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Abstract

This paper studies the transmission of monetary policy to the stock market through investors' discount factors. To isolate this channel, we investigate the effect of US monetary policy surprises on the ratio of prices of the same stock listed simultaneously in Hong Kong and Mainland China, and thereby control for revisions in cash-flow expectations. We find this channel to be strong and asymmetric, with the effect driven by surprise monetary policy interest rate cuts. A 100 basis point surprise cut results in a 30 basis point increase in the ratio of stock prices over 5 days. These results suggest significant slow-moving reductions in stock market risk premia following accommodating monetary policy surprises.

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1 Introduction

The effect of monetary policy on stock prices is an essential aspect of the transmission mechanism to the economy and remains a prime question in finance. This channel can be decomposed into two components. First, monetary policy can affect asset prices by influencing expectations about the future cash flows of firms either by directly affecting their profits by boosting aggregate demand (Caballero and Simsek, 2022, 2023) or by releasing new information about the economy (Nakamura and Steinsson, 2018; Gómez-Cram and Grotteria, 2022). Second, a change in monetary policy can also affect how investors discount those cash flows across time and states-of-the-world. For instance, the central bank lowering interest rates can induce investors to reduce the risk premia they require for holding risky stocks by compelling investors to take more risk to achieve the same return target (i.e., “reaching for yield" as in Hanson and Stein (2015)) or by revising upward their expectations about the responsiveness of the central bank to macroeconomic and financial market conditions (Cieslak and Pang, 2021). Studying the behavior of discount factors is important for assessing the plausibility of macro-financial models (Cochrane, 2017), understanding the impact of monetary policy on financial intermediation (Begenau et al., 2015), and analyzing the macroeconomic transmission of monetary policy through the stock market (Kekre and Lenel, 2022). Doing so is, however, challenging because discount rate shocks are typically confounded with news about firms' cash flows.

This paper offers new insight into how monetary policy impacts stock prices through investors' discount factors using dual-listed stocks in Mainland China and Hong Kong that represent claims to the same cash flows in two segmented markets. First, we provide new and conclusive evidence that monetary policy affects stock prices beyond its direct effect on firms' cash flows through investors' discount factors. Second, we show that those revisions in discount factors are asymmetric and correspond primarily to surprise rate cuts from the Federal Reserve (Fed). This result is consistent with prior evidence that cuts tend to be associated with reductions in risk premia (Cieslak et al., 2019; Cieslak and Vissing-Jorgensen, 2021). Third, we show that high-frequency strategies are likely to underestimate the effect of monetary policy because of the simultaneous release of information about cash flows. Hence, model calibrations and policy rules may need to be revised accordingly, given the stronger effects of monetary policy on asset prices relative to those currently measured in the literature.

In this study, we propose a new approach to isolate and study this discount rate channel by exploiting a unique institutional feature of the Chinese stock market, in which some companies' stocks are listed simultaneously in Mainland China and Hong Kong. Notably, the existence of capital controls that prevent flows between the two markets implies that the stock price of the same company can diverge across exchanges despite identical underlying fundamentals (Carpenter et al., 2020; Jia et al., 2017; Mei et al., 2009). In contrast to these restrictions on capital flows, geographic and cultural closeness allows for the free exchange of information, including about firms' future cash flows. We make use of this duality and propose a difference-in-differences empirical design to isolate the discount rate channel of monetary policy on stock prices. Specifically, we study the effect of US monetary surprises as introduced by Kuttner (2001) and Bernanke and Kuttner (2005) to the ratio of the prices of the same stock listed in both Mainland China and Hong Kong—the A/H ratio.

This design has three main advantages. First, by considering the ratio of the prices of the same company across the two exchanges, we remove the effect of revision in cash flow expectations, which should affect both A and H shares homogeneously under a common information set. This specification thereby allows us to isolate the effect of monetary policy on stocks that is solely due to revisions in discount factors. Second, unlike conventional event studies that focus on the US stock market and in which US monetary policy can potentially react to new macroeconomic information (Bauer and Swanson, 2023) or directly to stock market price dynamics (Rigobon and Sack, 2003; Cieslak and Vissing-Jorgensen, 2021), US monetary policy is plausibly exogenous to the state of the economy in Hong Kong. However, because the Hong Kong dollar is pegged to the US dollar, the Hong Kong overnight interbank rate (HIBOR) nonetheless closely follows the fed funds rate and is highly reactive to US monetary policy surprises. The combination of these two features creates an ideal setting to study the effect of monetary policy on stock prices without suffering from the inherent endogeneity issues arising in studies of US monetary policy to the US stock market. Third, by considering the ratio of stock prices on the same fundamentals, our difference-in-differences setting allows us to study the effect of monetary policy with reduced noise by netting out fundamental news on firms' cash flows, and thereby increases the precision of the estimates, allowing us to identify statistically significant effects of monetary policy surprises on discount rates beyond FOMC announcement days.

The main contribution of our analysis is to demonstrate the existence of a substantial *discount factor* transmission channel of monetary policy to the stock market[1] and provide evidence against the view that central banks do not affect asset prices.[2] According to our estimates, a 25 bp surprise increase in the US fed funds rate yields a decrease of 3% in the price of Chinese stocks listed in Hong Kong relative to the same company's stock listed in Mainland China over the next 5 days. These estimates compare to 1% in Bernanke and Kuttner (2005) and indicate a significant revision of investors' risk premia following monetary policy surprises, although with some mean reversion.

Moreover, we find that the isolated discount factor effect of monetary policy on stock prices is asymmetric, with rate hikes resulting in non-statistically significant movement in the A/H ratio. Those patterns are consistent with the findings of Cieslak et al. (2019) and Cieslak and Vissing-Jorgensen (2021), who document large reductions in the equity risk premium following accommodative surprises. In particular, Cieslak et al. (2019) find that since 1994, the equity risk premium has been earned entirely in even weeks following announcements and argue that the Fed has affected the stock market mostly via unexpectedly accommodating policy. Since investors interpret surprise rate cuts as evidence of the Fed reacting more strongly to negative surprises to the stock market than previously anticipated, they reduce the risk premium they require to hold stocks, which results in an increase in stock prices—the so-called Fed put effect. Cieslak and Vissing-Jorgensen (2021) find consistent evidence for the notion that the Fed became more reactive to the stock market through textual analysis, and Cieslak and Pang (2021) find that reductions in risk premia are 3.5 times stronger than orthogonalized surprises to short-term rates in a VAR exercise. This hypothesis of a transition toward a more accommodative monetary policy reaction function is consistent with the large asymmetric magnitudes of our estimates.[3]

[1]To our knowledge, no study has been able to isolate the transmission of monetary policy into stock prices by isolating the channel through discount factors. Work such as Hanson and Stein (2015) and Hanson et al. (2021) has studied the reaction of bond discount factors to monetary surprises and documented the existence of an "excess reaction puzzle". Stock discount factors are distinct from those of bonds, which has been shown by Fama and French (1993) and more recently by Cieslak and Pang (2021).

[2]For example, Eugene Fama noted in 2020 that "The central banks don't do anything real... we don't see a big effect of Fed actions on real activity or on stock prices or on anything else."

[3]Using panel data on professional forecasts, Bauer et al. (2022) find consistent evidence that public perception

These findings also indicate that, unlike new information about cash flows studied extensively in the finance literature (Fama, 1991), discount factors are slower to adjust to monetary policy surprises, and thus high-frequency methodologies are likely to underestimate the full impact of monetary policy on stock prices. Consistently with our findings, Binsbergen and Grotteria (2023) find that mortgage yields respond about 3 weeks after monetary policy announcements; Brooks et al. (2018) document gradual drift following FOMC announcement in the bond market following mutual fund rebalancing; and Hillenbrand (2022) finds that most of the decline in long-term yields took place over a 3-day window around FOMC announcements. In particular, our results support recent findings from Neuhierl and Weber (2024) of a strong and asymmetric drift following expansionary announcements and attribute those to revisions in discount factors rather than cash flow expectations.

We further investigate how monetary policy surprises affect the discount factor across three stock characteristics following Fama and French (1992): risk as measured by the Capital Asset Pricing Model (CAPM) beta, size as measured by market capitalization, and value as measured by the ratio of stock market capitalization to a company's earnings. First, we find that high-beta stocks are more reactive to monetary policy surprises. This finding is consistent with the theory that monetary policy surprises affect prices through risk premia: According to the standard asset pricing equation, a revision in risk premia will have a stronger effect on the price of riskier stocks. Moreover, we also find evidence that small firms, characterized by low market capitalization, and value firms, characterized by low price-to-earning, are more responsive to discount factors following FOMC announcements. This result is consistent with the notion that those firms require a larger macroeconomic announcement risk premium, as hypothesized by the distressed-firm explanation of the value premium (Fama and French, 1992; Chan and Chen, 1991) and is consistent with previous findings that discount factor fluctuations mostly impact near-future cash flows rather than distant-future ones (Binsbergen et al., 2012; Binsbergen and Koijen, 2017).

To conclude, we provide a series of additional tests to assess the robustness of those results. To ensure that heterogeneous revisions in firms' cash flow expectations are not driving our

of the reaction of the federal funds rate on economic conditions is highly time-varying. Similar asymmetry has also been documented by Ozdagli and Weber (2023).

results—as could be possible with imperfect information flows or heterogeneous reactions in beliefs across the two regions—we perform two additional exercises. First, we split our sample between firms that export to the US and those that don't. Consistent with our identifying assumption that revisions in cash flow expectations are controlled for by taking the A/H ratio, we find no difference in outcomes across these two segments. Second, we make use of surveys from professional forecasters regarding expectations of cash flow growth to examine whether investors based in Mainland China adjust their cash flow forecasts differently than investors based in Hong Kong.[4] As is also consistent with our identification assumption, we find that monetary policy surprises do not result in heterogeneous revisions in cash flow expectations from analysts across the two regions. In further robustness exercises, we also find no significant reaction in either HKD-CNY or USD-CNY exchange rates following a monetary policy surprise, which rules out exchange rate dynamics as an alternative channel. Our results are also robust to alternative clustering, fixed effects, time periods, and sample restrictions and to a series of alternative specifications.

The remainder of the paper is organized as follows. Section 2 presents our empirical strategy to identify the effects of monetary policy on asset prices, and Section 3 describes the data. Section 4 analyzes the empirical results, Section 5 discusses our robustness tests of the results, and Section 6 concludes.

2 Methodology

In this section, we discuss the institutional setting and outline our empirical approach to capture the effect of monetary policy on equity prices through discount factors. We achieve this result using shares for the same company that are listed in segmented markets: Mainland China and Hong Kong.

[4] Jia et al. (2017) find that A-shares exhibit a notably stronger reaction to recommendation adjustments by local analysts as opposed to foreign analysts.

2.1 Institutional Setting

Dual Listed Shares Mainland China and Hong Kong have separate stock exchanges that have followed different historical development paths. The main exchange in Hong Kong is the Stock Exchange of Hong Kong (SEHK), which was founded in 1891. There are two stock exchanges in Mainland China: the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE). Since their establishment in 1990, the mainland exchanges have experienced rapid growth in the number of listed stocks. Mainland Chinese exchanges issue two types of shares, A and B. Most firms (3,680 out of 3,777) issued A-shares, which are exclusively traded by Chinese residents in CNY. A small number of firms (97 out of 3,777) issued B-shares, which are traded in foreign currencies. B-shares are restricted to foreign investors, while A-shares are restricted to Chinese residents.[5]

Almost contemporaneously with the establishment of mainland exchanges, mainland Chinese companies also began listing in Hong Kong.[6] Stocks issued by Chinese firms in the SEHK are often referred to as H-shares. The first listing of a mainland Chinese firm in Hong Kong occurred when Tsingtao was listed in 1993. Since then, an increasing number of Chinese firms have been listed in the SEHK. By the end of 2019, 284 Chinese firms listed H-shares, and total market capitalization reached $830 billion. This accounted for approximately 16.8% of the SEHK's total market capitalization and is equivalent to approximately 10% of the capitalization of the two exchanges in Mainland China.[7] For firms that issue both A- and H-shares, these securities are claims to the same cash flow stream.

The stock market in Hong Kong operates without significant capital controls, which allows the free movement of capital. In contrast, Mainland China has implemented strict capital controls that restrict the free flow of capital across its borders. As a result, investors in Mainland China are prevented from trading shares in Hong Kong. Similarly, foreign investors encounter obstacles in trading shares in Mainland China because of the inability to move capital into Mainland China (Carpenter et al., 2021; Carpenter and Whitelaw, 2017; He et al., 2023). Capital

[5] For more details, see Carpenter et al. (2020); Jia et al. (2017); and Mei et al. (2009).

[6] There are also many Chinese firms that have listed their stocks in countries or regions other than mainland China or Hong Kong, including New York, London, and Singapore.

[7] Data are from The HKEX Fact Book 2019, SSE Yearbook 2020, and SZSE Yearbook 2019.

controls have led to a segmentation between cross-listed shares in Hong Kong and mainland China. This results in a price difference between shares because arbitrage is difficult, and there is a well-documented premium of A-shares over H-shares (Jia et al., 2017). Consequently, any shocks to one stock market are likely to impact only the prices of the corresponding share and contribute to a change in the price differences. It is worth noting that investors in both markets are exposed to a similar flow of information, given the cultural and geographical proximity, and equipped with equal voting and cash-flow rights.[8] The size of the A/H premium varies over time, with A-shares sometimes trading for twice as much as H-shares. Figure 1 shows the A/H premium over time. This premium has been discussed extensively by Jia et al. (2017) and Carpenter et al. (2021) and occurs due to the relatively strict segmentation in the market. In segmented markets, heterogeneity in investors' wealth and preference can lead to different discount factors across the two markets and, thereby, different equilibrium prices and quantities despite identical products: the rights to a firm's cash flows. Our empirical strategy, outlined later in this section, controls for differences in the levels of A and H shares and instead relies on shifts in the ratio.

Monetary Regimes in Hong Kong and Mainland China Despite the fact that Hong Kong was returned to China in 1997, the former British territory has maintained an independent financial system that differs from that of Mainland China. Hong Kong and Mainland China maintain different currencies and operate separate monetary policy. Specifically, Hong Kong's currency is pegged to the US dollar, and thus Hong Kong's monetary policy is determined externally. The unique institutional setting—which features significant capital controls and different central banks that affect different shares of the same company—provides an ideal setting for identifying the transmission of monetary policies through discount rates.

Hong Kong has a separate currency, the Hong Kong dollar, which is pegged to the US dollar.

[8] The market was partially unified with the introduction of the Shanghai-Hong Kong Stock Connect in November 2014. Under the program, a limited number of stocks were allowed to be traded by investors in both Hong Kong and Mainland with more than RMB500,000 (or approximately $70,000 USD) in their accounts. The introduction of Stockconnect is discussed by He et al. (2023). Suggesting the persistence in de facto segmentation with several restrictions in access, the introduction of the stock connect did not lead to significant reductions in the A/H premium. To ensure our results are not affected by the stockconnect, we nonetheless also run our regressions on a restricted sample consisting of the period pre-2014 when the markets were more strictly segmented and find similar results.

The Hong Kong Monetary Authority (HKMA) implements the Linked Exchange Rate System (LERS) in Hong Kong, whereby the exchange rate between HKD and USD is pegged within a range of 7.75 to 7.85 HKD per US dollar. To uphold the fixed exchange rate, the monetary base of Hong Kong is fully backed by USD assets, and the HKMA provides Convertibility Undertakings (CUs), under which the HKMA commits to selling HKD to banks at 7.75 HKD per USD and buying HKD from banks at 7.85 HKD per USD. The policy rate in Hong Kong is pegged to the target rate in the US.[9]

Mainland China, on the other hand, uses the Chinese yuan (CNY) and operates an independent monetary policy. The People's Bank of China (PBoC) employs various tools to ensure that monetary policy aligns with the economic challenges faced by Mainland China. Over time, the Chinese exchange rate system has become increasingly flexible. In 2005, the PBoC introduced a new exchange rate regime called "managed floating". During this period, the PBoC still heavily intervened in the foreign exchange market, which resulted in a relatively stable rate compared with the USD. We thus see little effect of US monetary policy surprises on differences in exchange rates between the HKD and CNY. Since July 2015, the PBoC has pursued and maintained a more flexible exchange rate regime.

