also possible that China's monetary authority actively intervenes in the Treasury market during foreign monetary policy announcement windows to stabilize the exchange rate and capital flows. If the strong correlation between Chinese and foreign yields during foreign monetary policy announcement windows is driven by global banks' heightened arbitrage operations or the Chinese government's interventions, trading should be more active during such events.

We compute the annual average daily trading volumes and market values in China's interbank Treasury bond market during or outside the monetary policy announcement windows and then compute the window/non-window ratios. According to Figure 6, daily trading during the monetary policy announcement windows is not significantly more active than outside the announcement windows. Before 2015, daily trading volumes and market values during monetary policy announcement windows were even much smaller than outside the windows. Therefore, the intensity of trading does not seem to explain the strong exposure of Chinese yields to foreign monetary policy shocks.

4.2 Monetary vs. Macroeconomic Announcements

If foreign monetary policy announcements affect China's interest rates by revealing information about their macroeconomic conditions, then their macroeconomic data releases should also significantly affect China's interest rates. Indeed, U.S. macroeconomic shocks influence world macroeconomic variables. Boehm and Kroner (2023) demonstrate that U.S. macroeconomic news announcements significantly impact world asset prices, independent of U.S. monetary policy responses. We investigate whether Chinese Treasury yields systematically change during U.S. macroeconomic announcement windows similarly to that during FOMC announcement windows.

We consider the CPI, GDP, industrial production, and unemployment announcements

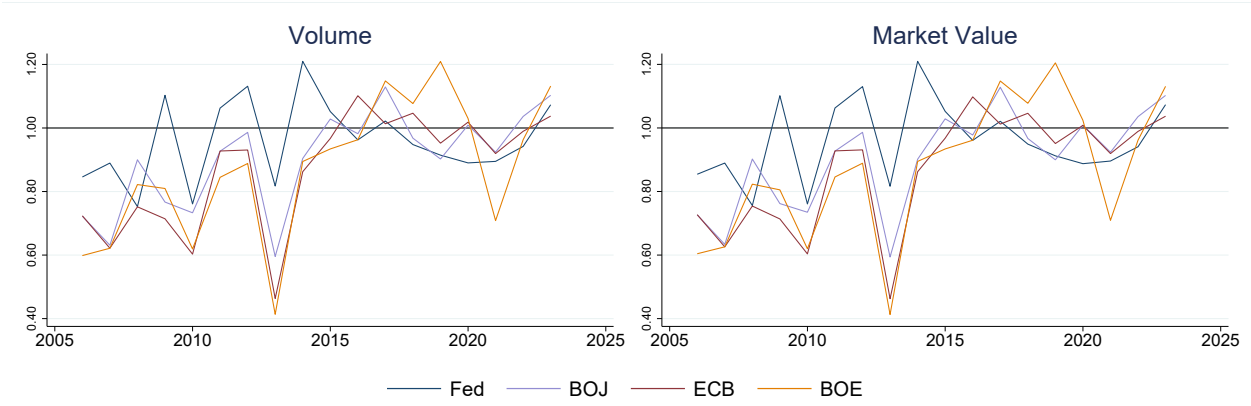


Figure 6: Volume and market value of transactions.

Notes. The figure plots the window/non-window ratio of annual average daily trading volumes (number of trades) or market values.

individually. The announcement calendar is from Bloomberg. For each macroeconomic announcement series, we drop the announcement days that are within the FOMC windows and construct the three-day windows for the remaining announcements. Figure 7 presents the cumulative change in China's 10-year yield during each U.S. macroeconomic news announcement window. In comparison, we contrast the macro-induced yield dynamics with the cumulative yield change during FOMC windows. The yield remains almost constant during CPI, industrial production, and unemployment announcement windows. Although it declines persistently during U.S. GDP announcement windows, the magnitude is dominated by the cumulative effects of FOMC announcements.

Surprisingly, Chinese macroeconomic announcements also have limited impacts on the yield. Figure 7 shows that the 10-year yield is slightly more volatile during Chinese CPI and industrial production announcement windows than during the U.S. announcement windows, but is still significantly less volatile than the actual yield in Figure 2a and the yield dynamics during FOMC announcement windows. Interestingly, U.S. GDP announcements seem to have a larger impact on China's 10-year yield than Chinese GDP announcements.

In summary, macroeconomic announcements have limited effects on China's Treasury yields. Therefore, the systematic yield changes during foreign monetary policy announcements are not responses to the implied global macroeconomic trend. Instead, the effects of monetary policy announcements are a unique monetary phenomenon.

