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Information Acquisition, Uncertainty Reduction and Pre-announcement Premium in China

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Keywords: Equity premium, macro announcement, central bank, information acquisition.
JEL Classification: E44, E52, G14

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1 Introduction

In this paper, we examine how and why stock markets react ex-ante to an anticipated central bank's announcement on its monetary policy stance. In particular, we study the equity returns in an environment in which the dates of central bank's information supply through public announcements are *not* pre-fixed. Savor and Wilson (2013, 2014) document positive excess returns realized in the U.S. stock market on the pre-scheduled dates of Federal Reserve Board (FRB)'s Federal Open Market Committee (FOMC) statement releases.[1] Lucca and Moench (2015) find that the FOMC-related premium is however accrued over hours prior to the FRB's announced policy decision, and regard this pre-announcement premium a puzzle for lack of data-consistent theories. More importantly, such impacts of central banks' announcements on equity markets are more of an international issue. Brusa, Savor, and Wilson (2019) show that the stock markets of 35 countries exhibit strong reactions to the FOMC announcements whereas 3 other markets are not at all responsive.

We demonstrate that the variation in scheduling and timing of announcements is important for identifying the mechanism behind the reactions of equity market to central bank's announcements. Our study is therefore framed within the Chinese context, where the People's Bank of China (PBOC), the country's central bank, announces key statistics measuring its monetary policy stance every month in a "quasi-scheduled" fashion. In other words, the market expects monetary data to be released on a day every month with probability one but the exact date and time of the announcement is largely unknown ahead of time.[2]

First, we document a sizable pre-announcement premium in China's equity market before the PBOC's announcement releases of monetary data, which is approximately five times as large as the average equity premium in China. The accumulation of the positive excess returns can be initialized as early as three days before announcements. Importantly, we find this pre-announcement premium exists only when an announcement arrives late in a month. In addition, based on the Bloomberg economists' forecast data, we show that market uncertainty is reduced prior to announcements while

[1] The Federal Reserve Board pre-schedules the dates of eight FOMC meetings a year, and informs the market of those dates ahead of time. On average, eight FOMC statements are issued per year right after the FOMC meetings.

[2] Chen, Ren, and Zha (2018) show that the monetary aggregates such as the growth rate of M2 are very important measures of monetary policy stance in China.

positive excess returns are accrued. Our findings for China's markets suggest that the domestic response of stock market to its own central bank's announcements of monetary policy stance is *not* U.S.-specific and is interesting for its own merit.

We then lay out our theoretical discussions within the framework of Ai, Bansal, and Han (2022), which rationalizes the pre-announcement premium by featuring the endogenous information acquisition among investors. Ai, Bansal, and Han (2022) proposes that with generalized risk sensitive preferences, the uninformed investors choose to acquire information ahead of announcements because the information advantages of informed investors over uninformed is particularly large during the pre-announcement window. Our paper further examines the asset pricing implications by highlighting the random timing of quasi-scheduled central bank's announcements as instituted in China. We show that investors' perceived probability for seeing an announcement on the next day weakly increases as time evolves. More uninformed investors find it optimal to acquire extra information when the date is increasingly close to the actual announcement day. It can be shown that the degree of information acquisition is larger as the date approaches to the end of an announcement cycle when an announcement is till pending. As a result, greater information acquisition as associated with late announcements drives down market uncertainty and boosts equity prices before announcements.

We then test the key model implications regarding the dynamics of information acquisition in the PBOC's announcement windows. We stress that the unique Chinese environment with "quasi-scheduled" central bank announcements helps identify the information acquisition channel. Based on the keywords search index of China's largest internet search engine, Baidu Inc., we examine changes in the degree of information acquisition for learning about monetary statistics and aggregate credit conditions. We provide model-consistent empirical evidence and show that information acquisition is significantly increased prior to PBOC's announcements. Most importantly, while a sizable pre-announcement premium is accrued only for late announcements, investors acquire more information during the same pre-announcement window for late announcements as well. We thus conclude that our documented pre-announcement premium in China is largely driven by investors' increased efforts of acquiring information ex-ante.

Our model framework differs from the class of models that implicitly or explicitly rely on the information leakage to deliver the pre-announcement premium (Ai and Bansal, 2018). While the information leakage channel is about the stock prices incorporating the "first moment" of news prior to announcements, we follow Ai, Bansal, and Han (2022) and highlight the asset pricing implications of the "second moment", i.e. the market uncertainty concerning the to-be-announced policy changes. However, though we show that our documented pre-announcement premium is not dependent on the expected or unexpected component of the monetary statistics announced ex-post, our paper abstracts from establishing that there is no other form of data leakages or informed trading that may partly explain our findings.[3] In addition, our paper is distinguished from the large literature that identifies the impacts of monetary policy shocks on financial markets upon information release (Bernanke and Kuttner, 2005; Nakamura and Steinsson, 2018). Rather, we focus on the ex-ante effects of central bank's announcement on stock markets. Our study thus contributes to the literature by exploiting the variation of announcement timing in China and identifies the information acquisition channel through which the equity premium is driven by uncertainty reduction prior to announcements.

Related Literature. This paper is related to three strands of literature. First, our study is aligned with the empirical works that explore the impacts of macro announcements on equity prices. Savor and Wilson (2013, 2014) find that the U.S. equity market exhibits larger excess returns and Sharpe ratios on days of data releases for inflation, unemployment, and various interest rates. Lucca and Moench (2015) detect a pre-announcement premium in response to the FOMC statement issuance. Cieslak, Morse, and Vissing-Jorgensen (2019) detect that the equity premium realized before and on the FOMC days is part of a larger premium cycle earned in even weeks starting from the last FOMC meeting. Our paper is the first to provide the empirical evidence on China's stock market in windows of its central bank's announcements of monetary aggregates data. This enriches and extends the existing view that the U.S. Federal Reserve is the unique central bank that matters for international stock markets (Brusa, Savor, and Wilson, 2019).[4]

[3]For example, based on high-frequency trading data, Bernile, Hu, and Tang (2016) and Kurov et al. (2019) find that the U.S. stock market moves in the same direction as the to-be-released data over a very short period of a few minutes before announcements. They find that multiple sources of information delivery, which are not necessarily data leakages, could lead to informed trading prior to announcements.

[4]In Section B.4 and B.7 of the Online Appendix, we confirm the findings in Brusa, Savor, and Wilson (2019) that China's equity markets are not responsive to news of the FOMC announcements. However, we find that PBOC's monthly announcements have significant post-announcement impacts on neighboring stock markets including Hong Kong, Japan and South Korea.

Second, our paper contributes to the theory literature that aims to explain the equity premium driven by macro announcement events. Ai and Bansal (2018) and Ai et al. (2021, 2022) use generalized risk sensitive preferences and theorize that the probability distortions in investors' preferences help realize positive equity premium on announcement days by affecting the degree of discounting.[5] Jiang, Pan, and Qiu (2019) emphasize the informed trading prior to public announcement for delivering the premium. Wachter and Zhu (2021) account for the announcement day premium using a model in which investors learn about a latent disaster probability from scheduled announcements. While these theories aim to rationalize the announcement-day stock returns, they have to entertain the possibility that there is some leakage of central bank's information ex-ante so as to deliver the premium prior to announcements. Ai, Bansal, and Han (2022) carefully document the return and volatility patterns around the FOMC days and proposes an Rational Expectation Equilibrium model with both informed and uninformed investors, generalized risk preference, and endogenous information acquisition from noisy signals to jointly account for the pre-announcement premium and return volatility dynamics. Laarits (2019) builds a model in which investors' interpretations of the recent stock market performance are signals indicative of FRB's to-be-announced decision, which helps resolve market uncertainty ex-ante. In our paper, we examine in theory the impacts of macro announcements on stock returns given timing variation of unscheduled announcements. Our empirical strategy helps identify the information acquisition channel as the potential explanation for pre-announcement premium in China for causal inference.

The closest papers related to ours are Hu et al. (2021) and Cocoma (2022). Firstly, along with Lucca and Moench (2015), Martello and Ribeiro (2018), Beckmeyer, Branger, and Grunthaler (2021) and Bauer, Lakdawala, and Mueller (2021), Hu et al. (2021) emphasize the heightening and the following reduction of the posterior variance in the market, i.e. market uncertainty as measured by the VIX index, as the main driver of the pre-FOMC announcement premium. Our paper differs from these works by exploiting the unique features of China's markets. We show that the cross-event variation of announcement timing gives us the latitude to better identify market uncertainty changes as a result of investors' information acquisition decisions. Secondly, Cocoma (2022) studies an environment of pre-scheduled announcements and assumes investors

[5]Based on the U.S. data, Ai, Han, and Xu (2021) also highlight the differences between the variance of conditional expectations and the posterior variance in windows of the FOMC announcements.

having differences of opinion. The reduction in disagreement prior to announcements decreases the sentiment risk and generates an upward pre-announcement drift. Our paper focuses on the asset pricing implications of randomness in announcement timing. We show that investors' perceived probability of seeing an announcement on the next day weakly increases as time moves closer to the end of an announcement cycle. Market uncertainty drops and the stock prices jump because more uninformed investors initiate information acquisition when an announcement arrives late in a cycle.

Third, our paper is also related to the literature that studies asset pricing with endogenous information acquisition. In the spirit of Sims (2003), models of investors with limited attention and costly information-processing capacity predict that asset values can be endogenously shifted by the decision of attention optimization, which serves the micro-foundation that determines the information and investment decisions (Peng and Xiong, 2006; Kacperczyk, Nieuwerburgh, and Veldkamp, 2016; Kacperczyk, Nosal, and Stevens, 2019; Kacperczyk, Nosal, and Sundaresan, 2018). Fisher, Martineau, and Sheng (2022) develop a macroeconomic attention index based on news article counts from newspapers featuring macroeconomic news. They show that the pre-announcement attention predicts the announcement-related risk premium and changes in the VIX. Our paper highlights that the channel of information-driven uncertainty reduction can be particularly important for delivering the pre-announcement premium in China. Ben-Rephael et al. (2021) show that the CAPM performs better on the FOMC announcement days, and they show that investor's information consumption is the driving force. We differ from Ben-Rephael et al. (2021) in that we regard the information acquisition related to monetary statistics and policy stance measurement as a device to mitigate the risk of holding the market portfolio ex-ante, whereas their rationalization is based on the information spillover and cross-learning among individual stocks.

The rest of the paper is structured as follows. We discuss in Section 2 the institutional details in China regarding the roles of PBOC as a central bank, the routines of PBOC's periodic announcements and the data sources. Section 3 documents the main empirical findings regarding the pre-announcement premium in China. In Section 4, we provide theoretical discussions of the information acquisition channel as to explain the pre-announcement premium associated with late announcements. Section 5 provides additional empirical results that are consistent with our model predictions on information acquisition in announcement windows. Section 6 concludes. In the section of Appendices, we provide supplementary empirical evidence and proofs. In addition, we have a separate Online Appendix in which we present additional empirical results covering a much wider range of explorations.

2 Institutional Details and Data

2.1 Monetary Policy in China and PBOC's Market Communications

The People's Bank of China assumed its role as China's central bank in 1984. Issuance of The PBOC Law of the People's Republic of China in 1995 stipulated that the PBOC is responsible for designing and conducting monetary policy in China. During years of 1984 to 1997, the PBOC mainly regulated strict quotas on credit and cash supply to specifically counterstrike the domestic inflation and to promote economic growth. Launches of stock markets, interbank markets and foreign exchange markets at the same time urgently called for market-based reforms on PBOC's rigid monetary policy framework.

In 1996, the quantity-based measure of aggregate money supply was officially set as intermediate target for China's monetary policy and this is when monetary statistics including M0 (cash in circulation), M1 (narrow measure of monetary aggregates) and M2 (broad measure of monetary aggregates) were being published regularly by the PBOC. In 1998, the PBOC's credit quotas on major national banks were completely abolished and since then, the PBOC started working with standard tools of monetary policies including open market operations, reserve requirement managements, interest rate adjustments and discount loans etc. to indirectly achieve the money growth targets.

Entering 2013, shrinkage in foreign reserves and fluctuations of financial markets in China rendered the PBOC to push forward innovative monetary policy practice to better maintain the credit market stability and to provide the well-needed stimulus to the real sectors. Since then, the PBOC started carrying out short and longer term lending facilities, special-purpose loan programs, interest rate channel managements, bank notes swaps and others to optimize over market liquidity and loans on initiative. In mid of the interest rate liberalization process, key interest rates including DR007, i.e., the 7-day repurchase rate pledged by interest rate bonds by deposit-taking institutions at China's interbank market, and LPR, the Loan Prime Rate were practically considered as important policy targets for money and credit markets respectively. Though, monetary aggregates data such as the growth rate of M2 is still by far one of the most critical gauge of monetary policy stance in China (Chen, Ren, and Zha, 2018).

Importantly, since 2010, the PBOC increasingly put efforts into public communications to better guide the market expectations and to increase its policy transparency. Important aggregate monetary statistics are published on the PBOC's website every month.[6] Official PBOC's research reports and papers, data release and interpretation press conferences, joint conference with other government agencies, media coverage of PBOC's senior officials' views and comments, and regular WeChat news feeds are all forms of central bank communications that the PBOC sticks to in recent years. These actions largely enhanced the market's comprehension of China's macroeconomic performance, upcoming market risks, additional policy necessities, and the specific goals of monetary policy adjustments. All these initiatives are pivotal to ensure the stability and well-functioning of Chinese financial markets, and to ultimately enhance the overall effectiveness of monetary policy in China.

2.2 PBOC's Announcements of Monetary Aggregates Data

By announcements, we refer to public news that specifically delivers up-to-date statistics of a macroeconomic variable with regular publication frequency.[7] In this paper, we are primarily interested in the announcements made by the PBOC on China's monetary aggregate data, which are indicative of the stance of China's monetary policy and overall credit condition. Data on the monetary aggregates, including levels and growth rates of M0, M1, and M2, are all published on the website of the PBOC every month in a single announcement statement. Other monetary and financial statistics are also published at the same time in the statement, including the outstanding balance of total loans and deposits, monthly interest rate averages, and balance of interbank loans.[8]

[6]Before 2010, the PBOC's website published the monthly monetary statistics by issuing news of descriptive data summaries instead of releasing the simpler statistics report. Since December 2009, the Statistics and Analysis Department of the PBOC formalized the format of publishing the monthly monetary statistics by releasing a short statement every month with a cleaner title "Financial Statistics Report (Month, Year)". The website of the PBOC was reformatted later in September 2010, which archives the monthly statements in the "Statistical Releases" section.

[7]In Section A.1 of the Online Appendix, we compare and summarize the institutional details of a range of macroeconomic announcements made by other important statistical agencies of China along with the FOMC statements issued by the U.S. FRB.

[8]Since November 2012, all these statistics have been published around the same time as the announcement of the balance of total social financing (TSF), even though TSF data are made public via a separate statement issue. TSF

To avoid abuse of terminology, we simply label the announcements that publish the most updated monetary aggregates data and other credit statistics as **M2** announcements.[9]

2.3 Data Sources

Our sample ranges from January 2010 to December 2019. We made this choice for three reasons. First, the current routine of PBOC's publishing up-to-date monetary data was not formalized until after 2009 when statistics started being promptly published on the PBOC's website in the "Statistical Releases" section. Therefore, the internet as an information vendor provides us with good precision to tell on what day and at what time a data point is initially and publicly accessible by the market. Second, we abstract from a period of domestic and international financial market turmoil, economic downturn, and massive policy interventions during 2007-2009.[10] Third, by focusing on recent years but excluding the years of Covid-19 pandemic thereafter, our sample selection helps isolate the effects of macro announcements during a period in which China was growing market sophistication through rounds of reforms and the market participants could gain increasing familiarity with the delivery process of PBOC's monetary data.

To identify the reactions of the equity market in the PBOC's announcement windows, we extract from the Bloomberg Economic Calendar (BEC) database a list of dates of the PBOC's announcements about monetary aggregates, which we also verified as consistent with the date and timing information published on the PBOC's website. Stock return data are constructed based on daily open and close price series of the Wind A-Share Index. This index incorporates the A-shares of all firms listed on the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE), and can be considered the most comprehensive measure of stock performance of China's equity market. We also examine the robustness of our results taking the SSE Composite Index and the SZSE Component Index separately for regressions. All these market index series are downloaded

data could be online a few seconds or hours before or after the monetary aggregate data releases.

[9] We also note the quarterly publication of China's Monetary Policy Report (MPR) by the PBOC. MPR is a comprehensive collection of the PBOC's assessments of the functioning of the credit market, macroeconomic and financial stability, and the necessity for the PBOC to fine tune the monetary policy. Therefore, the MPR is not directly comparable to other major central banks' policy statements that specifically publish policy instrument targets or articulate the decision of monetary policy moves, such as the FOMC statement by the U.S. FRB or the Monetary Policy Accounts of the European Central Bank. However, for completeness, we examine China's stock market reactions to these MPR announcements in Section B.5 of the Online Appendix.

[10] China introduced a massive stimulus package of RMB 4 trillion RMB(roughly USD 586 billion) to its economy and provided liquidity support to its financial markets since 2008.

from Wind Data Feed Services. To compute the excess equity returns, we take the 10-year treasury bond daily yield series as the benchmark risk-free rate. The 1-year bank time deposit rate is treated as an alternative measure. These risk-free rates are downloaded from the Wind database.

To measure market uncertainty regarding the monthly monetary statistics, we exploit the forecast data from Bloomberg Economic Forecast Survey. The Bloomberg database records an unbalanced panel of professional economists regarding their forecasts about various macroeconomic variables. In particular, we focus on the monthly forecasts about the year-over-year (YOY) M2 growth rates which the PBOC releases every month. To construct empirical proxies for capturing the intensity of investors' information acquisition, we employ the keywords-based search index compiled by Baidu, Inc., a leading Chinese search engine conglomerate. A search index regarding a range of key words related to monetary statistics is to capture the efforts of acquiring information to learn about monetary aggregates data and the PBOC's policy moves. The data series of Baidu search index by the keywords of interests are downloaded from the website of Baidu Inc. with the arranged authorization.

2.4 Data Release Routine: Timing of PBOC's Announcements

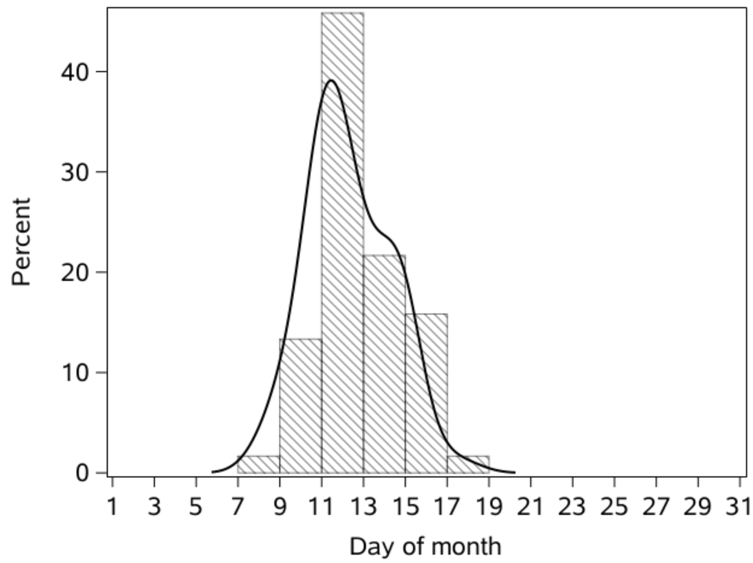
Our sample covers 2431 trading days of China's equity market, and 120 **M2** announcement events.[11] Figure 1 presents a histogram plot of the day of month distribution of **M2** announcement events.[12] The vertical distance measures the percent of **M2** announcement events with days of data release falling into a 2-day bin. The solid line approximates a probability density function capturing the discrete distribution. The graph shows that about 65% of **M2** announcements in our sample fall between the 11th and 14th days of a month and the day mode for the PBOC releasing the monetary data is the 11th. Therefore, the PBOC does not maintain a fixed day of month for

[11] In Section A.2 of the Online Appendix, we provide a summary of announcement days of a wider range of macro announcements made by different statistical agencies. In addition, we show the event tabulation of data co-releases in that section, which checks if another announcement event falls on the same day when the PBOC publishes its monetary data through an **M2** announcement. It can be shown that our identified **M2** announcements are largely independent events.

[12] In Section A.3 of the Online Appendix, we instead plot the histogram of the **M2** announcement days. Announcement days are defined with day realignment to reflect the fact that the market may have initial access to the newest data only on the next trading day. This is because an announcement could be made after the market close on the previous trading day. A very similar heterogeneity of announcement dates across months can be detected.

releasing the monthly monetary statistics.[13] However, investors may still be able to figure out a window of days with greatest probability of PBOC data release, for example, the 11th to 14th of a month.

Figure 1: Day of Month Distribution of M2 Announcement Events



Notes: Sample: January 2010 to December 2019. This figure plots the histogram distribution of day of month across all **M2** announcements events in our sample. Each bin spans 2 consecutive calendar days. The vertical distance of the box denotes the percentage (%) of **M2** announcement events with days of data release falling into a 2-day bin. The solid line approximates the kernel density function.