2.2 Conceptual Framework

To clarify our empirical approach, we introduce a simple conceptual framework. Consider an economy with integrated trade but fully segmented financial markets between two regions, A and H, populated by different investors. The economy features a continuum of firms whose stock shares are divided and sold in parts in the two regions. Shares are claims on firms' future cash flows, which are identical for all shares of the same firm, irrespective of the market it is trading in. Each region follows its own monetary policy stance—respectively, m_A and m_H. In line with the monetary policy surprises literature, a monetary policy stance is to be interpreted as the reaction function for the central bank across all policy instruments to each relevant event. Surprises to the monetary policy stance, as revealed through monetary policy announcements,

[9] From Nov. 1998 to Oct. 2008, the policy rate in Hong Kong was set as either the target rate in the US plus 150 bp or the simple average of the 5-day moving averages of the overnight and 1-month HIBOR, whichever was higher. After Oct. 2008, the premium of the Hong Kong policy rate over the US target rate was reduced to 50 bp.

may affect stock prices directly through firms' cash flows (aggregate demand channel) and indirectly by affecting investors' risk-adjusted discount factor (discount factor channel). While the monetary policy stance can affect cash flows in both regions through integrated trades, it only affects the discount factor of its own region's investors due to capital controls. Following these assumptions, we write the price of the stock of company i traded in both regions A and H following Cochrane (2005) as the future expected discounted cash flows:

$$P_A^i = \frac{1}{R_A^i(m_A)} E[x^i(m_A, m_H)], \qquad P_H^i = \frac{1}{R_H^i(m_H)} E[x^i(m_A, m_H)], \tag{1}$$

where P_J^i is the price of stock i in region $J \in \{A, H\}$, R_J^i is the risk-adjusted discount factor applied to stock i's cash flow by investors in region J, and $E[x^i(m_A, m_H)]$ is the cash flow expectation of stock i which, unlike the discount factors, possibly depends on the monetary policy stance in both regions. As is customary in the asset pricing literature, we further decompose the discount factor into a risk-free discount rate and a risk premium element:

$$R_J^i = r^f(m_J) + r^{p,i}(m_J), \quad \text{for } J \in [A, H].$$

This decomposition makes explicit that the monetary policy stance can possibly affect the discount factor through both the (whole term structure of) risk-free rates r_t^f and the firm-specific risk premium $r^{p,i}$. Taking the ratio of stock prices across the two regions:

$$\frac{P_A^i}{P_H^i} = \frac{R_H^i(m_H)}{R_A^i(m_A)}. \tag{2}$$

That is, the dependence of stock prices on monetary policy through cash flows cancels out as the ratio of stock prices across the two regions is proportional to the sum of the ratios of the discount factors in the two regions. This equation motivates our empirical approach because focusing on this ratio around monetary policy announcements in a given region allows us to extract the effect of surprises to the monetary policy stance on stock prices that are solely due to a change in relative discount factors. For instance, if a surprise to monetary policy stance m_H causes region H investors to lower the risk premium they require for holding stock i, $r^{p,i}$, it will result in a lower discount factor R_H^i and, consequently, a decrease in the price ratio P_A^i/P_H^i.

2.3 Empirical Strategy

Following the above conceptual framework, our empirical strategy exploits listings of the same stock in Mainland China and Hong Kong following monetary policy announcements. We examine the A/H ratio of Mainland over Hong Kong share prices for the same company's stock. Focusing on share price for the same company allows us to remove the effect of cash-flow revisions on prices, since the A- and H-securities are claims to the same company's cash flow and thus isolate discount rate responses to monetary policy announcements, holding changes in cash flows constant. In our main analysis, we estimate variants of the following specification:

$$(P_A/P_H)_{ist} = \alpha_i + \eta_s + \lambda_t + \beta \text{Surprise}_s \times \text{Post}_t + \varepsilon_{ist}. \tag{3}$$

Here, $(P_A/P_H)_{ist}$ is the A/H ratio of company i stock prices listed in Mainland China and Hong Kong, respectively, around announcement s in event time t. Surprise_s is the surprise component of announcement s. Post_t is an indicator variable equal to one if event time t is after the relevant announcement s and zero otherwise. We also include firm fixed effects α_i, which absorb time-invariant company-specific factors such as firm size or location; announcement fixed effects η_s, which absorb announcement-specific factors such as macroeconomic conditions; and event time fixed effects, which absorb aggregate temporal effects. Our main coefficient of interest is β, which captures the effect of a one percentage point surprise announcement on the ratio of share prices in Mainland China and Hong Kong.[10]

Our primary identification assumption is that, in the absence of monetary policy announcements, A and H shares would have trended smoothly. This assumption relies on the fact that the two share types are claims to the *exact same cash flows*. Thus in the absence of any change in discount rates, we should not see significant shifts in the ratio of A- and H-shares. The inclusion of fixed effects is important to our strategy as the well-documented level differences in the A and H shares—which may be driven by differences in demand between Mainland China and the outside world or other factors—are absorbed by company fixed effects α_i. Therefore,

[10] A potential concern with the approach is that heterogeneous and dynamic effects can bias estimates, which is the focus of recent literature (Baker et al., 2022). In Appendix D, we address these concerns by employing stacked estimators that are robust to these effects.

to threaten our empirical approach, a confounding factor must not only be correlated with the discount rate of either only A- or H-shares but also occur at the time of monetary policy announcements.

In this regard, a possible challenge to identification is that beliefs about future cash flows react differently in each region. Note that, in order for this divergence to be a threat to our identification, investors in Hong Kong and Mainland China would have to perceive US monetary policy surprises as having differential effects on firms' cash flows. This assumption is weaker than the need for beliefs to be identical in Mainland China and Hong Kong. If Mainland Chinese are, on average, more optimistic or pessimistic, this would be absorbed by the company fixed effects α_i. In Section E, we also present evidence that analysts' beliefs are similar in Hong Kong and Mainland China.[11]

We further employ event study models, which depend on whether the unit of analysis is at the announcement or company-announcement level. Throughout, we provide graphical representations for the event study model. Doing so helps in evaluating our identification assumptions, as it demonstrates smooth trends prior to surprise announcements, and allows us to study the dynamics of policy surprises. Specifically, when exploring the impact of monetary policy on bank lending rates, our analysis is at the announcement level. To assess whether HIBOR and HIBOR futures respond to US monetary policy surprises, we use the following specification:

$$\text{HIBOR}_{st} = \eta_s + \lambda_t + \sum_{\tau=-4}^{5} \beta_\tau^{\text{HB}} \text{Surprise}_s \times \mathbb{1}(\text{Time Since Announcement}_{st} = \tau) + \varepsilon_{st}. \quad (4)$$

Here, HIBOR_{st} is the 3-month HIBOR or 3-month HIBOR future around announcement s at event time t and $\mathbb{1}(\text{Time Since Announcement}_{st} = \tau)$ is an indicator variable that equals one if the time since the relevant announcement s equals τ at event time t and zero otherwise. Other variables are the same as those in Equation (3). In most specifications, we include announcement fixed effects η_s as well as event time fixed effects λ_t. The coefficients β_τ^{HB} capture the difference in rates following a monetary policy surprise in a specific period τ.

[11]Another possible concern is that exchange rates may shift. While this is unlikely, given that both the Hong Kong dollar and the Chinese yuan are stabilized against the dollar, in Appendix A, we demonstrate that exchange rates do not change following announcements.

Turning to the impact on share prices, we conduct similar analysis at the company-announcement level. We run the following specification, adding firm fixed effects α_i:

$$(P_A/P_H)_{ist} = \alpha_i + \eta_s + \lambda_t + \sum_{\tau=-4}^{5} \beta_\tau \text{Surprise}_s \times \mathbb{1}(\text{Time Since Announcement}_t = \tau) + \varepsilon_{ist} \quad (5)$$

Here, the variables are the same as those defined in Equations (3) and (4), and we are again interested in the coefficients β_τ that capture the difference between A- and H-shares following a monetary policy surprise. We cluster standard errors at the company level.[12]

3 Data

This section describes the main data sources used to obtain data on share prices, rates, and policy surprises. Our main data sources are WIND, the Hong Kong Monetary Authority (HKMA), and the Federal Reserve.

3.1 Share Prices

Our stock price data primarily come from WIND, a company that specializes in financial software services and data provision in China. WIND has built a large database on Chinese financial and securities data, which includes share prices for publicly listed companies. Throughout the period from 2000 to 2019, a total of 119 cross-listed stocks were traded both in Mainland China and Hong Kong stock markets. We obtain the daily closing stock prices of these A-H pairs over time. Simultaneously, we collect the exchange rate between the Hong Kong dollar (HKD) and Chinese yuan (CNY) to ensure currency consistency. These were also obtained from WIND. In our baseline analysis, the stock prices are in CNY. To calculate the A-H premium, we divide the A-share price by the H-share price. For each cross-listed stock, we merge its daily price information with the set of FOMC announcements and keep a period of 5 consecutive trading days before and after each announcement date. Finally, we combine all the cross-listed stocks to construct our sample for event studies.

[12] In the appendix, we show that results are robust to clustering at the announcement level.

Table 1 presents the summary statistics of our sample on announcement dates. In Panel A, we present stock-event-level statistics, which include A-share and H-share prices, as well as the A/H ratio. In Panel B, we present event-level statistics, which include target rates, surprises, HIBOR, and HIBOR futures.

3.2 Rates

We obtained data on relevant rates from the Hong Kong Association of Banks (HKAB). The primary relevant rate is the Hong Kong Interbank Offered Rate (HIBOR). The rate is the annualized rate for interbank lending on instruments denominated in Hong Kong dollars. The HKAB summarizes and announces the HIBOR each working day. We retrieve historical daily data from the HKMA.[13] Our data on Hong Kong Dollar Interest Settlement Rates and their futures span from 2000 to 2019. The HIBOR has different maturities: overnight, 1 week, 1 month, 3 months, 6 months, 9 months, and 1 year. In our baseline analysis, we primarily focus on the 3-month HIBOR because its futures data have longer time-series availability. We obtain daily data on 1-month futures of the 3-month HIBOR from Datastream. We then merge the HIBOR and HIBOR futures data with the event set. Furthermore, we include a period of 5 days before and after each announcement to conduct event studies.

3.3 Policy Surprises

To identify the surprise component of each FOMC announcement, we follow Kuttner (2001). We obtain data on FOMC announcement dates, target rates, and federal funds futures from the Federal Reserve's website.[14] We collect FOMC announcement dates spanning 2000 to 2019. Our target rate data is retrieved from Federal Reserve Economic Data (FRED). Before December 15, 2008, the Fed directly set the target rate, which we treat as our target rate in those instances. From December 16, 2008 onward, the Fed set an upper bound and a lower bound for the target rate. We calculate the average of the upper and lower bounds and treat it as the target rate. We obtain the spot rate and 1-month rate of federal funds futures from Datastream.

[13] See HKMA.

[14] See the Federal Reserve.

After calculating the surprise components, we merge the announcement dates, target rates, and surprises to form our event set. In our baseline scenario, we exclude announcements from December 16, 2008, to December 16, 2015, during which the target rate reached zero. Our main results hold including announcement during the zero lower bound period. Table 2 presents a comprehensive list of events in the full sample.

4 Results

This section presents our main results. We first show that, as hypothesized, US monetary policy surprises result in an almost one-to-one change to interbank rates in Hong Kong but have no effect on interbank rates in Mainland China. We then present the results of our main event-study regression and find a strong effect of monetary policy surprises to the A/H ratio. We interpret those results in relation to the literature and discuss some additional cross-sectional patterns.

4.1 Interbank Rates

We begin by studying the pass-through of US monetary policy surprises to various interbank rates to test the validity of our empirical setting. First, we examine the effects of policy surprises on the main interbank lending rate in Hong Kong, the HIBOR. The top panel of Figure 2 shows estimates of coefficients from equation (4), along with a 95% confidence interval. The left panel displays the 3-month HIBOR rate, and the right panel displays the 3-month HIBOR futures. These figures indicate no or very small pre-trends, followed by a sharp increase after policy surprises. A one percentage point policy surprise leads to an approximately 1 point increase in the 3-month HIBOR rate, and a sligthly lesser increase in 3-month HIBOR futures. However, after 1 day we cannot reject the null of a one-to-one increase by the day following the announcement.

The bottom left panel of Figure 2 displays the reaction of the USD London Interbank Offered Rate (LIBOR) to the same monetary policy announcement for reference, and the bottom right panel shows the reaction of the main interbank rate in Mainland China, the Shanghai Interbank

Offered Rate (SHIBOR). As anticipated, this exercise provides strong evidence of a large pass-through of US monetary policy to Hong Kong financial conditions; Chinese monetary policy is completely unaffected due to capital controls and market segmentation.

4.2 Monetary Policy Surprises and the A/H Ratio

Table 3 presents our main results, which examine the impact of monetary policy surprises on the ratio between share prices in Mainland China and Hong Kong. The table displays estimates of equation (3) for various specifications. The first column presents the baseline estimates without fixed effects while the second comment includes company fixed effects and an indicator for the time period after the announcement; time period fixed effects, announcement fixed effects, and a company-specific trend are then added in. The inclusion of additional fixed effects does not significantly alter the results. Regardless of the specification, we find that a one percentage point surprise increase leads to a 25 to 30 basis point increase in the ratio between share prices in the Mainland and Hong Kong.

Table 4 reproduces our main result when splitting the sample between surprises associated with rate hikes and cuts to further study the properties of discount rate reactions to monetary policy surprises. Table 4 shows the existence of strong asymmetry in discount factor reactions because only rate cuts and not rate hikes result in statistically significant movement in the A/H ratio; this contrasts with the symmetry of the estimates in Bernanke and Kuttner (2005). Those patterns are, however, consistent with the findings of Ai and Bansal (2018), who document the existence of an announcement premium that results in a decrease in risk premia following macroeconomic announcements. In particular, this asymmetry in the reaction of discount factors seems to corroborate the findings of Cieslak et al. (2019) and Cieslak and Vissing-Jorgensen (2021), whereby accommodative surprises such as interest rate cuts have been asymmetrically interpreted by market participants as an indication of a higher Fed propensity to intervene to avoid strong stock market declines—the so-called Fed put. As investors revise their expectations about Fed interventionism, they lower the risk premium they require to hold stocks, which leads to a rise in stock prices.

Figure 3 displays event study estimates for a window of 4 days before and 5 days after the event, following the specification reported in column (3) of Table 3, along with 95% confidence intervals. As for the effect on interbank rates, we see no evidence of any pre-trends in the days leading up to surprise policy announcements. Following the surprises, we see a significant increase in the ratio between A- and H-shares. Perhaps surprisingly, this effect appears to be increasing over time in the days following the announcement; the cumulative coefficient 3 days after the announcement is almost twice as large as the effect the day after the announcement. Higher-frequency strategies, such as Bernanke and Kuttner (2005), would miss these significant longer-term effects and thereby possibly underestimate the impact of policy announcements. Although the dynamics of the effect display some mean reversion, we show in Appendix E that some statistically significant effect remains in a 10-day window.

4.3 Discussion of the Main Results

According to the estimates presented in Table 3, a 100 bp rate cut results in a decrease in the ratio of the stock price of Mainland A-shares to Hong Kong H-shares of 28 bps. Given a mean observation-weighted A/H ratio of 2.4 for our sample (Table 1), this figure implies that a 25 bp rate cut increases H-stock prices compared with the A-stock prices by around 3% on average. This figure is significantly larger than the estimate of Bernanke and Kuttner (2005) and Gürkaynak et al. (2005), whereby a 25 bp cut leads to a 1% increase in the index stock price.

A series of methodological differences are possibly responsible for this discrepancy. First, Bernanke and Kuttner (2005) only look at first-day effect because, within an event-study methodology, standard errors become too large beyond this time window. An advantage of our approach is that by taking the ratio of two claims on the same underlying cash flow and applying time-fixed effects, we control for the effect of new information on macroeconomic variables on cash flows and are able to expand the study's time window beyond day 1. As shown in Figure 3, the discount factor effect of monetary policy surprises increases until the third day after the announcement. In particular, the day-1 regression coefficient is around 0.15, which generates an increase in the stock price of H stocks relative to A stocks of 1.5% for a 25 bp cut; this figure is closer to Bernanke and Kuttner's 1%.

A second discrepancy that could be responsible for the larger estimates is that, by isolating the effect of monetary policy working through discount rates, our method partly controls for the "Fed information" channel, as described by Nakamura and Steinsson (2018), Jarociński and Karadi (2020), and Hillenbrand (2022). As shown in those studies, market participants derive information from monetary policy surprises about the state of the economy and, thereby, firms' future cash flows. This effect is commonly opposite to the direct causal effect of monetary policy. Through a surprise interest rate hike, the Fed may also signal to the market that the economy is doing better relative to its anticipation. For this reason, the information channel is considered to be a plausible explanation for why some surprise hikes are associated with an outright increase in stock prices (and conversely). By focusing on the effect of monetary policy surprises on the A/H ratio, our estimates are likely less sensitive to the confounding effect of the information channel.[15] A larger coefficient for monetary policy surprises is consistent with this hypothesis.