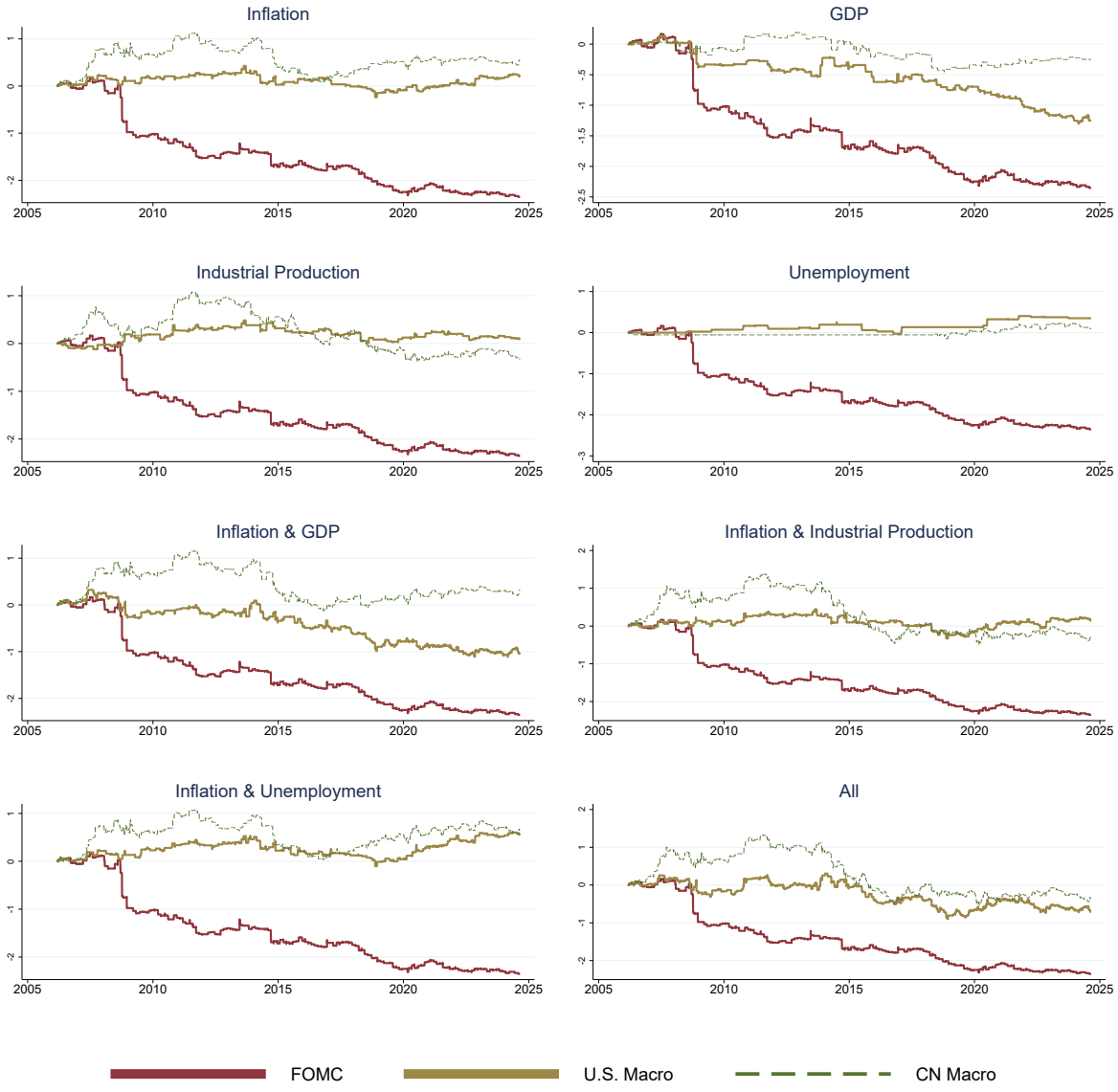


Figure 7: Cumulative effects of macroeconomic announcements.

Notes: The figure plots the cumulative change in China's 10-year yield during 3-day FOMC or macroeconomic news announcement windows. The header of each panel indicates the specific macroeconomic announcement being considered. Macroeconomic announcement windows overlapping with FOMC windows are excluded.

5 Expectations vs. Term Premium

Under the standard New Keynesian framework, the expectations hypothesis implies that fluctuations in long-term yields are entirely driven by changes in expected short-term yields. In this case, investors expect that China's policy rate will track foreign policy rates. Within our context, it is therefore instructive to assess the extent to which the cumulative responses of Chinese long-term yields to foreign monetary policy announcements reflect anticipated adjustments in China's short-term yield. A dominant expectations component would indicate that bond market participants foresee the People's Bank of China aligning its policy stance with that of foreign central banks.

The expectations hypothesis component of the n-period yield is also called the "risk-neutral yield", and the associated bond price is called the "risk-neutral bond price". The risk-neutral bond prices satisfy the expectations hypothesis

$$P_t^{(n),rn} = \mathbf{E}_t \left[e^{-y_t^{(1)}} P_{t+1}^{(n-1),rn} \right], \tag{4}$$

and the risk-neutral yields are the log prices: $y_t^{(n),rn} \equiv -\frac{1}{n} \ln P_t^{(n),rn}$. Iterating forward, the risk-neutral yields satisfy

$$y_t^{(n),rn} = \frac{1}{n} \mathbf{E}_t \left[y_t^{(1)} + \cdots + y_{t+n-1}^{(1)} \right] + \theta^{(n)}, \tag{5}$$

where $\theta^{(n)}$ is a constant adjusting for Jensen's inequality. Intuitively, the n-period risk-neutral yield is the average expected short-term yields between t and the maturity date (up to a constant).

To estimate the conditional expectations $\mathbf{E}_t \left[y_{t+s}^{(1)} \right], s \in \{1, 2, 3, \dots\}$, we estimate an affine term structure model and compute the model-implied expectations. The model is estimated using the Adrian et al. (2013) regression method. To correct the small-sample bias in estimating the AR(1) coefficients of persistent state variables, we follow the bootstrap procedure of Bauer et al. (2014).

Since the term structure model is standard, we briefly describe the model and relegate the model details and estimation procedures to the Online Appendix.

5.1 The Term Structure Model

The yield curve is determined by a $K \times 1$ vector of state variables X_t following a vector autoregression (VAR) process:

$$X_{t+1} = \boldsymbol{\mu} + \Phi X_t + U_{t+1}, \quad U_{t+1} | \{X_s\}_{s=0}^{t} \sim \mathcal{N}(\mathbf{0}, \Omega). \tag{6}$$

Let $P_t^{(n)}$ denote the zero-coupon bond price with maturity n periods at period t. The no-arbitrage condition implies

$$P_t^{(n)} = \mathbf{E}_t \left[M_{t,t+1} P_{t+1}^{(n-1)} \right], \tag{7}$$

where $M_{t,t+1}$ is the stochastic discount factor (SDF). The SDF is exponentially affine:

$$\ln M_{t,t+1} = -\delta_0 - \boldsymbol{\delta}_1^\top X_t - \frac{1}{2} \Lambda_t^\top \Lambda_t - \Lambda_t^\top \Sigma^{-1} U_{t+1}, \tag{8}$$

where $\Sigma \Sigma^\top = \Omega$. The market prices of risk are of the essentially affine form:

$$\Lambda_t = \Sigma^{-1} (\Lambda_0 + \Lambda_1 X_t). \tag{9}$$

Finally, the risk-neutral bond prices satisfy

$$P_t^{(n)rn} = \mathbf{E}_t \left[e^{-y_t^{(1)}} P_{t+1}^{(n-1)rn} \right], \tag{10}$$

where $y_t^{(1)} = -\ln P_t^{(1)}$ is the log short-term interest rate. The yields and risk-neutral yields are, respectively,

$$y_t^{(n)} = -\frac{1}{n} \ln P_t^{(n)}, \quad y_t^{(n)rn} = -\frac{1}{n} \ln P_t^{(n)rn}. \tag{11}$$

The term premium is the difference between the yield and the risk-neutral yield.

5.2 Decomposition Results

We decompose the cumulative yield changes during a given central bank's announcement windows, ∇y_t^{window}, into the sum of daily changes in the risk-neutral rate and the sum of daily changes in the term premium. The results are illustrated in Figure 8. Risk premia explain most of China's long-term yield responses to U.S. and Euro monetary policy announcements.

Risk-neutral rates have remained almost constant during the respective announcement windows. During the Bank of England's and Bank of Japan's monetary policy announcement windows, the risk-neutral rates fluctuate more than during the Fed's and ECB's windows; however, the term premia still explain most of the dynamics of China's long-term yields during these announcement windows.

Our term structure model suggests that when the foreign central banks announce monetary policy decisions, investors do not expect persistent changes in China's future short-term rates. This is in sharp contrast to the responses of developed economies' bond markets. Using the same term structure model as ours, Albagli et al. (2019) find that U.S. monetary policy announcements mainly affect risk-neutral rates in developed economies but term premia in developing economies.

Motivated by the decomposition results, in the next section, we build a two-factor bond pricing model to explain why Chinese yields closely comove with foreign yields during their monetary policy announcement windows. The factor substantially influenced by foreign monetary policy announcements is interpreted as the term premium component, implying that Chinese investors do not anticipate the domestic policy rate to track the foreign counterpart. This interpretation aligns with PBoC's official assertions of maintaining an independent monetary policy.

6 A Model of Yield Comovement

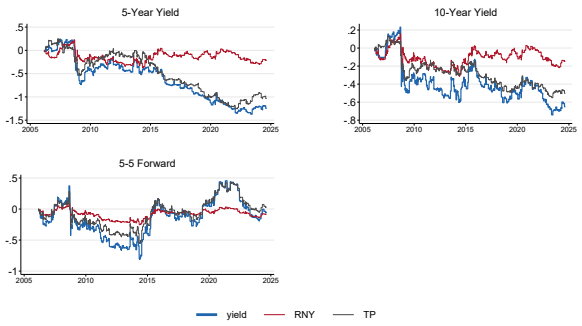
We start by discussing standard mechanisms of monetary policy transmission and international spillover. We argue that the standard mechanisms face challenges in explaining key aspects of our empirical findings. Then, we present our model and empirical support for the model.