Importantly, note that the PBOC does not pre-communicate with the market regarding the exact day of data releases. However, market participants know with probability one that every month, sooner or later, one announcement that publishes up-to-date monetary aggregate data will be made. Hence, we call this PBOC routine of releasing monetary data "quasi-scheduled".We claim that the timing variation of **M2** announcements across months is largely exogenous. This is the important motivating point where we study the relationship of announcement timing and equity premium in an environment of random announcement scheduling.[14]

[13]It should be noted that the PBOC stops its routine in 2015 for publishing a time table at the beginning of a year in which all its covered monetary and credit market statistics are scheduled for announcements in a year. The abandoned routine used to state that the monetary aggregates data were scheduled to be released on the 15^{th} of each month. However, we checked the actual dates of data releases before 2015 and found that most of the monetary aggregates data were released before the 15^{th}. We plot a similar histogram plot of timing heterogeneity before 2015 in Section A.4 of the Online Appendix. That is, there is a significant timing variation for announcements of monetary data ex-post.

[14]First, we show in Section B of the Appendix that early or late arrivals of **M2** announcements are not correlated with the contents of announcements ex-post. In addition, the announcement timing exhibits no serial correlations over time and the exact day of announcement in a month is not predictable using a wide class of variables. Second, some anecdotal evidence from inside the PBOC's monetary policy department suggests to us that the formal approval

3 Empirical Evidence: Pre-announcement Premium in China

In this section, we document a pre-announcement drift of China's stock market returns in response to the PBOC's monthly announcements of the monetary aggregate data. We highlight the fact that given China's unique setting with quasi-scheduled central bank announcements, the pre-announcement equity premium arises only when an announcement arrives late in a month. We then show that such pre-announcement premium is not driven by data leakage or by unexpected or exchanged changes in the to-be-announced monetary statistics. In addition, based on the Bloomberg economists' forecast data, we find that market uncertainty regarding the M2 growth declines over time in each announcement cycle and reaches its bottom low prior to announcements.

3.1 Equity Premium Prior to the PBOC's Announcements

To examine the reactions of China's stock market to **M2** announcements, we first define the day of an announcement as the first trading day on which China's financial markets have access to the PBOC's updated statistics. Then we examine the stock market returns in announcement windows by estimating a baseline specification given by

$$Exret_t = \gamma + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{1}$$

where t corresponds to a trading day. $Exret_t$ denotes the daily difference of close-to-close stock returns constructed from the Wind A-Share Market Index and the daily 10-year treasury yields, and thus a measure of excess returns. We show that using open-to-close returns and alternative risk-free rate such as the 1-year bank deposit rate does not affect our baseline results.

Our explanatory variable $\mathbb{I}_{t_{M2}-i}$ is a dummy variable that equals 1 if day t is the i-th trading day before (after if i is negative) an **M2** announcement. With $i = 0$, $\mathbb{I}_{t_{M2}} = 1$ denotes the **M2** announcement day.[15] In total, we include $2T + 1$ day dummies to capture the duration of

of releasing monetary statistics every month depends on whether the PBOC's senior officials are timely available to sign off the data release documents. For example, senior officials' business travels, sickness, and their conference and discussion arrangements could all create time conflicts and thus the delays for releasing data timely.

[15]The **M2** announcement events in our sample can be further grouped into four by the exact time of the data release in a day: (1) before trading hours on weekdays; (2) within trading hours (including the gap hours between the morning and afternoon trading sessions); (3) after trading hours from Monday to Thursday; and (4) between market closure on Friday until 24:00 on Sunday. Correspondingly, by our definition of the announcement day, the day of data release, t, for announcement groups (3) and (4) has been adjusted to reflect the fact that the next trading day, $t + 1$,

the announcement window. Ceteris paribus, the coefficient β_i is interpreted as the mean excess return on the i-th day prior to announcement relative to the average daily excess return outside an announcement window. We further include year, month, and weekday fixed effects in vector X_t to control for the potential seasonality and calendar effect.

Table 1 reports the coefficient estimates of Equation (1). According to the results in columns (1) to (4) with $T = 5$ for an 11-day **M2** announcement window, we find that most of the coefficient estimates β_i are statistically insignificant except for those related to the dummy variables associated with the three days prior to announcement, namely, $\mathbb{I}_{t_{M2}-1}$, $\mathbb{I}_{t_{M2}-2}$ and $\mathbb{I}_{t_{M2}-3}$. Depending on the specification and the measures, these point estimates with varying standard errors range from 21 to 35 basis points (bps) per day. The largest and most statistically significant daily equity premium is realized on the day before the announcement day, t_{M2-1}. This is robust regardless of whether we take alternative measures of excess returns using the open-to-close market index, the 1-year bank time deposit rate as proxy for the risk-free rate, or the raw close-to-close stock returns as the dependent variable. Given that the coefficient estimates associated with day dummies on and after the **M2** announcement day are not statistically significant, we thus confirm that China's equity market accrues a pre-announcement equity premium before the PBOC's release of monthly monetary data. Column (5) presents similar coefficient estimates when focusing on 7-day dummies of announcement windows for $T = 3$, and the results again suggest that the dominant share of the pre-announcement premium is realized on the day before the announcement day.[16]

Given that the coefficient estimates associated with $\mathbb{I}_{t_{M2}-2}$ and $\mathbb{I}_{t_{M2}-3}$ are large in size and may be statistically significant depending on regression specifications and the measures that we use, we proceed to run the following regression to quantify the relative size of the mean daily excess return

is the first day for the market to internalize the public news for trading. See Section A.2 of the Online Appendix for more details about the breakdown of the announcement events by various timing measures.

[16] In Section B.1 of the Online Appendix, we demonstrate that our estimation results also hold if we directly use the Shenzhen or Shanghai stock exchange market index for constructing returns. Though, we note that the size of the pre-announcement premium is somewhat smaller when our sample includes more recent years of data covering 2018 and 2019. Importantly, the weakening of this premium is driven by the performance of those stocks traded on the Shanghai Stock Exchange. Apart from the equity markets, we also explored the performance of other asset markets in China in windows of the PBOC's announcements of monetary aggregates data. Results are collected in Section B.6 of the Online Appendix.

Table 1: **Wind A-Share Index Returns in Windows of M2 Announcements**

VARIABLES	(1) Exret	(2) Open-Close	(3) Bank Rate	(4) Raw Returns	(5) Exret	(6) Exret	(7) Exret
$\mathbb{I}_{t_{M2}-5}$	0.09	0.14	0.09	0.09		0.09	0.09
	(0.16)	(0.12)	(0.16)	(0.16)		(0.16)	(0.16)
$\mathbb{I}_{t_{M2}-4}$	-0.02	0.07	-0.02	-0.02		-0.02	-0.02
	(0.15)	(0.13)	(0.15)	(0.15)		(0.15)	(0.15)
$\mathbb{I}_{t_{M2}-3}$	0.21	0.26*	0.21	0.21	0.18	0.21	
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	
$\mathbb{I}_{t_{M2}-2}$	0.22+	0.21*	0.22+	0.22+	0.20		
	(0.14)	(0.12)	(0.14)	(0.14)	(0.14)		
$\mathbb{I}_{t_{M2}-1}$	0.31**	0.35***	0.31**	0.31**	0.28**		
	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)		
$\mathbb{I}_{t_{M2}-2,t_{M2}-1}$						0.26**	
						(0.10)	
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$							0.25***
							(0.09)
$\mathbb{I}_{t_{M2}}$	0.16	0.06	0.16	0.16	0.13	0.16	0.16
	(0.14)	(0.13)	(0.14)	(0.14)	(0.13)	(0.14)	(0.14)
$\mathbb{I}_{t_{M2}+1}$	-0.08	-0.05	-0.08	-0.08	-0.10	-0.08	-0.08
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
$\mathbb{I}_{t_{M2}+2}$	0.01	0.02	0.01	0.01	-0.02	0.01	0.01
	(0.16)	(0.15)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
$\mathbb{I}_{t_{M2}+3}$	-0.10	-0.11	-0.10	-0.10	-0.12	-0.10	-0.10
	(0.15)	(0.14)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+4}$	0.16	0.14	0.16	0.16		0.16	0.16
	(0.15)	(0.13)	(0.15)	(0.15)		(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+5}$	0.11	0.11	0.11	0.11		0.11	0.11
	(0.16)	(0.15)	(0.16)	(0.16)		(0.16)	(0.16)
Constant	-0.18	0.01	-0.18	-0.17	-0.16	-0.18	-0.18
	(0.17)	(0.16)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431	2,431
R^2	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Notes: Sample: January 2010 to December 2019. Columns (1) to (5) report the regression results of Equation (1) for various specifications taking different measures. Columns (6) and (7) present the estimation results of Equation (2). The dependent variable is the close-to-close excess return constructed from the Wind A-Share Index for columns except for (2) and (4). Column (2) considers the open-to-close excess returns and column (4) directly takes the raw close-to-close market returns as the dependent variable. Announcement dummy $\mathbb{I}_{t_{M2}-i}$ equals 1 if it is the i-th trading day before (after if i is negative) an **M2** announcement. Excess returns of the first trading day are aligned to the day on which the stock market first has access to the monetary statistics as indicated by the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$, i.e. the announcement day. Dummy variable $\mathbb{I}_{t_{M2}-j,t_{M2}-1}$ equals 1 when a trading day t falls in a j-trading-day window before the **M2** announcement day. ***, **, *, and + denote the statistical significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in the parentheses.

in a longer pre-announcement window of j days covering trading days between $t_{M2}-1$ and $t_{M2}-j$.

$$Exret_t = \gamma + \theta_j \mathbb{I}_{t_{M2}-j,t_{M2}-1} + \sum_{i=-T}^{0} \beta_i \mathbb{I}_{t_{M2}-i} + \sum_{i=T}^{j+1} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{2}$$

The dummy variable $\mathbb{I}_{t_{M2}-j,t_{M2}-1} = 1$ denotes those trading days that fall in a j-day window before an **M2** announcement. θ_j can be interpreted as the average daily excess return of those days that fall into the j-day window, relative to that of days outside the announcement windows. The estimation results are summarized in columns (6) and (7) of Table 1. Both columns suggest that the daily excess return during a 2-day or 3-day window prior to announcements relative to that of a day outside the announcement windows is about 25 bps.[17]

3.2 Timing of Announcements and the Pre-announcement Premium

Given that the central bank's announcements of key monetary statistics in China are quasi-scheduled, there is significant timing variation of the announcement days across announcement events. In this subsection, we explore the impacts of announcement timing on the presence and the size of the pre-announcement premium.

In specific, we divide the daily excess returns into two groups: returns in months in which the PBOC's announcements of monetary data are made earlier than a cutoff day (Early Group), and returns in months with announcements made on and after that day (Late Group). To ensure the results of robustness, we select different cutoff days ranging from the 11^{th} to 14^{th} day of a month and estimate the specification of Equation (1) based on a restricted subsample of return data for each group. Therefore, given a cutoff day of month, the total number of daily return observations summing over the early and the late group is fixed at 2431, which is the total size of our baseline sample data.

Table 2 reports the estimation results by highlighting the group differences. In Panel A, estimations are based on returns in months with the PBOC's announcements made relatively early. The results from columns (1) to (4) of Panel A all suggest that no significant extra premium can be earned over the 1-day or 3-day windows before announcements. Conversely, the results in columns (1) to (4) of Panel B find that for those announcements made relatively late in a month, the coefficient estimates associated with the day dummies in 1-day or 3-day pre-announcement windows are significantly positive and large. Referring to our estimation results in Table 1, it is safe to

[17] We thank Jun Pan in a discussion of our paper for pointing out that our documented pre-announcement premium could be sensitive to the exclusion of announcement events in 2015 where Chinese stock markets underwent some dramatic fluctuations. We found that if the return observations in 2015, or if observations of May, June and July in 2015 are removed for regressions of Equation (1) and (2), the coefficient estimates for dummy variable $\mathbb{I}_{t_{M2}-1}$ and for $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ are still statistically significant but having smaller magnitudes and larger standard errors. Our interpretation of this result is that the 12 PBOC's monthly announcements of M2 growth in 2015 were consistently made on a day that is later than or on the 11th of a month, where the 12th is the median day of month for announcements across events. As we will show that the pre-announcement premium in China exists only when an announcement arrives late in monthly cycles, the exclusion of returns in 2015 naturally discounts our estimates of the *average* daily premium prior to announcements. While our exploration is not well motivated to throw a selection of a few events or to drop the observations of a complete year, we therefore stick to our full sample and to our baseline regression results. Additional results with truncated samples are available upon request.

conclude that the daily relative excess return of 25 bps over an average 3-day window prior to announcements is largely associated with those late announcement events.[18] We thus document that the size of the pre-announcement premium in China depends on the timing of the PBOC's announcement arrival in monthly cycles. The pre-announcement equity premium exists only when a PBOC's announcement arrives late in a month.

Table 2: Pre-announcement Premium: Early vs. Late M2 Announcements

	Panel A				Panel B			
VARIABLES	(1) $< 11^{th}$	(2) $< 12^{th}$	(3) $< 13^{th}$	(4) $< 14^{th}$	(1) $\geq 11^{th}$	(2) $\geq 12^{th}$	(3) $\geq 13^{th}$	(4) $\geq 14^{th}$
$\mathbb{I}_{t_{M2}-5}$	-0.06	0.23	-0.02	-0.01	0.12	0.00	0.33	0.39
	(0.38)	(0.24)	(0.19)	(0.18)	(0.17)	(0.22)	(0.28)	(0.31)
$\mathbb{I}_{t_{M2}-4}$	0.22	0.18	-0.03	0.05	-0.06	-0.14	0.04	-0.16
	(0.30)	(0.20)	(0.16)	(0.15)	(0.17)	(0.21)	(0.29)	(0.36)
$\mathbb{I}_{t_{M2}-3}$	-0.04	0.15	0.13	0.25	0.26+	0.25	0.33	0.10
	(0.50)	(0.25)	(0.19)	(0.18)	(0.17)	(0.22)	(0.30)	(0.37)
$\mathbb{I}_{t_{M2}-2}$	-0.03	0.07	0.04	0.17	0.28*	0.33*	0.49*	0.38
	(0.23)	(0.19)	(0.16)	(0.15)	(0.16)	(0.20)	(0.26)	(0.32)
$\mathbb{I}_{t_{M2}-1}$	-0.28	-0.02	0.10	0.15	0.41***	0.52***	0.63***	0.73**
	(0.38)	(0.24)	(0.18)	(0.15)	(0.14)	(0.15)	(0.22)	(0.28)
$\mathbb{I}_{t_{M2}}$	0.33	0.29	0.23	0.20	0.13	0.07	0.08	0.06
	(0.35)	(0.22)	(0.17)	(0.15)	(0.14)	(0.16)	(0.21)	(0.27)
$\mathbb{I}_{t_{M2}+1}$	0.13	-0.24	-0.10	-0.13	-0.12	0.04	-0.02	0.07
	(0.42)	(0.25)	(0.19)	(0.17)	(0.15)	(0.16)	(0.23)	(0.27)
$\mathbb{I}_{t_{M2}+2}$	0.02	0.07	-0.11	-0.05	0.01	-0.03	0.20	0.15
	(0.33)	(0.28)	(0.21)	(0.18)	(0.18)	(0.19)	(0.25)	(0.33)
$\mathbb{I}_{t_{M2}+3}$	-0.25	-0.02	-0.12	-0.03	-0.06	-0.14	-0.05	-0.22
	(0.27)	(0.23)	(0.17)	(0.16)	(0.17)	(0.20)	(0.27)	(0.33)
$\mathbb{I}_{t_{M2}+4}$	0.11	-0.05	0.02	0.07	0.18	0.31+	0.39*	0.43+
	(0.34)	(0.25)	(0.20)	(0.18)	(0.17)	(0.19)	(0.23)	(0.28)
$\mathbb{I}_{t_{M2}+5}$	-0.21	-0.01	-0.03	0.06	0.16	0.18	0.37+	0.24
	(0.32)	(0.30)	(0.21)	(0.19)	(0.18)	(0.17)	(0.23)	(0.28)
Constant	0.12	0.11	0.12	0.16	-0.32*	-0.29	-0.20	-0.49
	(0.54)	(0.28)	(0.19)	(0.19)	(0.19)	(0.24)	(0.29)	(0.36)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	369	993	1,512	1,751	2,062	1,438	919	680
R^2	0.07	0.03	0.02	0.02	0.02	0.04	0.06	0.06

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equation (1). The dependent variable is the excess return constructed from the Wind A-Share Index. Announcement day dummy $\mathbb{I}_{t_{M2-i}}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. We align the return data of the first trading day that the equity market has access to the news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Each column summarizes the estimation results based on a restricted sample of returns. Regression results with daily excess returns in a month where the PBOC's M2 announcement arrived earlier than a cutoff day of month, e.g. 11^{th}, 12^{th}, 13^{th} and 14^{th} are shown in Panel A (Early Group). By contrast, regression results with daily excess returns in a month where the PBOC's M2 announcement arrived on and after a cutoff day of month are shown in Panel B (Late Group). ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

[18] In Section B.9 of the Online Appendix, we show in an interaction regression setting with a dummy variable of early group interacting with pre-announcement day dummies that the pre-announcement premium is mostly driven by late arrivals of announcements.

3.3 Premium Not Driven by the Announcement Content

We then provide evidence showing that our documented equity premium as accrued before the PBOC's **M2** announcements is unconditional. That is, the pre-announcement premium is not driven by the unexpected or expected changes in the to-be-announced monetary statistics.

First, it is possible that the Chinese market may react to the statistics prior to announcements if there is data leakage to some extent. Second, it may be true that the stock market investors could have well anticipated the directional changes in monetary aggregates ex-ante. If these are the potential drivers, the stock market would respond before the PBOC releases the data. Hence, both explanations predict the pre-announcement premium is conditional on the directional changes in the actual data released or on the expected and unexpected changes of the data.

To check the validity of these explanations, we use three different proxies to characterize the data content of an **M2** announcement and then we do regression analysis. That is, the monthly change in YOY M2 growth rate, $\Delta g_{M2,m} = g_{M2,m} - g_{M2,m-1}$, serves as our baseline measure. We then decompose $\Delta g_{M2,m}$ into two components which are taken as additional proxies. The decomposition is given by $\Delta g_{M2,m} = \epsilon_{M2,m} + \mathbb{E}[\Delta g_{M2,m}]$, whereby the first part captures the "unexpected" changes of money growth and the second part reflects the expected changes. Specifically, the unexpected changes to M2 growth rates can be calculated as $\epsilon_{M2,m} = \Delta g_{M2,m} - \mathbb{E}[g_{M2,m}] = g_{M2,m} - \bar{g}_{M2,m}$, where $\bar{g}_{M2,m}$ denotes the market-expected M2 growth rate as proxied by the median forecast of Bloomberg Economic Forecast Survey. The expectation of the M2 growth changes can be written as the difference of the surveyed forecast of M2 growth rate and the realized M2 growth of previous month $\mathbb{E}[\Delta g_{M2,m}] = \bar{g}_{M2,m} - g_{M2,m-1}$. We then estimate the following specification to examine if the pre-announcement premium is dependent on the sign and the magnitude of the to-be-announced statistics.

$$Exret_t = \gamma + \beta_1 \mathbb{I}_{t_{M2}-j, t_{M2}-1} + \beta_2 \mathbb{I}_{t_{M2}-j, t_{M2}-1} \cdot Content_{t_{M2}} + \beta_3 Content_{t_{M2}} + \beta_x X_t + \upsilon_t \tag{3}$$

We take $j = 3$ by focusing on the return reactions during the 3-day window prior to announcements. $Content_{t_{M2}}$ denotes the content of monthly announcements and is measured by $\Delta g_{M2,m}$, $\epsilon_{M2,m}$, or $\mathbb{E}[\Delta g_{M2,m}]$. Positive or negative measures of the content can be considered as extra expansion or tightening in monetary aggregates and overall credit condition. The coefficient associated with the interaction term β_2 gives the estimate of additional gain or loss, if any, due to changes in the announcement content.

We summarize the estimation results in Table 3. The coefficient estimates across columns (2) to (4) all suggest that our identified pre-announcement premium is robust to different measures of the announcement content. The relative daily excess returns of 3-day windows prior to announcements are consistently around 25 bps. In addition, the coefficient estimates related to the interaction term are statistically insignificant across columns. This implies that the size of the pre-announcement premium is not affected by the total, unexpected or expected changes in the M2 growth to be announced in that month. Precisely, if the market indeed reacts to some leaked data ex-ante, we expect to see that the actual monetary aggregates changes, $\Delta g_{M2,m}$, or the pre-leaked "unexpected" component of monetary changes, $\epsilon_{M2,m}$, helps explain the size of the pre-announcement premium. However, this argument is not supported by estimation results in columns (2) and (3). Moreover, if the market responds to the monetary expansion or tightening in expectation, $\mathbb{E}[\Delta g_{M2,m}]$, the coefficient estimate related to the interaction term should have been significant. This again is at odds with our findings in column (4).