4.4 Additional Cross-sectional Results

In this section, we explore how monetary policy surprises heterogeneously affect firms' specific discount factors across three stock characteristics that are known to be significant drivers of aggregate cross-sectional variations in stock returns (Fama and French, 1992). Specifically, we interact our primary estimate, Surprise × Post, with price-to-earning ratios (PE for value), market capitalization (MC for size), and CAPM Betas in the following triple-difference regression:

$$\begin{aligned}(P_A/P_H)_{ist} = \alpha_i + \eta_s + \lambda_t + \beta_1 \text{Surprise}_s \times \text{Post}_t \\ + \beta_2 \text{Charact}_{ist} + \beta_3 \text{Surprise}_s \times \text{Charact}_{ist} \\ + \beta_4 \text{Post}_t \times \text{Charact}_{ist} + \beta_5 \text{Surprise}_s \times \text{Post}_t \times \text{Charact}_{ist} + \varepsilon_{ist}\end{aligned} \tag{6}$$

where Charact_{ist} is a lagged stock characteristic (i.e., PE ratio, MC, and CAPM beta) of stock i on announcement s and at event time t. To compute PE ratios, MC, and CAPM betas,

[15] Although our methodology controls for the Fed's information effect on firms' future cash flows in equity markets, a residual information effect may still arise if investors adjust their long-run discount factors based on economic conditions. Nakamura and Steinsson (2018) and Hillenbrand (2022) provide evidence for the existence of an information effect on long-run interest rates $r^\star$.

we retrieve market value and total earnings data from WIND starting on Feb. 15, 2001. Market value data are calculated on a trading day basis following the formula $\text{Market}_{it} = \text{H Shares}_{it} \times \text{H Price}_{it} + \text{A Shares}_{it} \times \text{A Price}_{it}$, with i denoting a stock and t a trading day. H Shares_{it} and H Price_{it} denote the number of shares and the closing price in the Hong Kong stock market, while A Shares_{it} and A Price_{it} denote the number of shares and the closing price in the Mainland China stock market. The price-to-earnings ratio are $\text{Market}_{it}/\text{Earnings}_{it}$. Because prices may be affected by the monetary policy surprises, we lag our price-to-earnings ratio by a year. The CAPM betas are calculated from a 5-year rolling window based on the monthly returns of the stocks and the Shanghai Composite Index (SSE) using data from WIND.[16]

The first three columns of Table 5 display the results of interacting Surprise × Post with the PE ratios. Previous studies have documented that firms with low stock market valuations relative to measures of fundamentals, such as earnings or book equity, have outperformed the market—the so-called value anomaly (Rosenberg et al., 1985; Fama and French, 1992). Prior work has hypothesized that this result could be caused by pervasive behavioral biases (Lakonishok et al., 1994; De Bondt and Thaler, 1985; La Porta et al., 1997); priced risk factors, such as a distressed risk factor (Fama and French, 1995; Chan and Chen, 1991); or differences in cash flow duration (Lettau and Wachter, 2007; Binsbergen et al., 2012; Weber, 2018). Table E.7 provides some evidence that value stocks, as measured by firms with a low PE ratio, are more impacted by monetary policy surprises. When splitting the sample between above- and below-median PE, above-median PE firms are almost twice as impacted, with an estimated coefficient of 0.364 vs 0.157 for below-median PE firms—a difference that is statistically significant at the 5% level. The triple interaction exercise provides evidence that is similar directionally—with a negative coefficient irrespective of the specification—although with low statistical significance.

This exercise suggests that monetary policy surprises affect investors' discount factors more strongly for firms with a low market valuation relative to earnings. This result is consistent with previous findings that the risk premia on short-term cash flows are, on average, larger and

[16]Specifically, the beta of stock i in month t is obtained by conducting the following regression: $r_{i,m} = \alpha_i + \beta_i r_{SSE,m} + \varepsilon_{i,m}$, where $m \in \{t-60, t-59, \ldots, t-1\}$ denotes a month in the rolling window of month t, $r_{i,m}$ is the monthly return of stock i in month m, and $r_{SSE,m}$ is the monthly return of SSE in month m. To alleviate the effects of outliers, we winsorize betas by 2.5% on both sides for each announcement.

more volatile than on more distant ones, which results in excess volatility.[17] In particular, this result is consistent with the model of Lettau and Wachter (2007), in which the value premium is the consequence of time variations in investors' stochastic discount factors. This interpretation also matches with the results for the size characteristics presented in the second three columns of Table 5: Small stocks, as captured by below-median market capitalization, have stronger reactions to monetary policy shocks, which renders them more sensitive to macroeconomic business cycle news.

The last three columns of Table 5 present the results of a similar triple-difference regression, with the CAPM beta as an additional interacted variable. This exercise finds a more significant effect for larger beta stocks and provides additional evidence that monetary policy surprises affect not only the risk-free part of the discount factor decomposition but also the risk premium. This result echoes Savor and Wilson (2014) findings that the CAPM does better on macroeconomic announcement days, a result later confirmed by Cieslak et al. (2019) for days within the FOMC cycle. When splitting the sample between below-median and above-median stock, we observe an almost doubling of the estimate Surprise × Post coefficient from 0.212 to 0.386. Tables E.9, E.7, and E.8 in the Appendix present similar results for alternative specifications.

5 Alternative Channels and Robustness

In this section, we study the potential alternative channels through which a US monetary policy surprise could affect the A/H ratio through revisions in cash flow expectations rather than the discount factor, and provide evidence on the robustness of our main results.

5.1 Expectations of Future Cash Flows

A primary concern is that investors across the two markets would have heterogeneous reactions to monetary policy surprises in revising their subjective cash flow expectations. If this were the case, innovations to the A/H ratio could still be driven by the divergence of those cash flow

[17] See, for example, Binsbergen et al. (2012) and Binsbergen and Koijen (2017).

expectations.[18] In this subsection, we provide empirical evidence against such a divergence following monetary policy surprises. First, we show that local Chinese firms for which the entirety of their sales are located in mainland China do not differ in their A/H reaction to US monetary policy surprises from exporting firms: this is consistent with diverging cash flow expectations' not being an important driver. Second, we provide direct evidence that professional forecasters' cash flow forecasts do not diverge following a monetary policy surprise.

5.1.1 Foreign Exposure

To further ensure that our results are not driven by heterogeneity in cash flow expectations across the two markets, we merge our dataset with FactSet's GeoRev data feed to identify the share of a firm's revenue that is generated by exports. Doing so allows us to modulate our results based on the level of exposure of firms to the US economy. If heterogeneity in subjective expectations about cash flows were an important driver of the observed reaction in the A/H ratio, exporting firms should be more affected by the cash flow expectation revisions caused by a change in US monetary policy than the non-export firms. The results of this exercise are displayed in Appendix B. Columns (1) to (5) of Table B.1 show that the interaction term $Surprise \times Post \times US\ Export\ Share$ is largely nonsignificant across all specifications. Columns (6) and (7) display the results of running the main regression when splitting the sample between non-export firms (*Share* $= 0$) and firms with some export (*Share* > 0). Taken together, these results suggest that heterogeneous reactions to cash flow expectations are not driving our estimates.

5.1.2 Analysts' Forecasts

To further ensure that our results are not driven by diverging reactions in subjective cash flow expectations, we merge our dataset with the I/B/E/S database on professional forecasters' firm cash flow forecasts. Thanks to the granularity of this dataset, we are able to construct a firm-level measure of average cash flow expectations for professional forecasters located in

[18] For instance, Jia et al. (2017) document that heterogeneity in analyst forecasts of firm-specific cash flow expectations across markets is a driver of price dispersion.

Mainland China and Hong Kong. We then study the reaction of the ratio of those expectations to monetary policy surprises following the procedure laid out in Section 2.3. Appendix C provides the details of the data construction and results of the exercise. Supporting our identification assumptions, we find that cash flow expectations are highly correlated across the two regions and do not find any significant divergence in cash flow expectations following a monetary policy surprise.

5.2 Exchange Rates

An additional channel through which a surprise change in monetary policy could, in theory, heterogeneously affect the A/H ratio is exchange rates. As explained above, because H-shares are denominated in Hong Kong dollars while A-shares are denominated in Chinese yuan, we use the daily spot HKD-CNY exchange rate to express the A/H ratio in a common unit of account. If this exchange rate were to react to US monetary policy surprises, our estimates could capture some of this change in the exchange rate. Although exchange rates have been shown to react to monetary policy surprises, this is unlikely to be a concern in our setting because both Hong Kong and Mainland China have maintained a peg with the US dollar; the latter uses foreign exchange intervention and capital controls as its main stabilization instrument. In Appendix A, we address this possible concern by conducting event studies of exchange rates following announcements. Figures A.1 and A.2 indicate that there are no significant movements in exchange rates around the announcements, consistent with the presence of a stabilization regime.

5.3 Alternative Specifications

Our main results are robust to a number of alternative specifications. Table 6 presents results from varying the sample. The first column includes announcements at the zero lower bound, which are not included in the main sample. The second, third, and fourth columns exclude, respectively, very small surprise announcements and announcements during holidays and on days surrounding holidays. The results remain similar to those in our main Table 3.

Another possible concern is that dynamic and heterogeneous treatment effects could bias our results. Appendix D presents a stacked estimator that is robust to dynamic and heterogeneous treatment effects following the stacked approach summarized by Baker et al. (2022) and applied by Cengiz et al. (2019). Appendix E presents further robustness tests. We show that our main results are robust to alternative clustering (Tables E.1 and E.2), fixed effects (Table E.3), and restricting the sample (Table E.4). Results and magnitudes remain quite similar. Table E.10 further presents a sensitivity analysis to potential outliers by reporting our main estimates when dropping a each single announcements.

6 Concluding Remarks

This paper uses monetary policy surprises and claims to the same cash flows to study how monetary policy impacts asset prices. We find conclusive evidence that changes in policy rates affect prices, with a 25 bp cut leading to a 3% increase in stock prices over 5 days following FOMC announcements. Consistent with theories that the market has interpreted rate cuts as evidence of stronger activism from the Fed, this result is concentrated in surprise cuts. Moreover, we find that the effect grows after the initial announcement, which suggests that higher-frequency strategies may underestimate the effects of policy transmission. There are many potentially fruitful avenues for future research. In particular, whereas in this paper, we demonstrate the importance of a discount rate channel in determining asset prices, future work can decompose the effects of different channels to learn more about the mechanisms behind those large revisions in discount factors.

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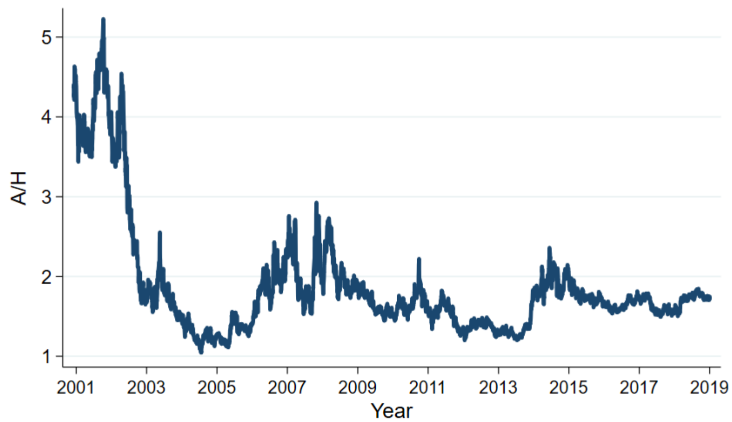
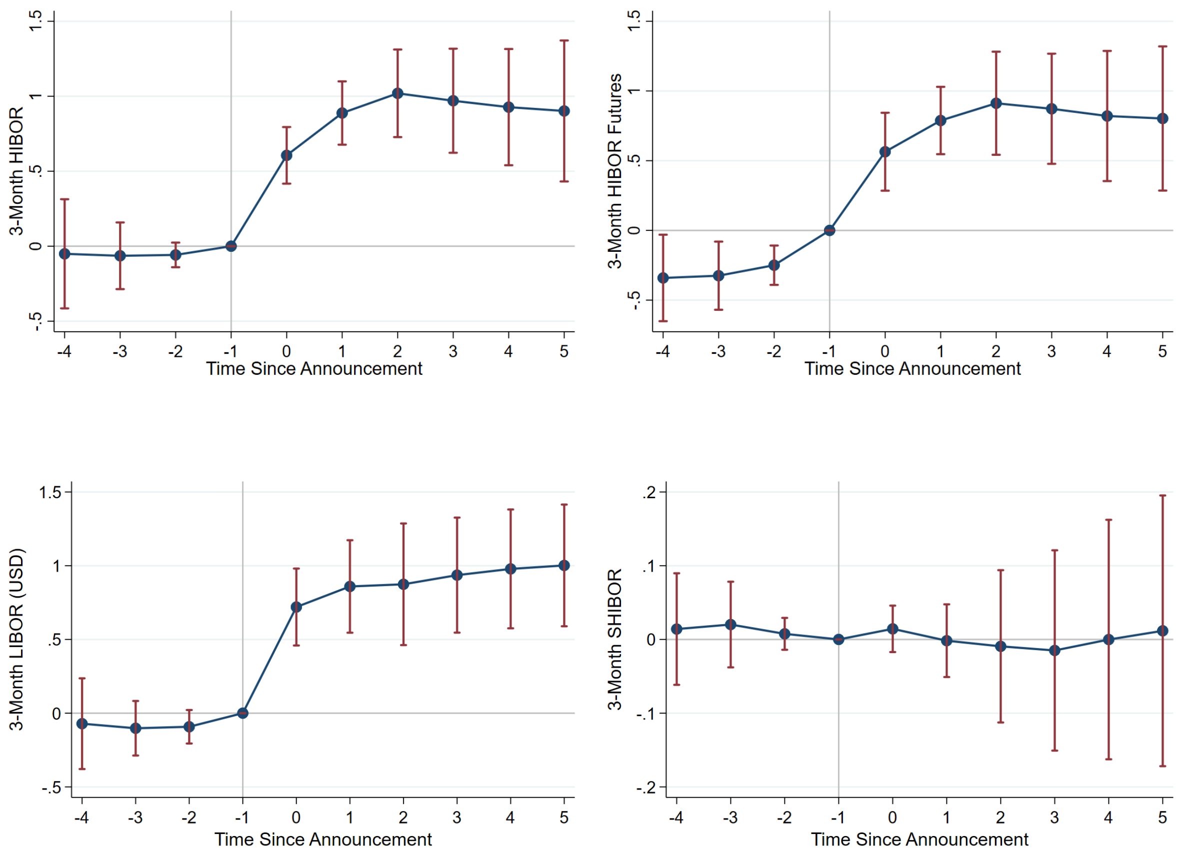
Figure 1: Time Series of Median A-H Premium



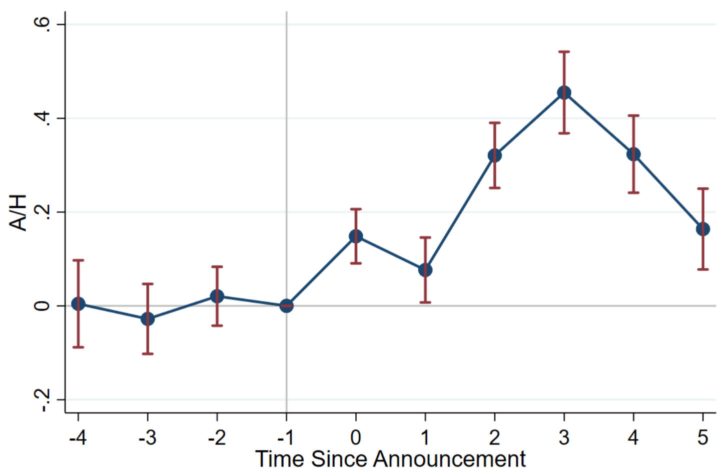
Note: This figure plots the daily time series of the median A/H share price ratio from December 2001 to December 2019.

Figure 2: Policy Announcements, HIBOR, LIBOR, and SHIBOR



This figure plots estimates of equation (4) around FOMC announcements, where the dependent variable is HIBOR, HIBOR futures, LIBOR in USD, or SHIBOR, all of which have a 3-month maturity. All announcements listed in Table 2 are included in the sample. The vertical axis depicts HIBOR, HIBOR futures, LIBOR in USD, or SHIBOR. Announcement fixed effects and a post-announcement indicator are included. Standard errors are clustered at the announcement level. In the top left panel, the dependent variable is HIBOR. In the top right panel, the dependent variable is HIBOR futures. In the bottom left panel, the dependent variable is LIBOR in USD. In the bottom right panel, the dependent variable is SHIBOR. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure 3: Policy Announcements and Share Prices



This figure plots estimates of equation (5) around FOMC announcements, where the dependent variable is the A/H share price ratio. All announcements listed in Table 2 are included in the sample. Company and announcement fixed effects, as well as a post-announcement indicator, are included. Standard errors are clustered at the company level. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Table 1: Summary Satistics

	Mean	SD	25th Pct.	Median	75th Pct.
Panel A: Company-Announcement Level					
A	9.448	9.914	3.468	5.990	11.27
ΔA	-0.0242	0.564	-0.0726	0	0.0597
H	5.728	7.890	1.600	2.984	6.167
ΔH	-0.00101	0.274	-0.0472	-0.00289	0.0341
A/H	2.427	2.070	1.375	1.804	2.722
ΔA/H	-0.00290	0.168	-0.0296	0.000971	0.0274
N	5,537				
Panel B: Announcement Level					
Target Rate	2.702	1.869	1.250	2	4.500
ΔTarget Rate	-0.0398	0.248	0	0	0
Surprise	-0.0167	0.1000	-0.00999	0	0.00499
3-Month HIBOR	2.550	1.745	1.113	2.094	4.119
Δ3-Month HIBOR	-0.0238	0.108	-0.0380	-0.00267	0.0179
3-Month HIBOR Future	2.578	1.729	1.120	2.150	4.130
Δ3-Month HIBOR Future	-0.0114	0.108	-0.0400	-0.00999	0.0300
N	110				

This table presents summary statistics for our main analysis variables on announcement dates. All announcements listed in Table 2 are included in the sample. Panel A summarizes the data at the company-announcement level. *A*, *H*, and *A/H*, respectively, represent the A-share price, H-share price, and A/H ratio on the announcement date. Δ*A*, Δ*H*, and Δ*A/H*, respectively, represent the difference in A-share prices, H-share prices, and A/H ratios between the announcement date and the day before the announcement date. Note that the sample includes both increases and decreases. Panel B summarizes data at the announcement level. *Target Rate*, *3-Month HIBOR*, and *3-Month HIBOR Future*, respectively, represent the target rate, 3-month HIBOR, and 1-month future rate of 3-month HIBOR on the announcement date. Δ*Target Rate*, Δ*3-Month HIBOR*, and Δ*3-Month HIBOR Future*, respectively, represent the difference in target rates, 3-month HIBOR, and 1-month future rates of 3-month HIBOR between the announcement date and the day before the announcement date. *Surprise* represents the surprise component of the change in target rate.