6.1 Discussion of Standard Mechanisms

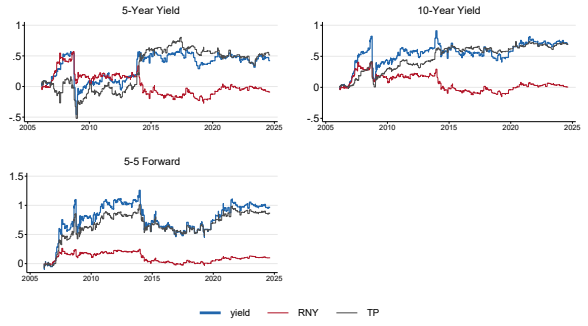
Long-Run Guidance of r^* Hillenbrand (2025) emphasizes the role of the long-run level of interest rates signaled by FOMC announcements in explaining the downward trend of the FOMC-window series. For this channel to explain the cumulative responses of international yields to FOMC announcements, the recipient country's r^* must be similar to, or even



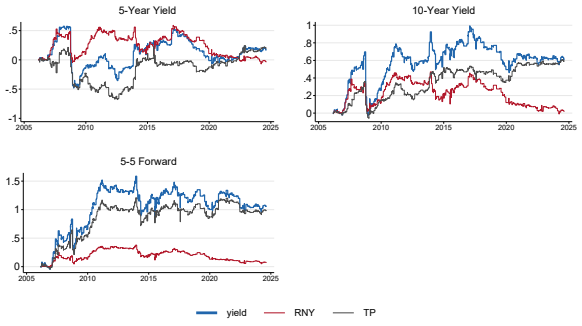
(a) Federal Reserve.



(b) Bank of Japan.



(c) European Central Bank.



(d) Bank of England.

Figure 8: Decomposing Chinese Treasury yields during foreign monetary policy announcement windows.

Notes. Decomposing ∇y_t^{window} into the risk-neutral rate and term premium. The series "yield" is the sum of daily changes in the observed yield during the central bank's announcement windows; "RNY" is the sum of daily changes in the risk-neutral rate during the announcement windows; "TP" is the sum of daily changes in the term premium during the announcement windows. The equality $yield = RNY + TP$ holds.

driven by, that in the U.S., which seems to be true for many countries (for example, see Holston et al. (2017), Del Negro et al. (2019)). Accordingly, the financial market learns about the recipient country's r_t^* from FOMC announcements and adjusts interest rates to a neighborhood of the new r_t^*. An important implication of this channel is that the interest rates should be stable between FOMC announcements. Such a pattern holds for advanced economies (Hofmann et al. (2025)) but not for China. China's long-run level of interest rates diverges from the trends in all announcement countries considered in this paper, and Chinese interest rates revert strongly to China's own trend between foreign monetary policy

announcements. Therefore, the r^* channel unlikely explains the cumulative response of China's interest rates to foreign monetary policy announcements.

Relatedly, in standard DSGE models, interest rates are determined by the Euler equation:

$$e^{-ny_t^{(n)}} = \mathbf{E}_t \left[e^{-n\delta} \frac{u'(C_{t+n})}{u'(C_t)} \frac{1}{\Pi_{t,t+n}} \right]. \tag{12}$$

Foreign monetary policy announcements may reveal macroeconomic news informative about Chinese fundamentals, and the yield comovements during monetary announcement windows suggest that $\mathbf{E}_t[Macro_{CN,t+n}]$ is similar to $\mathbf{E}_t[Macro_{foreign,t+n}]$ where t denotes the foreign monetary policy announcement window. However, the widening yield gaps between monetary policy announcements suggest that $\mathbf{E}_{t+\Delta}[Macro_{CN,t+n}]$ differ substantially from $\mathbf{E}_{t+\Delta}[Macro_{foreign,t+n}]$. In rational expectations models, future macroeconomic variables are consistent with the consequences of current monetary policy, so it is challenging to explain why the expectation about a given future variable $Macro_{CN,t+n}$ reverts so drastically after the announcement. Moreover, the yield gaps between announcement windows have persisted for decades, so it is also puzzling why $\mathbf{E}_t[Macro_{CN,t+n}]$ does not incorporate the gaps.

Arbitraging Away the Yield Gaps The UIP condition suggests that the difference between Chinese and foreign bond yields should equal the expected rate of exchange rate change if the financial market is complete. If investors believe that China's objective is to stabilize the exchange rate, we would expect consistent yield comovement across all periods. However, as illustrated in Figure 4, the yield gaps continuously widen between monetary policy announcements, indicating substantial arbitrage opportunities. It is difficult to believe that investors only exploit these yield gaps during short monetary policy windows while ignoring the opportunities during other periods.

Monetary Policy Coordination Vast evidence shows that monetary policies worldwide are coordinated. However, as Figure 2a shows, China's short-term yield is vastly different from those in other countries, suggesting that China's monetary policy barely correlates with the monetary policies studied in this paper. In the Online Appendix, we demonstrate that China's Treasury yields remain flat during many PBoC announcement windows; therefore, the yield comovements during foreign monetary policy announcement windows are unlikely

to be due to anticipated follow-up PBoC policies.

6.2 A Possible Explanation: Rational Inattention

To explain the documented yield comovement patterns, we extend the framework of Van Nieuwerburgh and Veldkamp (2009) by introducing two asset pricing signals. Investors optimally allocate their attention between the home signal and the foreign signal. During the foreign monetary policy announcement windows, investors in China endogenously pay more attention to the foreign signal than at other times, leading to stronger international comovement in interest rates.

6.2.1 Setup

The model is static and consists of three periods. In period 1, each investor chooses the precision (variances) of signals subject to a capacity constraint for the total precision. In period 2, each investor observes signals and makes the investment. In period 3, each investor receives the asset payoffs.

The payoff of China's long-term bond is:

$$v = \theta_h + \lambda\theta_f + \varepsilon \tag{13}$$

where θ_h and θ_f are domestic and foreign factors (both normally distributed), λ is a constant weight, ε is an idiosyncratic shock. The payoff can be thought of as the reselling value of the long-term bond, and the foreign signal can be interpreted as the risk premium component. The global financial cycle literature documents that monetary policies of the financial hub countries significantly affect global risk premia (e.g., Gerko and Rey (2017), Gilchrist et al. (2019), Jordà et al. (2019), Miranda-Agrippino and Rey (2022)). Our term structure decomposition in Section 5 also supports the notion that foreign monetary policy affects China's term premia.