Further, one may be concerned if the pre-announcement premium is instead driven by those statistics other than the M2 growth but are co-released in the same PBOC's announcement.[19] For example, the M1 growth measures, total outstanding loan balance (Loan) and the deposit balance (Deposit) are all released at the same time along with the M2 data. In addition, the balance of Total Social Financing (TSF), which is recently considered another key measure of the monetary policy stance in China, is also published some time very close to the **M2** announcement albeit in a separate statement on the same day.[20] Columns (5) to (8) of Table 3 present coefficient estimates related to the interaction term between the dummy variable, $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$, and a measure of statistics other than M2 growth rate. These statistics are taken into the regressions as monthly difference of YOY growth rates: $\Delta g_{M1,m}$, $\Delta g_{Loan,m}$, $\Delta g_{Deposit,m}$, and $\Delta g_{TSF,m}$. Again, our estimation results find

[19]Section A.1 of the Online Appendix summarizes other statistics that are regularly published at the same time in the same **M2** announcement. We also list statistics that are published in other important macro announcements.

[20]The outstanding balance of the TSF data are published only as quarterly statistics before 2016 and the monthly flow TSF data are published monthly since 2012. Not until January 2016, the balance of the TSF and the YOY growth rates started being published monthly. We check whether or not the YOY TSF growth rates released in monthly **M2** announcement windows affect our results since 2016. There are thus fewer return observations for regressions involving monthly TSF announcement events.

that none of these data measures determines the magnitude of the equity premium prior to **M2** announcements.

Table 3: Pre-announcement Premium: Data Released in the M2 Announcements

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$	0.25***	0.26***	0.26***	0.25***	0.24***	0.25**	0.24**	0.16
	(0.09)	(0.10)	(0.10)	(0.10)	(0.09)	(0.10)	(0.10)	(0.15)
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \Delta g_{M2,m}$		0.08						
		(0.12)						
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \epsilon_{g_{M2,m}}$			0.11					
			(0.15)					
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \mathbb{E}[\Delta g_{M2,m}]$				0.03				
				(0.15)				
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \Delta g_{M1,m}$					-0.01			
					(0.03)			
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \Delta g_{Loan,m}$						-0.01		
						(0.11)		
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \Delta g_{Deposit,m}$							-0.04	
							(0.08)	
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \Delta g_{TSF,m}$								0.03
								(0.05)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Anns Window Ctrls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level Term Ctrls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431	2,431	1,152
R^2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03

Notes: Sample: January 2010 to December 2019. This table reports the dummy variable regression results of Equation (3). The dependent variable is the close-to-close excess returns constructed from the Wind A-Share Index. "Other Anns Window Ctrls": controls for the remaining day dummies in the announcement window of length of $2T+1$ for $T=5$. "Level Term Ctrls": includes the term of monetary statistics itself in a regression. Announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals 1 if a trading day falls in the 3-day window before the announcement. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

3.4 Market Uncertainty Declines Before Announcements

We further document that the mean forecast uncertainty about the M2 growth rate, a direct measure of market uncertainty before the PBOC announces the data, declines over time within an announcement cycle.[21] In addition, we find significant reductions of market uncertainty are realized prior to announcements. That is, the pre-announcement equity premium is accrued while market uncertainty is lowered.

In specific, we exploit the panel data from Bloomberg Economic Forecast Survey covering a selection of economists' monthly forecasts regarding the monthly YOY growth rate of M2 in China.

[21] Note that due to data limitation, the standard measure of market uncertainty like the option-implied volatility index has been tracking China's stock market exchanges only for a very short period of about two years. This series does not span our entire sample coverage.

Our final forecast sample is registered with 86 economists and their 2675 point forecasts.[22] First, at the aggregate level, we construct two empirical measures to proxy for the market uncertainty about the monetary statistics to be announced across monthly cycles: first, the daily dispersion of forecast errors as measured by their daily standard deviation; second, the average daily absolute forecast errors. We plot in Figure 2 the two measures of market uncertainty along the days on which point forecasts are collected in a month.[23] The figure suggests that regardless of measures, market uncertainty is high when forecasts are made earlier in a month. In addition, market uncertainty decreases with the day of forecasts within an average monthly announcement cycle. Importantly, a significant portion of more than 67% (mean absolute forecast errors) and up to 87% (dispersion of forecast errors) of the prior uncertainty can be reduced as time moves forward by which the date of forecasts is getting closer to a late announcement day. In addition, it is also suggestive that the forecast uncertainty during the pre-announcement window is even lower for those late announcements, before which the point forecasts are also made relatively late in a month.

Next, based on controlled regressions, we further identify the size of uncertainty reduction in windows prior to announcements. Let $\bar{g}_{i,t,m}$ denote economist i's forecast made on day t regarding the M2 growth to be announced in month m, $g_{M2,m}$. $FE_{i,t,m} = \bar{g}_{i,t,m} - g_{M2,m}$ captures economist i's forecast error recorded on day t. We then estimate the following specification:

$$|FE_{i,t,m}| = \alpha + \gamma \mathbb{I}_{t_{M2,m}-j,t_{M2,m}-1} + \zeta_i + year_t + \upsilon_{i,t,m} \tag{4}$$

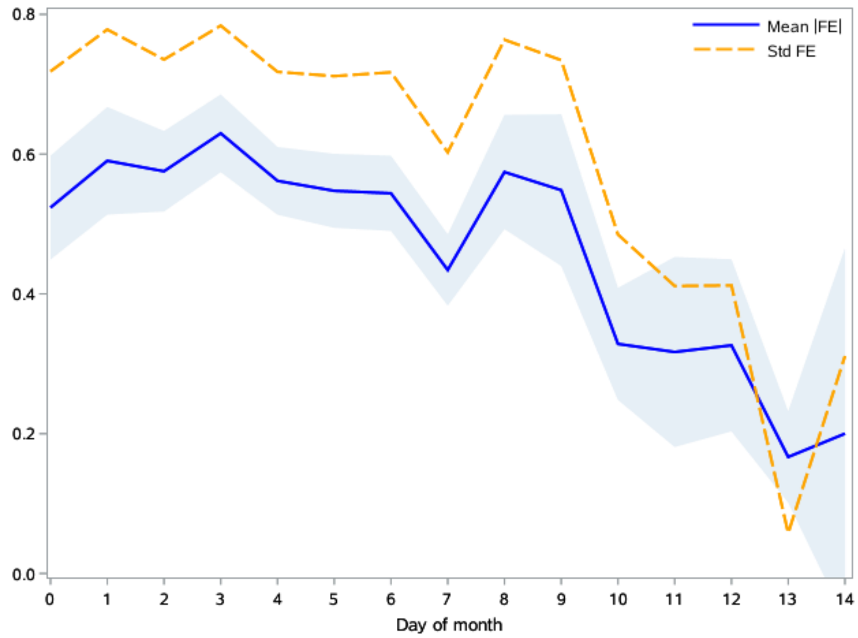
The dependent variable is economist i's absolute forecast error, which measures the forecasting imprecision of a forecasting individual. Dummy variable $\mathbb{I}_{t_{M2,m}-j,t_{M2,m}-1}$ equals 1 if the forecast day t falls in the j trading-day window before an announcement is made on day $t_{M2,m}$ in month m.[24] Given that few forecasts are made in the 1-day or 2-day windows before announcements,

[22] We deleted forecasters who made fewer than six forecasts and applied the winsorization at the 1 and 99 percentile of the point forecast distribution. In addition, we note that some forecasters were making forecasts too early and may skipped the announcement cycles. For example, a forecast regarding an M2 number for the month of May may be made in April before April's announcement, which is supposed to release the M2 statistics for the month March. We thus deleted those forecasts that are ahead of the their associated announcement cycles. For more detailed information on the dates of forecasts in our sample, see Section A.6 of the Online Appendix.

[23] A forecast can be made on days as early as those of the previous month. We therefore pool the forecasts made in the previous month for calculating the two measures and assign the values to day $t = 0$ for plots in the figure.

[24] Note that forecasts are not always collected and recorded on weekdays. To facilitate comparisons of results throughout the paper, we focus on the j-trading day window before announcements and realigned the point forecasts made in weekends to the next trading day.

Figure 2: Market Uncertainty about the M2 Growth Prior to Announcements



Notes: Sample: January 2010 to December 2019. This figure plots the daily standard deviation of forecast errors regarding the YOY M2 growth across the Bloomberg Surveyed forecasting economists (yellow dashed line, i.e. Std FE) and the average daily absolute forecast errors across all forecasts and forecasters on each day (blue solid line, i.e. Mean |FE|) along the day of month on the horizontal axis. Values at $t = 0$ are calculated based on forecasts made on days in the previous month. The lighter blue area is capturing the 90% confidence band centering the mean absolute forecast errors.

we thus focus on a longer duration of 3 and 5 days before announcements with $j = 3, 5$. ζ_i and $year_t$ capture the forecasting economist and the year fixed-effect controls respectively. While the forecasts are effectively made before announcements, the coefficient estimate of γ measures the average size of economists' imprecision of forecasts, i.e. the mean uncertainty about M2 growth across economists within the pre-announcement windows relative to that on an average day earlier than the pre-announcement windows.

The estimation results of Equation (4) are listed in Table 4. The coefficient estimates associated with term $\mathbb{I}_{t_{M2,m}-j,t_{M2,m}-1}$ for a 3-day and 5-day pre-announcement window all suggest that the average forecast uncertainty across forecasters is significantly lowered over days before the PBOC's announcements of the M2 data. Though, adding both the forecaster and the year fixed effects somewhat dampens the statistical significance of the coefficient estimates for γ. This can be partly explained by the fact that some economists are more active in submitting forecasts to Bloomberg in certain years. High correlations between the two fixed effect controls enlarge the standard errors of the estimations. In summary, we find that the market uncertainty declines before the

M2 announcements and individuals' forecast uncertainty in the pre-announcement windows are significantly lower than that over days outside the announcement windows.[25]

Table 4: Individuals' Forecast Uncertainty Prior to Announcements

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\mathbb{I}_{t_{M2,m}-3,t_{M2,m}-1}$	-0.10***	-0.05*	-0.09***	-0.04				
	(0.03)	(0.03)	(0.03)	(0.03)				
$\mathbb{I}_{t_{M2,m}-5,t_{M2,m}-1}$					-0.04**	-0.04***	-0.04**	-0.03+
					(0.02)	(0.02)	(0.02)	(0.02)
Constant	0.55***	0.72***	0.39***	0.57***	0.56***	0.74***	0.39***	0.58***
	(0.02)	(0.04)	(0.01)	(0.06)	(0.02)	(0.04)	(0.01)	(0.06)
Year FE		Yes		Yes		Yes		Yes
Forecaster FE			Yes	Yes			Yes	Yes
Observations	2,675	2,675	2,675	2,675	2,675	2,675	2,675	2,675
R^2	0.00	0.14	0.11	0.18	0.00	0.14	0.11	0.18

Notes: Sample: January 2010 to December 2019. This table reports the regression results of Equation (4). The dependent variable is the absolute forecast error of each forecasting economist. Announcement dummy $\mathbb{I}_{t_{M2,m}-j,t_{M2,m}-1}$ equals 1 if the forecast day t falls in the j trading-day window before a monthly announcement made on day $t_{M2,m}$ of month m. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Standard errors are clustered at the forecaster's level.

4 Theoretical Discussions: Timing of Announcements and Information Acquisition

In this section, we lay out our theoretical discussions within the framework of Ai, Bansal, and Han (2022), which rationalizes the pre-announcement premium based on the endogenous information acquisition among investors. Ai, Bansal, and Han (2022) propose that with generalized risk sensitive preferences, the uninformed investors choose to acquire information ahead of announcements because the information advantages of informed investors over uninformed is particularly large during pre-announcement window. As uncertainty resolves, positive risk premium of the market portfolio can be realized shortly before announcements. In the following, we examine the asset pricing implications given that macro announcements are not pre-scheduled. While we keep our discussions as close as possible to that in Ai, Bansal, and Han (2022), we refer the readers to

[25] In order to further explore the potential dependence of individuals' forecast uncertainty on the timing of announcements, the routine regression analysis cannot be implemented. This is due to the fact that there is very little timing variation in the forecasts for each economist over monthly cycles. That is, forecasters tend to make forecasts every month on certain fixed days. Therefore, a forecaster fixed effects almost completely masks the timing variation needed to differentiate the forecast uncertainty potentially driven by the timing of announcements.

the paper for greater details on model construction and theoretical predictions.

We demonstrate that the degree of information acquisition is larger as the date approaches to the end of an announcement cycle when an announcement is till pending. Increased efforts of acquiring information can be driven by those uninformed investors who find it optimal to acquire extra information when the date is increasingly closer to the announcement arrival. It then follows that greater information acquisition as associated with late arrivals of announcements deliver larger equity premium before announcements. Finally, we list two hypotheses to be tested against Chinese data, which relate the degree of information acquisition to the timing of PBOC's announcements.

4.1 Quasi-scheduled Announcements

We first introduce the environment with quasi-scheduled announcements. Analytically, we demonstrate that market investors upon entering another day without seeing an announcement would become increasingly certain that an announcement would soon arrive on the next few days.

Let t denote a day. In each announcement cycle, the central bank makes an announcement regarding its key monetary policy instrument, for example, the balance of monetary aggregates in China for the PBOC.[26] We examine an *average* announcement cycle consisted of N days, which is defined to capture the duration between the first and the last day on which an announcement can be feasibly made.[27] We use $t^A \in \{1, 2, ..., N\}$ to denote the announcement day associated with an average announcement cycle. In the following, we give the formal definition of the quasi-scheduled announcements, which are exemplified by the PBOC's monthly announcements of the monetary aggregates data.

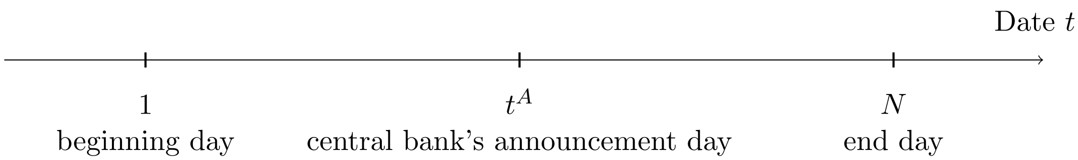
Definition 1 (Quasi-scheduled Announcements) *Announcements are quasi-scheduled if within an average announcement cycle spanning N days, (1) an announcement would fall on any day with some probability such that $Prob(t^A = i) \geq 0$ for $i \in \{1, ..., N\}$, and (2) an announcement is to be made with probability one in each cycle such that $\sum_{i=1}^{N} Prob(t^A = i) = 1$.*

[26] Another example is the target federal funds rate as determined during the FOMC meetings for the U.S. Federal Reserve Board.

[27] For instance, an announcement cycle for Chinese **M2** announcements is a calendar month because the PBOC announces monthly monetary statistics on the monthly basis. The data may be released on a day between the first and the last day of a month. By contrast, an announcement cycle for the U.S. FOMC announcements can be as long as approximately 40 to 50 days, which measures the day gaps between the previous and the ensuing FOMC meeting date. In Section B of the Appendix, we show that the timing of Chinese **M2** announcement arrivals each month is not serially correlated, which suggests that studying an average announcement cycle is without the loss of generality.

For illustrative purposes, we therefore draw a time line in Figure 3 to recapitulate the environment with quasi-scheduled announcements. The central bank's announcement would necessarily fall on a day with timing randomness but will be bounded by the first and the last day of each cycle.

Figure 3: Time Line of an Average Announcement Cycle



With quasi-scheduled announcements, we first show that conditional on no announcement made by the beginning of day t, investors' perceived probability of an announcement arrival on day $t+1$ and the following days is weakly increasing as time t moves towards the end of an announcement cycle. The following lemma summarizes this result, which is a defining characteristic of this announcement environment.

Lemma 1 *If announcements are quasi-scheduled, the investors' perceived probability of the announcement arrival on days $n \in [t+1, N]$, conditional on no announcement made up to day t, $Prob(t^A = n|\{t^A \neq i\}_{i=1}^{i=t})$, is non-decreasing as date t moves towards the end day of an announcement cycle. With positive prior probability of an announcement arrival on day n such that $Prob(t^A = n) > 0$, the posterior probability $Prob(t^A = n|\{t^A \neq i\}_{i=1}^{i=t})$ is strictly increasing with day t.*

We show the proof of Lemma 1 in Section E of the Appendix. Intuitively, as time evolves, the day options left for accommodating an announcement arrival in that cycle are increasingly fewer. That is, by definition, the feasible set of an announcement arrival, i.e. $[t+1, N]$ is shrinking as t goes towards the end of the cycle given no announcement is made up to day t. Therefore, if any day yet to come has positive prior probability of being an announcement day, investors would rationally update their prior and carry a larger perceived probability of seeing an announcement arrival on that day.

4.2 Timing of Announcements and Information Acquisition

Following Ai, Bansal, and Han (2022), we assume that investors doing market research would produce them a signal that is informative about the latent monetary policy stance but subject to a noise. Importantly, this imperfectly observed latent policy variable affects the payoff of the risky asset traded in the financial market. In addition, there are two different types of investors demanding for this risky asset, i.e. the informed and uninformed. Informed investors with greater sophistication can do market research and observe such signals every day without paying any cost for extracting information. By contrast, uninformed investors have to pay an information cost and then get the access to these signals, though they can still learn from the equilibrium asset price to partially back out the fundamentals. In particular, they would acquire informative signals if and only if the benefit of extra learning outweighs the information cost. Given a unit measure of investors, $\omega \in (0,1)$ denotes the fraction of uninformed investors whereas a fraction $1-\omega$ investors are informed.

For simplicity, based on abstracted benefit-cost analysis, we impose the optimal decision for information acquisition among uninformed investors in the following

$$\iota_t = \begin{cases} 1 & if \quad \hat{t}^A - t \leq \epsilon \\ 0 & if \quad \hat{t}^A - t > \epsilon \end{cases} \tag{5}$$

where $\epsilon \in \mathbb{Z}^+$. According to Equations (5), with ι_t an indicator variable, an uninformed investor finds it optimal to acquire extra information and to observe the noisy signal ($\iota_t = 1$) on a day if her *perceived* day of announcement, $\hat{t}^A$, is close enough as of day t, i.e. $\hat{t}^A$ falling within a window of ϵ days from day t. Otherwise, if an uninformed investor perceives $\hat{t}^A$ is still far away and she would stay uninformed ($\iota_t = 0$).[28]

Our imposed decision rule for acquiring extra information among uninformed investors can be optimal for the following reasons. First, as highlighted in Ai, Bansal, and Han (2022), prior uncertainty about the unknown latent variable can be accumulating without observing the noisy signals. Therefore, the benefit of acquiring extra information can be increasingly large as time moves closer

[28] Instead of being positive integers, ϵ can be any arbitrary positive number and our result still holds unconditionally. For example, for $\epsilon \in (0,1)$, the interpretation would be this perceived pre-announcement window is as long as a few hours.

to the end of an announcement cycle as long as an announcement is still pending. Second, given a constant cost of acquiring information, learning would be optimal among uninformed investors once the benefit surpasses this cost as time evolves. Third, in reality, when more market research and outstanding information are produced as time goes by, uninformed investors may find it cheaper to access these extra information. As a result, the cost of acquiring information can be increasingly lowered as well.

Finally, let λ_t denote the actual mass of uninformed investors who are acquiring extra information other than the asset price.[29] Conditional on the fact that no announcement has been made up to day t, we can characterize the average mass of uninformed investors who are acquiring extra signals on day t as followed

$$\begin{aligned}\lambda_t &= \omega \cdot Prob(t^A - t \leq \epsilon | \{t^A \neq i\}_{i=1}^{i=t}) \\ &= \omega \cdot \sum_{y=1}^{\epsilon} Prob(t^A = t + y | \{t^A \neq i\}_{i=1}^{i=t})\end{aligned} \tag{6}$$

According to Equation (6), the mass of uninformed investors who are acquiring information on day t increases with the subjective probability $Prob(t^A - t \leq \epsilon | \{i \neq t^A\}_{i=1}^{i=t})$. Importantly, note that for an environment with pre-scheduled announcements, Ai, Bansal, and Han (2022) show that the optimal decision rule for the uninformed investors is to wait until a certain day to start acquiring information all the way till the announcement is made. Therefore, all the uninformed investors start to acquire information at the same time because they are sure that the announcement is imminent with absolute certainty. However, with the quasi-scheduled announcements as in our illustration, investors are uncertain about whether or not they are standing in the pre-announcement window. Hence, the average mass of the uninformed investors acquiring information depends on the subjective probability of announcement arrivals.[30]

In particular, this subjective probability reflects how likely the uninformed investors perceive the announcement day is close enough from day t. By Lemma 1, $\frac{d\lambda_t}{dt} \geq 0$ and the sign of this

[29] For simplicity, our model focuses on the extensive margin of investors who are acquiring extra information, i.e. the mass of investors, and abstracts from examining the intensive margin of information acquisition, i.e. the intensity of information flow through information acquisition.