Table 2: List of Events

Announcement Date	Target Rate	Kuttner Surprise	Announcement Date	Target Rate	Kuttner Surprise
2000/02/02	5.75	-.054	2006/09/20	5.25	0
2000/03/21	6	-.031	2006/10/25	5.25	0
2000/05/16	6.5	.052	2006/12/12	5.25	0
2000/06/28	6.5	-.02	2007/01/31	5.25	0
2000/08/22	6.5	-.017	2007/03/21	5.25	0
2000/10/03	6.5	0	2007/05/09	5.25	0
2000/11/15	6.5	0	2007/06/28	5.25	0
2000/12/19	6.5	.052	2007/08/07	5.25	.026
2001/01/03	6	-.382	2007/08/17	5.25	.155
2001/01/31	5.5	.005	2007/09/18	4.75	-.15
2001/03/20	5	.056	2007/10/31	4.5	-.02
2001/04/18	4.5	-.425	2007/12/11	4.25	.008
2001/05/15	4	-.078	2008/01/22	3.5	-.741
2001/06/27	3.75	.05	2008/01/30	3	-.095
2001/08/21	3.5	.016	2008/03/18	2.25	.167
2001/10/02	2.5	-.069	2008/04/30	2	-.055
2001/11/06	2	-.1	2008/06/25	2	-.03
2001/12/11	1.75	0	2008/08/05	2	-.006
2002/01/30	1.75	.015	2008/09/16	2	.059
2002/03/19	1.75	-.026	2008/10/08	1.5	-.142
2002/05/07	1.75	0	2008/10/29	1	-.06
2002/06/26	1.75	0	2008/12/16	.125	-.119
2002/08/13	1.75	.034	2015/12/16	.375	.021
2002/09/24	1.75	.025	2016/01/27	.375	0
2002/11/06	1.25	-.194	2016/03/16	.375	-.01
2002/12/10	1.25	0	2016/04/27	.375	0
2003/01/29	1.25	.005	2016/06/15	.375	0
2003/03/18	1.25	.048	2016/07/27	.375	0
2003/05/06	1.25	.037	2016/09/21	.375	-.042
2003/06/25	1	.15	2016/11/02	.375	-.005
2003/08/12	1	0	2016/12/14	.625	0
2003/09/16	1	0	2017/02/01	.625	-.003
2003/10/28	1	0	2017/03/15	.625	.005
2003/12/09	1	0	2017/05/03	.875	0
2004/01/28	1	0	2017/06/14	.875	.009
2004/03/16	1	0	2017/07/26	1.125	0
2004/05/04	1	-.006	2017/09/20	1.125	0
2004/06/30	1.25	-.01	2017/11/01	1.125	0
2004/08/10	1.5	.022	2017/12/13	1.125	.004
2004/09/21	1.75	.017	2018/01/31	1.375	-.005
2004/11/10	2	0	2018/03/21	1.375	.008
2004/12/14	2.25	0	2018/05/02	1.625	0
2005/02/02	2.5	0	2018/06/13	1.625	-.004
2005/03/22	2.75	0	2018/08/01	1.875	-.003
2005/05/03	3	0	2018/09/26	1.875	0
2005/06/30	3.25	0	2018/11/08	2.125	.003
2005/08/09	3.5	0	2018/12/19	2.125	.032
2005/09/20	3.75	.015	2019/01/30	2.375	0
2005/11/01	4	0	2019/03/20	2.375	.014
2005/12/13	4.25	0	2019/05/01	2.375	-.021
2006/01/31	4.5	0	2019/06/19	2.375	.041
2006/03/28	4.75	0	2019/07/31	2.375	.045
2006/05/10	5	-.007	2019/09/18	2.125	-.031
2006/06/29	5.25	-.015	2019/10/30	1.875	-.018
2006/08/08	5.25	-.04	2019/12/11	1.625	0

This table lists the events that are used in the baseline specifications. *Announcement Date* is the date of FOMC announcements. *Target Rate* is the target rate specified in FOMC announcements. After Dec. 2008, it is calculated as the average of the upper bound and the lower bound. *Kuttner Surprise* is the surprise component of the changes in the target rate calculated according to Kuttner (2001).

Table 3: Main Results

	(1)	(2)	(3)	(4)	(5)
Surprise × Post	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	110	110	110	110	110
Observations	60,865	60,865	60,865	60,865	60,865

This table presents the baseline results of estimating equation (3). All announcements listed in Table 2 are included in the sample. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table 4: Main Results Split by Surprise Direction

	Increase	Decrease	Near Zero
	(1)	(2)	(3)
Surprise × Post	0.0267	0.315***	-0.798
	(0.101)	(0.0378)	(0.751)
Announcements	23	27	60
Observations	11,351	13,520	35,994

This table presents the results of estimating variants of equation (3) split by surprise changes. Column (1) presents the result using the announcements in Table 2 with surprise increases (Surprise ≥ 0.01), Column (2) presents the result using the announcements in Table 2 with surprise decreases (Surprise ≤ -0.01), and Column (3) presents the result for announcements in Table 2 with near-zero surprises (-0.01 < Surprise < 0.01). In each specification, we control for announcement fixed effects. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table 5: Main Results Interacted with Characteristics

	Price-to-Earnings			Market Capitalization			CAPM β		
	Full Sample	$\leq$ Median	$>$ Median	Full Sample	$\leq$ Median	$>$ Median	Full Sample	$\leq$ Median	$>$ Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Surprise × Post	0.291***	0.364***	0.157***	2.314***	0.358***	0.227***	-0.0855	0.212***	0.386***
	(0.0569)	(0.0718)	(0.0526)	(0.524)	(0.0601)	(0.0384)	(0.177)	(0.0717)	(0.0806)
Charact	-0.0206			-0.429***			-0.0220		
	(0.0660)			(0.0573)			(0.284)		
Surprise × Charact	0.739*			0.373***			0.664		
	(0.401)			(0.121)			(1.927)		
Post × Charact	-0.00479			-0.000811			-0.0116		
	(0.00630)			(0.00140)			(0.00710)		
Surprise × Post × Charact	-0.113			-0.0809***			0.420**		
	(0.0901)			(0.0207)			(0.193)		
Announcements	91	91	91	110	110	110	110	110	110
Observations	51,681	26,076	25,605	59,540	29,982	29,558	45,559	22,946	22,613

This table presents the results of estimating variants of equation (6) with the full sample and variants of equation (3) split by the median of the characteristic on announcement dates. In Columns (1) - (3), the characteristic is price-to-earnings ratio (PE). For available firms, the PE data is extracted from WIND, is winsorized by 2.5% on both sides, and is lagged by one year. Because earlier PE data are not available, only announcements after March 19, 2002, in Table 2, are included in the sample. In Columns (4) - (6), the characteristic is the log of market capitalization (MC). For available firms, the MC data is extracted from WIND and is lagged by three months. All announcements in Table 2 are included in the sample. In Columns (7) - (9), the characteristic is the CAPM β. For available firms, the β of each stock is extracted from WIND, is calculated from a 5-year rolling window based on the monthly returns of the stock and Shanghai Composite Index (SSE), and is winsorized by 5% on both sides. All announcements in Table 2 are included in the sample. Columns (1), (4), and (7) summarize the results from estimating equation (6) using the full sample. Columns (2), (5), and (8) summarize the results from estimating equation (3) using the subsample of firms with below-median PE, MC, and β, respectively. Columns (3), (6), and (9) summarize the results from estimating equation (3) using the subsample of firms with above-median PE, MC, and β, respectively. In each specification, we include announcement fixed effects and a post-announcement indicator. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table 6: Robustness

	(1)	(2)	(3)	(4)
Surprise × Post	0.284***	0.287***	0.286***	0.300***
	(0.0305)	(0.0311)	(0.0311)	(0.0322)
Set of Announcements				
Include	ZLB Ann.			
Exclude		Zero Surprise Ann.	Holiday Ann.	Holiday Event Times
Announcements	165	50	98	98
Observations	104,281	24,871	55,843	51,574

This table presents additional robustness tests, estimating variants of equation (3). In each specification, we control for announcement and company fixed effects, and a post-announcement indicator is included. *Set of Announcements* depicts changes in the set of announcements and event times compared with the baseline sample. *Include* indicates the additional announcements included in the baseline sample, whereas *ZLB Ann.* indicates announcements during the Zero Lower Bound period. *Exclude* indicates announcements or event times excluded from the baseline sample, where *Zero Surprise Ann.* means announcements with near-zero surprise ($-0.01 <$ Surprise < 0.01); *Holiday Ann.* means announcements made on mainland China or Hong Kong holidays; and *Holiday Event Times* means event times that belong to 5 consecutive trading days before and after an announcement, which are separated by a mainland China or Hong Kong holiday from the announcement. *Announcements* represents the number of FOMC announcements employed. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Appendices

A Exchange Rates Around FOMC Announcement Dates

In our baseline analysis, we quote H share prices in CNY. However, in response to a surprise change in the target rate, it is possible that the exchange rate between HKD and CNY also changes. In this section, we conduct event studies on exchange rates to tackle this issue. We primarily focus on the exchange rate between HKD and CNY, but we also provide an analysis of that between USD and CNY since the exchange rate between USD and HKD is fixed. We measure exchange rates as the amount of CNY that one unit of HKD/USD can exchange, so an increase in exchange rates indicates an appreciation of HKD/USD. HKD-CNY exchange rate data are extracted from WIND, as in Section 3. USD-CNY exchange rate data are extracted from FRED.

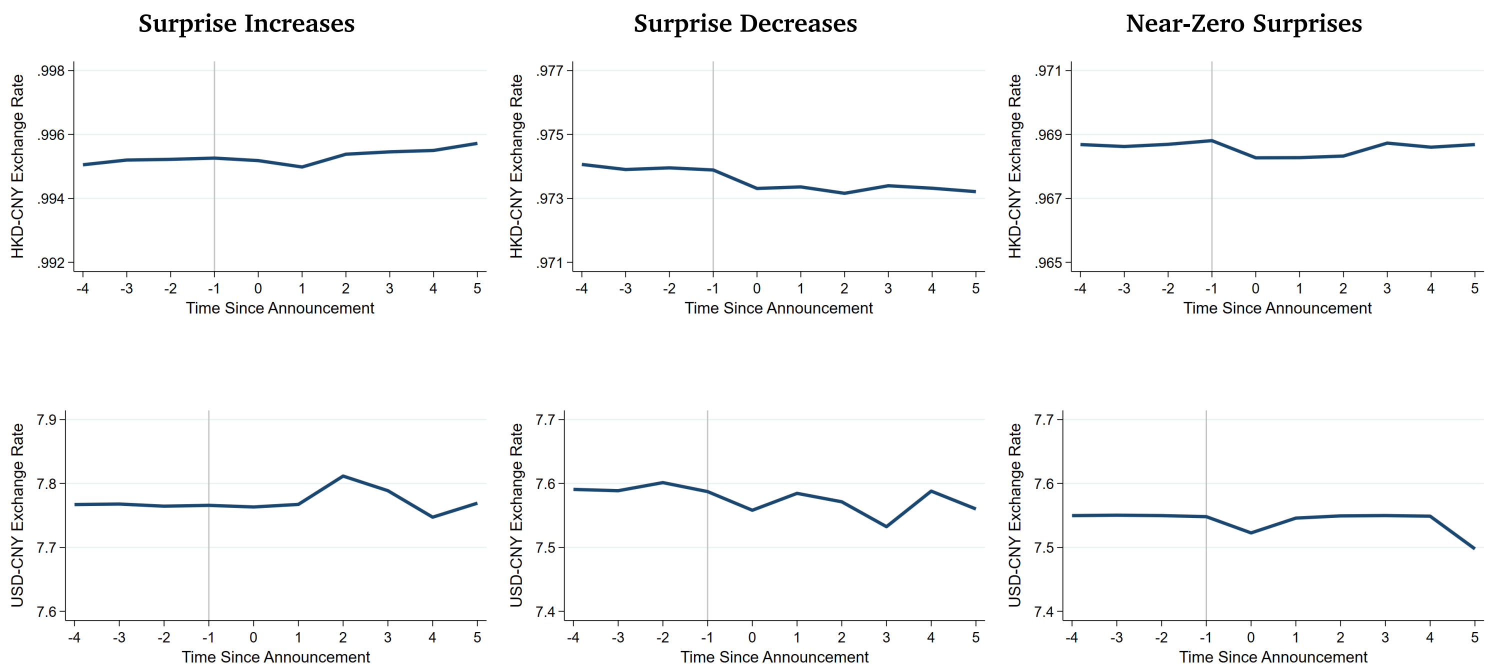
Figure A.1 displays the means of HKD-CNY and USD-CNY exchange rates around announcements, grouped by surprise increases and decreases. The left column shows the raw means for surprise increases, and the middle column for surprise decreases. In each column, the upper graph shows HKD-CNY exchange rates, and the bottom panel shows USD-CNY exchange rates. Note that there are 23 increases, with an average surprise of 0.050, and 27 decreases, with an average surprise of -0.116. We see that around increases, the exchange rates barely change. However, around decreases, both HKD and USD depreciate. The following event studies investigate whether there is a significant relationship between surprises and exchange rate changes.

Figure A.2 displays the event studies on exchange rates with respect to surprises following the specification in the main text. The top panel plots the event study for the HKD-CNY exchange rate, and the bottom panel plots the USD-CNY exchange rate. We find that both exchange rates do not significantly change in response to surprises. This alleviates potential concerns regarding converting currency units when calculating the A/H ratio.

Another potential concern is that even though the exchange rates do not respond to monetary policy surprises immediately, they respond later, which affects the calculation of A/H ratios in the future. To alleviate this concern, we collect data on HKD-CNY and USD-CNY 6-month-forward exchange rates and conduct an analysis to examine their responses to monetary policy surprises. Forward exchange rate data are extracted from the China Foreign Exchange Trade System, and the time series starts from 2015.

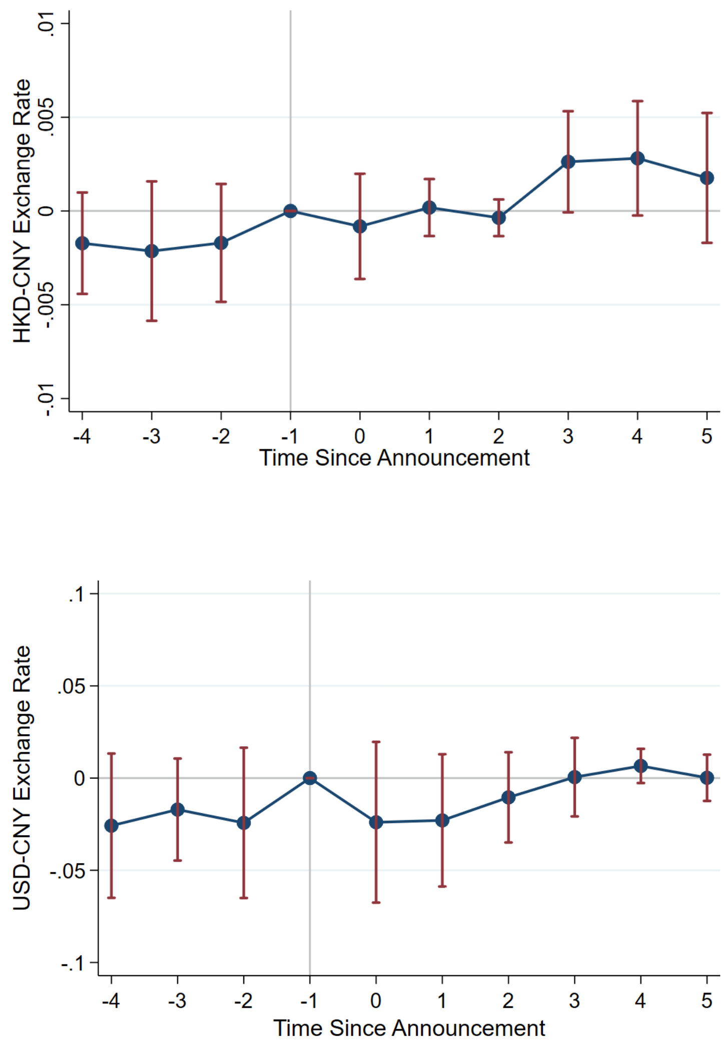
Figure A.3 displays the event studies on forward exchange rates with respect to surprises following equation (4). The top panel plots the event study for the HKD-CNY 6-month-forward rate and the bottom panel plots that for the USD-CNY 6-month-forward rate. The results imply that both forward exchange rates do not significantly change in response to surprises. This illustrates that the exchange rates are not changing in response to monetary policy surprises in the future, and thus alleviates concern that the A/H ratio might be miscalculated due to converting currency units.