Investors observe two signals: $s_h = \theta_h + \eta_h$ and $s_f = \theta_f + \eta_f$ with Gaussian noises $\eta_h \sim \mathcal{N}(0, \sigma_h^2)$, $\eta_f \sim \mathcal{N}(0, \sigma_f^2)$, where σ_h^2, σ_f^2 are the endogenously chosen signal noise variances. The priors for θ_h and θ_f are also independent Gaussian with means and variances $(\mu_{h,0}, \sigma_{h,0}^2)$, $(\mu_{f,0}, \sigma_{f,0}^2)$. The noises η_h and η_f are independent, and their variances can be chosen by the

investors in period 1. The investors pay efforts to reduce the posterior variances, $\hat{\sigma}_h^2 \equiv \mathbf{Var}(\theta_h|s_h)$ and $\hat{\sigma}_f^2 \equiv \mathbf{Var}(\theta_f|s_f)$, which is equivalent to reducing the variances of η_h and η_f.[7] When no effort is made, the noise variance is infinite, and the posterior variance equals the prior variance. When the investors exert efforts to learn from the signal, the posterior variance becomes smaller than the prior variance, and the total reduction is subject to a capacity constraint:

$$\frac{1}{2}\log\left(\frac{\sigma_{h,0}^2}{\hat{\sigma}_h^2}\right) + \frac{1}{2}\log\left(\frac{\sigma_{f,0}^2}{\hat{\sigma}_f^2}\right) \leq \kappa, \tag{14}$$

for some $\kappa > 0$, which is equivalent to

$$\hat{\sigma}_h^2\hat{\sigma}_f^2 \geq \frac{\sigma_{h,0}^2\sigma_{f,0}^2}{e^{2\kappa}}, \tag{15}$$

where $\hat{\sigma}_h^2$ and $\hat{\sigma}_f^2$ are the posterior variances chosen by the investor. The investors in China maximize expected utility

$$U = \mathbf{E}\left[q(v - rp) - \frac{\gamma}{2}q^2\Omega\middle|s_h, s_f\right], \tag{16}$$

where q is the number of shares of the long-term bond and Ω is the variance of the payoff. The terminal wealth is

$$W = rW_0 + q(v - pr). \tag{17}$$

6.2.2 Model Solution

We solve the model backward.

In period 2, the first-order condition for the optimal portfolio choice is

$$q = \frac{1}{\gamma}\hat{\Omega}^{-1}\left(\hat{v} - pr\right), \tag{18}$$

where $\hat{v} = \hat{\theta}_h + \lambda\hat{\theta}_f$ is the posterior mean, $\mathbf{E}\left[v|s_h, s_f\right]$, and $\hat{\Omega}$ is the posterior variance, $\mathbf{Var}(v|s_h, s_f)$, of the asset payoff. The total supply of the long-term bond is fixed at $\bar{x}$. The

[7] The Gaussian-Gaussian conjugate formula implies $\hat{\sigma}_h^2 = \left(\frac{1}{\sigma_{h,0}^2} + \frac{1}{\sigma_h^2}\right)^{-1}$. Given $\sigma_{h,0}^2$, choosing $\hat{\sigma}_h^2$ is equivalent to choosing σ_h^2.

market-clearing condition implies

$$p = \frac{1}{r}\left[\hat{v} - \gamma\hat{\Omega}\bar{x}\right]. \tag{19}$$

In period 1, the investor substitutes Equation (18) into the utility function to get

$$U = \mathbf{E}\left[\frac{1}{2}\hat{\Omega}^{-1}(\hat{v} - pr)^2 \middle| s_h, s_f\right]. \tag{20}$$

Choosing $\hat{\Omega}$ to maximize the utility is equivalent to [8]

$$\max_{\hat{\sigma}_h^2, \hat{\sigma}_f^2} \frac{1}{\hat{\sigma}_h^2} + \frac{\lambda^2}{\hat{\sigma}_f^2} \quad \text{s.t.} \quad \hat{\sigma}_h^2\hat{\sigma}_f^2 \geq \frac{\sigma_{h,0}^2\sigma_{f,0}^2}{e^{2\kappa}}, \quad \hat{\sigma}_h^2 \leq \sigma_{h,0}^2, \quad \hat{\sigma}_f^2 \leq \sigma_{f,0}^2. \tag{21}$$

Proposition 1 [Corner solutions] *The optimum is attained at a corner. Define learning indices* $L_h = 1/\sigma_{h,0}^2$ *and* $L_f = \lambda^2/\sigma_{f,0}^2$. *If* $L_h > L_f$ *the home corner obtains with* $(\hat{\sigma}_h^2, \hat{\sigma}_f^2) = (\sigma_{h,0}^2/e^{2\kappa}, \sigma_{f,0}^2)$. *If* $L_f > L_h$ *the foreign corner obtains with* $(\sigma_{h,0}^2, \sigma_{f,0}^2/e^{2\kappa})$.

Intuitively, the proposition implies that the investor allocates all attention to the factor with a smaller prior variance and thus reduces the respective posterior variance.

To explain the comovement puzzle, we make the following assumption.

Assumption 1 *The prior variance* $\sigma_{f,0}^2$ *of the foreign factor decreases during foreign monetary policy announcement windows. In particular,* $\sigma_{f,0}^2/\sigma_{h,0}^2 > \lambda^2$ *outside the announcement windows, but* $\sigma_{f,0}^2/\sigma_{h,0}^2 < \lambda^2$ *during the announcement windows.*

This assumption aligns with the well-established view that monetary policy announcements resolve macroeconomic uncertainty (Ai and Bansal (2018), Brusa et al. (2020), Hu et al. (2022)).

[8] This objective function is a simplified version of the general Van Nieuwerburgh and Veldkamp (2009) framework. In the full model, the benefit from learning also depends on supply noise and the informativeness of the equilibrium price. We abstract from these general equilibrium feedback effects to keep the model tractable. While endogenizing price informativeness would enrich the analysis, it does not alter our core prediction that improvements in the informativeness of foreign prior trigger a reallocation of attention.

Denoting $\boldsymbol{s} \equiv (s_h, s_f)^\top$, the posterior variance and mean are

$$\hat{\Omega} \equiv \mathbf{Var}(p|\boldsymbol{s}) = \mathbf{Var}(\theta_h|s_h) + \lambda^2 \mathbf{Var}(\theta_f|s_f) + \mathbf{Var}(\varepsilon), \tag{22}$$

and

$$\hat{v} \equiv \mathbf{E}[p|\boldsymbol{s}] = \mathbf{E}[\theta_h|s_h] + \lambda \mathbf{E}[\theta_f|s_f]. \tag{23}$$

According to Bayes' rule,

$$\hat{\sigma}_h^2 \equiv \mathbf{Var}(\theta_h|s_h) = \frac{1}{\frac{1}{\sigma_h^2} + \frac{1}{\sigma_{h,0}^2}} = \begin{cases} e^{-2\kappa}\sigma_{h,0}^2 & \text{non-window} \\ \sigma_{h,0}^2 & \text{window} \end{cases}, \tag{24}$$

$$\hat{\sigma}_f^2 \equiv \mathbf{Var}(\theta_f|s_f) = \frac{1}{\frac{1}{\sigma_f^2} + \frac{1}{\sigma_{f,0}^2}} = \begin{cases} \sigma_{f,0}^2 & \text{non-window} \\ e^{-2\kappa}\sigma_{f,0}^2 & \text{window} \end{cases}. \tag{25}$$

Note that we can solve for the noise signal variances σ_h^2 and σ_f^2 from the last equality. Moreover, the posterior mean is a weighted average of the signal and the prior mean

$$\hat{\theta}_h \equiv \mathbf{E}[\theta_h|s_h] = \hat{\sigma}_h^2 \left(\frac{1}{\sigma_h^2} s_h + \frac{1}{\sigma_{h,0}^2} \mu_{h,0} \right), \tag{26}$$

$$\hat{\theta}_f \equiv \mathbf{E}[\theta_f|s_f] = \hat{\sigma}_f^2 \left(\frac{1}{\sigma_f^2} s_f + \frac{1}{\sigma_{f,0}^2} \mu_{f,0} \right). \tag{27}$$

Importantly, when the investors choose to reduce σ_f^2, $\hat{\theta}_f$ has a larger relative loading on s_f and $\hat{\sigma}_f^2$ is smaller. Meanwhile, $\hat{\theta}_h$ puts a smaller weight on s_h and $\hat{\sigma}_h^2$ increases. The intuition is straightforward: when s_f is more precise, the investors rely more on it to infer θ_f, and the inference has less uncertainty.