[30] In specific, in the environment when all announcements are pre-scheduled and the announcement dates are pre-informed to investors, $\lambda_t = \omega$ when $t^A - t \leq \epsilon$ and $\lambda_t = 0$ otherwise. Therefore, all uninformed investors would acquire information starting on day $t = t^A - \epsilon$. This is the case as assumed in Ai, Bansal, and Han (2022).

derivative would turn positive when the prior probability of seeing an announcement on any day from $t+1$ to $t+\epsilon$ is strictly positive. This reflects the fact that as time t approaches to the end of the cycle, investors know it is increasingly likely to see the arrival of an announcement on the next few days. As a result, more investors would acquire information as time evolves before announcement. It then implies that greater information acquisition is associated with late arrivals of announcements. We summarize this result in the following proposition:

Proposition 1 (Late Announcements and Information Acquisition) *In an environment with quasi-scheduled announcements, the degree of information acquisition among uninformed investors in the pre-announcement windows increases as time approaches to the end of an announcement cycle. As a result, greater information acquisition is associated with late announcement arrivals.*

4.3 Information Acquisition, Uncertainty Reduction and Asset Prices

According to Ai, Bansal, and Han (2022), a model having uniformed investors' preference exhibiting generalized risk sensitivity would generate reduction of uncertainty through information acquisition, which then delivers the realization of risk premium prior to macro announcements. According to Proposition 1, the degree of information acquisition increases as time evolves. Considering the random timing of the PBOC's announcement arrivals in China, we then lay out the following hypotheses which are consistent with the model predictions as implied from Ai, Bansal, and Han (2022).[31]

In specific, we test the precondition as required by the model with generalized risk sensitive preferences and endogenous information acquisition if macro announcements are instead quasi-scheduled.

Hypothesis 1 *Large amount of information acquisition is observed prior to the PBOC's announcements.*

[31] Ai, Bansal, and Han (2022) also predict that if new information is leaked prior to announcements, the volatility of realized returns should jump up instead of going down. However, as uninformed investors are internalizing the information that has been incorporated into the market prices of the risky asset, their information acquisition efforts ex-ante reduce the noises in stock prices and lead to lowered return volatility. We show in Section D of the Appendix that the volatility of realized returns on China's markets before the PBOC's announcements is significantly reduced, and this is even lower when an announcement arrives late in a month.

Hypothesis 2 *Greater information acquisition is associated with late arrivals of the PBOC's announcement events.*

To test Hypotheses 1 and 2 and to better align the empirics with the model, we proceed to identify the efforts of information acquisition more specifically associated by those uninformed investors in the data.

5 Additional Evidence: Information Acquisition Before Announcements

In this section, we test the hypotheses regarding the degree of information acquisition as derived from our theoretical discussions and provide evidence based on China's unique setting. We show that information acquisition is heightened before announcements and the intensity of acquiring information ex-ante is larger when an announcement arrives late in a month.

In particular, we measure the degree of investors' information acquisition using the keywords search index of Baidu Inc., i.e. the largest internet search engine in China. We stress that the Baidu search data could be one of the best among few alternatives for capturing the efforts of information acquisition as initiated by those less informed and unsophisticated investors. According to Xu, Xuan, and Zheng (2021), retail investors in China search extensively for information online, which contrasts with more sophisticated and institutional investors who have constant access to multiple information sources. By 2020, it is calculated that the Baidu search engine has maintained an approximately 70% market share in China for queries online.[32] Therefore, the Baidu search data well reflects the dynamics of interest and intensity of information acquisition driven by less sophisticated and uninformed retail investors in China. This choice best aligns our empirical evidence with the underlying model mechanisms.

[32]This is according to Statcounter's data: http://gs.statcounter.com/search-engine-market-share/. Statcounter is a company that provides web analytics service by tracking more than 2 million sites globally. It presents real-time calculations of internet traffics conditional on channels and search engines across countries.

5.1 Increased Information Acquisition Prior to Announcements

We first evaluate Hypothesis 1 and examine the intensity of acquiring information related to monetary statistics in the PBOC's announcement windows. We take the daily keywords-based Baidu search index as the empirical proxies for capturing the degree of investors' information acquisition. Precisely, our baseline measure takes the detrended averages of a number of search index series associated with a set of keywords in Chinese, i.e. "M2 growth", "money supply" and "total social financing", which correspond in exact form to the announced statistics. We first compute the simple averages of considered search index series for different key words, $\overline{index}_t^{raw}$, and then apply the normalization by removing the 30-day moving-average trend in logarithm, $trend_{index,t}^{MA}$. The exact normalization follows that $index_t^{norm} = log(\frac{1+\overline{index}_t^{raw}}{1+trend_{index,t}^{MA}})$. In addition, we construct a more generally defined composite measure as the alternative proxy, which extends the scope of keywords by including additional terms for search such as "monetary policy", "financial institutions", "liquidity of assets" along with "economic fundamentals".

In specific, we run the estimation of the following specification:

$$Info_t = \gamma + \sum_{i=-T}^{T} \psi_i \mathbb{I}_{t_{M2}-i} + \psi_x X_t + \upsilon_t \tag{7}$$

$Info_t$ denotes our empirical measure of the degree of information acquisition constructed from a set of the Baidu keywords search index. The coefficient ψ_i indicates the intensity of information acquisition on the i^{th} trading day prior to (after if i is negative) the **M2** announcements relative to that of a day outside the announcement windows. With $i = 0$, $\mathbb{I}_{t_{M2}} = 1$ indicates the announcement day on which the equity market has the initial access to the announced monetary statistics.

Table 5 summarizes the estimation results. Looking at the results in column (1), we find that all the coefficient estimates associated with the day dummy variables are significantly positive. These findings still hold when we consider the search index capturing a broader set of terms according to numbers in column (2). That is, greater efforts of acquiring information are observed over those days centering the PBOC's announcements for releasing monetary aggregates data, whereas the interests and search intensity are lowered outside the announcement windows. In addition, the coefficient estimates for days on and after the announcements reflect that the degree of information acquisition peaks on the announcement day t_{M2} and gradually declines afterwards. Therefore, such evidence suggests that our measure of information acquisition indeed captures the dynamics of information intensity.

Importantly, it shows that the coefficient estimates associated with the 1-day dummy before announcements $\mathbb{I}_{t_{M2}-1}$ appear to be the largest among all estimates prior to announcements. This pattern of timing is well aligned with that for our documented pre-announcement premium. To ensure the robustness of results, we present the estimation results in columns (3) and (4) based on a specification by taking the 3-day pre-announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ to replace the three dummies $\mathbb{I}_{t_{M2}-3}, \mathbb{I}_{t_{M2}-2}$ and $\mathbb{I}_{t_{M2}-1}$. Results show that the coefficient estimate for the 3-day pre-announcement window dummy is statistically positive and is the largest among all estimates for the pre-announcement day dummies. We thus reject the null of Hypothesis 1.

Our first set of empirical results suggest that the information acquisition is increased while positive excess returns are accrued before the **M2** announcements. Our evidence is therefore well consistent with the information acquisition channel in theory by which market uncertainty is reduced driven by greater efforts of acquiring information among less informed investors.

5.2 Timing of Announcements and Information Acquisition

We then examine Hypothesis 2 and look for the dependence of the intensity of information acquisition on the timing of announcement arrivals. We provide evidence showing that the degree of information acquisition is larger prior to those announcements that arrive late in a month. Similarly, we divide the daily measures of search index into two groups by the timing of the **M2** announcement in monthly announcement cycles: search index for months with announcements made earlier than a cutoff day of month (Early Group), and those for months with announcements made on and after a cutoff day of a month (Late Group). By selecting different cutoff days from 11^{th} to 14^{th}, we estimate the specification of Equation (7) based on the subsamples of proxies for information acquisition in each group.

Table 6 reports the estimation results by taking the detrended search index covering the baseline set of keyword searches.[33] First, by looking at coefficient estimates based on subsamples of search

[33] For the results based on estimations using the composite index covering a broader set of term searches, see Section B.10 of the Online Appendix.

Table 5: Increased Information Acquisition Prior to M2 Announcements

VARIABLES	(1) Base	(2) Composite	(3) Base	(4) Composite
$\mathbb{I}_{t_{M2}-5}$	0.07***	0.08***	0.07***	0.08***
	(0.02)	(0.01)	(0.02)	(0.01)
$\mathbb{I}_{t_{M2}-4}$	0.09***	0.08***	0.09***	0.08***
	(0.02)	(0.01)	(0.02)	(0.01)
$\mathbb{I}_{t_{M2}-3}$	0.07***	0.10***		
	(0.02)	(0.01)		
$\mathbb{I}_{t_{M2}-2}$	0.09***	0.09***		
	(0.02)	(0.01)		
$\mathbb{I}_{t_{M2}-1}$	0.28***	0.15***		
	(0.02)	(0.01)		
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$			0.14***	0.12***
			(0.01)	(0.01)
$\mathbb{I}_{t_{M2}}$	0.42***	0.20***	0.42***	0.20***
	(0.02)	(0.01)	(0.02)	(0.01)
$\mathbb{I}_{t_{M2}+1}$	0.27***	0.14***	0.27***	0.14***
	(0.02)	(0.01)	(0.02)	(0.01)
$\mathbb{I}_{t_{M2}+2}$	0.19***	0.13***	0.19***	0.13***
	(0.02)	(0.01)	(0.02)	(0.01)
$\mathbb{I}_{t_{M2}+3}$	0.17***	0.13***	0.17***	0.13***
	(0.02)	(0.01)	(0.02)	(0.01)
$\mathbb{I}_{t_{M2}+4}$	0.13***	0.11***	0.13***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)
$\mathbb{I}_{t_{M2}+5}$	0.10***	0.09***	0.10***	0.09***
	(0.02)	(0.01)	(0.02)	(0.01)
Constant	-0.13***	-0.17***	-0.13***	-0.17***
	(0.02)	(0.02)	(0.02)	(0.02)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes
Observations	3,652	3,652	3,652	3,652
R^2	0.26	0.33	0.25	0.33

Notes: Sample: January 2010 to December 2019. This table reports the regression results of Equation (7) in columns (1) and (2), and of a specification in which the three day dummies are replaced by a joint 3-day pre-announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ in columns (3) and (4). Dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals one if a trading day falls in a 3-day window before an **M2** announcement. The dependent variable is the Baidu keywords-based search index. We consider search intensity with respect to "M2 growth", "money supply" and "total social financing" (Base Measure), and more generally to include all terms of "M2 growth", "money supply", "total social financing", "monetary policy", "financial institutions", "liquidity of assets" and "economic fundamentals" (Composite Measure). Announcement day dummy $\mathbb{I}_{t_{M2}-i}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. We first compute simple averages of the considered search index series for different key words, $\overline{index}_t^{raw}$, and then apply the normalization by removing the 30-day moving-average trend in logarithm, $trend_{index,t}^{MA}$. The exact normalization follows that: $index_t^{norm} = log(\frac{1+\overline{index}_t^{raw}}{1+trend_{index,t}^{MA}})$. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

index in months with early announcements in Panel A, most of the estimates are significantly positive. Information acquisition is increased in the PBOC's announcement windows relative to that of non-announcement days even if we only focus on those monthly announcement cycles with early announcements. Moving to Panel B with estimation results associated with late announcement groups, the coefficient estimates associated with $\mathbb{I}_{t_{M2}-2}$ and $\mathbb{I}_{t_{M2}-1}$ are particularly larger than the coefficient counterparts for the early announcement groups. First, accounting for the tight standard errors estimated for these coefficients, the estimates based on subsamples of search index in months with announcements made on and after $12^{th}, 13^{th}$ and 14^{th} are significantly larger than those for announcements before these days. Second, we computed the Wald statistic by calculating the differences of coefficient estimate related to term $\mathbb{I}_{t_{M2}-1}$ between early and late groups for each cutoff day. The Wald statistic follows an approximate χ^2 distribution and we find the coefficients for the early groups are significantly smaller than those of late groups at the significance level of 5%.[34] Therefore, we document that the measured degree of information acquisition among investors for learning about the monetary data is further heightened before announcements when an announcement arrives late in a month. Such evidence highlights the fact that both the size of equity premium and the intensity of information acquisition depend on the timing of the PBOC's announcement arrival in monthly cycles.

In summary, we provide additional evidence depicting the dynamics of information acquisition centering the days of PBOC's announcements of monetary statistics. These findings suggest that the information acquisition channel as highlighted in Ai, Bansal, and Han (2022) can be an important channel to account for the pre-announcement premium in China. We emphasize the fact that the uniqueness of institutional details in China's market helps identify this channel given quasi-scheduled announcements. This lends additional credence to the model mechanism featuring endogenous information acquisition to rationalize the pre-announcement premium.

6 Conclusion

By studying China, this paper examines the stock market returns in an environment in which the dates of central bank's information supply through public announcements are not pre-fixed. That is, investors do not know the exact day of the central bank's announcement but they are well informed that some data will be released, sooner or later, with absolute certainty. We document large and positive excess returns are accrued on China's equity market in response to its central bank's monthly announcements of measures of monetary aggregates, which may arrive early or late in a month. For the period of 2010 to 2019, on average, the A-share market in China realized an excess return of 25 bps per day in the 3-day window prior to the day of announcement. More importantly, we find that the pre-announcement premium exists only when an announcement arrives

[34] In addition, in Section B.11 of the Online Appendix, we show in an interaction regression setting with a dummy variable of early group interacting with pre-announcement day dummies that the degree of information acquisition is further increased for late arrivals of announcements.

Table 6: Information Acquisition: Early vs. Late M2 Announcements

	Panel A				Panel B			
VARIABLES	(1) $< 11^{th}$	(2) $< 12^{th}$	(3) $< 13^{th}$	(4) $< 14^{th}$	(1) $\geq 11^{th}$	(2) $\geq 12^{th}$	(3) $\geq 13^{th}$	(4) $\geq 14^{th}$
$\mathbb{I}_{t_{M2}-5}$	0.00	0.05**	0.05**	0.07***	0.08***	0.09***	0.10***	0.08***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}-4}$	0.19**	0.08**	0.07**	0.07***	0.07***	0.09***	0.11***	0.12***
	(0.08)	(0.04)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)
$\mathbb{I}_{t_{M2}-3}$	0.14***	0.05*	0.05**	0.07***	0.06***	0.09***	0.11***	0.09**
	(0.05)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
$\mathbb{I}_{t_{M2}-2}$	0.07	0.03	0.04*	0.07***	0.09***	0.12***	0.15***	0.13***
	(0.06)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}-1}$	0.18***	0.12***	0.21***	0.25***	0.29***	0.37***	0.37***	0.35***
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
$\mathbb{I}_{t_{M2}}$	0.37***	0.35***	0.35***	0.39***	0.43***	0.47***	0.52***	0.50***
	(0.05)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}+1}$	0.22***	0.21***	0.22***	0.24***	0.27***	0.30***	0.34***	0.32***
	(0.05)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}+2}$	0.17***	0.14***	0.15***	0.18***	0.19***	0.22***	0.25***	0.22***
	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}+3}$	0.16***	0.11***	0.12***	0.15***	0.17***	0.20***	0.23***	0.21***
	(0.05)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
$\mathbb{I}_{t_{M2}+4}$	0.11***	0.09***	0.11***	0.12***	0.14***	0.16***	0.17***	0.15***
	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
$\mathbb{I}_{t_{M2}+5}$	0.12***	0.07**	0.07***	0.08***	0.10***	0.13***	0.15***	0.15***
	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant	-0.30***	-0.09**	-0.05*	-0.06**	-0.05**	-0.06**	-0.06*	-0.07+
	(0.06)	(0.04)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.05)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	551	1,464	2,226	2,591	3,101	2,188	1,426	1,061
R^2	0.28	0.22	0.24	0.25	0.27	0.31	0.33	0.33
Late - Early: $\mathbb{I}_{t_{M2}-1}$ (Wald Test: χ^2 *Stat.*)					5.00[0.03]	35.2 [0.00]	11.3 [0.00]	4.19 [0.04]

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equation (7). The dependent variable is the detrended Baidu keywords-based search index with respect to a few terms about the monetary statistics announced each month: "M2 growth", "money supply" and "total social financing". Announcement day dummy $\mathbb{I}_{t_{M2}-i}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. We first compute simple averages of the considered search index series for different key words, $\overline{index}_t^{raw}$, and then apply the normalization by removing the 30-day moving-average trend in logarithm, $trend_{index,t}^{MA}$. The exact normalization follows that: $index_t^{norm} = log(\frac{1+\overline{index}_t^{raw}}{1+trend_{index,t}^{MA}})$. Each column summarizes the estimation results based on a restricted sample that includes data of trading days for a selected number of months. Regression results with the daily measure of search index in a month where the PBOC's M2 announcement arrived earlier than a cutoff day of month, e.g. $11^{th}, 12^{th}, 13^{th}$ and 14^{th} are shown in Panel A (Early Group). By contrast, regression results based on daily search index in a month with the announcements arriving on and after one the cutoff day of month are shown in Panel B (Late Group). Year, month, and weekday dummies are included. The actual date and time information of the PBOC's announcements is used for dividing the event sample into two groups. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses. P-values of the wald-statistic are reported in the brackets besides the statistics.

late in monthly cycles. In particular, the pre-announcement equity premium is accrued while market uncertainty is lowered.

By featuring the randomness in the timing of announcement arrivals, we then rationalize the pre-announcement premium in China within the analytical framework of Ai, Bansal, and Han (2022), which highlights the information acquisition channel as an important driver. We theorize that the degree of information acquisition is larger as the date approaches to the end of an announcement cycle when an announcement is till pending. Greater information acquisition can be driven by those uninformed investors who find it optimal to acquire extra information when the date is increasingly closer to the announcement arrival. It then follows that information acquisition as associated with late announcements mitigates market uncertainty and generates the accumulation of equity premium before announcements. Finally, we provide model-consistent empirical evidence showing that the efforts of information acquisition are heightened before announcements, and the intensity of acquiring information among investors is larger when announcements arrive late.

Ultimately, we stress that our documented pre-announcement premium in China itself is uniquely important for understanding asset pricing in general. In particular, our paper may contribute to a broader span of literature. First, we analytically show that the environment of quasi-scheduled central bank's announcements in China implies that investors' perceived likelihood of seeing an announcement on the next few days weakly increases as time evolves. This result well nests a special case when announcements are perfectly scheduled. For example, given that the FOMC's announcements in the U.S. are pre-scheduled, the perceived likelihood of seeing an announcement and undergoing policy shocks on the next day is zero in theory as long as the date is prior to the FOMC days. However, this probability would quickly turn to one on the day right before the FOMC days when investors know for sure that an FOMC announcement is to be made tomorrow. Therefore, increasing information acquisition ex-ante can be optimal and the reduction of market uncertainty can be realized one day before the FOMC statement is released. Second, we show in the Online Appendix a full range of the U.S.-based evidence which is perfectly consistent with the information acquisition channel.[35] We therefore regard our paper as one of the important work that exploit the random timing of quasi-scheduled announcements to highlight the information acquisition channel for explaining the pre-announcement premium in general.

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[35]In Section C of the Online Appendix, we find the following: first, the pre-FOMC equity premium and uncertainty reduction in the U.S. stock markets co-exist. Second, the pre-FOMC premium in the U.S. is only associated with the FOMC announcement events that realized sizable reductions in market uncertainty ex-ante. Third, based on the Google search index, we show that larger pre-FOMC premium is associated with larger efforts of acquiring information in the market in order to learn about the Fed and the FOMC decisions before the FOMC statement release.

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Appendices

A Magnitude of the Pre-announcement Premium and Trading Returns

We evaluate how quantitatively important our documented pre-announcement premium is in both absolute and risk-adjusted terms. In particular, the mean daily excess return of a 3-day window prior to **M2** announcements is compared with the size of total risk premium in China's equity market. Table A.1.T summarizes the results. Based on close-to-close daily excess returns, the first row in Panel A of Table A.1.T finds that the average daily excess return of the Wind A-Share Market Index is about 0.6 bps, which can be aggregated up to an annual return of approximately 1.49%. This is the size of total equity premium in China over our sample years. By contrast, the daily excess returns averaged over all 3-day pre-announcement windows is about 20 bps, which is then annualized up to 7.11% using a factor of 36 (3 days of duration for 12 monthly **M2** announcements). Therefore, in annual terms, the monetary pre-announcement premium in China scales the total equity premium of Chinese equity market by a multiple close to 5. The Sharpe ratio of 3-day holding return on the Wind A-Share Index prior to the **M2** announcements for 12 times a year is about 0.78. This number is very large, more than thirteen times of the mean Sharpe ratio of 0.06 derived from the buy-and-hold strategy on the stock market index of China in a year. Panel B of Table A.1.T shows that our documented pre-announcement premium accounts for a sizable fraction of 43% of China's total equity premium based on open-to-close returns. The relative Sharpe ratio associated with the pre-announcement windows is 1.15. We thus highlight the importance of studying such strong reactions of Chinese equity markets prior to the PBOC's monetary announcements.