Figure A.1: Means of Exchange Rates around Surprise Increases and Decreases



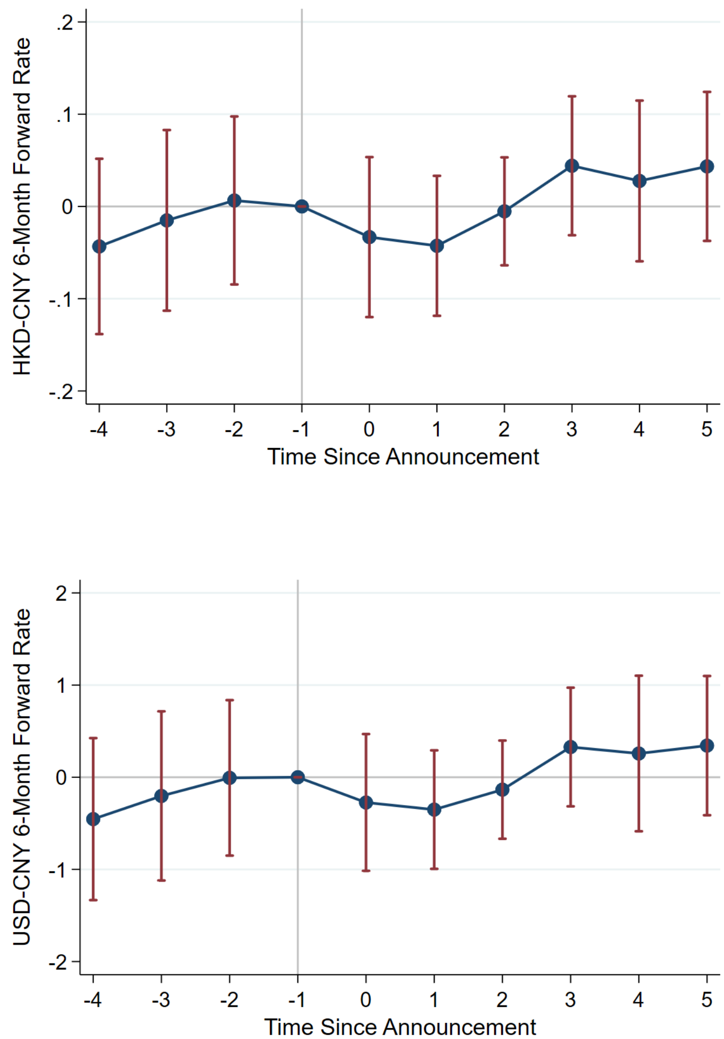
This figure plots the means of HKD-CNY and USD-CNY exchange rates around FOMC announcements, grouped by surprise increases (Surprise ≥ 0.01), surprise decreases (Surprise ≤ -0.01), and near-zero surprises (-0.01 < Surprise < 0.01). All announcements listed in Table 2 are included in the sample. An announcement is considered a surprise increase if Surprise is larger than 0.01. An announcement is considered a surprise decrease if Surprise is smaller than -0.01. An announcement is considered a near-zero surprise if the Surprise is larger than -0.01 and smaller than 0.01. The left column plots the means of the exchange rates around surprise increases; the middle column plots the means around surprise decreases; and the right column plots the means around near-zero surprises. In each column, the top panel plots the mean of the HKD-CNY exchange rate, and the bottom panel plots the mean of the USD-CNY exchange rate. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. The vertical gray line marks time since announcement = -1.

Figure A.2: Policy Announcements and Exchange Rates



This figure plots estimates of equation (4) around FOMC announcements, where the dependent variable is either the HKD-CNY exchange rate or the USD-CNY exchange rate. All announcements listed in Table 2 are included in the sample. The vertical axis depicts either the HKD-CNY exchange rate or the USD-CNY exchange rate. Announcement fixed effects and a post-announcement indicator are included. Standard errors are clustered at the announcement level. In the top panel, the dependent variable is the HKD-CNY exchange rate. In the bottom panel, the dependent variable is the USD-CNY exchange rate. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure A.3: Policy Announcements and Forward Exchange Rates



This figure plots estimates of equation (4) around FOMC announcements, where the dependent variable is either the HKD-CNY 6-month-forward rate or USD-CNY 6-month-forward rate. Because earlier forward exchange rates are not available, only announcements after December 16, 2015, are included in the sample. The vertical axis depicts either the HKD-CNY 6-month-forward rate or the USD-CNY 6-month-forward rate. Announcement fixed effects and a post-announcement indicator are included. Standard errors are clustered at the announcement level. In the top panel, the dependent variable is the HKD-CNY 6-month-forward rate. In the bottom panel, the dependent variable is the USD-CNY 6-month-forward rate. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

B Heterogeneity with US Export Shares

One potential concern in our analysis is that imperfect information flows or heterogeneous beliefs between mainland China and Hong Kong could be driving part of our results. To assess these potential concerns, we collect data on the shares of sales from export for the companies in our sample using data from FactSet GeoRev.[19] We perform the following triple-difference regression:

$$\begin{aligned}(P_A/P_H)_{ist} = \alpha_i + \eta_s + \lambda_t + \beta_1 \text{Surprise}_s \times \text{Post}_t \\ + \beta_2 \text{US Export Share}_{ist} + \beta_3 \text{Surprise}_s \times \text{US Export Share}_{ist} \\ + \beta_4 \text{Post}_t \times \text{US Export Share}_{ist} + \beta_5 \text{Surprise}_s \times \text{Post}_t \times \text{US Export Share}_{ist} + \varepsilon_{ist}\end{aligned} \tag{7}$$

where US Export Share$_{ist}$ is firm i's revenue share from the US on announcement s and at event time t. Other variables are the same as those defined in equation (3).

Besides the triple-difference specification, we also perform a difference-in-differences specification, splitting the sample by whether the company has a positive US export share. This allows us to examine whether the cash flow exposure to US monetary policy is driving the response of the A-H premium to monetary surprises by comparing the responses of companies with zero and positive US export shares.

Table B.1 presents the results. Columns (1) - (5) present the triple-difference results with different fixed effects and trends included. The main interaction remains significant following the announcement, and we do not see significant differences in the interactions of export shares. Columns (6) and (7) present variants of the main results, restricting to a subsample with US export shares equal to zero and a subsample with US export shares greater than zero. The results are highly similar and statistically indistinguishable.

[19] For many companies in our sample, US export share data for earlier years are not available in FactSet. Therefore, we drop these observations in the following analysis.

Table B.1: Robustness Interacting with US Export Share

	Full Sample					Share = 0	Share > 0
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Surprise × Post	0.214***	0.204***	0.204***	0.205***	0.148***	0.207***	0.208***
	(0.0336)	(0.0332)	(0.0333)	(0.0334)	(0.0332)	(0.0422)	(0.0407)
US Export Share	0.00388	0.00343	0.0240	0.00339	0.00301		
	(0.0133)	(0.0133)	(0.0153)	(0.00663)	(0.00609)		
Surprise × US Export Share	-0.0980	-0.0985	-0.0531	-0.0584*	-0.0190		
	(0.0616)	(0.0616)	(0.0421)	(0.0298)	(0.0224)		
Post × US Export Share	-0.000208	0.000604	0.000621	0.000628	0.000595		
	(0.000450)	(0.000491)	(0.000494)	(0.000517)	(0.000522)		
Surprise × Post × US Export Share	0.00110	0.00205	0.00210	0.00212	0.000936		
	(0.00722)	(0.00724)	(0.00724)	(0.00730)	(0.00703)		
Company FE	No	No	Yes	Yes	Yes	No	No
Event Time	No	Post	Post	FE	FE	Post	Post
Company Spec. Trend	No	No	No	Common	Separated	No	No
Announcements	102	102	102	102	102	102	84
Observations	42,449	42,449	42,449	42,449	42,449	23,811	18,638

This table presents additional robustness tests, estimating equation (7) and variants of equation (3) split by US Export Share. Because earlier US export share data are not available, only announcements after January 3, 2001, in Table 2 are included in the sample in Columns (1) - (6), and only announcements after January 29, 2003, in Table 2 are included in the sample in Column (7). Columns (1) - (5) summarize the results of estimating equation (7). Column (6) summarizes the result of estimating equation (3) using the subsample of firms with zero US export share. Column (7) summarizes the result of estimating equation (3) using the subsample of firms with positive US export share. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

C Monetary Policy Surprises and EPS Forecasts

To further test whether heterogeneous beliefs about firms' cash flows following a monetary policy surprise are potentially driving some of our results, we use the earning-per-share (EPS) forecasts from professional forecasters on dual-listed stocks by both Hong Kong and mainland China brokers and investigates how these forecasts differ following a monetary policy surprise.

Our EPS forecast data come from the I/B/E/S database. It provides recommendation scores and EPS forecasts on stocks traded in major stock exchanges all over the world, provided by analysts from various brokerage houses (hereafter brokers). I/B/E/S provides the last name, first initial, and ID for each analyst, the CUSIP of the target stock, the analyst's EPS forecast and the forecasting release and period, and a numeric ID for the broker the analyst works for. Observations in the EPS forecast dataset differ in three ways. We extract recommendation scores and EPS forecasts from 1993 to 2023 for the dual-listed stocks,[20] and prepare the data using the following steps.

The first step is to translate the numeric broker ID into the broker's name. We merge the EPS forecast dataset with the recommendation score dataset based on the analyst's ID and the recommendation date and time. This allows us to obtain the alphabetic broker ID. Unfortunately, I/B/E/S has stopped providing the translation file between the alphabetic ID and the broker's name.[21] Therefore, we first employ Table A1.1 in Shen (2022), Table 2 in Hashim (2012), and Online Appendix Table A1.1 in Law (2023), in which the translation of several brokers is provided, to identify most of the brokers in our sample. For the remaining brokers, Section A1.3 in Shen (2022) points out that some alphabetic IDs are abbreviations of the broker's full name (for instance, GOLDMAN stands for Goldman Sachs), so we manually matched each couple of alphabetic IDs and analyst name to the most plausible brokerage firm. Following the above procedure, we are able to identify 151 of 196 brokers, which corresponds to more than 97% of the forecasts in our sample.

[20]The H-share and A-share of the same stock have different CUSIPs, which allows us to distinguish different EPS forecasts between shares. Nevertheless, the forecast data suggest that if an analyst has made two EPS forecasts on the H-share and A-share of the same stock at the same time, the forecasts will not differ in most cases. Therefore, we do not distinguish between shares in this exercise.

[21]See https://wrds-www.wharton.upenn.edu/pages/support/support-articles/ibes/ibes-broker-transaction-files/.

The second step is to determine whether the broker is located in Hong Kong, Mainland China, or elsewhere. We manually collect each broker's registration country or region from Bloomberg and only keep the forecasts by Hong Kong brokers or mainland China brokers. This leaves us with 34 in Hong Kong and 47 in mainland China.

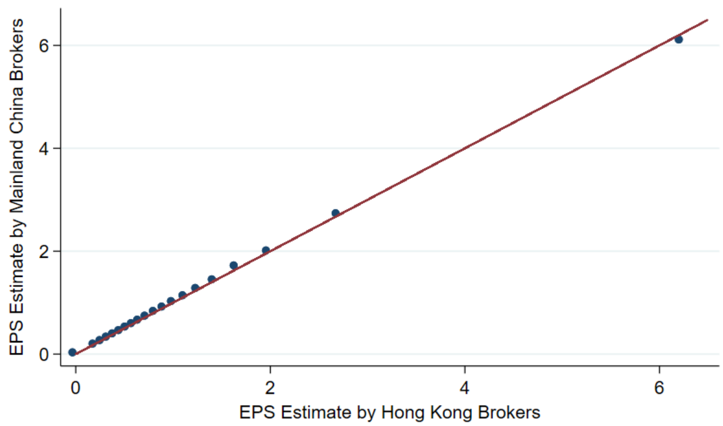
The third step is to clean the EPS forecasts. First, forecasts vary in their forecasting periods. We observe that more than 95% of the forecasts are for the current fiscal year, the next fiscal year, or the second subsequent fiscal year. Therefore, we focus on those forecasting horizons. Second, the forecasts can be either primary EPS or diluted EPS. To keep things comparable, we focus on the primary EPS forecasts for all stocks, which account for around 85% of the sample. Third, the forecasting period indicator and the forecasting period end date are sometimes inconsistent. We drop those observations from our sample. Fourth, the forecasts are made in either HKD or CNY. We use the HKD-CNY daily exchange rate to convert HKD forecasts into CNY.

The fifth step is to aggregate the data to region by stock by day level. This aggregation is necessary because most brokers in our sample do not frequently make EPS forecasts. Without appropriate aggregation, we would not observe much variability in the EPS forecasts after we merge the EPS forecast data with our baseline event study data. We first aggregate the analyst forecasts to broker by stock by day level. Specifically, when any analyst from a broker makes a new forecast on a given day for a given stock, we treat that forecast as the broker's forecast for that stock from that day until a new forecast for the stock is made by some analyst from the same broker. If multiple analysts from a broker are making forecasts on the same day for the same stock, we use the average forecast as the broker's forecast. Next, we aggregate broker forecasts to the region by stock by day level. For a given day, we calculate the average forecast with the same forecasting period of all Hong Kong (mainland China) brokers on every stock and use the average as the forecast of Hong Kong (mainland China) brokers on the corresponding stock and for the corresponding forecasting period.

Figure C.1 depicts a binscatter plot of EPS forecasts by mainland China brokers versus those by Hong Kong brokers using the aggregated forecast data. Each observation is a stock-day for which there is no missing EPS forecast from either Hong Kong brokers or mainland China brokers and for which there is a forecast update from at least one broker on that day. The figure suggests that the forecasts are highly correlated across regions.

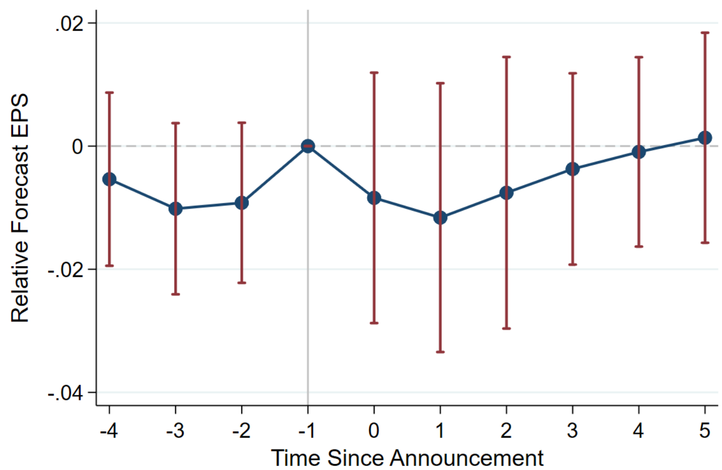
Next, we merge the aggregated forecast data with the event study data and conduct an event study similar to our baseline specification for the A/H stock price ratio. We change the dependent variable in equations (3) and (5) to the ratio of EPS forecasts by mainland China brokers over those by Hong Kong brokers. We winsorize the forecasts at the 5% level on both sides to alleviate the impact of outliers. To account for the difference in the forecasting period, we add forecasting period fixed effects to the equations. Figure C.2 plots the event study coefficients from equation (5), and Table C.1 summarizes the diff-in-diff results from equation (3). Both of these suggest that the relative EPS forecasts do not change a lot following a monetary policy surprise, which suggests that beliefs about cash flow expectations across Hong Kong and mainland China investors do not diverge much.

Figure C.1: Binscatter plot of EPS forecasts



This figure presents a binscatter plot of EPS forecasts by mainland China brokers versus those by Hong Kong brokers. The blue dots are binned scatters of EPS forecasts, and the red line is the 45 degree line. The sample period spans from July 1993 to September 2023. Each underlying observation is defined as a stock-day for which there is no missing EPS forecast from either Hong Kong brokers or mainland China brokers for the stock on that day, and there is an update in the forecast for the stock from at least one Hong Kong broker or mainland broker on that day.