6.2.3 Price Correlation

Consider equilibrium prices from market clearing:

$$p = \frac{1}{r}[\hat{\theta}_h + \lambda \hat{\theta}_f - \gamma \hat{\Omega} \bar{x}], \quad p^* = \frac{1}{r}[\hat{\theta}_f^* - \gamma^* \hat{\Omega}^* \bar{x}^*],$$

where $\hat{\theta}_i = \mathbb{E}[\theta_i|s_i]$ are posterior means and asterisks denote foreign market variables. We assume that the foreign bond payoff only depends on θ_f, and the foreign investors observe the same s_f that the home investors observe. Moreover, the foreign investors don't learn from the signal, so that $\hat{\sigma}_f^{*2} = \sigma_{f,0}^2$.[9]

Since θ_h and θ_f are independent across markets, the only source of covariance is $\mathbf{Cov}(\hat{\theta}_f, \hat{\theta}_f^*)$. Hence, the correlation between prices is:

$$\mathbf{corr}(p, p^*) = \frac{\frac{\lambda}{r^2}\mathbf{Cov}(\hat{\theta}_f, \hat{\theta}_f^*)}{\sqrt{\mathbf{Var}(p)\mathbf{Var}(p^*)}}. \tag{28}$$

When the home investors reallocate attention from the home signal to the foreign signal during foreign monetary policy announcements, there are two effects on the correlation.

1. The numerator increases: better foreign signals increase $\mathbf{Cov}(\hat{\theta}_f, \hat{\theta}_f^*)$.

2. The denominator becomes more similar to the numerator: the foreign signal variance has a larger weight in $\mathbf{Var}(p)$.

Hence, under Assumption 1, the equilibrium price correlation is strictly higher during FOMC announcement windows than outside these windows. Intuitively, greater precision of the foreign signal strengthens the common driver of both markets while dampening the influence of idiosyncratic home noise, thereby raising comovement.

Letting

$$\begin{aligned} V_{hf} \equiv &\mathbf{Var}^2(\theta_h|s_h)\frac{1}{\sigma_h^4}\mathbf{Var}(s_h)\mathbf{Var}^{*2}(\theta_f|s_f)\frac{1}{\sigma_f^{*4}}\mathbf{Var}(s_f), \\ V_{ff} \equiv &\mathbf{Var}^2(\theta_f|s_f)\frac{1}{\sigma_f^4}\mathbf{Var}(s_f)\mathbf{Var}^{*2}(\theta_f|s_f)\frac{1}{\sigma_f^{*4}}\mathbf{Var}(s_f), \end{aligned}$$

we characterize the international price correlation using the following proposition.

Proposition 2 [Price Correlation] *The correlation between the home and foreign bond prices*

[9] Assuming the foreign investors always learn the foreign signal doesn't change our result, because the key is that the foreign posterior variance is constant.

is

$$\mathbf{corr}(p, p^*) = \frac{\lambda}{\sqrt{\frac{V_{hf}}{V_{ff}} + \lambda^2}}. \tag{29}$$

Moreover,

$$\left.\frac{V_{hf}}{V_{ff}}\right|_{non\text{-}window} > \left.\frac{V_{hf}}{V_{ff}}\right|_{window}, \tag{30}$$

so the correlation is higher during the foreign monetary policy windows.

6.2.4 Validation

Our model highlights the assumption that investors consider monetary policy announcements more informative about interest rate dynamics than other news. This assumption is consistent with the fact that Chinese yields are much less responsive to macroeconomic news than monetary policy announcements presented in Figure 7. Consequently, investors should pay more attention to monetary policy announcements than macroeconomic news when considering interest rates. We test this hypothesis using online news article data from GDELT.[10]

We estimate the regression

$$\%int_t = \beta_0 + \beta_1 FOMC_t + \beta_2 Macro_t + \varepsilon_t, \tag{31}$$

where the dependent variable is the percent of online news articles published on date t that contain the Chinese word "interest rate", $FOMC_t$ and $Macro_t$ are dummy variables equaling 1 if t belongs to the FOMC window or a U.S. macroeconomic news announcement window. Macroeconomic news windows that overlap with FOMC windows are excluded. The macroeconomic news announcement windows are the same as those considered in Figure 7. The news data covers Chinese online news articles published between 2017 and 2024. The coefficients β_1 and β_2 measure whether more articles mention "interest rate" during FOMC or macroeconomic news announcement windows than on other days.

Every day, 1% of all articles mention "interest rate" on average. The maximum occurred on January 31, 2023, when 18% of the articles mentioned "interest rate". The day

[10]The GDELT Project monitors the world's broadcast, print, and web news from nearly every corner of every country in over 100 languages. Its Chinese database covers major Chinese media outlets, including Sina, People's Daily, and Caijing, among others. The archives are updated every 15 minutes.

Table 3: Frequency of "interest rate" in news articles.

	CPI	GDP	IP	UN	CPI&GDP	CPI&IP	CPI&UN	All
const.	1.02***	0.99***	1.02***	1.00***	1.01***	1.04***	1.02***	1.04***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
FOMC	0.21*	0.24**	0.21*	0.24**	0.22**	0.20*	0.22**	0.20*
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Macro	-0.18***	0.12	-0.21***	0.05	-0.04	-0.21***	-0.08	-0.10**
	(0.06)	(0.11)	(0.06)	(0.10)	(0.06)	(0.05)	(0.06)	(0.05)
N	2797	2797	2797	2797	2797	2797	2797	2797
R^2 (%)	0.43	0.35	0.47	0.30	0.31	0.62	0.34	0.41
FOMC - Macro	0.39***	0.13	0.42***	0.19	0.26**	0.41***	0.30**	0.30***

Notes. The table reports the estimation results for $\%int_t = \beta_0 + \beta_1 FOMC_t + \beta_2 Macro_t + \varepsilon_t$, where the dependent variable is the percent of online news articles published on date t that contains the Chinese word "interest rate", $FOMC_t$ and $Macro_t$ are dummy variables equaling 1 if t belongs to the FOMC window or a U.S. macroeconomic news (column header) announcement window. Macroeconomic news windows that overlap with FOMC windows are excluded. The last row reports the point estimate for the hypothesis that $\beta_1 - \beta_2 = 0$ vs. $\beta_1 - \beta_2 \neq 0$. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

was also an FOMC meeting day. On average, the fraction of news articles mentioning "interest rate" increases by 0.2 percentage points during FOMC windows compared to days without FOMC or macroeconomic news announcement days. During macroeconomic news announcement days, however, news articles are less likely to mention "interest rate" than on non-announcement days. The regression results support our model assumption by showing that interest-rate-related topics receive disproportionately more attention during monetary policy announcement windows than on other days in China.