Table A.1.T: Pre-announcement Premium and China's Total Equity Premium

		A. Close-to-close Returns			B. Open-to-close Returns		
	No.Obs	Daily average	Annualized	S.R.	Daily average	Annualized	S.R.
Market Total	2431	0.6 bps	1.49%	0.06	10.51 bps	26.28%	1.16
Pre-announcement 3 Days	360	19.74 bps	7.11%	0.78	31.3 bps	11.27%	1.33
Relative Scale			4.76	13.14		0.43	1.15

Notes: This table presents excess returns of the Wind A-Share Market Index earned in 3-day pre-M2 windows as compared to China's total equity premium. "Market Total" presents returns earned in all trading days of the sample range: January 2010 to December 2019. Columns "Annualized" denote cumulative annual excess returns, assuming there are 250 trading days in a calendar year. "S.R." denotes the annualized Sharpe ratio of excess returns. Row label "Pre-announcement 3 Days" presents the returns earned in 3-day pre-M2 announcement windows. Given there are 12 3-day pre-announcement windows per year, we annualize the pre-announcement excess returns by a factor of 36, and the Sharpe ratio is also annualized, which is the daily number multiplied by $\sqrt{36}$. "Relative Scale" scales the returns earned in the 3-day pre-M2 announcement windows by those earned over all trading days. Panel A summarizes the results based on close-to-close returns and Panel B lists the results based on open-to-close returns.

Important to note that when the announcement date is not pre-scheduled and is unknown ex-ante, the trading strategy over a precise duration of days before announcement is not implementable. Nonetheless, we are still able to examine the range of excess returns derived from implementing various feasible buy-and-hold trading strategies. In particular, we compute the holding period excess returns when an investor could purchase the market index at market close some days prior to announcements and hold until selling at the market close on the first trading day right after the announcement, i.e. the announcement day. We pick a few starting days for the holding period as these days are less likely to be the announcement days given the histogram plot in Figure 1. We then calculate the excess returns by allowing for the starting day of a buy-and-hold strategy to vary while fixing the selling day on the announcement day t_{M2}. Table A.2.T summarizes the results of our calculations. Each row of this table denotes our return calculations associated with a particular trading strategy. Across rows, we find that investors could have earned a significantly positive and large equity premium annually ranging from 7.79% to 9.28% by implementing a trading strategy before **M2** announcements every month. Our calculated excess returns outsize the total risk premium in China by a multiple of more than 5, which is well consistent with our findings in Table A.1.T. In addition, we find the annualized Sharpe ratio in the 3-day pre-announcement windows is comparable to that of the market according to Table A.1.T.

Table A.2.T: Trading Strategy and the Size of Pre-announcement Premium

Strategy	Daily Premium (%)	*t.stat*	Average No. of Holding Days in a Year	Annualized Premium (%)	S.R.
$7^{th} - t_{M2}$	0.13	[2.07]	63	8.11	0.65
$8^{th} - t_{M2}$	0.16	[2.39]	55	8.70	0.75
$9^{th} - t_{M2}$	0.20	[2.82]	47	9.28	0.89
$10^{th} - t_{M2}$	0.20	[2.66]	39	7.79	0.84

Notes: Sample: January 2010 to December 2019. This table reports the excess returns realized over a period of buying the Wind A-Share Market Index at market close on i^{th}(for $i = 7, 8, 9, 10$) day of a month until selling at the market close on the first trading day after an announcement is made for that month. "S.R." denotes the annualized Sharpe ratio of excess returns.

B Announcement Timing: Additional Tests

Our documented pre-announcement premium exists only when a PBOC's announcement of monetary statistics arrives late in a month. Here, we examine if the announcement delays are indicative of monetary expansion, which could have triggered positive excess returns. More generally, we check if the announcement delays are associated with directional changes in other co-released statistics. We also explore whether the announcement timing in monthly cycles exhibits serial correlations over time, i.e. the self-predictability of announcement timing. These questions are particularly important because if the data to be released can be predicted ahead of time, our claims for causal inference based on random timing of PBOC's announcement scheduling would be much weakened.

B.1 Announcement Delays and News Predictability

First, we examine if the M2 announcement timing associated with a given monthly announcement cycle m, as measured by the day of month on which a PBOC's announcement is made i.e. $Day_{M2,m}$, is correlated with our measure of the monetary statistics announced for that month, i.e. the monthly changes of M2 year-over-year growth rate, $\Delta g_{M2,m}$. In addition, we use a dummy variable to capture the announcement timing, i.e. $Delay_{M2,m}$ which equals 1 if an announcement is made after the 12th of a month. Thus, across the **M2** announcement events, we estimate two regression models as specified below:

$$\Delta g_{M2,m} = \alpha + \gamma Day_{M2,m} + \zeta X + e_m \tag{B.1.E}$$

$$\Delta g_{M2,m} = \alpha + \gamma Delay_{M2,m} + \zeta X + e_m \tag{B.2.E}$$

In the covariate vector X, we include the day-of-month associated with the announcement made in the previous month $Day_{M2,m-1}$. Alternatively, the dummy indicator whether or not the previous announcement was made after the 12th day of that month $Delay_{M2,m-1}$ is included in X. In addition, a range of monetary statistics including monthly changes in the growth rates of M2, M1, the outstanding balance of bank loan, the deposit balance, CPI, VAI, and exports for the previous announcement cycle are all considered as extra controls. The year dummies are included in regressions for some specifications as well.

Table B.3.T summarizes the estimation results. First, we see that regardless of control variables, neither measure of the announcement timing, $Day_{M2,m}$ or $Delay_{M2,m}$, is correlated with the M2 growth statistics announced for that month. Second, across columns, changes in M2 growth published in the previous month is the only proxy that partially helps predict the newest M2 growth number. This association is negative, which indicates that increased money growth for the previous month tends to be followed by a slow down of monetary growth in the ensuing month.

Hence, the announced monetary statistics is not correlated to when an announcement is made in monthly cycles. Our empirical evidence rejects the claim that the pre-announcement premium associated with late announcements is because announcement delays are signalling monetary expansions.

Table B.3.T: Announcement Timing: Predictability of News Content

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
$Day_{M2,m}$	-0.05		-0.06			
	(0.04)		(0.04)			
$Day_{M2,m-1}$		0.01	-0.01			
		(0.04)	(0.04)			
$Delay_{M2,m}$				-0.16		-0.15
				(0.15)		(0.18)
$Delay_{M2,m-1}$					0.07	-0.04
					(0.15)	(0.17)
$\Delta g_{M2,m-1}$			-0.36**			-0.36**
			(0.16)			(0.16)
$\Delta g_{loan,m-1}$			0.23			0.24
			(0.17)			(0.18)
$\Delta g_{deposit,m-1}$			0.12			0.11
			(0.11)			(0.11)
$\Delta g_{M1,m-1}$			-0.02			-0.02
			(0.04)			(0.04)
$\Delta g_{CPI,m-1}$			0.05			0.07
			(0.24)			(0.25)
$\Delta g_{VAI,m-1}$			0.02			0.03
			(0.03)			(0.03)
$\Delta g_{export,m-1}$			0.00			0.00
			(0.01)			(0.01)
Year Dummies			Yes			Yes
Observations	120	120	120	120	120	120
R^2	0.02	0.00	0.22	0.01	0.00	0.21

Notes: Sample: January 2010 to December 2019. The table reports the regression results regarding coefficient estimates per Equations (B.1.E) and (B.2.E). ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.2 Serial Correlation

Then, we explore whether or not the timing of the PBOC's announcements exhibits serial correlations over monthly cycles. In particular, we run regressions of the following specification:

$$Day_{M2,m} = \alpha + \phi Day_{M2,m-1} + \zeta X + e_m \tag{B.3.E}$$

where the dependent variable is the day-of-month associated with an **M2** announcement event m. The key regressor of interest is the day-of-month associated with the PBOC's announcement made in the previous month, $Day_{M2,m-1}$. If there are serial correlations of announcement timing over months, the coefficient estimate ϕ would be statistically positive or negative, which suggests that the timing of announcement arrivals of previous months is carried into the following months. The year, month and weekday dummies are incrementally included as additional controls across specifications. Table B.4.T collects the estimation results. In column (1), the coefficient estimate suggests that the announcement timing of a given month is not related to the announcement arrival of the subsequent month. This result is robust across columns (2) and (3) as we further control for the potential seasonality of announcement timing by including year, month and weekday fixed effects dummies. Thus, we find little evidence to support the argument that the timing of PBOC's announcement for releasing aggregate monetary data is serially correlated over months. This also implies that it's reasonable to focus on an average announcement cycle, i.e. a month, for our theoretical discussions.

Table B.4.T: Announcement Timing: Serial Correlation

VARIABLES	(1)	(2)	(3)
$Day_{M2,m-1}$	0.11	-0.10	-0.06
	(0.09)	(0.12)	(0.12)
Year Dummies		Yes	Yes
Month Dummies		Yes	Yes
Weekday Dummies			Yes
Observations	120	120	120
R^2	0.01	0.61	0.66

Notes: Sample: January 2010 to December 2019. The table displays the regression results regarding coefficient estimates per Equation (B.3.E). ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

C M2 Announcements and Excess Returns: a CAPM Test

We then delve deeper into the cross-section and examine the excess returns of individual stocks within the PBOC's **M2** announcement windows.

Here we provide important evidence from the Chinese markets to shed light on the relationship between the market beta and the average stock returns. In specific, we work with 25 portfolios sorted by size and book-to-market (BM) ratio, and 10 additional beta-sorted portfolios. These 35 portfolios are then taken as the test assets for doing the CAPM test.[36] For a quick overview, we first plot in Figure C.1.F the average excess returns of the 25 size and BM sorted portfolios and 10 beta-sorted portfolios against their market betas conditional on two different samples of daily returns, i.e. the 3-day windows before **M2** announcements, and all days excluding the 3-day pre-announcement windows. The figure shows that based on returns over the 3-day pre-announcement windows, the fitted Security Market Line (SML) has a slope that is strongly positive and statistically significant. This suggests that greater market betas, by capturing larger systemic risk, compensates investors with greater risk premium during days prior to PBOC's monetary announcements. By contrast, over all other days, the fitted SML gives a slightly negative relation between the average excess returns and market betas. Note that the returns on and after the announcement days are grouped into the comparison sample, but this arrangement does not help deliver a positive and significant SML. In sum, CAPM works better in China over those days before PBOC's **M2** announcements relative to other days.

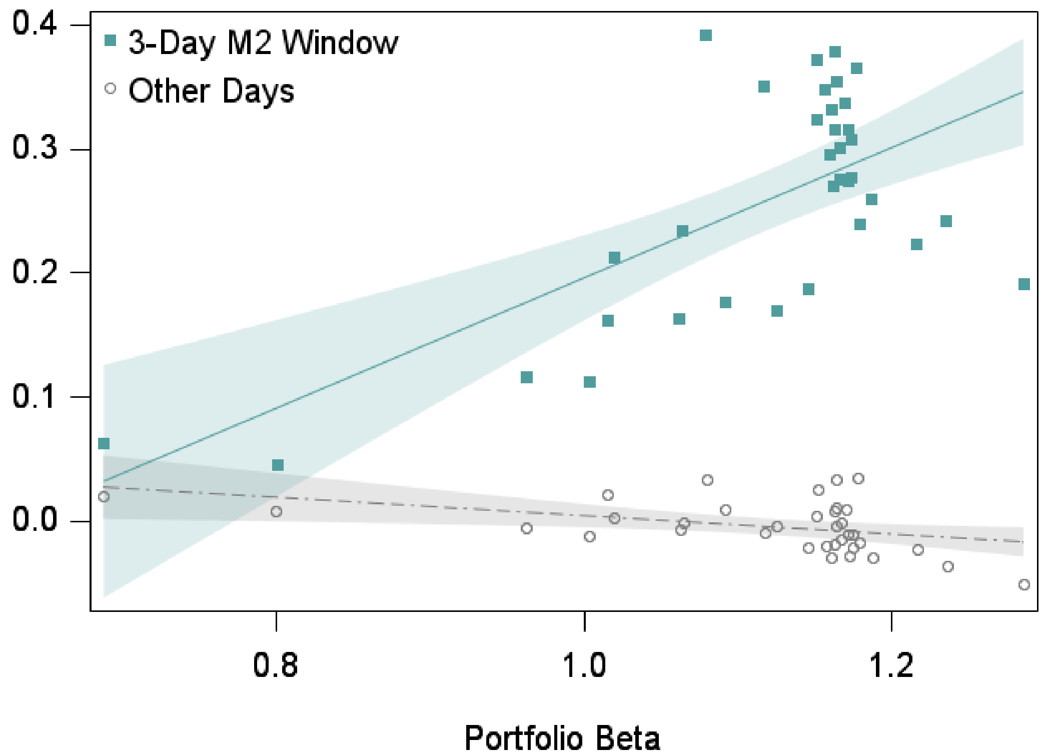
Further, we apply the standard two-step procedure to explicitly test the holding of CAPM and to identify the relationship between market betas of the sorted portfolios and their average excess returns. First, we compute the time-varying value-weighted portfolio market betas $\hat{\beta}_{j,t}$, which are estimated based on daily returns of portfolio j rolling the one-year windows. In the second stage, we adopt the Fama-MacBeth procedure and estimate the coefficients of interest separately for days before, on, or after the **M2** announcements, along with those for days that fall outside the 7-day announcement windows (3 days before and after the announcements). Specifically, we run the regressions specified as follows:

$$R_{j,t+1} - R_{f,t+1} = \gamma_0 + \gamma_1 \hat{\beta}_{j,t} \tag{C.4.E}$$

where $\hat{\beta}_{j,t}$ denotes the portfolio j's stock market beta estimated from the first-stage regressions. $R_{j,t+1} - R_{f,t+1}$ captures the excess returns on the portfolio. Then we estimate the slope coefficients γ_1 so as to pin down the exact relationship between excess returns and the market betas. In

[36] In terms of sorting, each year, we first assign Chinese A-share stocks to five quintiles by the size of market capitalization as of end of June, and then break the stocks of each size quintile into five sub-portfolios per the book-to-market ratio also by the end of June. Such sorting gives us 25 portfolios. As for the beta-sorted portfolios, we estimate the stock market betas for all stocks using five-year rolling windows of monthly returns, and then sort stocks into ten deciles by the magnitude of the market beta. These beta portfolios are rebalanced every month.

Figure C.1.F: M2 Announcements: Security Market Lines in China



Notes: This figure plots the average daily excess returns in percent (%) against the market beta for 25 Fama French Size-BM portfolios and 10 beta-sorted portfolios based on two different samples, i.e. the 3-day windows before the Chinese **M2** announcements (3-day pre-M2 Window), and all days excluding the 3-day pre-announcement windows (Other Days). The implied OLS-based estimates of the Security Market Line (SML) for two different groups of excess returns are plotted. The sample data covers a period from January 2010 to December 2019. The dark shaded areas mark the 95% confidence band around the fitted SML.

particular, we are interested in the slope differences across different samples of daily returns, by which we examine the dependence of the holding of CAPM on whether the days are before, on or after the announcements, or when days fall completely outside the announcement windows.

Table C.5.T reports the regression results. According to Panel A, we see that for the 25 size and BM sorted portfolios, the relationship between excess returns and market betas is negative and insignificant during those days that fall outside the announcement windows. The estimation gives a slope of the SML equal to -17 bps of market risk premium and a t-statistic of -1.47. The intercept equals 12 bps and is also insignificant. Conversely, across the samples of pre-announcement windows of length 1, 2, and 3 days, we see there is a consistently positive slope of the SML. In particular, estimations based on days of the 3-day pre-announcement window find a SML with slope of 49 bps, with a t-statistic of 2.3. The intercept is -26 bps, with a t-statistic of -1.46. In addition, row t_{M2}

shows that on the announcement days, the slope of the implied SML is 64 bps and insignificant, and the intercept is also not significantly different from zero. As for the period of 3-day window after the announcement, the slope and intercept of the SML are insignificant. It shows that these results are exactly consistent with the message derived from Figure C.1.F. That is, the positive relationship between excess returns and the market beta in Chinese markets is pronounced during the days prior to the PBOC's announcements for releasing the aggregate monetary statistics.

Panel B of the table reports the results when additional 10 beta-sorted portfolios are included for estimations. Our key results are robust. Over days outside the announcement windows, the slope of fitted SML is still negative, whereas the slope of the implied SML is positive over the pre-announcement windows of varied lengths, with the strongest positive number of 48 bps as market risk premium, with a t-statistic of 2.44 for the 2-day pre-announcement window. Again, the SML estimated based on returns on and after the **M2** announcement are indifferent from that based on estimations of returns over non-announcement days, having an insignificantly negative slope and insignificant intercept.

In sum, our results suggest that the market beta is after all an important measure of the systematic risk in China's equity market. That is, entering into a window of forthcoming monetary announcement with timing uncertainty, when investors in Chinese stock markets are also uncertain about the to-be-released data, investors demand higher risk premium for holding the market portfolio. Cross-sectionally, investors require higher risk premium for holding large-beta stocks. Therefore, the fact the CAPM works better during the pre-announcement days in China resonate well with our empirical results. That is, investors are compensated for bearing beta risk exactly when aggregate risk premium is high.

Important to note that our findings are consistent with other important studies on the U.S. markets. Savor and Wilson (2014) show that the market beta of U.S. stocks is strongly and positively correlated with the average returns on major macro announcement days, i.e. when there are public news announcements about the U.S. inflation, unemployment, and the FOMC decisions. However, the market betas become unrelated to the mean returns on non-announcement days whereby the implied market risk premium turns negative. This result suggests that the CAPM works better on announcement days in the U.S. markets, and the market beta is indeed an important measure of the systematic risk. The existing work that examines the impacts of the macro and firm-level announcements on the functioning of CAPM is mostly focused on the U.S. markets (Savor and Wilson, 2014, 2016). For example, Lucca and Moench (2015) also shows that the single market factor model provides a good description of the cross-section of the FOMC-day returns. Our findings complement the literature and show that CAPM works better in Chinese markets before PBOC's monthly monetary announcements.

Table C.5.T: CAPM Test: Excess Returns and Market Betas

Panel A: 25 Fama-French Size and BM sorted portfolios			
Sample of Day Coverages	Intercept	Slope Coefficient	Avg. R^2
$[t_{M2}-3, t_{M2}-1]$	-0.26	0.49	0.25
	[-1.46]	[2.3]	
$[t_{M2}-2, t_{M2}-1]$	-0.52	0.75	0.25
	[-2.21]	[2.73]	
$t_{M2}-1$	-0.49	0.64	0.27
	[-1.37]	[1.57]	
t_{M2}	0.00	0.64	0.23
	[0.02]	[-0.22]	
$[t_{M2}+1, t_{M2}+3]$	0.02	-0.09	0.23
	[0.1]	[-0.44]	
Non-announcement Days	0.12	-0.17	0.24
	[1.05]	[-1.47]	

Panel B: 25 Fama-French Size and BM sorted portfolios, and 10 beta-sorted portfolios			
Sample of Day Coverages	Intercept	Slope Coefficient	Avg. R^2
$[t_{M2}-3, t_{M2}-1]$	-0.12	0.33	0.23
	[-0.92]	[2.08]	
$[t_{M2}-2, t_{M2}-1]$	-0.26	0.48	0.23
	[-1.63]	[2.44]	
$t_{M2}-1$	-0.19	0.34	0.24
	[-0.81]	[1.17]	
t_{M2}	0.04	0.34	0.22
	[0.18]	[-0.36]	
$[t_{M2}+1, t_{M2}+3]$	0.16	-0.22	0.22
	[1.25]	[-1.33]	
Non-announcement Days	0.13	-0.19	0.22
	[1.72]	[-2.14]	

Notes: The table reports estimates from Fama-MacBeth regressions of daily excess returns on market betas of various portfolios of Equation (C.4.E). Panel A shows results for 25 Fama-French portfolios sorted by the market value and book-to-market ratio. Panel B has the results based on 25 Fama-French portfolios, book-to-market sorted portfolios and the 10 beta-sorted portfolios. The sample coverage ranges from January 2010 to December 2019. The t-statistics are reported in brackets.

D Return Volatility Prior to Announcements

In a regression setting, we document that the stock return volatility in China is lower prior to PBOC's announcements of monetary aggregates data. For lack of the high frequency data for the complete set of stocks under Wind A Index, we therefore examine the return volatility as captured by the standard deviation of 5-minute returns on the realized Shanghai Stock Exchange Index (SSE) and Shenzhen Stock Exchange Index (SZSE) separately.

We estimate the following specification, with $\mathbb{I}_{t_{M2}-1} = 1$ and $\mathbb{I}_{t_{M2}-3,t_{M2}-1} = 1$ indicating the day that falls into a 1-day or 3-day pre-announcement window respectively:

$$Ret\_Vol_t = \gamma + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{D.5.E}$$

$$Ret\_Vol_t = \gamma + \theta \mathbb{I}_{t_{M2}-3,t_{M2}-1} + \sum_{i=-T}^{0} \beta_i \mathbb{I}_{t_{M2}-i} + \sum_{i=4}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{D.6.E}$$

Accordingly, we are interested in the coefficient estimates associated with the terms $\mathbb{I}_{t_{M2}-1}$ and $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$. Table D.6.T presents the estimation results of Equations (D.5.E) and (D.6.E). We find that the realized return volatility is lower during 1-day and 3-day windows before the **M2** announcements than that of an average day outside the announcement windows. In addition, it is interesting to see that the return volatility of both stock exchanges in China is low on and one day after the announcements.