Figure C.2: Policy Announcements and EPS forecasts



This figure plots estimates of a variant of equation (5) around FOMC announcements, where the dependent variable is the EPS forecast ratio of mainland China brokers over Hong Kong brokers. Because EPS forecasts are infrequent, we drop announcements in Table 2 that are not associated with forecasts for any dual-listed stocks from both Hong Kong and mainland China brokers. Company, announcement, and forecasting period fixed effects, as well as a post-announcement indicator, are included. Standard errors are clustered at the company level. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Table C.1: Monetary Policy Surprises and Target Rate and EPS Forecasts

	(1)	(2)	(3)	(4)	(5)
Surprise × Post	-0.00100	0.00140	0.00175	0.00134	0.00165
	(0.00586)	(0.00583)	(0.00581)	(0.00589)	(0.00520)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	81	81	81	81	81
Observations	122,715	122,715	122,715	122,715	122,715

This table presents the results of estimating variants of equation (3). The dependent variable is the EPS forecast ratio of mainland China brokers over Hong Kong brokers. Because EPS forecasts are infrequent, we drop announcements in Table 2 that are not associated with forecasts for any dual-listed stocks from both Hong Kong and Mainland China brokers. In each specification, we control for announcement and forecasting period fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

D Dynamic and Heterogeneous Treatment Effects

A possible concern is that dynamic and heterogeneous treatment effects could bias our results. To investigate whether our baseline results are driven by dynamic and heterogeneous treatment effects, we follow the stacked approach summarized by Baker et al. (2022) and applied by Cengiz et al. (2019).

To apply the stacked method to our setting, we first set the event time window to 5 periods before and after the announcement ($t \in \{-5, -4, \ldots, 5\}$). We use the baseline 110 announcements from 2000 to 2019, when the zero lower bound was not reached, as the event set. Note that every stock in the sample during the event time window was affected by monetary policy surprises, so we used a different method to construct a control group. For each stock i at announcement s and event time t, we still used stock i as its control group but lagged it by 10 trading days from the trading day prior to announcement s and event time t. Note that this stacked approach almost doubles our previous sample size; however, several stocks do not have earlier price data because of initial issuance. We drop these 287 observations.

We estimate the following specification:

$$(P_A/P_H)_{i(T),s,t} = \alpha_{i(T),s} + \eta_{s,t} + \beta \text{Surprise}_{i(T),s} \times \text{Post}_t + \varepsilon_{i(T),s,t} \tag{8}$$

where i stands for a stock, $T = 1$ if stock i is not lagged (treatment group) and $T = 0$ if it is lagged (control group), s stands for an announcement, and t stands for an event time. $\alpha_{i(T),s}$ is the announcement by stock group fixed effect, and $\eta_{s,t}$ is the announcement by event time fixed effect. The term $\text{Surprise}_{i(T),s}$ equals the Kuttner surprise of announcement s if $T = 1$ and zero otherwise, and Post_t equals one if t is larger than or equal to 0 and zero otherwise.

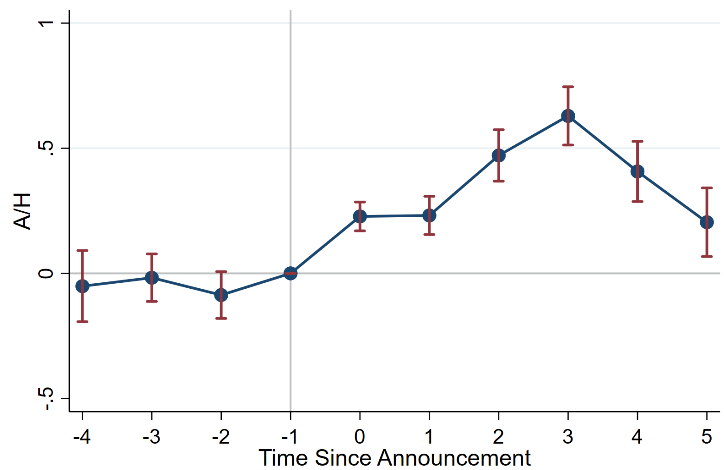
The event study specification is analogous and given by

$$(P_A/P_H)_{i(T),s,t} = \alpha_{i(T),s} + \eta_{s,t} + \sum_{\tau=-4}^{5} \beta_\tau \text{Surprise}_{i(T),s} \times \mathbb{1}(\text{Time Since Announcement}_t = \tau) + \varepsilon_{i(T),s,t} \tag{9}$$

where $\mathbb{1}(\text{Time Since Announcement}_t = \tau)$ equals one if time since announcement equals τ and zero otherwise. The remaining variables are the same as those in equation (8).

Table D.1 presents difference-in-differences results following equation (8) and Figure D.1 presents event study results following equation (9). The effects are broadly similar to our main estimates, albeit with slighttly larger coefficients.

Figure D.1: Stacked Policy Announcements and Share Prices



This figure plots estimates of equation (9) around FOMC announcements, where the dependent variable is the A/H share price ratio. All announcements listed in Table 2 are included in the sample. Company by treatment group by announcement and announcement by event time fixed effects are included. Standard errors are clustered at the company level. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Table D.1: Stacked Main Results

	(1)	(2)	(3)	(4)
Surprise × Post	0.409***	0.409***	0.407***	0.386***
	(0.0393)	(0.0393)	(0.0404)	(0.0417)
Company FE	No	Yes	Yes	Yes
Company Spec. Trend	No	No	Common	Separated
Announcements	110	110	110	110
Observations	121,156	121,156	121,156	121,156

This table presents the results of estimating equation (8). All announcements listed in Table 2 are included in the sample. In each specification, we control for announcement by treatment group and announcement by event time fixed effects. *Company FE* represents whether we control for company fixed effects: *No* implies that announcement by treatment group fixed effects are not interacted with company fixed effects; *Yes* implies that announcement by treatment group fixed effects are interacted with company fixed effects. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for; *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

E Additional Robustness Tests

In the baseline specifications, we use all FOMC announcements in which the ZLB is not reached as our event set. We employ 5 consecutive trading days before and after the announcements in our estimates. In this section, we consider different sets of announcements and event times to determine whether our baseline specifications yield robust results. Specifically, we consider the following four settings:

1. Announcements during the ZLB are also included.
2. Announcements with no Kuttner surprises are excluded.
3. Announcements made on mainland China and Hong Kong holidays are excluded.
4. Event times that belong to the set of 5 consecutive trading days before and after an announcement but are separated by a mainland China or Hong Kong holiday from the announcement are excluded.

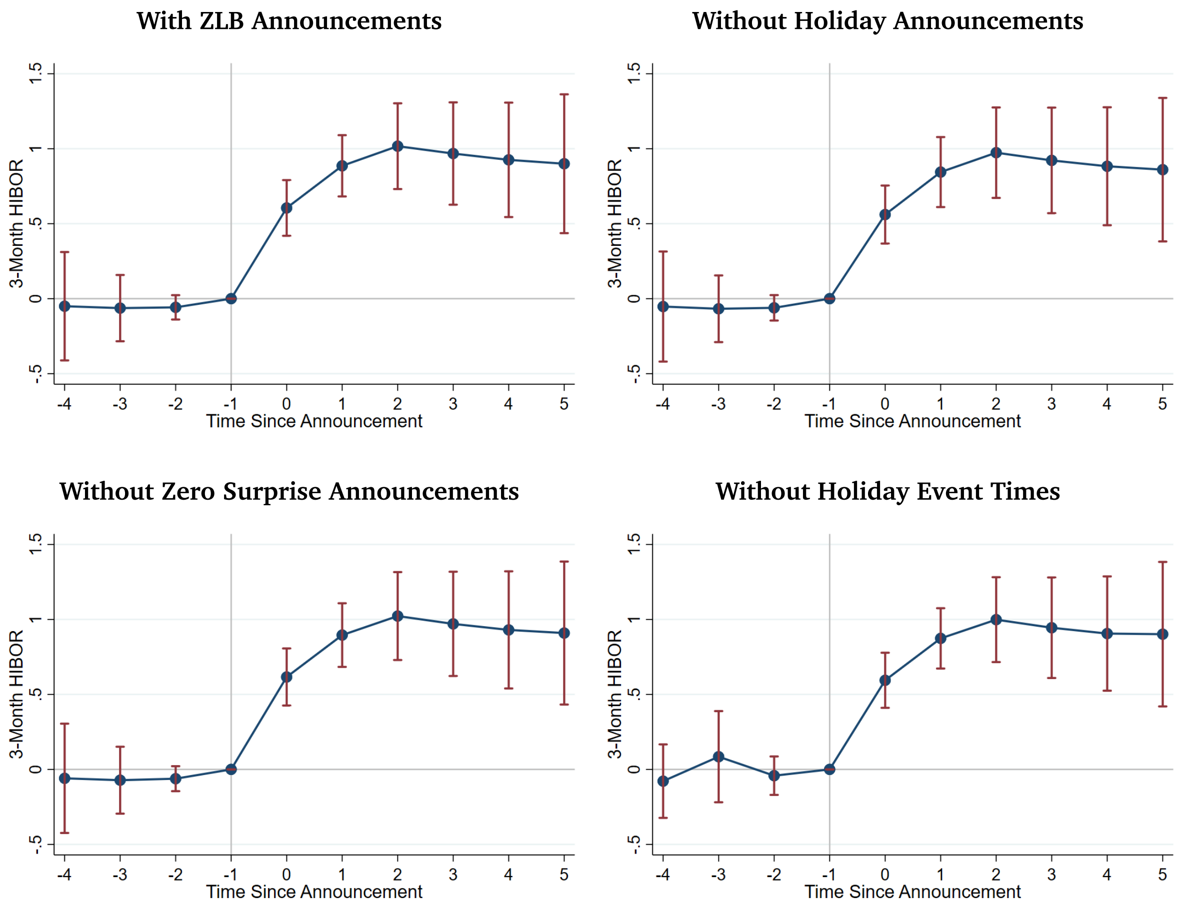
Table 6 presents the main results of the A/H ratio, employing the above four settings with Columns (1) - (4) featuring the corresponding sample restriction. In Figures E.1 to E.3, we conduct event studies of the 3-month HIBOR rate, 3-month HIBOR futures, and A/H ratio using the above four settings. In each figure, the top left panel features setting (1), the bottom left panel setting (2), the top right panel setting (3), and the bottom right panel setting (4). Figure E.1 plots the event studies for 3-month HIBOR, Figure E.2 for 3-month HIBOR futures, and Figure E.3 for A/H ratio. The results remain quite similar to our main results.

In Figures 2 and 3, we do not include event time fixed effects or any time trends in the regressions. As a robustness check, in Figure E.4 we add event time fixed effects and linear time trends separated for surprise increases and decreases as controls. In Figure E.5, we add event time fixed effects and company-specific time trends separated for surprise increases and decreases as controls.

We further show that the main results are robust to alternative clustering. In Table 3 and Figure 3, we cluster standard errors at the company level. Our results are robust to clustering at different levels. To see this, we replicate the analysis but instead cluster standard errors at the company-announcement and announcement levels. Table E.1 and Figure E.6 present the results clustering at the company-announcement level, and Table E.2 and Figure E.7 the results clustering at announcement level. The results remain significant at conventional levels.

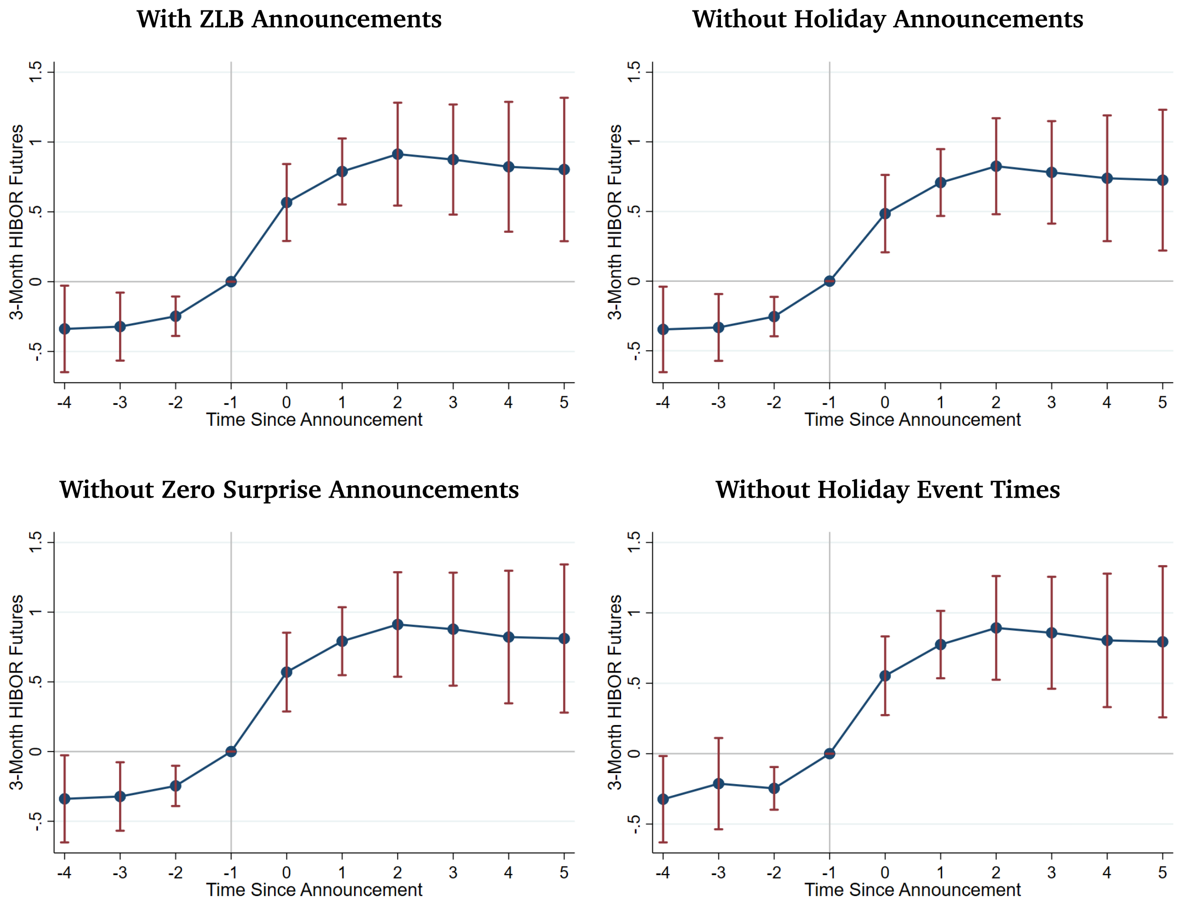
In Table 3, the time trends in Columns (4) and (5) are based on calendar time. Since we are stacking the announcements, this exercise is helpful in assessing the robustness of our results to time trends based on event times. Table E.3 mimics Columns (4) and (5) of Table 3, but we change the calendar time trends to event time trends. The results remain comparable to those reported in the main table.

Figure E.1: Policy Announcements and HIBOR Varying Announcements



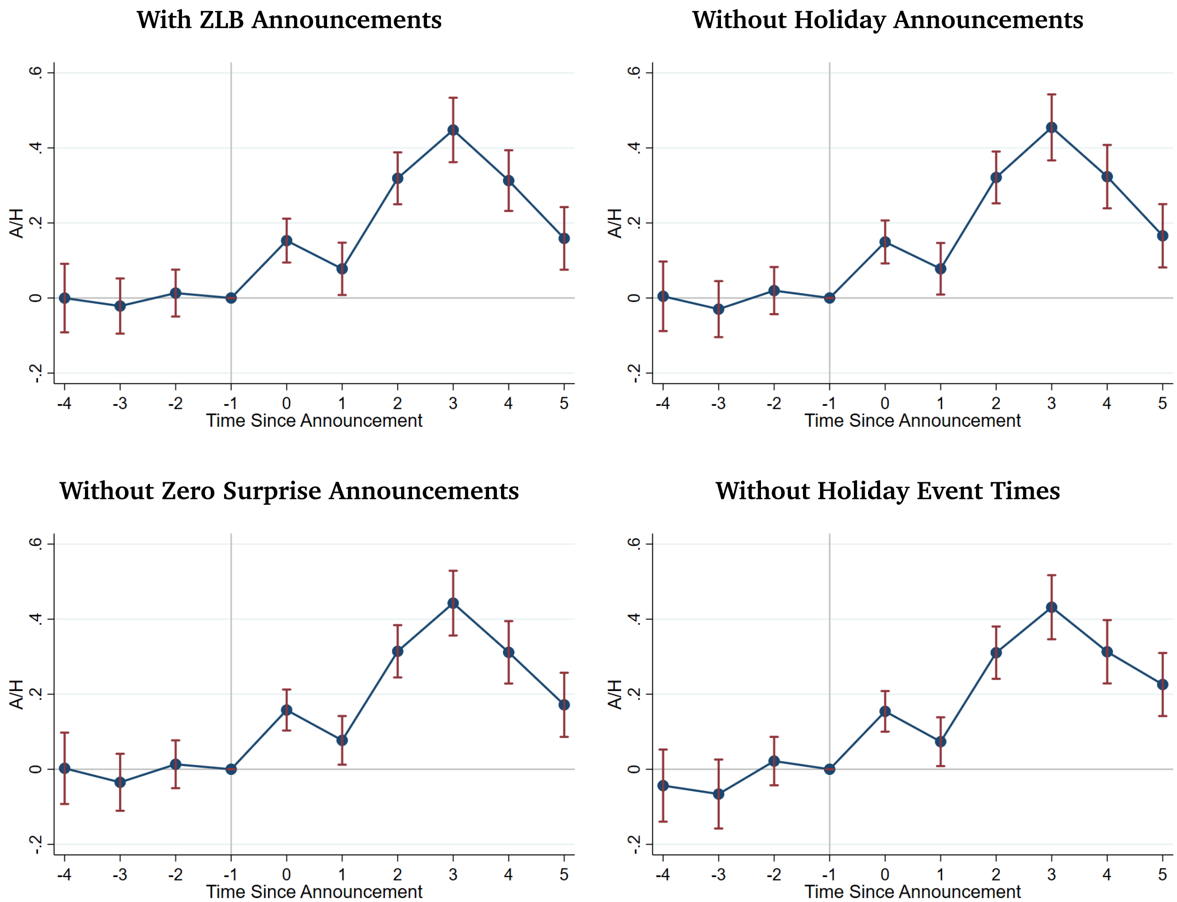
This figure plots estimates of variants of equation (4) around FOMC announcements, where the dependent variable is the 3-month HIBOR. The vertical axis depicts HIBOR. Announcement fixed effects and a post-announcement indicator are included. Standard errors are clustered at the announcement level. In the top left panel, announcements during Zero Lower Bound periods are also included. In the bottom left panel, announcements with near-zero surprise ($-0.01 < \text{Surprise} < 0.01$) are excluded. In the top right panel, announcements made on mainland China and Hong Kong holidays are excluded. In the bottom right panel, event times that belong to 5 consecutive trading days before and after an announcement but which are separated by a mainland China or Hong Kong holiday from the announcement are excluded. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure E.2: Policy Announcements and Futures Varying Announcements