7 Conclusion

We examine the cumulative effects of foreign monetary policy announcements on China's Treasury yield curve, finding that these announcements impact various segments of the yield curve in a monotonic manner. Specifically, the monetary policy announcements from the Federal Reserve and the Bank of Japan have consistently reduced China's long-term yields, while those from the European Central Bank and the Bank of England have led to persistent declines in China's short-term interest rate.

Overall, China's Treasury yields do not coincide with those of developed economies, as evidenced by the diverging trends. However, during the respective central banks' monetary policy announcements, China's Treasury yields are closely pegged nearly one-to-one with foreign yields. This observation suggests that monetary policy can induce persistent variations in interest rates independent of the natural rate.

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A1 Additional Figures and Tables

A1.1 FOMC Announcements and World Interest Rates

In Figure A1, we demonstrate that the consecutive yield decline during FOMC windows is a global phenomenon, regardless of the economic development stage. Moreover, the downward yield trend is also common among all country groups. Therefore, it is challenging to distinguish the pure monetary effects from the "long-run Fed guidance" channel, highlighting China's unique role in identifying the monetary trend without stars.

Specifically, we study the average 10-year yields of the following three country groups.

G10 Australia (AUS), Canada (CAN), Switzerland (CHE), Denmark (DNK), Germany (DEU), United Kingdom (GBR), Japan (JPN), Norway (NOR), New Zealand (NZL), Sweden (SWE), United States (USA).

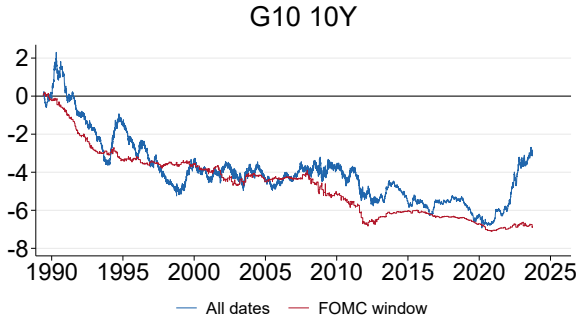
Non-G10 Developed Economies Belgium (BEL), Spain (ESP), France (FRA), Hong Kong SAR, China (HKG), Israel (ISR), Italy (ITA), Korea, Republic of (KOR), Netherlands (NLD), Singapore (SGP).

Emerging Market Economies Bulgaria (BGR), Colombia (COL), the Czech Republic (CZE), Hungary (HUN), Indonesia (IDN), India (IND), Mexico (MEX), Malaysia (MYS), Peru (PER), the Philippines (PHL), Poland (POL), Romania (ROU), the Russian Federation (RUS), Thailand (THA), Turkey (TUR), South Africa (ZAF).

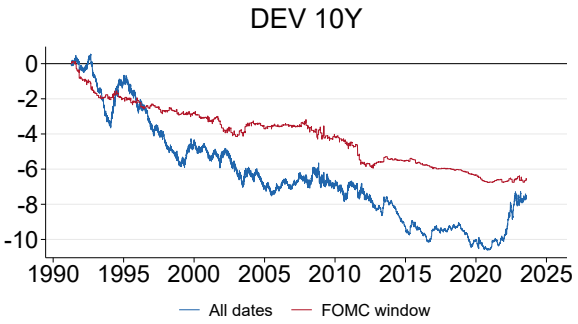
For each group, we compute the cross-sectional average daily yield changes on each day, and then sum them up over time. The average yields in all groups have declined persistently over the past three decades, and the cumulative yield changes within the three-day FOMC windows closely resemble the downward trends observed in all groups.

A1.2 Chinese Yield Dynamics Over An FOMC Cycle

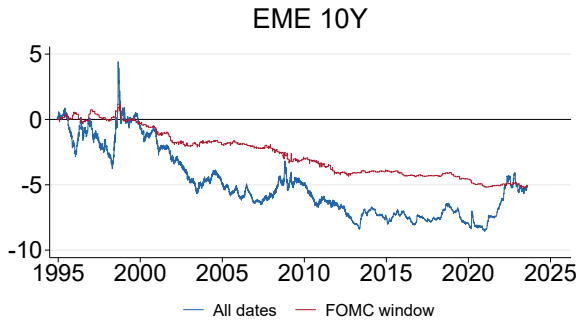
Figure A2 plots the cumulative changes in Chinese government bond yields of various maturities from day -2 to day +15 around monetary policy announcements by the Federal Reserve, Bank of Japan, European Central Bank, and Bank of England. The solid red lines show the average yield change across announcement cycles, and the dashed lines denote



(a) G10 average 10-year yield.



(b) Non-G10 developed economies average 10-year yield.

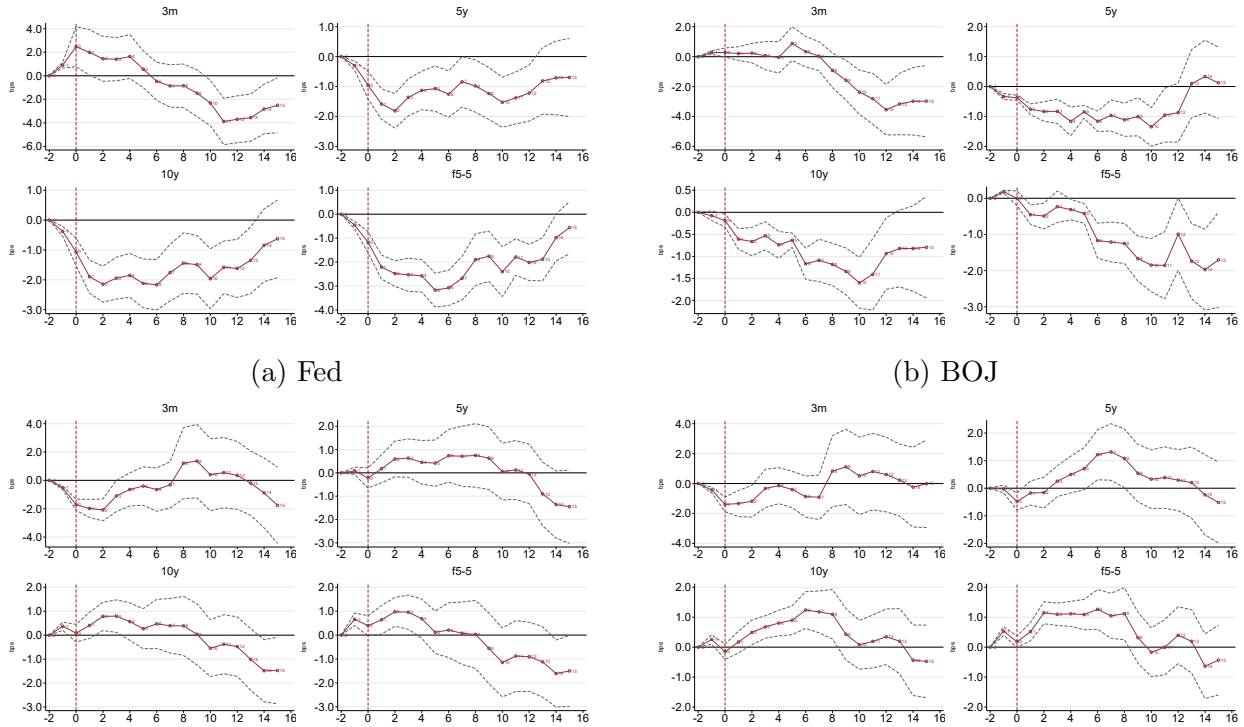


(c) Emerging market economies average 10-year yield.