The above empirical findings related to return volatility are well consistent with the mechanism discussed in our main text. The information acquisition model of Ai, Bansal, and Han (2022) assumes that the information acquired by the uninformed investors is the information that is already known to informed investors and has been incorporated into the equilibrium stock prices. In addition, the information acquisition by uninformed investors gradually eliminate noises in stock prices and therefore is associated with a lower volatility of realized stock returns. With the random timing of the quasi-scheduled announcements, investors perceive an increasing likelihood of seeing the announcement arrivals on the following days. There are more uninformed investors acquiring information as time evolves, which leads to reduced return volatility for late announcements.

Next, we examine the potential dependence of the return volatility on the timing of announcement arrivals. In particular, we show that the pre-announcement return volatility is further reduced when an announcement arrives late in a month. This timing pattern exactly echoes what we found for our documented pre-announcement premium. Similarly, we divide the sample of return volatility data into two groups by months: months with announcements made earlier than, and months with announcements made on and after a cutoff day. We estimate the specification of Equation (D.5.E) using a restricted sample from each group.

Panel A and Panel B in Table D.7.T report the estimation results for the return volatility

Table D.6.T: **Stock Return Volatility in Windows of M2 Announcements**

VARIABLES	(1) SSE	(2) SZSE	(3) SSE	(4) SZSE
$\mathbb{I}_{t_{M2}-5}$	0.04	-0.01	0.04	-0.01
	(0.08)	(0.07)	(0.08)	(0.07)
$\mathbb{I}_{t_{M2}-4}$	0.04	0.03	0.04	0.03
	(0.06)	(0.07)	(0.06)	(0.07)
$\mathbb{I}_{t_{M2}-3}$	-0.05	-0.08+		
	(0.05)	(0.05)		
$\mathbb{I}_{t_{M2}-2}$	-0.06	-0.08		
	(0.06)	(0.06)		
$\mathbb{I}_{t_{M2}-1}$	-0.13***	-0.17***		
	(0.04)	(0.05)		
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$			-0.08**	-0.11***
			(0.03)	(0.04)
$\mathbb{I}_{t_{M2}}$	-0.09*	-0.12**	-0.09*	-0.12**
	(0.05)	(0.05)	(0.05)	(0.05)
$\mathbb{I}_{t_{M2}+1}$	-0.06	-0.09	-0.06	-0.09
	(0.06)	(0.06)	(0.06)	(0.06)
$\mathbb{I}_{t_{M2}+2}$	-0.08*	-0.09*	-0.08*	-0.09*
	(0.04)	(0.05)	(0.04)	(0.05)
$\mathbb{I}_{t_{M2}+3}$	-0.03	-0.04	-0.03	-0.04
	(0.05)	(0.05)	(0.05)	(0.05)
$\mathbb{I}_{t_{M2}+4}$	-0.07+	-0.09+	-0.07	-0.09+
	(0.05)	(0.06)	(0.05)	(0.06)
$\mathbb{I}_{t_{M2}+5}$	-0.10*	-0.10**	-0.10*	-0.10**
	(0.05)	(0.05)	(0.05)	(0.05)
Constant	1.06***	1.40***	1.06***	1.40***
	(0.06)	(0.07)	(0.06)	(0.07)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431
R^2	0.31	0.28	0.31	0.28

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equations (D.5.E) and (D.6.E) for different specifications. The dependent variable for column (1) and column (3) is the daily stock return volatility on Shanghai Stock Exchange Market Index (SSE), as measured by the standard deviation of 5-minute returns on the market index. The dependent variable for column (2) and column (4) is the daily stock return volatility on Shenzhen Stock Exchange Market Index (SZSE), as measured by the standard deviation of 5-minute returns on the market index. The announcement day dummy $\mathbb{I}_{t_{M2}-1}$ equals one for the trading days in a 1-day window before an **M2** announcement. The announcement day dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals one for the trading days in a 3-day window before an **M2** announcement. "Year/Month/Weekday Dummies": controls for the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

associated with Shanghai and Shenzhen stock exchange respectively. We see that regardless of the stock exchange, the coefficient estimates for pre-announcement day dummies associated with late announcement groups are significantly negative and larger in absolute size. These findings suggest that the size of the pre-announcement return volatility also depends on the timing of the PBOC's announcement in monthly cycles.

Table D.7.T: Stock Return Volatility: Early vs. Late Announcements

Panel A: SSE Composite Index

VARIABLES	(1) $< 11^{th}$	(2) $< 12^{th}$	(3) $< 13^{th}$	(4) $< 14^{th}$	(1) $\geq 11^{th}$	(2) $\geq 12^{th}$	(3) $\geq 13^{th}$	(4) $\geq 14^{th}$
$\mathbb{I}_{t_{M2}-5}$	-0.08	-0.01	0.01	0.02	0.06	0.07	0.09	0.08
	(0.07)	(0.07)	(0.07)	(0.06)	(0.09)	(0.12)	(0.16)	(0.20)
$\mathbb{I}_{t_{M2}-4}$	-0.11*	-0.05	0.02	0.01	0.07	0.10	0.08	0.11
	(0.06)	(0.07)	(0.08)	(0.07)	(0.07)	(0.09)	(0.09)	(0.10)
$\mathbb{I}_{t_{M2}-3}$	-0.05	-0.11*	-0.03	-0.06	-0.05	-0.01	-0.08	-0.04
	(0.08)	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)	(0.09)	(0.10)
$\mathbb{I}_{t_{M2}-2}$	0.06	-0.10	-0.06	-0.07	-0.09	-0.03	-0.06	-0.05
	(0.12)	(0.08)	(0.07)	(0.06)	(0.06)	(0.08)	(0.10)	(0.12)
$\mathbb{I}_{t_{M2}-1}$	-0.02	-0.11*	-0.09*	-0.11**	-0.15***	-0.14**	-0.19**	-0.17*
	(0.05)	(0.07)	(0.05)	(0.05)	(0.05)	(0.06)	(0.08)	(0.09)
$\mathbb{I}_{t_{M2}}$	-0.04	-0.10	-0.07	-0.09*	-0.10*	-0.09	-0.12	-0.10
	(0.07)	(0.07)	(0.06)	(0.05)	(0.05)	(0.06)	(0.09)	(0.10)
$\mathbb{I}_{t_{M2}+1}$	-0.00	-0.12+	-0.10+	-0.09+	-0.07	-0.02	0.01	0.02
	(0.13)	(0.08)	(0.07)	(0.06)	(0.06)	(0.08)	(0.11)	(0.12)
$\mathbb{I}_{t_{M2}+2}$	-0.02	-0.13**	-0.08	-0.07	-0.10*	-0.05	-0.10	-0.12+
	(0.07)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)	(0.07)	(0.07)
$\mathbb{I}_{t_{M2}+3}$	-0.08	-0.12*	-0.06	-0.05	-0.03	0.02	0.01	0.01
	(0.07)	(0.07)	(0.06)	(0.05)	(0.05)	(0.06)	(0.08)	(0.10)
$\mathbb{I}_{t_{M2}+4}$	0.06	-0.08	-0.09	-0.08	-0.10*	-0.07	-0.05	-0.07
	(0.15)	(0.08)	(0.06)	(0.06)	(0.05)	(0.06)	(0.09)	(0.10)
$\mathbb{I}_{t_{M2}+5}$	-0.07	-0.11+	-0.09	-0.08	-0.10*	-0.08	-0.10	-0.14+
	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	(0.08)	(0.09)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	369	993	1,512	1,751	2,062	1,438	919	680
R-squared	0.33	0.43	0.29	0.28	0.32	0.31	0.40	0.45

Panel B: SZSE Component Index

VARIABLES	(1) $< 11^{th}$	(2) $< 12^{th}$	(3) $< 13^{th}$	(4) $< 14^{th}$	(1) $\geq 11^{th}$	(2) $\geq 12^{th}$	(3) $\geq 13^{th}$	(4) $\geq 14^{th}$
$\mathbb{I}_{t_{M2}-5}$	-0.10	-0.00	0.01	0.01	0.01	-0.01	-0.04	-0.05
	(0.08)	(0.08)	(0.07)	(0.07)	(0.08)	(0.10)	(0.13)	(0.15)
$\mathbb{I}_{t_{M2}-4}$	-0.17**	-0.05	0.05	0.04	0.06	0.07	-0.02	-0.03
	(0.08)	(0.08)	(0.10)	(0.09)	(0.08)	(0.10)	(0.10)	(0.12)
$\mathbb{I}_{t_{M2}-3}$	-0.10	-0.12+	-0.04	-0.06	-0.08	-0.06	-0.16**	-0.14+
	(0.10)	(0.08)	(0.07)	(0.06)	(0.06)	(0.07)	(0.08)	(0.09)
$\mathbb{I}_{t_{M2}-2}$	-0.00	-0.13+	-0.07	-0.08	-0.09+	-0.04	-0.09	-0.07
	(0.14)	(0.09)	(0.07)	(0.07)	(0.07)	(0.08)	(0.10)	(0.12)
$\mathbb{I}_{t_{M2}-1}$	-0.03	-0.16*	-0.11*	-0.14**	-0.20***	-0.18***	-0.26***	-0.24**
	(0.08)	(0.08)	(0.06)	(0.06)	(0.05)	(0.06)	(0.08)	(0.09)
$\mathbb{I}_{t_{M2}}$	0.00	-0.09	-0.06	-0.08	-0.14**	-0.13**	-0.20**	-0.21**
	(0.09)	(0.08)	(0.06)	(0.06)	(0.05)	(0.06)	(0.08)	(0.10)
$\mathbb{I}_{t_{M2}+1}$	-0.05	-0.17*	-0.12+	-0.11+	-0.09	-0.03	-0.04	-0.05
	(0.17)	(0.10)	(0.08)	(0.07)	(0.07)	(0.08)	(0.11)	(0.12)
$\mathbb{I}_{t_{M2}+2}$	-0.04	-0.15**	-0.09	-0.07	-0.10*	-0.05	-0.10	-0.14
	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)	(0.09)	(0.11)
$\mathbb{I}_{t_{M2}+3}$	-0.10	-0.12+	-0.05	-0.05	-0.03	0.02	-0.03	-0.02
	(0.08)	(0.08)	(0.06)	(0.06)	(0.06)	(0.07)	(0.09)	(0.11)
$\mathbb{I}_{t_{M2}+4}$	-0.02	-0.10	-0.11+	-0.08	-0.10+	-0.07	-0.05	-0.10
	(0.13)	(0.08)	(0.07)	(0.06)	(0.06)	(0.08)	(0.11)	(0.12)
$\mathbb{I}_{t_{M2}+5}$	-0.10	-0.13+	-0.10+	-0.09+	-0.10*	-0.08	-0.11	-0.14
	(0.08)	(0.08)	(0.07)	(0.06)	(0.06)	(0.06)	(0.09)	(0.11)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	369	993	1,512	1,751	2,062	1,438	919	680
R-squared	0.37	0.38	0.26	0.24	0.29	0.27	0.37	0.43

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equations (D.5.E). The dependent variable is the daily return volatility measures based on realized returns on Shanghai (Panel A) and Shenzhen (Panel B) Stock Exchange market index. Announcement day dummy $\mathbb{I}_{t_{M2-i}}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. We align the return data of the first trading day that the equity market has access to the news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Each column summarizes the estimation results based on a restricted sample that includes only trading days outside all **M2** announcement windows of 11 days and windows of those selected announcement events that fall into the early or the late group. The actual date and time information of the PBOC's announcements is used for dividing the event sample. Year, month, and weekday dummies along with the remaining day dummies of the announcement window of length of $2T + 1$ as $T = 5$ are included. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

E Proof of Lemma 1

Before entering an announcement cycle, suppose investors are endowed with some prior probability distribution believing that an announcement would fall on a day $i \in \{1, ..., N\}$ with probability $Prob(t^A = i) \geq 0$. $\sum_{i=1}^{N} Prob(t^A = i) = 1$ follows from the fact that an announcement is to be made with probability one in each cycle. Conditional on no announcement made from day 1 up to day t, by the Bayes' Rule, the investors' posterior probability for seeing an announcement on a day $n \geq t+1$ can be expressed as $Prob(t^A = n|\{t^A \neq i\}_{i=1}^{i=t}) = \frac{Prob(t^A=n)Prob(\{t^A \neq i\}_{i=1}^{i=t}|n=t^A)}{Prob(\{t^A \neq i\}_{i=1}^{i=t})} = \frac{Prob(t^A=n)}{Prob(\{i \neq t^A\}_{i=1}^{i=t})}$.

Denote the cumulative probability density function associated with the prior distribution using $G(t) = Prob(t^A \leq t)$. We can rewrite $Prob(t^A = n|\{t^A \neq i\}_{i=1}^{i=t}) = \frac{Prob(t^A=n)}{1-G(t)}$. As time t evolves, larger $G(t)$ in the denominator strictly increases this ratio, as long as the prior probability for day n being the announcement day $Prob(t^A = n)$ is positive. In sum, with $Prob(t^A = n) \geq 0$ for $n \geq t+1$, $Prob(t^A = n|\{t^A \neq i\}_{i=1}^{i=t})$ is weakly increasing in day t.

Part I

Online Appendix

Information Acquisition, Uncertainty Reduction and Pre-announcement Premium in China

A Additional Summaries

A.1 List of Other Announcements

We consider a wider range of macroeconomic variables that have their data regularly published by regulatory agencies through public announcements. Apart from the monetary-related statistics released by the PBOC, other macroeconomic statistics can be categorized into three groups by their data coverage: international trade data, the real-sector productivity measures, and aggregate price indexes. The data-associated announcements are correspondingly grouped. The U.S. FOMC statement issuance, labelled FOMC announcements, belongs to a fourth category. In the following, we discuss details of these announcements under each category.

1. **Trade Data Announcements**. Monthly statistics about the total imports and exports of China are published by the General Administration of Customs of the People's Republic of China (GACC) via a single statement on its website. We label these news for releasing trade data as **TRD** announcements.

2. **Real-sector Productivity Announcements**. We also examine four important data series measuring the fundamentals of the Chinese economy: fixed asset investment excluding rural

households (**FAI**), value added of industrial enterprises above the designated size (**VAI**), profits of industrial enterprises above the designated size (**INP**), and the manufacturing purchasing managers index (**PMI**). Each month, these statistics are published by the National Bureau of Statistics of China (NBS).[1]

3. **Aggregate Price Index Announcements**. NBS announcements of three other statistics of aggregate prices are also considered: the consumer price index (**CPI**) released simultaneously with the producer price index, and the sales price index of residential real estate in 70 large and medium-sized cities (**RST**).[2]

4. **FOMC Announcements**. FOMC meetings that discuss the relevance of U.S. monetary policy changes are held regularly eight times a year. Each FOMC statement is issued right after each meeting.[3]

In total, we look into nine data-release announcements including the PBOC's **M2** announcements, each of which publishes at least one important statistic. Note that some of these announcements made in a month are not releasing the data points associated with that month, but some statistics spanning the previous month. This is routinely known as the the data publication lag. For example, the M2 growth statistics of month $m-1$ are released in month m announcement. On the other hand, certain statistics of a month can be published very timely in the end of a month. For instance, China's manufacturing PMI data of a month are often made public on the 30th of that month.

Table A.1 summarizes these macroeconomic announcements by their publishing agencies, statistics published, and the number of regular statement issues in a year. We have the following observations. First, a macro announcement in China may release more than one set of statistics. Second, although key macroeconomic statistics of the Chinese economy are routinely published monthly, a

[1]FAI and VAI data are routinely published around the same time on an announcement day through separate statements on the NBS's website. Other important statistics, including retail sales of consumer goods, development and sales statistics of national real estate, energy production, and private fixed asset investment, are all published on the same day about the same time, albeit in separate statements. The quarterly GDP growth rate, however, is announced together with all these aforementioned statistics every 3 months.

[2]The release of PPI data preceded that of CPI by 1 day before 2009. Since 2009, CPI and PPI data are released simultaneously in one single public statement.

[3]In rare circumstances, more than eight FOMC statements were issued in a year. For example, during the recession years of 2001, 2007, and 2008, the FOMC Committee had issued more than one statement in a month of critical importance.

subtlety should be noted, that is, there are at most 11 announcements for data releases of **FAI**, **FAI**, and **INP** in a year. This is because data for January and February are routinely collected for releasing in the March statement as the NBS skips publishing these statistics in February. This is due to the fact that Chinese Spring Festival holidays consistently fall in February when manufacturing productions are paused and statistical efforts are halted.

Table A.1: List of Macro Announcements

Announcement	Publishing Agency	Released Statistics	No. of Routine Issues Per Year
M2	PBOC	M0/M1/M2 Level and Growth	12
		Loan and Savings Balance: Level and Growth	
		Interbank Loan: Interest Rate and Balance	
TRD	GACC	Import/Export Level and Growth	12
FAI	NBS	Fixed Asset Investment	11
VAI	NBS	Value Added of Industrial Enterprises	11
INP	NBS	Profits of Industrial Enterprises	11
PMI	NBS	Manufacturing/Non-manufacturing PMI	12
CPI	NBS	CPI & PPI	12
RST	NBS	Price Indexes of Residential Buildings	12
FOMC	U.S. FRB	FOMC Statement	8

A.2 Summaries of Announcement Timing

We have the dates and timing information of our considered macro announcement events obtained from the Bloomberg Economic Calendar (BEC) database. Table A.2 provides a summary of the announcement days by the day of month for the **M2** announcements along with other announcements. It shows that 75% of the monetary aggregate data published by the PBOC are announced between the 8th and 14th days of a month. The remaining 25% of the announcements are made after the 14th but no later than the 18th of a month. As for other announcements, the **TRD** announcements are routinely published on the 10th day of a month but no later than the 15th. Three-fourths of **FAI** and **VAI** data are published in the first half of a month before or on the 16th. 75% of **INP** announcements are made by the end of a month. The **PMI** announcements are consistently published on the first day of a month. The **CPI** announcements are mostly published before the 11th day of a month. The **RST** data are made public mostly on the 18th day of a month. 75% of the **FOMC** statements are issued later than the 14th of a month.

Table A.3 summarizes the announcement days by the day of week distribution for all announcements. The table shows that **M2** announcements are often made public on weekdays and about one-third of them fall on Fridays. While most of the announcements have greater chance of being

Table A.2: Day of Month Distribution of Announcements

	M2	TRD	FAI	VAI	INP	PMI	CPI	RST	FOMC
Min	8	8	9	9	3	1	8	15	1
25.Perctl	11	8	11	11	27	1	9	18	14
Median	12	10	14	14	27	1	10	18	19
75.Perctl	14	10	16	16	27	30	11	18	27
Max	18	15	21	21	29	31	21	26	31
Mode	11	8	14	14	27	1	9	18	2
No. Events	120	120	110	102	98	121	120	106	80

Notes: Sample: January 2010 to December 2019. This table shows the day of month distribution of announcements by their percentile cut-off day of a month. Number i in a cell denotes the i-th day of a month. Min: the earliest day of a month on which an announcement event falls; Max: the latest day of month for an announcement event; Percentiles: percentiles of the day of month distribution; Median: 50% percentile cut-off. Mode: day of month on which largest number of announcement events falls. Data reported are rounded off in the case that the percentile cut-off days are decimal ratios.

released on Thursdays and Fridays, announcements of **PMI** are more evenly distributed across days within a week.

Table A.3: Day of Week Distribution of Announcements

	M2	TRD	FAI	VAI	INP	PMI	CPI	RST	FOMC
Mon	0.13	0.14	0.15	0.16	0.13	0.13	0.09	0.20	
Tue	0.18	0.11	0.16	0.17	0.14	0.14	0.17	0.14	
Wed	0.14	0.14	0.18	0.18	0.12	0.15	0.13	0.14	0.10
Thu	0.15	0.18	0.17	0.17	0.16	0.15	0.22	0.12	0.86
Fri	0.32	0.21	0.22	0.23	0.19	0.15	0.22	0.20	0.04
Sat	0.03	0.12	0.08	0.07	0.11	0.13	0.12	0.13	
Sun	0.05	0.11	0.04	0.04	0.13	0.15	0.06	0.07	

Notes: Sample: January 2010 to December 2019. This table shows the percentage of announcements (in decimals) made on each day of the week for a given announcement. Due to rounding off, column numbers might not add up precisely to one.

Table A.4 summarizes the distribution of announcement days by the point of time for data release in a day. In general, except for FOMC announcements that always fall on weekdays before trading hours of Chinese stock markets in Beijing Local Time, other listed announcements of China are made public either on weekdays or weekends at any time, that is, regardless of whether it falls within, before, or after the trading hours. For about one-third of all times in the sample, monetary aggregate data are published via **M2** announcements after trading hours on weekdays. Another one-third falls on weekends, that is, post-trading hours on Friday until the end of Sunday. Announcements about international trade data, real-sector statistics, and price indexes are routinely made available within trading hours near market opens and closes, although data may be occasionally released over the weekends. However, the PMI data are released promptly at 9:00 AM on weekdays or weekends.