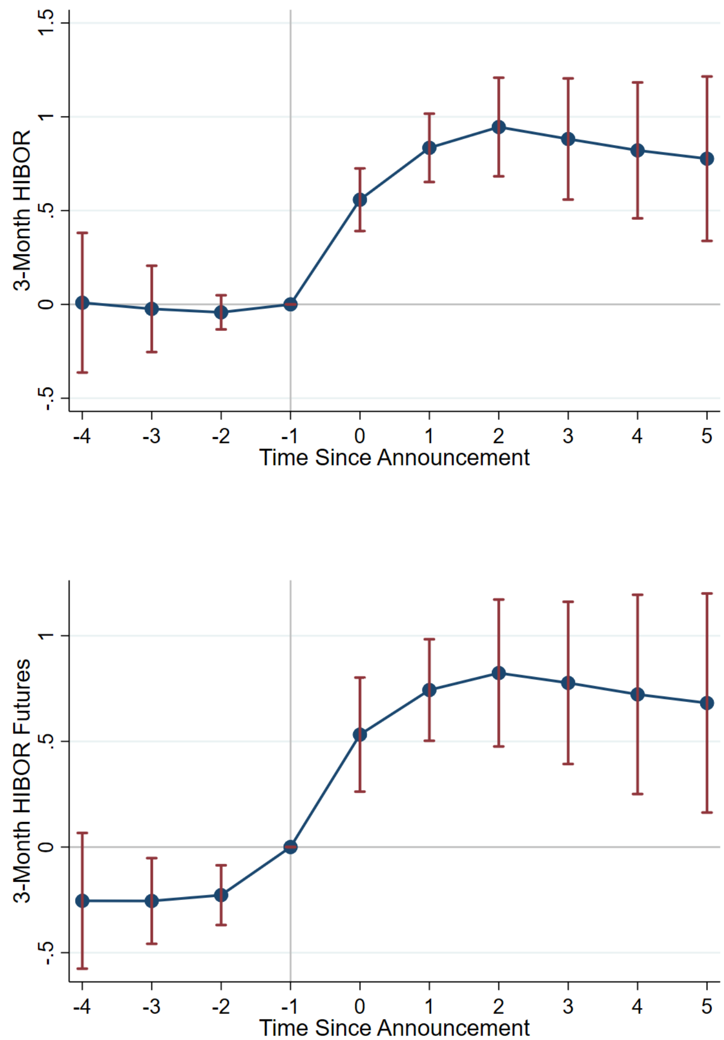
This figure plots estimates of variants of equation (4) around FOMC announcements, where the dependent variable is the 3-month HIBOR futures. The vertical axis depicts HIBOR futures. Announcement fixed effects and a post-announcement indicator are included. Standard errors are clustered at the announcement level. In the top left panel, announcements during Zero Lower Bound periods are also included. In the bottom left panel, announcements with near-zero surprise ($-0.01 < \text{Surprise} < 0.01$) are excluded. In the top right panel, announcements made on mainland China and Hong Kong holidays are excluded. In the bottom right panel, event times that belong to 5 consecutive trading days before and after an announcement but which are separated by a mainland China or Hong Kong holiday from the announcement are excluded. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure E.3: Policy Announcements and Share Prices Varying Announcements



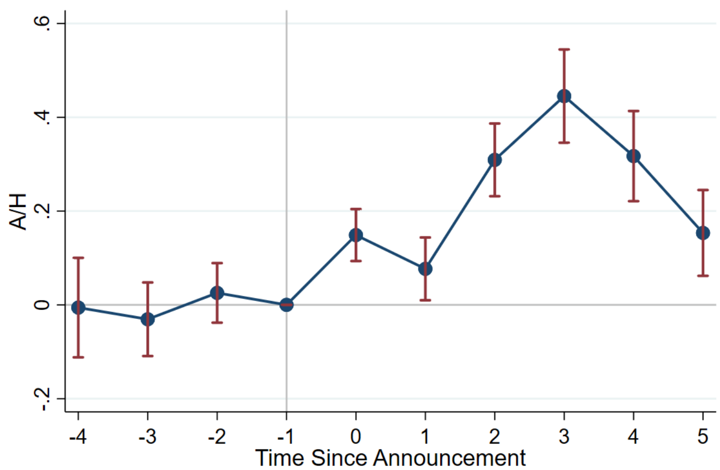
This figure plots estimates of variants of equation (5) around FOMC announcements, where the dependent variable is the A/H share price ratio. Company and announcement fixed effects, as well as a post-announcement indicator, are included. Standard errors are clustered at the company level. In the top left panel, announcements during Zero Lower Bound periods are also included. In the bottom left panel, announcements with near-zero surprise (-0.01 $<$ Surprise $<$ 0.01) are excluded. In the top right panel, announcements made on mainland China and Hong Kong holidays are excluded. In the bottom right panel, event times that belong to 5 consecutive trading days before and after an announcement but which are separated by a mainland China or Hong Kong holiday from the announcement are excluded. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure E.4: Policy Announcements and HIBOR with Time Trends



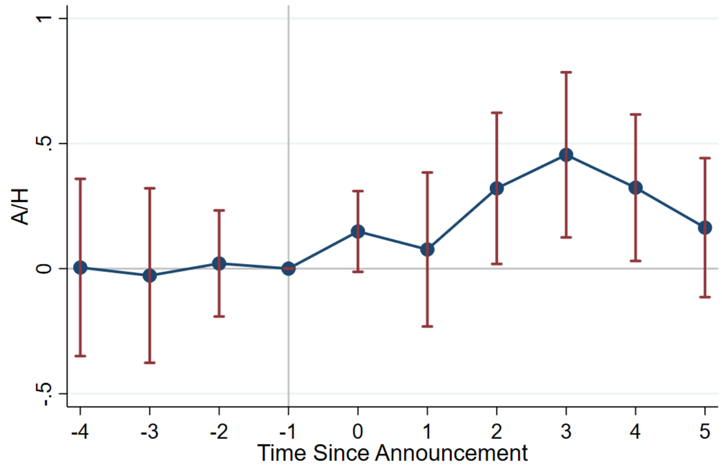
This figure plots estimates of equation (4) with time trends around FOMC announcements, where the dependent variable is either the 3-month HIBOR or 3-month HIBOR futures. All announcements listed in Table 2 are included in the sample. The vertical axis depicts either the HIBOR or HIBOR futures. Announcement fixed effects, a post-announcement indicator, and linear time trends separated for surprise increases and decreases are included. Standard errors are clustered at the announcement level. In the top panel, the dependent variable is the 3-month HIBOR. In the bottom panel, the dependent variable is 3-month HIBOR futures. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure E.5: Policy Announcements and Share Prices with Time Trends



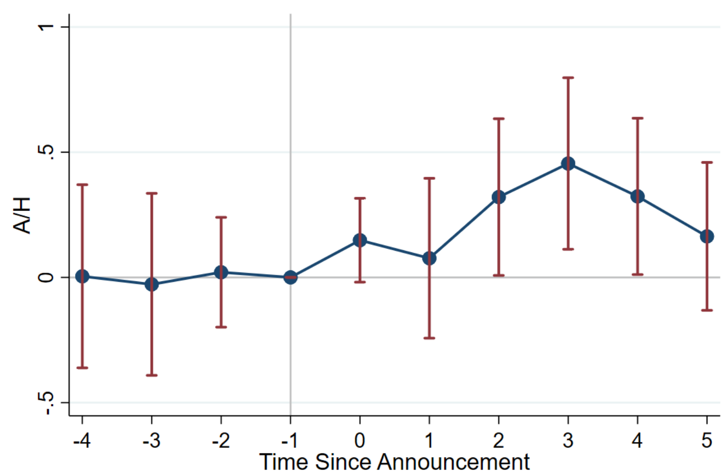
This figure plots estimates of equation (5) with time trends around FOMC announcements, where the dependent variable is the A/H share price ratio. All announcements listed in Table 2 are included in the sample. Company, announcement, and event time fixed effects, as well as company-specific time trends separated for surprise increases and decreases, are included. Standard errors are clustered at the company level. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure E.6: Policy Announcements and Share Prices with Double Clustering



This figure plots estimates of equation (5) with double clustering around FOMC announcements, where the dependent variable is the A/H share price ratio. All announcements listed in Table 2 are included in the sample. Company and announcement fixed effects, as well as a post-announcement indicator, are included. Standard errors are clustered at the company-announcement level. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Figure E.7: Policy Announcements and Share Prices with Announcement Clustering



This figure plots estimates of equation (5) with announcement clustering around FOMC announcements, where the dependent variable is the A/H share price ratio. All announcements listed in Table 2 are included in the sample. Company and announcement fixed effects, as well as a post-announcement indicator, are included. Standard errors are clustered at the announcement level. The horizontal axis is the event-time indicator. The time since the announcement equals zero if the FOMC announcement was published on that date. Blue dots represent the regression coefficients, and red bands represent 95% confidence intervals. The vertical gray line marks time since announcement = -1, where we normalize the coefficients to zero.

Table E.1: Main Results with Double Clustering

	(1)	(2)	(3)	(4)	(5)
Surprise × Post	0.286**	0.283**	0.283**	0.284**	0.283**
	(0.113)	(0.111)	(0.111)	(0.122)	(0.130)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	110	110	110	110	110
Observations	60,865	60,865	60,865	60,865	60,865

This table presents the results of estimating equation (3) with double clustering. All announcements listed in Table 2 are included in the sample. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effects are included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company-announcement level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.2: Main Results with Announcement Clustering

	(1)	(2)	(3)	(4)	(5)
Surprise × Post	0.286**	0.283**	0.283**	0.284**	0.283**
	(0.118)	(0.116)	(0.117)	(0.118)	(0.121)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	110	110	110	110	110
Observations	60,865	60,865	60,865	60,865	60,865

This table presents the results of estimating equation (3) with announcement clustering. All announcements listed in Table 2 are included in the sample. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the announcement level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.3: Main Results with Event Time Trends

	(1)	(2)
Surprise × Post	0.288***	0.263***
	(0.0315)	(0.0376)
Company Spec. Trend	Common, Event Time	Separated, Event Time
Announcements	110	110
Observations	60,865	60,865

This table presents the results of estimating equation (3) with event time trends. All announcements listed in Table 2 are included in the sample. In each specification, we control for announcement, company, and event time fixed effects. *Company Spec. Trend* represents how company-specific time trends are controlled for: *Common, Event Time* indicates that we control for company-specific event time trends common to surprise increases and decreases; *Separated, Event Time* indicates that we control for company-specific event time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.4: Main Results with 10-Day Window Sample

	(1)	(2)	(3)	(4)	(5)
Surprise × Post	0.270***	0.268***	0.270***	0.277***	0.253***
	(0.0401)	(0.0399)	(0.0400)	(0.0404)	(0.0417)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	110	110	110	110	110
Observations	115,449	115,449	115,449	115,449	115,449

This table presents the results of estimating equation (3) with a 10-day window sample. All announcements listed in Table 2 are included in the sample. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.5: Main Results Split by 2008

	(1)	(2)	(3)	(4)	(5)
Panel A: Pre-2008 Sample					
Surprise × Post	0.404***	0.414***	0.416***	0.415***	0.695***
	(0.0929)	(0.0926)	(0.0927)	(0.0926)	(0.147)
Announcements	67	67	67	67	67
Observations	19,261	19,261	19,261	19,261	19,261
Panel B: Post-2008 Sample					
Surprise × Post	0.249***	0.240***	0.240***	0.242***	0.180***
	(0.0357)	(0.0351)	(0.0351)	(0.0351)	(0.0392)
Announcements	43	43	43	43	43
Observations	41,604	41,604	41,604	41,604	41,604
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated

This table presents the results of estimating equation (3) with the pre-2008 and post-2008 samples. Panel A presents results with the pre-2008 sample until December 11, 2007, an announcement date in Table 2, and Panel B presents results with the post-2008 sample from Jan. 22, 2008, an announcement date in Table 2. *Announcements* represents the number of FOMC announcements in the corresponding sample, and *Observations* represents the number of observations in the corresponding sample. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.6: Main Results with Pre-2014 Sample

	(1)	(2)	(3)	(4)	(5)
Surprise × Post	0.279***	0.276***	0.279***	0.271***	0.298***
	(0.0308)	(0.0332)	(0.0335)	(0.0330)	(0.0454)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Post	Post	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	77	77	77	77	77
Observations	25,023	25,023	25,023	25,023	25,023

This table presents the results of estimating equation (3) with the pre-2014 sample. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.7: Results Interacting with Price-to-Earnings Ratio

	Full Sample					Below Median	Above Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Surprise × Post	0.295***	0.291***	0.304***	0.283***	0.220***	0.364***	0.157***
	(0.0568)	(0.0569)	(0.0580)	(0.0515)	(0.0556)	(0.0718)	(0.0526)
Price-to-Earnings	-0.0199	-0.0206	-0.0770*	-0.0388	-0.0331		
	(0.0661)	(0.0660)	(0.0431)	(0.0266)	(0.0228)		
Surprise × Price-to-Earnings	0.740*	0.739*	0.327	0.298	0.0250		
	(0.400)	(0.401)	(0.293)	(0.286)	(0.238)		
Post × Price-to-Earnings	-0.00615	-0.00479	-0.00979**	-0.00380	-0.00425		
	(0.00571)	(0.00630)	(0.00418)	(0.00276)	(0.00375)		
Surprise × Post × Price-to-Earnings	-0.114	-0.113	-0.151*	-0.0927	-0.0583		
	(0.0899)	(0.0901)	(0.0880)	(0.0716)	(0.0675)		
Company FE	No	No	Yes	Yes	Yes	No	No
Event Time	No	Post	Post	FE	FE	Post	Post
Company Spec. Trend	No	No	No	Common	Separated	No	No
Announcements	91	91	91	91	91	91	91
Observations	51,681	51,681	51,681	51,681	51,681	26,076	25,605

This table presents the results of estimating equation (6) and variants of equation (3) split by the median of the price-to-earnings ratio on announcement dates. For available firms, the price-to-earnings ratio is extracted from WIND, is winsorized by 2.5% on both sides, and is lagged by one year. Because earlier price-to-earnings ratio data are not available, only announcements after March 19, 2002, in Table 2, are included in the sample. Columns (1) - (5) summarize the results estimating equation (6). Column (6) summarizes the result of estimating equation (3) using the subsample of firms with below-median price-to-earnings ratio. Column (7) summarizes the result of estimating equation (3) using the subsample of firms with above-median price-to-earnings ratio. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.8: Results Interacting with Log Market Capitalization

	Full Sample					Below Median	Above Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Surprise × Post	2.285***	2.314***	2.142***	2.143***	2.102***	0.358***	0.227***
	(0.512)	(0.524)	(0.565)	(0.578)	(0.598)	(0.0601)	(0.0384)
log(Market Capitalization)	-0.429***	-0.429***	-0.217	-0.284	-0.326		
	(0.0572)	(0.0573)	(0.233)	(0.290)	(0.299)		
Surprise × log(Market Capitalization)	0.372***	0.373***	0.385***	0.268***	0.145		
	(0.121)	(0.121)	(0.0945)	(0.0716)	(0.121)		
Post × log(Market Capitalization)	-0.0000125	-0.000811	-0.00105	-0.000719	-0.000774		
	(0.0000849)	(0.00140)	(0.00132)	(0.00118)	(0.00122)		
Surprise × Post × log(Market Capitalization)	-0.0798***	-0.0809***	-0.0744***	-0.0743***	-0.0727***		
	(0.0202)	(0.0207)	(0.0221)	(0.0225)	(0.0232)		
Company FE	No	No	Yes	Yes	Yes	No	No
Event Time	No	Post	Post	FE	FE	Post	Post
Company Spec. Trend	No	No	No	Common	Separated	No	No
Announcements	110	110	110	110	110	110	110
Observations	59,540	59,540	59,540	59,540	59,540	29,982	29,558

This table presents the results of estimating equation (6) and variants of equation (3) split by the median of the market capitalization on the announcement dates. For available firms, the market capitalization of each stock is extracted from WIND and is lagged by three months for accounting reasons. All announcements listed in Table 2 are included in the sample. Columns (1) - (5) summarize the results estimating equation (6). Column (6) summarizes the result of estimating equation (3) using the subsample of firms with below-median market values. Column (7) summarizes the result of estimating equation (3) using the subsample of firms with above-median market values. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.9: Results Interacting with Betas

	Full Sample					Below Median	Above Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Surprise × Post	-0.0967	-0.0855	-0.0705	-0.0576	-0.0534	0.212***	0.386***
	(0.179)	(0.177)	(0.174)	(0.173)	(0.170)	(0.0717)	(0.0806)
β	-0.0271	-0.0220	-0.334	1.076*	1.010*		
	(0.284)	(0.284)	(0.376)	(0.605)	(0.574)		
Surprise × β	0.659	0.664	-0.779	0.251	-1.279		
	(1.928)	(1.927)	(1.325)	(0.978)	(0.851)		
Post × β	-0.00214	-0.0116	-0.00987	-0.00551	-0.00583		
	(0.00255)	(0.00710)	(0.00655)	(0.00648)	(0.00636)		
Surprise × Post × β	0.428**	0.420**	0.402**	0.387**	0.356*		
	(0.195)	(0.193)	(0.191)	(0.190)	(0.193)		
Company FE	No	No	Yes	Yes	Yes	No	No
Event Time	No	Post	Post	FE	FE	Post	Post
Company Spec. Trend	No	No	No	Common	Separated	No	No
Announcements	110	110	110	110	110	110	110
Observations	45,559	45,559	45,559	45,559	45,559	22,946	22,613

This table presents the results of estimating equation (6) and variants of equation (3) split by β. For available firms, the β of each stock is extracted from WIND, is calculated from a 5-year rolling window based on the monthly returns of the stock and Shanghai Composite Index (SSE), and is winsorized by 2.5% on both sides. All announcements listed in Table 2 are included in the sample. Columns (1) - (5) summarize the results. Column (6) reports the result of estimating equation (3) using the subsample of firms with below-median betas. Column (7) reports the result of estimating equation (3) using the subsample of firms with above-median betas. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *Observations* represents the number of observations. Standard errors clustered at the company level are in parentheses. *** represents significance at the 1% level, ** 5% level, * 10% level.