Figure A1: World 10-year yields and the FOMC trends.

Notes. The yields are computed by taking cross-sectional averages of daily changes within each country group, and then summing over time. The G10 includes: AUS, CAN, CHE, DNK, DEU (EUR), GBR, JPN, NOR, NZL, SWE, USA. The non-G10 developed economies include: BEL, ESP, FRA, HKG, ISR, ITA, KOR, NLD, SGP. The emerging market economies include: BGR, COL, CZE, HUN, IDN, IND, MEX, MYS, PER, PHL, POL, ROU, RUS, THA, TUR, ZAF.

the 95% confidence intervals. Across all maturities and central banks, the yield changes significantly and consistently in the short interval from day -1 to day +1. Beyond day +1, the cumulative yield changes flatten or display less systematic movement, indicating that the responses in Chinese interest rates take place within this three-day horizon. This pattern supports the choice of the [-1, 1] window as the maximal event interval for capturing the systematic trend in yields attributable to foreign monetary policy announcements, while minimizing the inclusion of unrelated market noise or post-event drift.



(a) Fed

(b) BOJ

(c) ECB

(d) BOE

Figure A2: Average dynamics of Chinese yields over a monetary policy cycle.

Notes. We compute the cumulative yield changes from day -2 to day 15 around each monetary policy announcement, then compute the day-by-day averages across announcement cycles. The dashed lines depict the 95% confidence interval. The unit of the yield is basis points.

A1.3 Yield Dynamics During PBoC Announcement Windows

Figure A3 illustrates the dynamics of Chinese Treasury yields during the People's Bank of China's monetary policy announcement windows. The dynamics of all maturities during the windows are highly consistent: the rates declined substantially in late 2008 and early 2009, and then remained almost constant until the end of 2019. Since 2020, the Treasury yields have changed frequently during PBoC's monetary policy announcements. Overall, the yields barely changed during China's monetary policy announcement windows over most of our sample period, and the window series diverge from the actual yields substantially. This implies that the responses of China's yields to foreign monetary policy announcements are unlikely due to PBoC's policy responses.

A2 Proofs

A2.1 Proof of Proposition 1

Proof. The Lagrangian for Equation (21) is

$$\mathcal{L} = \frac{B_h}{\hat{\sigma}_h^2} + \frac{B_f}{\hat{\sigma}_f^2} - \mu\Big(\hat{\sigma}_h\hat{\sigma}_f - \tfrac{\sigma_h^0\tilde{\sigma}_{f,t}}{e^{\kappa}}\Big). \tag{A1}$$

FOCs imply any interior point must satisfy $\mu > 0$ and the product constraint binds. The objective is strictly convex in $(\hat{\sigma}_h^2, \hat{\sigma}_f^2)$ while the feasible set is convex and compact; therefore, optima lie at corners where one no-forgetting constraint binds. Comparing the two corners reduces to $\frac{1}{\sigma_{h,0}^2} \gtrless \frac{\lambda^2}{\sigma_{f,0}^2}$. □

Figure A4 illustrates the intuition for the optimal choice of posterior variances. The investor increases the utility by minimizing the posterior variances, but the constraint prevents the investor from choosing too small variances. The feasibility set is the triangular region, while the indifference curve moves in the lower left direction. Therefore, the optimal choice is one of the two corners.

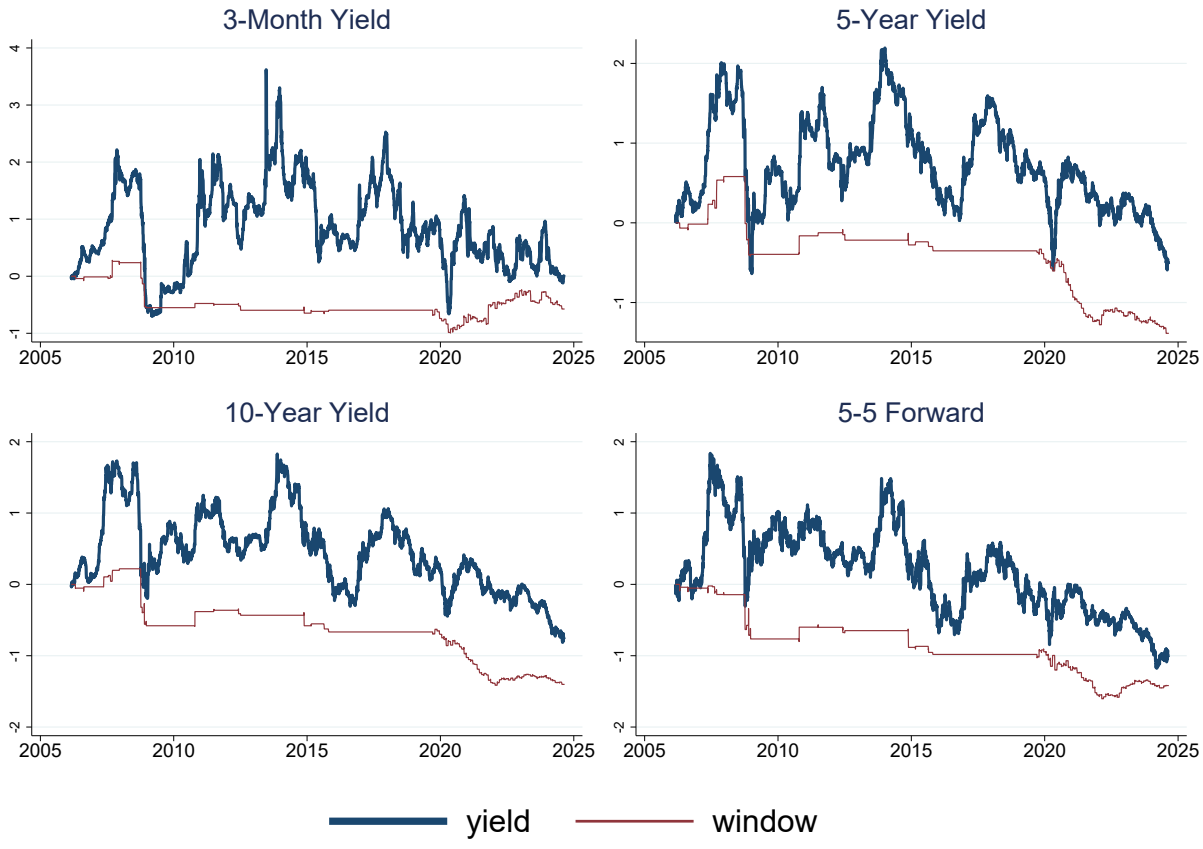


Figure A3: Cumulative changes in Chinese Treasury yields during PBoC monetary policy announcement windows.