Table A.4: Timing Distribution of Announcements

		M2	TRD	FAI	VAI	INP	PMI	CPI	RST	FOMC
Weekday before trading hours	No. Anns.	4					87			80
	Avg. Time	8:46					9:00			2:00
Weekday within trading hours	No. Anns.	30	91	96	90	74		99	85	
	Avg. Time	10:56	10:48	10:54	10:51	9:34		9:37	9:31	
Mon-Thur after trading hours	No. Anns.	46	1	1	1					
	Avg. Time	16:19	15:34	15:40	15:40					
On weekends	No. Anns.	40	28	13	11	24	34	21	21	
	Avg. Time	15:11	10:55	12:55	12:49	9:36	9:00	9:32	9:32	
Total		120	120	110	102	98	121	120	106	80

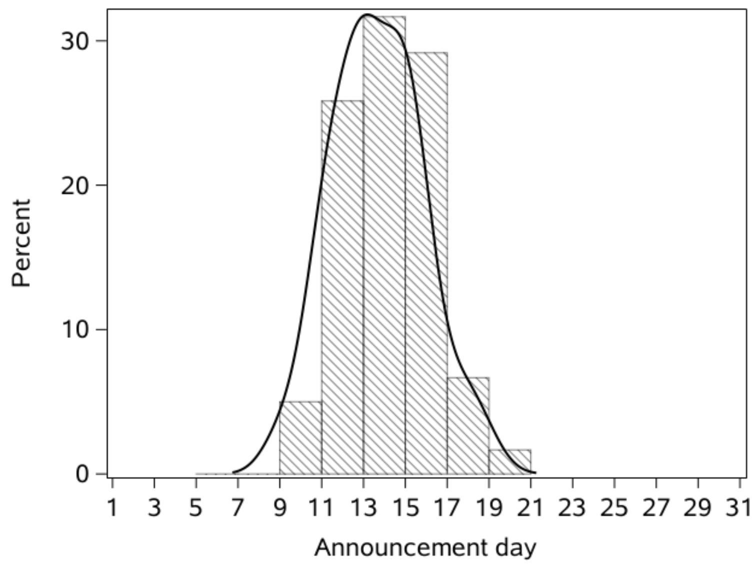
Notes: This table reports the number of announcement events by categorized groups of announcement timing and the averaged point of time for data releases in a day within each group. The four groups are: (1) announcements released before trading hours on weekdays; (2) announcements released within trading hours (including announcements with data released between the morning and afternoon sessions); (3) announcements released after trading hours from Monday to Thursday; and (4) announcements released between market closure on Friday until midnight of Sunday. The SZSE and SSE are normally open for trading from Monday to Friday, with call auction during 9:15–9:25, and continuous auction during 9:30–11:30 and 13:00–15:00. Intent orders for block trades are accepted during 9:30–11:30 and again 13:00–15:30, while execution orders and fixed-price orders for block trades are accepted during 15:00–15:30. Special block trade sessions are held on an ad-hoc basis during 15:00–17:00.

In addition, we make a few points here through comparing **M2** and **FOMC** announcements. The PBOC's announcements can be made public on any day of a week, whereas the FOMC statement releases predominantly fall on early Thursday mornings in Beijing time (Wednesday afternoons in U.S. Eastern Time). In addition, a greater proportion of **M2** announcements are publicly available during off-trading sessions, including post-trading hours and on weekends. However, the FOMC statements are issued routinely within trading hours around 2 PM U.S. Eastern time. Accounting for China–U.S. time differences, this FOMC news is initially accessible by the Chinese market around 2:00 to 3:00 AM on Thursdays locally in Beijing, depending on whether the U.S. daylight-saving time applies.

A.3 Histogram of the M2 Announcement Days

For our regression analysis in the main text, we applied the day realignment on the original dates of **M2** announcements in order to accommodate those cases when **M2** announcements were made during off trading hours. We specifically define an announcement day as the first trading day on which the market has initial access to the updated monetary data, as indicated by $\mathbb{I}_{t_{M2}} = 1$. Figure A.1 presents a histogram plot of the distribution of the **M2** announcement days. This figure shows a very similar timing heterogeneity to that in Figure 1 even if the market could have responded to the announced statistics with hours of delays when trading is not possible. It shows that about 85% of the monthly monetary statistics are accessible to the market investors over days between the 11th and 16th days of a month.

Figure A.1: Distribution of M2 Announcements Days

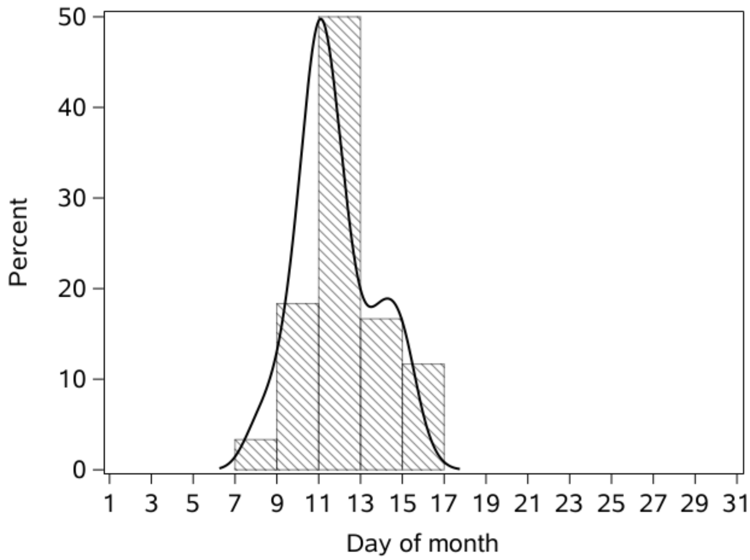


Notes: Sample: January 2010 to December 2019. An **M2** announcement day is defined as the first trading day on which China's financial markets have access to the PBOC's updated monetary statistics. This figure plots the histogram distribution of day of month across all **M2** announcements days in our sample. Each bin spans 2 consecutive calendar days. The vertical distance of the box denotes the percentage (%) of **M2** announcement days that fall into a 2-day bin. The solid line approximates the kernel density function.

A.4 Histogram of the M2 Announcement Events Before 2015

Figure A.2 presents a histogram plot of the day of month distribution of **M2** announcement events between January 2010 and December 2014. The vertical distance measures the percent of **M2** announcement events with days of data release falling into a 2-day bin. The solid line approximates a probability density function capturing the discrete distribution. The graph shows that about 87% of **M2** announcements fall before the 15th day of a month, which is supposed to be the announcement day every month according to the PBOC's annual time table for data release published early in a year before 2015. Hence, the PBOC did not stick to the pre-scheduled announcement day for releasing the monthly monetary statistics even before it no longer published any time table.

Figure A.2: Before 2015: Day of Month Distribution of M2 Announcement Events



Notes: Sample: January 2010 to December 2014. This figure plots the histogram distribution of day of month across **M2** announcements events before 2015. Each bin spans 2 consecutive calendar days. The vertical distance of the box denotes the percentage (%) of **M2** announcement events with days of data release falling into a 2-day bin. The solid line approximates the kernel density function.

A.5 Summary of Co-released Announcements

Table A.5 summarizes the number of a given type of macro announcement events that are made public on a day on which some other announcements are also published, that is, the count of co-released announcement events. Out of the 120 **M2** announcements, monetary data are co-released with **FAI**, **VAI** and **CPI** announcements about 20 times. Furthermore, **FAI** and **VAI** statistics are routinely released together. Across the macro announcements events, the **INP**, **PMI** and **RST** data are released with minimum days of overlaps with others in China.

Table A.5: Co-released Announcements

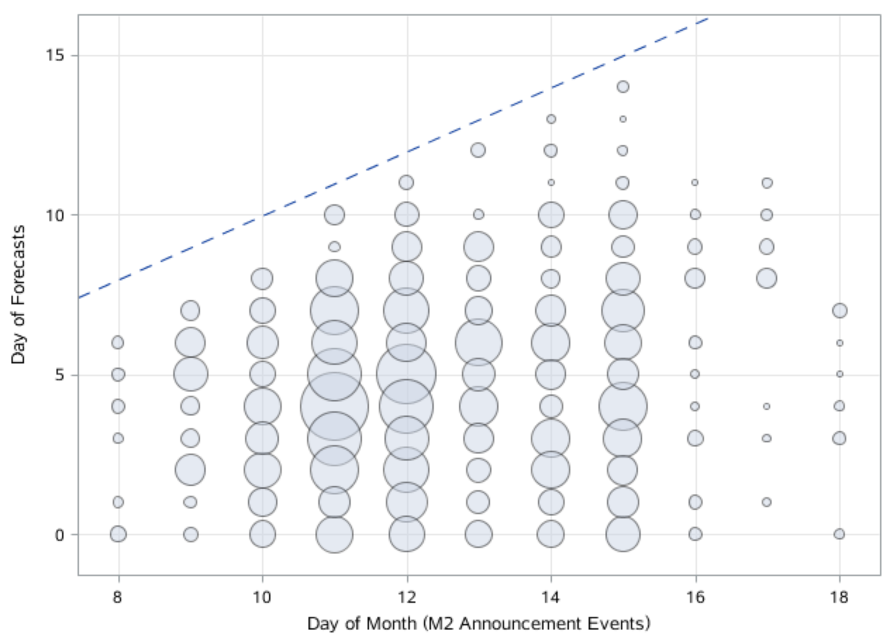
	M2	**TRD**	**FAI**	**VAI**	**INP**	**PMI**	**CPI**	**RST**	**FOMC**
M2	120	12	20	19			24		2
TRD		120					1		1
FAI			110	102			31	6	3
VAI				102			29	6	3
INP					98				2
PMI						121			4
CPI							120		2
RST								106	4
FOMC									80

Notes: Sample: January 2010 to December 2019. The number in the cell indicates the number of row announcement events that are overlapped with the column announcement events. An overlap is counted if both types of labeled announcements fall on the same day. Note that the sum of row or column numbers does not have to equal the total number of announcement events of a given announcement label.

A.6 Forecast Data: Date Distribution

We provide additional details on our panel forecast data. In Figure A.3, we plot on the Y-axis the day of month on which a forecast is made against the day of month on which the associated monthly **M2** announcement is made on the X-axis for all forecasts across all announcement cycles in our sample. The larger the blue circle, the greater number of forecasts is recorded. The dashed line is the 45 degree line that marks the upper bound of days for a meaningful forecast, which has to be made before announcements. We observe the following from the figure. First, very few forecasts are made in the 1-day or 2-day windows before announcements. Second, most of the point forecasts are made between the 1st and 8th of a month regardless of the actual announcement days ex-post. Third, there are fewer forecasts associated with those early announcement events on the 8th and 9th and with those extremely late announcement events on the 16th, 17th and 18th. This is simply because an **M2** announcement is most likely to fall between 11th to 15th.

Figure A.3: Day of Month Distribution of the Forecasts in the Bloomberg Survey



Notes: Sample: January 2010 to December 2019. This figure plots the day of month on which a forecast is made on the Y-axis against the day of month on which an **M2** announcement is made on the X-axis. The dashed line is the 45 degree line that marks the upper bound of days for a meaningful forecast, which has be made before announcements. The larger the blue circle, the greater number of forecasts is recorded in our sample. Forecasts made in the previous month are collected and bubbled on tick 0 on the Y-axis.

B Additional Empirical Results

B.1 Return Responses: Alternative Market Indexes and Earlier Sample Years

We discuss the robustness of our baseline results using returns constructed from alternative market indexes including the SZSE and SSE. We run regressions of the benchmark specifications of Equations (1) and (2). In Table B.1, Columns (1) and (7) first report the coefficient estimates taking Wind A-share index returns of our baseline sample to aid comparisons. Results in Columns (2)(3)(8) and (9) suggest that the coefficient estimates associated with the dummies indicating a 1-day and 3-day window prior to announcement are all positive and large in size. Though, the size of the pre-announcement premium is larger among the stocks traded on the Shenzhen Stock Exchange than that of those on the Shanghai Stock Exchange. However, when based on an earlier sample from January 2010 to June 2017, we find the coefficient estimates from Columns (4)(5)(6)(10)(11) and (12) are all positive across market index. In addition, the estimates based on earlier sample are somewhat larger than those from a sample that includes more recent years. Therefore, the price sensitivity of stocks traded both on Shenzhen and Shanghai Stock Exchange in the pre-announcement windows drops over time while more weakened premium is associated with stocks on the Shanghai Stock Exchange.

B.2 Return Responses: Co-released Announcements

We examine whether our documented pre-announcement premium in response to **M2** announcements may be driven by the fact that some other macro announcements, which are co-released on the same days when the PBOC publishes monetary statistics, may generate actual impacts on stock prices.

First, by delving into Table A.5 in which the co-released announcement events are tabulated, we observe that the announcements of **TRD**, **FAI**, **VAI**, **CPI** and **FOMC** had the announcement days overlapped with days on which PBOC published monetary statistics. Hence, we run the dummy variable regression of Equations (1) and disregard day windows of those **M2** announcement events that had date overlaps with others and treat them as non-announcement days. The estimation results are summarized in Table B.2.

Accordingly, our regression results table suggests that the daily excess returns prior to **M2** an-

Table B.1: Alternative Market Index and an Earlier Sample: Preannouncement Premium

VARIABLES	(1) Wind A	(2) SZSE	(3) SSE	(4) Wind A (Alt.)	(5) SZSE (Alt.)	(6) SSE (Alt.)
$\mathbb{I}_{t_{M2}-5}$	0.09	0.10	0.06	0.16	0.15	0.11
	(0.16)	(0.17)	(0.14)	(0.18)	(0.19)	(0.15)
$\mathbb{I}_{t_{M2}-4}$	-0.02	-0.07	-0.03	-0.07	-0.12	-0.06
	(0.15)	(0.14)	(0.13)	(0.20)	(0.17)	(0.17)
$\mathbb{I}_{t_{M2}-3}$	0.21	0.14	0.11	0.29+	0.17	0.18
	(0.16)	(0.17)	(0.14)	(0.19)	(0.19)	(0.16)
$\mathbb{I}_{t_{M2}-2}$	0.22+	0.18	0.12	0.25+	0.19	0.16
	(0.14)	(0.14)	(0.12)	(0.17)	(0.16)	(0.14)
$\mathbb{I}_{t_{M2}-1}$	0.31**	0.29**	0.15	0.39**	0.32*	0.23*
	(0.13)	(0.14)	(0.11)	(0.16)	(0.17)	(0.13)
$\mathbb{I}_{t_{M2}}$	0.16	0.11	0.12	0.22	0.16	0.18
	(0.14)	(0.15)	(0.12)	(0.17)	(0.18)	(0.14)
$\mathbb{I}_{t_{M2}+1}$	-0.08	-0.15	-0.07	-0.21	-0.29+	-0.19
	(0.14)	(0.15)	(0.12)	(0.17)	(0.18)	(0.14)
$\mathbb{I}_{t_{M2}+2}$	0.01	-0.11	-0.03	0.02	-0.12	-0.05
	(0.16)	(0.17)	(0.15)	(0.19)	(0.20)	(0.18)
$\mathbb{I}_{t_{M2}+3}$	-0.10	-0.15	-0.09	-0.02	-0.07	-0.06
	(0.15)	(0.16)	(0.12)	(0.18)	(0.19)	(0.15)
$\mathbb{I}_{t_{M2}+4}$	0.16	0.13	0.09	0.01	-0.04	-0.07
	(0.15)	(0.17)	(0.13)	(0.19)	(0.21)	(0.17)
$\mathbb{I}_{t_{M2}+5}$	0.11	0.07	0.04	0.03	-0.02	-0.05
	(0.16)	(0.16)	(0.14)	(0.20)	(0.19)	(0.16)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	1,819	1,819	1,819

VARIABLES	(7) Wind A	(8) SZSE	(9) SSE	(10) Wind A (Alt.)	(11) SZSE (Alt.)	(12) SSE (Alt.)
$\mathbb{I}_{t_{M2}-5}$	0.09	0.10	0.06	0.16	0.15	0.11
	(0.16)	(0.17)	(0.14)	(0.18)	(0.19)	(0.15)
$\mathbb{I}_{t_{M2}-4}$	-0.02	-0.07	-0.03	-0.07	-0.12	-0.06
	(0.15)	(0.14)	(0.13)	(0.20)	(0.17)	(0.17)
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$	0.25***	0.20**	0.13+	0.31***	0.23**	0.19**
	(0.09)	(0.10)	(0.08)	(0.11)	(0.11)	(0.09)
$\mathbb{I}_{t_{M2}}$	0.16	0.11	0.12	0.22	0.16	0.18
	(0.14)	(0.15)	(0.12)	(0.17)	(0.18)	(0.14)
$\mathbb{I}_{t_{M2}+1}$	-0.08	-0.15	-0.07	-0.21	-0.29+	-0.19
	(0.14)	(0.15)	(0.12)	(0.17)	(0.18)	(0.14)
$\mathbb{I}_{t_{M2}+2}$	0.01	-0.11	-0.03	0.02	-0.12	-0.05
	(0.16)	(0.17)	(0.15)	(0.19)	(0.20)	(0.18)
$\mathbb{I}_{t_{M2}+3}$	-0.10	-0.15	-0.09	-0.02	-0.07	-0.06
	(0.15)	(0.16)	(0.12)	(0.18)	(0.19)	(0.15)
$\mathbb{I}_{t_{M2}+4}$	0.16	0.13	0.09	0.01	-0.04	-0.07
	(0.15)	(0.17)	(0.13)	(0.19)	(0.21)	(0.16)
$\mathbb{I}_{t_{M2}+5}$	0.11	0.07	0.04	0.03	-0.02	-0.05
	(0.16)	(0.16)	(0.14)	(0.20)	(0.19)	(0.16)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	1,819	1,819	1,819

Notes: Baseline sample: January 2010 to December 2019. This table reports the dummy variable regression results of Equations (1) and (2). The dependent variable is the close-to-close excess return constructed from the Wind A-share Index, the SZSE Index or the SSE Index. We align the return data of the first trading day on which the equity market has access to the monetary aggregate data to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Announcement dummy $\mathbb{I}_{t_{M2}-1}$ equals one for the day that is 1 day before an **M2** announcement. Announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals one for the trading days in a 3-trading-day window before an **M2** announcement. "Year/Month/Weekday Dummies": controlling for the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses. Regression results in Columns (1)(2) and (3) are based on the baseline sample. Columns (4)(5) and (6) report the results, labeled as Alt., estimated based an alternative sample of returns covering January 2010 to June 2017.

nouncements relative to that of days outside the announcement windows are positive over a window of 3 days. These results are consistent with our baseline estimates in Table 1 regardless of which type of overlapped announcement events is disregarded. We conclude the equity premium accrued prior to **M2** announcements reflects stock returns' reactions specifically to PBOC's announcements releasing aggregate monetary statistics.

Table B.2: Robustness: Without Co-released Announcements Windows

VARIABLES	(1) No TRD	(2) No FAI	(3) No VAI	(4) No INP	(5) No PMI	(6) No CPI	(7) No RST	(8) No FOMC
$\mathbb{I}_{t_{M2}-5}$	0.14	0.21	0.18	0.09	0.09	0.19	0.11	0.07
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}-4}$	-0.07	-0.07	-0.03	-0.02	-0.02	-0.05	-0.01	-0.03
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}-3}$	0.17	0.18	0.17	0.21	0.21	0.28*	0.24+	0.27*
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}-2}$	0.24+	0.16	0.13	0.22+	0.22+	0.27*	0.24+	0.20
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}-1}$	0.30*	0.36**	0.34*	0.31**	0.31**	0.42***	0.31**	0.32**
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}}$	0.18	0.20	0.22	0.16	0.16	0.19	0.15	0.14
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+1}$	-0.05	0.09	0.06	-0.08	-0.08	-0.06	-0.06	-0.09
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+2}$	-0.02	-0.03	-0.05	0.01	0.01	0.10	-0.01	-0.02
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+3}$	-0.10	-0.13	-0.09	-0.10	-0.10	-0.05	-0.09	-0.12
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+4}$	0.15	0.21	0.24	0.16	0.16	0.22	0.18	0.13
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+5}$	0.11	0.01	0.02	0.11	0.11	0.17	0.15	0.11
	(0.16)	(0.18)	(0.17)	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)
Constant	-0.04	-0.05	-0.05	-0.04	-0.04	-0.09	-0.05	-0.04
	(0.16)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431
R^2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Notes: Sample: January 2010 to December 2019. This table reports the dummy variable regression results of Equations (1) using varied samples. Results of each column reflect the regression results based on a sample that treats those 11-day **M2** announcement windows as non-announcement windows when an announcement had the monetary data and a particular type of other macro data published on the same day. The dependent variable is the close-to-close excess return constructed from the Wind A-Share Index. We align the return data of the first trading day on which the equity market has access to the monetary aggregate data to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Announcement dummy $\mathbb{I}_{t_{M2}-i}$ equals one for the day that is i day before (i is negative if after) an **M2** announcement. "Year/Month/Weekday Dummies": controlling for the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.3 Return Responses: Other Macro Announcements

We examine if the positive reaction of stock returns prior to the releases of monetary aggregates data carries over to the windows of other macro announcements. We consider the list of announcements as summarized in Table A.1. Then we run regressions based on Equation (1) and Table B.3 reports the estimation results. Importantly, focusing on a window length of 11 days centering the announcement events, we find that China's stock market also exhibits reactions to data releases over a few days before announcements of **VAI** and **FAI** by realizing positive pre-announcement premium. We regard this as complementary evidence in support of the channel of information-driven uncertainty reduction. As the aggregate market risk can be shifted by a range of macro statistics other than monetary aggregates data, pre-announcement information acquisition to learning about other statistics similarly helps mitigate the market perceived risk and push up equity prices ex-ante. Interestingly, we note that the equity market yields trivial but negative excess returns in response to incoming announcements of **INP**, **PMI** and **RST**.