Table E.10: Baseline Results Excluding Each Announcement

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
02/02/2000	0.306***	0.300***	0.300***	0.301***	0.245***
	(0.0327)	(0.0329)	(0.0330)	(0.0331)	(0.0322)
03/21/2000	0.293***	0.288***	0.288***	0.289***	0.272***
	(0.0313)	(0.0315)	(0.0317)	(0.0317)	(0.0359)
05/16/2000	0.281***	0.277***	0.277***	0.278***	0.282***
	(0.0295)	(0.0296)	(0.0298)	(0.0297)	(0.0376)
06/28/2000	0.284***	0.282***	0.283***	0.284***	0.285***
	(0.0301)	(0.0308)	(0.0309)	(0.0309)	(0.0395)
08/22/2000	0.291***	0.285***	0.285***	0.286***	0.262***
	(0.0313)	(0.0312)	(0.0314)	(0.0314)	(0.0340)
10/03/2000	0.286***	0.279***	0.280***	0.280***	0.285***
	(0.0305)	(0.0303)	(0.0305)	(0.0305)	(0.0384)
11/15/2000	0.286***	0.282***	0.282***	0.283***	0.282***
	(0.0305)	(0.0307)	(0.0308)	(0.0308)	(0.0377)
12/19/2000	0.279***	0.275***	0.275***	0.276***	0.279***
	(0.0303)	(0.0307)	(0.0309)	(0.0308)	(0.0375)
01/03/2001	0.269***	0.267***	0.268***	0.268***	0.265***
	(0.0358)	(0.0358)	(0.0360)	(0.0360)	(0.0376)
01/31/2001	0.287***	0.288***	0.288***	0.290***	0.278***
	(0.0306)	(0.0314)	(0.0316)	(0.0317)	(0.0372)
03/20/2001	0.308***	0.310***	0.311***	0.312***	0.289***
	(0.0342)	(0.0356)	(0.0358)	(0.0358)	(0.0394)
04/18/2001	0.253***	0.251***	0.251***	0.253***	0.250***
	(0.0302)	(0.0307)	(0.0308)	(0.0309)	(0.0386)
05/15/2001	0.272***	0.271***	0.272***	0.273***	0.281***
	(0.0291)	(0.0297)	(0.0299)	(0.0299)	(0.0378)
06/27/2001	0.280***	0.276***	0.277***	0.277***	0.281***
	(0.0299)	(0.0302)	(0.0303)	(0.0303)	(0.0375)
08/21/2001	0.285***	0.282***	0.282***	0.283***	0.284***
	(0.0305)	(0.0311)	(0.0312)	(0.0312)	(0.0378)
10/02/2001	0.258***	0.260***	0.260***	0.260***	0.296***
	(0.0274)	(0.0283)	(0.0284)	(0.0283)	(0.0402)
11/06/2001	0.288***	0.286***	0.286***	0.287***	0.284***
	(0.0314)	(0.0318)	(0.0319)	(0.0320)	(0.0382)
12/11/2001	0.286***	0.282***	0.282***	0.283***	0.282***
	(0.0305)	(0.0308)	(0.0310)	(0.0309)	(0.0378)

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Table E.10: **Baseline Results Excluding Each Announcement**

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
01/30/2002	0.284***	0.280***	0.280***	0.281***	0.283***
	(0.0304)	(0.0308)	(0.0309)	(0.0309)	(0.0379)
03/19/2002	0.288***	0.284***	0.285***	0.285***	0.279***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
05/07/2002	0.286***	0.283***	0.284***	0.284***	0.283***
	(0.0305)	(0.0308)	(0.0310)	(0.0310)	(0.0379)
06/26/2002	0.286***	0.282***	0.282***	0.283***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
08/13/2002	0.287***	0.285***	0.286***	0.286***	0.282***
	(0.0306)	(0.0311)	(0.0313)	(0.0313)	(0.0378)
09/24/2002	0.282***	0.278***	0.278***	0.279***	0.298***
	(0.0297)	(0.0298)	(0.0300)	(0.0300)	(0.0405)
11/06/2002	0.271***	0.269***	0.269***	0.270***	0.271***
	(0.0290)	(0.0296)	(0.0298)	(0.0298)	(0.0367)
12/10/2002	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
01/29/2003	0.286***	0.284***	0.285***	0.286***	0.282***
	(0.0305)	(0.0311)	(0.0313)	(0.0313)	(0.0378)
03/18/2003	0.289***	0.287***	0.288***	0.288***	0.283***
	(0.0307)	(0.0313)	(0.0315)	(0.0314)	(0.0380)
05/06/2003	0.289***	0.288***	0.288***	0.290***	0.273***
	(0.0310)	(0.0317)	(0.0319)	(0.0320)	(0.0368)
06/25/2003	0.287***	0.284***	0.285***	0.285***	0.284***
	(0.0311)	(0.0318)	(0.0320)	(0.0319)	(0.0386)
08/12/2003	0.286***	0.284***	0.285***	0.285***	0.283***
	(0.0305)	(0.0311)	(0.0312)	(0.0312)	(0.0379)
09/16/2003	0.286***	0.282***	0.283***	0.283***	0.282***
	(0.0305)	(0.0309)	(0.0310)	(0.0310)	(0.0378)
10/28/2003	0.286***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0312)	(0.0379)
12/09/2003	0.286***	0.283***	0.284***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
01/28/2004	0.286***	0.282***	0.282***	0.283***	0.284***
	(0.0305)	(0.0309)	(0.0310)	(0.0311)	(0.0379)
03/16/2004	0.286***	0.282***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0310)	(0.0310)	(0.0378)

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Table E.10: Baseline Results Excluding Each Announcement

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
05/04/2004	0.286***	0.282***	0.283***	0.283***	0.285***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
06/30/2004	0.285***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
08/10/2004	0.285***	0.282***	0.282***	0.283***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0311)	(0.0379)
09/21/2004	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0310)	(0.0312)	(0.0311)	(0.0378)
11/10/2004	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
12/14/2004	0.286***	0.283***	0.284***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
02/02/2005	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0310)	(0.0311)	(0.0311)	(0.0378)
03/22/2005	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
05/03/2005	0.286***	0.283***	0.284***	0.285***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
06/30/2005	0.286***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0311)	(0.0312)	(0.0312)	(0.0379)
08/09/2005	0.286***	0.282***	0.283***	0.283***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0310)	(0.0378)
09/20/2005	0.286***	0.284***	0.285***	0.286***	0.281***
	(0.0305)	(0.0310)	(0.0312)	(0.0312)	(0.0378)
11/01/2005	0.286***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0312)	(0.0379)
12/13/2005	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
01/31/2006	0.286***	0.283***	0.284***	0.285***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
03/28/2006	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
05/10/2006	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
06/29/2006	0.285***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0380)

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Table E.10: Baseline Results Excluding Each Announcement

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
08/08/2006	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0380)
09/20/2006	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
10/25/2006	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0310)	(0.0311)	(0.0311)	(0.0379)
12/12/2006	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0310)	(0.0310)	(0.0378)
01/31/2007	0.286***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
03/21/2007	0.286***	0.282***	0.282***	0.283***	0.282***
	(0.0305)	(0.0308)	(0.0310)	(0.0310)	(0.0378)
05/09/2007	0.286***	0.285***	0.286***	0.286***	0.282***
	(0.0305)	(0.0310)	(0.0311)	(0.0311)	(0.0379)
06/28/2007	0.286***	0.285***	0.285***	0.286***	0.283***
	(0.0305)	(0.0312)	(0.0314)	(0.0313)	(0.0380)
08/07/2007	0.283***	0.279***	0.279***	0.280***	0.287***
	(0.0307)	(0.0313)	(0.0314)	(0.0314)	(0.0378)
08/17/2007	0.320***	0.321***	0.321***	0.321***	0.316***
	(0.0311)	(0.0316)	(0.0319)	(0.0318)	(0.0392)
09/18/2007	0.275***	0.273***	0.274***	0.275***	0.276***
	(0.0308)	(0.0312)	(0.0314)	(0.0315)	(0.0382)
10/31/2007	0.288***	0.284***	0.284***	0.285***	0.275***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0380)
12/11/2007	0.284***	0.279***	0.279***	0.280***	0.279***
	(0.0304)	(0.0308)	(0.0309)	(0.0309)	(0.0377)
01/22/2008	0.510***	0.507***	0.508***	0.518***	0.599***
	(0.0672)	(0.0670)	(0.0668)	(0.0666)	(0.1040)
01/30/2008	0.278***	0.277***	0.277***	0.277***	0.280***
	(0.0316)	(0.0319)	(0.0321)	(0.0320)	(0.0381)
03/18/2008	0.284***	0.281***	0.281***	0.280***	0.279***
	(0.0350)	(0.0361)	(0.0363)	(0.0362)	(0.0406)
04/30/2008	0.289***	0.286***	0.287***	0.287***	0.279***
	(0.0308)	(0.0312)	(0.0314)	(0.0314)	(0.0379)
06/25/2008	0.290***	0.286***	0.286***	0.287***	0.275***
	(0.0304)	(0.0309)	(0.0311)	(0.0311)	(0.0379)

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Table E.10: Baseline Results Excluding Each Announcement

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
08/05/2008	0.285***	0.283***	0.284***	0.285***	0.282***
	(0.0304)	(0.0310)	(0.0312)	(0.0312)	(0.0378)
09/16/2008	0.277***	0.272***	0.272***	0.273***	0.281***
	(0.0304)	(0.0309)	(0.0310)	(0.0310)	(0.0378)
10/08/2008	0.306***	0.303***	0.303***	0.304***	0.290***
	(0.0314)	(0.0318)	(0.0319)	(0.0318)	(0.0383)
10/29/2008	0.243***	0.248***	0.248***	0.249***	0.282***
	(0.0306)	(0.0310)	(0.0312)	(0.0312)	(0.0383)
12/16/2008	0.269***	0.268***	0.268***	0.270***	0.273***
	(0.0312)	(0.0317)	(0.0319)	(0.0319)	(0.0385)
12/16/2015	0.285***	0.281***	0.282***	0.282***	0.284***
	(0.0304)	(0.0308)	(0.0310)	(0.0310)	(0.0380)
01/27/2016	0.286***	0.285***	0.286***	0.286***	0.284***
	(0.0305)	(0.0310)	(0.0311)	(0.0311)	(0.0379)
03/16/2016	0.286***	0.283***	0.283***	0.284***	0.277***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0381)
04/27/2016	0.286***	0.282***	0.282***	0.283***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
06/15/2016	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
07/27/2016	0.286***	0.283***	0.284***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
09/21/2016	0.287***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0382)
11/02/2016	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
12/14/2016	0.286***	0.282***	0.283***	0.283***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0310)	(0.0378)
02/01/2017	0.285***	0.283***	0.283***	0.285***	0.282***
	(0.0305)	(0.0310)	(0.0311)	(0.0312)	(0.0378)
03/15/2017	0.286***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0312)	(0.0379)
05/03/2017	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
06/14/2017	0.285***	0.282***	0.282***	0.283***	0.282***
	(0.0304)	(0.0309)	(0.0311)	(0.0310)	(0.0378)

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Table E.10: Baseline Results Excluding Each Announcement

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
07/26/2017	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
09/20/2017	0.286***	0.283***	0.284***	0.285***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0312)	(0.0379)
11/01/2017	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0310)	(0.0311)	(0.0311)	(0.0379)
12/13/2017	0.286***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
01/31/2018	0.286***	0.283***	0.283***	0.284***	0.283***
	(0.0304)	(0.0310)	(0.0311)	(0.0311)	(0.0379)
03/21/2018	0.285***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0311)	(0.0313)	(0.0313)	(0.0380)
05/02/2018	0.286***	0.283***	0.283***	0.284***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0379)
06/13/2018	0.285***	0.283***	0.284***	0.285***	0.282***
	(0.0304)	(0.0310)	(0.0312)	(0.0312)	(0.0379)
08/01/2018	0.285***	0.284***	0.284***	0.285***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0311)	(0.0379)
09/26/2018	0.286***	0.283***	0.283***	0.285***	0.283***
	(0.0305)	(0.0310)	(0.0312)	(0.0312)	(0.0377)
11/08/2018	0.285***	0.282***	0.283***	0.283***	0.282***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0378)
12/19/2018	0.285***	0.282***	0.282***	0.283***	0.281***
	(0.0305)	(0.0311)	(0.0313)	(0.0312)	(0.0380)
01/30/2019	0.286***	0.284***	0.285***	0.286***	0.282***
	(0.0305)	(0.0311)	(0.0312)	(0.0313)	(0.0377)
03/20/2019	0.285***	0.282***	0.282***	0.283***	0.282***
	(0.0304)	(0.0309)	(0.0311)	(0.0310)	(0.0383)
05/01/2019	0.283***	0.282***	0.282***	0.283***	0.296***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0395)
06/19/2019	0.281***	0.277***	0.277***	0.278***	0.281***
	(0.0304)	(0.0310)	(0.0312)	(0.0311)	(0.0380)
07/31/2019	0.286***	0.283***	0.284***	0.284***	0.283***
	(0.0306)	(0.0312)	(0.0314)	(0.0313)	(0.0380)
09/18/2019	0.286***	0.284***	0.284***	0.285***	0.284***
	(0.0305)	(0.0309)	(0.0311)	(0.0311)	(0.0385)

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Table E.10: Baseline Results Excluding Each Announcement

Excluded Announcement	Estimates Corresponding to Table 3				
	(1)	(2)	(3)	(4)	(5)
10/30/2019	0.285***	0.283***	0.283***	0.284***	0.288***
	(0.0304)	(0.0309)	(0.0311)	(0.0311)	(0.0385)
12/11/2019	0.286***	0.284***	0.284***	0.284***	0.283***
	(0.0305)	(0.0310)	(0.0311)	(0.0311)	(0.0379)
Company FE	No	No	Yes	Yes	Yes
Event Time	No	Dummy	Dummy	FE	FE
Company Spec. Trend	No	No	No	Common	Separated
Announcements	109	109	109	109	109

This table presents the results of estimating equation (3) with each announcement dropped from the baseline sample. All announcements are listed in Table 2. In each specification, we control for announcement fixed effects. *Company FE* represents whether we control for company fixed effects. *Event Time* indicates how event time effects are controlled for: *No* indicates that event time is not controlled for; *Post* indicates that a dummy variable for post-announcement event time is included; *FE* indicates that event time fixed effect is included. *Company Spec. Trend* represents whether and how company-specific time trends are controlled for: *No* indicates company-specific time trends are not included; *Common* indicates that we control for company-specific time trends common to surprise increases and decreases; *Separated* indicates that we control for company-specific time trends separated for surprise increases and decreases. *Announcements* represents the number of FOMC announcements. *** represents significance at the 1% level, ** 5% level, * 10% level.