Notes. The series "yield" is the actual daily yield minus its initial value; "window" is the sum of daily yield changes during the respective monetary policy announcement windows.

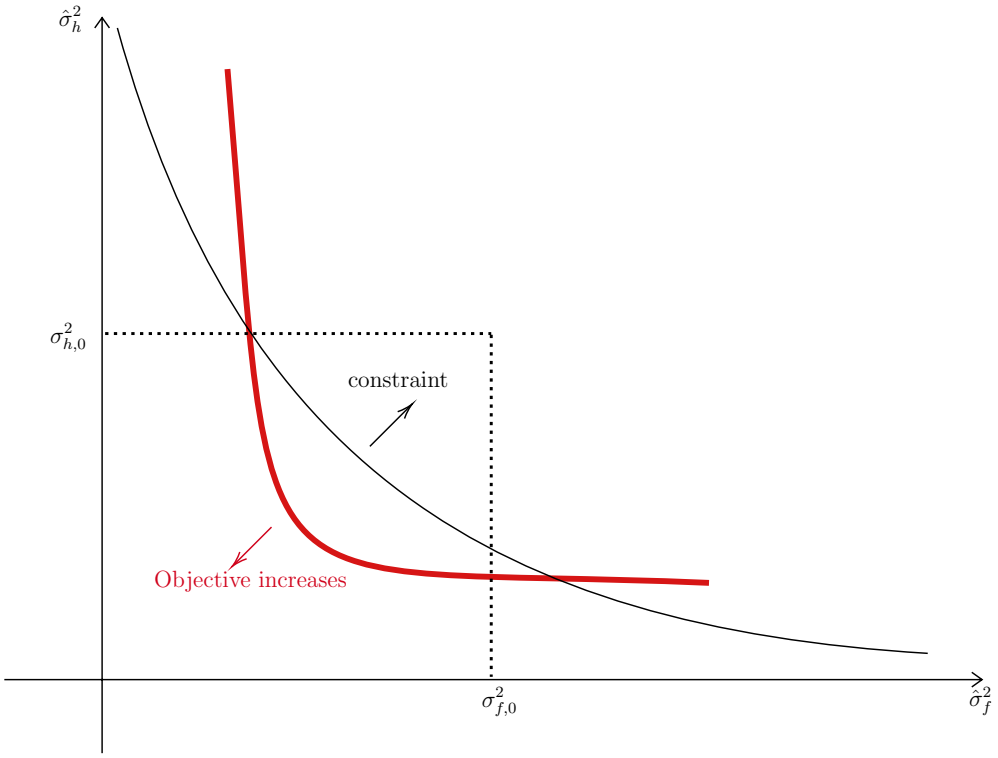


Figure A4: Optimal choice of posterior variances.

A2.2 Proof of Proposition 2

Proof. The covariance between p and p^* is

$$\begin{aligned}
\mathbf{Cov}(p, p^*) =& \frac{\lambda}{r^2}\mathbf{Var}(\theta_f|s_f)\mathbf{Var}^*(\theta_f|s_f)\frac{1}{\sigma_f^2}\frac{1}{\sigma_f^{*2}}\mathbf{Var}(s_f) && \text{(A2)}\\
=& \frac{\lambda}{r^2}\frac{1}{\frac{1}{\sigma_f^2}+\frac{1}{\sigma_{f,0}^2}}\frac{1}{\frac{1}{\sigma_f^{*2}}+\frac{1}{\sigma_{f,0}^2}}\frac{1}{\sigma_f^2}\frac{1}{\sigma_f^{*2}}\mathbf{Var}(s_f) && \text{(A3)}\\
=& \frac{\lambda}{r^2}\frac{\sigma_{f,0}^2}{\sigma_{f,0}^2+\sigma_f^2}\frac{\sigma_{f,0}^2}{\sigma_{f,0}^2+\sigma_f^{*2}}\mathbf{Var}(s_f). && \text{(A4)}
\end{aligned}$$

The variances are

$$\mathbf{Var}(p) = \frac{1}{r^2}\left[\mathbf{Var}^2(\theta_h|s_h)\frac{1}{\sigma_h^4}\mathbf{Var}(s_h) + \lambda^2\mathbf{Var}^2(\theta_f|s_f)\frac{1}{\sigma_f^4}\mathbf{Var}(s_f)\right], \tag{A5}$$

$$\mathbf{Var}(p^*) = \frac{1}{r^2}\left[\mathbf{Var}^{*2}(\theta_f|s_f)\frac{1}{\sigma_f^{*4}}\mathbf{Var}(s_f)\right]. \tag{A6}$$

Let

$$\begin{aligned}
V_{hf} \equiv& \mathbf{Var}^2(\theta_h|s_h)\frac{1}{\sigma_h^4}\mathbf{Var}(s_h)\mathbf{Var}^{*2}(\theta_f|s_f)\frac{1}{\sigma_f^{*4}}\mathbf{Var}(s_f) \\
=& \left[\frac{\sigma_{h,0}^2}{\sigma_{h,0}^2+\sigma_h^2}\frac{\sigma_{f,0}^2}{\sigma_{f,0}^2+\sigma_f^{*2}}\right]^2\mathbf{Var}(s_h)\mathbf{Var}(s_f), \\
V_{ff} \equiv& \mathbf{Var}^2(\theta_f|s_f)\frac{1}{\sigma_f^4}\mathbf{Var}(s_f)\mathbf{Var}^{*2}(\theta_f|s_f)\frac{1}{\sigma_f^{*4}}\mathbf{Var}(s_f) \\
=& \left[\frac{\sigma_{f,0}^2}{\sigma_{f,0}^2+\sigma_f^2}\frac{\sigma_{f,0}^2}{\sigma_{f,0}^2+\sigma_f^{*2}}\right]^2\mathbf{Var}^2(s_f).
\end{aligned}$$

Then,

$$\mathbf{corr}(p,p^*) = \frac{\lambda\sqrt{V_{ff}}}{\sqrt{V_{hf}+\lambda^2 V_{ff}}} = \frac{\lambda}{\sqrt{\frac{V_{hf}}{V_{ff}}+\lambda^2}}. \tag{A7}$$

Note that the only terms switching between windows and non-windows are σ_h^2 and σ_f^2. Since

$$\sigma_h^2 = \begin{cases} \frac{\sigma_{h,0}^2}{e^{2\kappa}-1} & \text{non-window} \\ \infty & \text{window,} \end{cases} \qquad \sigma_f^2 = \begin{cases} \infty & \text{non-window} \\ \frac{\sigma_{f,0}^2}{e^{2\kappa}-1} & \text{window,} \end{cases} \tag{A8}$$

it is straightforward that

$$\left.\frac{V_{hf}}{V_{ff}}\right|_{\text{non-window}} > \left.\frac{V_{hf}}{V_{ff}}\right|_{\text{window}}, \tag{A9}$$

so the correlation is higher during the foreign monetary policy windows. □