Table B.3: Returns in Windows of Other Macro Announcements

VARIABLES	(1) M2	(2) TRD	(3) VAI	(4) FAI	(5) INP	(6) PMI	(7) CPI	(8) RST
$\mathbb{I}_{t_{Anns}-5}$	0.09	0.17	0.06	0.05	-0.26+	-0.29+	0.07	-0.12
	(0.16)	(0.14)	(0.17)	(0.16)	(0.17)	(0.18)	(0.16)	(0.16)
$\mathbb{I}_{t_{Anns}-4}$	-0.02	0.21	0.30*	0.25*	-0.07	-0.06	0.33**	0.11
	(0.15)	(0.17)	(0.16)	(0.15)	(0.19)	(0.15)	(0.15)	(0.15)
$\mathbb{I}_{t_{Anns}-3}$	0.21	0.18	0.31*	0.25+	-0.04	-0.15	0.00	-0.23+
	(0.16)	(0.14)	(0.17)	(0.17)	(0.16)	(0.17)	(0.14)	(0.15)
$\mathbb{I}_{t_{Anns}-2}$	0.22+	0.08	0.27*	0.24+	-0.19	-0.24+	-0.01	-0.01
	(0.14)	(0.16)	(0.16)	(0.15)	(0.14)	(0.16)	(0.15)	(0.16)
$\mathbb{I}_{t_{Anns}-1}$	0.31**	0.19	0.05	0.03	-0.26+	0.08	0.01	-0.06
	(0.13)	(0.15)	(0.15)	(0.14)	(0.18)	(0.14)	(0.16)	(0.17)
$\mathbb{I}_{t_{Anns}}$	0.16	0.25*	0.08	0.09	-0.17	0.18	-0.01	-0.16
	(0.14)	(0.15)	(0.17)	(0.16)	(0.20)	(0.17)	(0.17)	(0.17)
$\mathbb{I}_{t_{Anns}+1}$	-0.08	0.02	-0.01	-0.03	-0.22	0.17	0.15	0.07
	(0.14)	(0.14)	(0.15)	(0.15)	(0.15)	(0.16)	(0.14)	(0.17)
$\mathbb{I}_{t_{Anns}+2}$	0.01	0.10	-0.04	-0.01	-0.09	0.19	-0.06	0.07
	(0.16)	(0.16)	(0.18)	(0.17)	(0.18)	(0.14)	(0.15)	(0.14)
$\mathbb{I}_{t_{Anns}+3}$	-0.10	0.11	0.11	0.12	0.26*	0.01	0.09	-0.10
	(0.15)	(0.11)	(0.14)	(0.14)	(0.15)	(0.14)	(0.14)	(0.15)
$\mathbb{I}_{t_{Anns}+4}$	0.16	-0.02	0.13	0.14	-0.02	-0.00	0.10	-0.17
	(0.15)	(0.15)	(0.17)	(0.16)	(0.18)	(0.13)	(0.16)	(0.17)
$\mathbb{I}_{t_{Anns}+5}$	0.11	0.05	0.06	0.08	0.07	0.02	-0.09	-0.42**
	(0.16)	(0.16)	(0.16)	(0.15)	(0.15)	(0.17)	(0.15)	(0.20)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431
R^2	0.02	0.01	0.02	0.01	0.02	0.02	0.01	0.02

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equation (1) for announcement windows associated with **M2** announcement and a wider range of announcements that release other macro data. The dependent variable is the close-to-close excess return constructed from the Wind A-Share Index. Announcement dummy $\mathbb{I}_{t_{Anns}-i}$ equals one if the i-th trading day is before (or after if i is negative) a particular type of announcement. We align the return data of the first trading day that the equity market has access to the news to the dummy variable $\mathbb{I}_{t_{Anns}} = 1$ when $i = 0$. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.4 Return Responses: FOMC Statements

We evaluate if China's stock market reacts to the U.S. FOMC statement releases. Table B.4 summarizes our estimation results. Columns (1) and (4) list the estimated coefficients of pre-announcement dummies of Equations (1) and (2) based on our baseline sample covering a period from January, 2010 to December, 2019. Most of the coefficient estimates are insignificant, except for a trivially negative number for dummy $\mathbb{I}_{t_{FOMC}-2}$.

We also note the sample difference of our years of coverage 2010-2019 as compared with the pre-2011 period in Lucca and Moench (2015). Therefore, our sample captures a period when the U.S. federal funds rate stayed mostly near a zero lower bound since the end of 2008. In addition, the U.S. FRB did the forward guidance which anchored the market expectations of domestic and international investors by minimizing changes of the U.S. monetary policy. It is thus possible that the Chinese market hardly responded because there was little risk related to the U.S. monetary policy. To assess this possibility, we further examine two subsample periods and check if Chinese markets may react to the FOMC news since late 2015 when the zero lower bound (ZLB) was lifted. Importantly, by comparing and contrasting the estimation results in earlier and later samples, we are to explore if Chinese markets could have developed additional sophistication over time and may start being synchronized with other markets after rounds of market reforms and developments. First, we present the estimation results as in columns (2) and (5) of Table B.4 using the sample years of 2010 to 2014. We find that China's equity market reactions were silent in windows of the FOMC announcements when the zero lower bound was still binding. Second, we focus on later sample starting from 2015 and tabulate the regression results in columns (3) and (6). We find that the Chinese market started exhibiting negative pre-announcement premium in response to FOMC meetings in later years given a significant coefficient estimate for a three-day pre-announcement dummy. This evidence may suggest that in midst of rising interest rates after the zero lower bound was lifted in the U.S., drops of China's equity market prior to the FOMC announcements may be reflective of China's anticipated capital outflow and the RMB devaluation.

In sum, we conclude that the daily excess returns of China's equity market in FOMC announcement windows is not statistically different from that outside the FOMC announcement windows before 2014, which is roughly zero. It, however, exhibits trivially negative pre-announcement premium in case of forthcoming FOMC meetings since 2015 once the ZLB was lifted. Such evidence differs from the main findings in Lucca and Moench (2015) and Brusa, Savor, and Wilson (2019) with respect to the fact that the stock markets of a number of advanced economies do realize positive returns before or on the FOMC announcement days. Our findings also complement the view in Brusa, Savor, and Wilson (2019) that China's equity market is not at all responsive to the FOMC news.

Table B.4: China's Stock Market Responses to FOMC Announcements

VARIABLES	(1) 2010-2019	(2) 2010-2014	(3) 2015-2019	(4) 2010-2019	(5) 2010-2014	(6) 2015-2019
$\mathbb{I}_{t_{FOMC}-5}$	0.08	-0.17	0.31	0.08	-0.17	0.30
	(0.16)	(0.20)	(0.25)	(0.16)	(0.20)	(0.25)
$\mathbb{I}_{t_{FOMC}-4}$	-0.18	-0.09	-0.24	-0.18	-0.09	-0.24
	(0.17)	(0.22)	(0.25)	(0.17)	(0.22)	(0.25)
$\mathbb{I}_{t_{FOMC}-3}$	-0.28	-0.13	-0.45			
	(0.23)	(0.24)	(0.39)			
$\mathbb{I}_{t_{FOMC}-2}$	-0.35*	-0.22	-0.48			
	(0.20)	(0.23)	(0.34)			
$\mathbb{I}_{t_{FOMC}-1}$	-0.00	0.10	-0.06			
	(0.16)	(0.20)	(0.25)			
$\mathbb{I}_{t_{FOMC}-3,t_{FOMC}-1}$				-0.21*	-0.09	-0.33*
				(0.12)	(0.14)	(0.19)
$\mathbb{I}_{t_{FOMC}}$	-0.19	-0.04	-0.38	-0.19	-0.04	-0.38
	(0.20)	(0.24)	(0.33)	(0.20)	(0.24)	(0.33)
$\mathbb{I}_{t_{FOMC}+1}$	-0.04	0.05	-0.10	-0.04	0.05	-0.10
	(0.19)	(0.22)	(0.31)	(0.19)	(0.21)	(0.31)
$\mathbb{I}_{t_{FOMC}+2}$	-0.23	0.00	-0.51+	-0.22	0.01	-0.49+
	(0.20)	(0.25)	(0.32)	(0.20)	(0.25)	(0.32)
$\mathbb{I}_{t_{FOMC}+3}$	0.06	0.05	0.05	0.07	0.06	0.06
	(0.17)	(0.20)	(0.27)	(0.17)	(0.20)	(0.27)
$\mathbb{I}_{t_{FOMC}+4}$	-0.10	-0.11	-0.05	-0.12	-0.12	-0.09
	(0.16)	(0.19)	(0.27)	(0.16)	(0.19)	(0.26)
$\mathbb{I}_{t_{FOMC}+5}$	-0.15	0.05	-0.39	-0.16	0.05	-0.39
	(0.22)	(0.21)	(0.39)	(0.22)	(0.21)	(0.39)
Constant	-0.16	0.03	-0.20	-0.13	0.06	-0.16
	(0.17)	(0.19)	(0.28)	(0.17)	(0.19)	(0.28)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	1,212	1,219	2,431	1,212	1,219
R^2	0.02	0.03	0.02	0.01	0.03	0.02

Notes: This table reports dummy variable regression results for specifications of Equations (1) and (2) when considering FOMC announcements. The dependent variable is the close-to-close excess return constructed from the Wind A-Share Index. We align the return data of the first trading day on which the Chinese equity market has access to the FOMC news to the dummy variable $\mathbb{I}_{t_{FOMC}} = 1$ when $i = 0$. Announcement dummy $\mathbb{I}_{t_{FOMC}-i}$ equals one if the i-th trading day is before (or after if i is negative) an **FOMC** announcement. Announcement dummy $\mathbb{I}_{t_{FOMC}-3,t_{FOMC}-1}$ equals one for the trading days in a 3-trading-day window before an **FOMC** announcement. "Year/Month/Weekday Dummies" control the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.5 Return Responses: Monetary Policy Reports

Besides the monthly announcements of monetary aggregates data, the PBOC also issues the Monetary Policy Report (MPR) every quarter, namely, the **MPR** announcements. The MPR is a comprehensive collection of the PBOC's view on the functioning of credit market, the macroeconomic and financial stability, and the necessity to fine tune monetary policy in China. Therefore, we are also interested to know whether the stock market reacts to the issuance of this policy report.

We estimate the regression specifications of Equations (1) and (2) in windows of **MPR** announcements. Table B.5 summarizes our findings. According to columns (1) and (2), the relative excess return per day for a 1-day and 3-day pre-announcement window before an **M2** announcement is 31 bps and 25 bps, respectively. We list these here as benchmark for comparison purposes. Columns (3) and (4) find that the equity market responds to the issuance of Monetary Policy Report ex-ante (two days before the issuance of monetary policy report) as well as ex-post (on and after the announcement days) positively and significantly. Then we consider all events of **M2** and **MPR** announcements in estimations, and columns (5) and (6) summarize the results. Our estimation results suggest that there is equity premium before and after the issuance of the monetary policy report.

Important to note that first, China's Monetary Policy Reports, although inclusive of statistics about the conduct of Chinese monetary policy, delivers much more information about the PBOC's assessments but less so about releasing the up-to-date monetary and credit data. Second, compared to an encyclopedia style of quarterly issues of the policy reports, monetary aggregates data are published monthly, which could be more useful for investors to draw real-time insights and implement trading strategies.

B.6 Return Responses: Other Asset Markets

We explore the responses of other asset markets in China to the PBOC's announcements of monetary aggregates data. We consider a series of measures of market performance as the dependent variable in regressions including the daily returns of 10-year government bond yields, the daily excess returns on Chinese A-share futures of 300 big stocks, the gold futures, and the exchange rates of Chinese Yuan against major currencies including the U.S. Dollar, Japanese Yen, and Euro. The estimation results based on the specification of Equation (2) are collected in Table B.6. Accordingly, relative to days outside **M2** announcement windows, we find no excess returns for most of these alternative asset markets. It should be noted that our estimated dummy coefficient associated with the future index of the 300 big stocks is sizable and is significant only at the 15% significance level. This is consistent with our findings that significant pre-announcement returns are accrued in Shenzhen stock exchange where more small and medium cap stocks are traded than Shanghai stock market exchange which hosts primarily large stocks.

Table B.5: Returns in Windows Prior to MPR Announcements

VARIABLES	(1) **M2**	(2) **M2**	(3) **MPR**	(4) **MPR**	(5) **M2** and **MPR**	(6) **M2** and **MPR**
$\mathbb{I}_{t_{Anns}-5}$	0.09	0.09	-0.60***	-0.60***	-0.06	-0.06
	(0.16)	(0.16)	(0.22)	(0.22)	(0.14)	(0.14)
$\mathbb{I}_{t_{Anns}-4}$	-0.02	-0.02	0.35	0.35	0.05	0.05
	(0.15)	(0.15)	(0.27)	(0.27)	(0.14)	(0.14)
$\mathbb{I}_{t_{Anns}-3}$	0.21		-0.01		0.17	
	(0.16)		(0.23)		(0.14)	
$\mathbb{I}_{t_{Anns}-2}$	0.22+		0.65***		0.33***	
	(0.14)		(0.19)		(0.12)	
$\mathbb{I}_{t_{Anns}-1}$	0.31**		0.01		0.22*	
	(0.13)		(0.23)		(0.12)	
$\mathbb{I}_{t_{Anns}-3,t_{Anns}-1}$		0.25***		0.22+		0.24***
		(0.09)		(0.14)		(0.08)
$\mathbb{I}_{t_{Anns}}$	0.16	0.16	0.66**	0.66**	0.28**	0.27**
	(0.14)	(0.14)	(0.27)	(0.27)	(0.12)	(0.12)
$\mathbb{I}_{t_{Anns}+1}$	-0.08	-0.08	0.71***	0.71***	0.08	0.08
	(0.14)	(0.14)	(0.22)	(0.22)	(0.12)	(0.12)
$\mathbb{I}_{t_{Anns}+2}$	0.01	0.01	-0.13	-0.13	-0.07	-0.07
	(0.16)	(0.16)	(0.19)	(0.19)	(0.13)	(0.13)
$\mathbb{I}_{t_{Anns}+3}$	-0.10	-0.10	0.17	0.16	-0.04	-0.04
	(0.15)	(0.15)	(0.20)	(0.20)	(0.13)	(0.13)
$\mathbb{I}_{t_{Anns}+4}$	0.16	0.16	0.05	0.06	0.16	0.16
	(0.15)	(0.15)	(0.22)	(0.22)	(0.13)	(0.13)
$\mathbb{I}_{t_{Anns}+5}$	0.11	0.11	0.60***	0.60***	0.23*	0.23*
	(0.16)	(0.16)	(0.22)	(0.22)	(0.14)	(0.14)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431
R^2	0.02	0.02	0.02	0.02	0.02	0.02

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results for specifications of Equations (1) and (2). The dependent variable is the close-to-close excess return constructed from the Wind A-Share Index. We align the return data of the first trading day on which the equity market has access to the **Anns** announcement or the **MPR** reports to the dummy variable $\mathbb{I}_{t_{Anns}} = 1$ when $i = 0$. Announcement dummy $\mathbb{I}_{t_{Anns}-1}$ equals one for the day that is 1 day before an **Anns** or **MPR** announcement. Announcement dummy $\mathbb{I}_{t_{Anns}-3,t_{Anns}-1}$ equals one for the trading days in a 3-trading-day window before an **Anns** or **MPR** announcement. "Year/Month/Weekday Dummies" controls for the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

Table B.6: Other Asset Markets' Reactions to M2 Announcements

VARIABLES	(1) $R_{10Y,bond}$	(2) $Furture_{CSI300}$	(3) $Furture_{Gold}$	(4) EX_{USD}	(5) EX_{JPY}	(6) EX_{EUR}
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$	-0.00	0.15+	0.01	0.00	-0.01	-0.02
	(0.01)	(0.09)	(0.05)	(0.01)	(0.04)	(0.03)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Other Anns Window Ctrls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,362	2,431	2,431	2,431	2,431
R^2	0.73	0.01	0.02	0.03	0.02	0.02

Notes: Sample: January 2010 to December 2019 (However, the series of $Furture_{CSI300}$ is dated from April 2010 since its launch). This table reports dummy variable regression results of Equation (2) using different dependent variables as identified by the column headers. Announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals one for the trading days in a 3-trading-day window before an **M2** announcement. "Other Anns Window Ctrls" controls for the remaining day dummies of the announcement window of length of $2T + 1$ as $T = 5$. "Year/Month/Weekday Dummies" controls for the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.7 Return Responses: Neighboring Markets

We further check if any important neighboring market of China exhibits significant reactions to **M2** announcements. In particular, we study three neighboring markets focusing on their key stock market index including Hong Kong (Hang Seng Index), Japan (Nikkei 225 Index), and South Korea (Korea Composite Stock Price Index, KOSPI Index). By computing the excess returns after subtracting their corresponding government bond yields from the raw market returns, we estimate the regression specification of Equation (1) focusing on a window with 5 trading days before and after the PBOC's monetary announcements. In particular, we align the return data of the first trading day in a neighboring stock market has access to the Chinese news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$.

Looking at the estimation results summarized in Table B.7, we find no positive excess returns accrued for holding the stock portfolio of the three neighboring markets 3 days prior to PBOC's monetary announcements over years of 2010 to 2019. This implies that the market co-movement between the Chinese mainland markets and its neighbors before China's **M2** announcements does not exist on average. It is safe to conclude that our documented pre-announcement equity premium in China so far is largely domestic. However, it is interesting to note significantly positive excess returns are detected in stock markets of Japan and Korea, and more recently in the Hong Kong market since 2015 on and after the PBOC's releases of Chinese monetary data.

B.8 Monetary Statistics Announcement as Source of Risk

In the main text, we examine the pre-announcement premium as our main focus. However, a natural question is whether the monetary statistics for example, the M2 year-over-year growth rate, would be truly important to the market investors upon announcement is made. That is, it is interesting to understand if **M2** announcements are source of risk and whether this risk is priced. In specific, we are to examine whether the news surprise would generate any market impact ex-post.

To measure the unexpected surprises, we follow Chen, Ren, and Zha (2018) and apply a two-step procedure. First, we estimate a time-varying reaction function of PBOC's money supply rule, which operates the M2 YOY growth each month given inflation and output gaps in China. Alternatively, we estimate this M2 growth reaction function by fitting a regime-switching dynamic structure and

Table B.7: **Neighboring Markets' Reactions to Chinese M2 Announcements**

VARIABLES	(1) HK (2010-2019)	(2) HK (2015-2019)	(3) JP (2010-2019)	(4) JP (2015-2019)	(5) KR (2010-2019)	(6) KR (2015-2019)
$\mathbb{I}_{t_{M2}-5}$	-0.09	0.12	-0.26*	0.18	-0.22**	0.01
	(0.12)	(0.17)	(0.13)	(0.18)	(0.10)	(0.15)
$\mathbb{I}_{t_{M2}-4}$	-0.20+	-0.11	0.16	0.15	-0.17**	-0.05
	(0.14)	(0.19)	(0.15)	(0.19)	(0.09)	(0.11)
$\mathbb{I}_{t_{M2}-3}$	0.04	0.07	-0.04	-0.02	0.01	0.11
	(0.13)	(0.19)	(0.16)	(0.22)	(0.10)	(0.12)
$\mathbb{I}_{t_{M2}-2}$	-0.05	0.10	-0.00	0.25	-0.02	0.19*
	(0.10)	(0.15)	(0.13)	(0.18)	(0.09)	(0.11)
$\mathbb{I}_{t_{M2}-1}$	0.03	0.04	0.07	0.04	0.01	0.12
	(0.10)	(0.15)	(0.12)	(0.18)	(0.09)	(0.11)
$\mathbb{I}_{t_{M2}}$	0.03	0.16	0.13	0.33**	0.10	0.06
	(0.12)	(0.16)	(0.12)	(0.14)	(0.10)	(0.11)
$\mathbb{I}_{t_{M2}+1}$	-0.00	0.06	0.00	0.02	0.05	0.14+
	(0.10)	(0.15)	(0.14)	(0.14)	(0.08)	(0.09)
$\mathbb{I}_{t_{M2}+2}$	0.03	0.25*	0.40***	0.42**	0.18*	0.24**
	(0.11)	(0.14)	(0.12)	(0.17)	(0.10)	(0.11)
$\mathbb{I}_{t_{M2}+3}$	-0.15	-0.04	-0.05	0.11	-0.03	0.12
	(0.10)	(0.15)	(0.11)	(0.15)	(0.09)	(0.10)
$\mathbb{I}_{t_{M2}+4}$	0.11	0.41***	0.18+	0.18	0.06	0.22**
	(0.11)	(0.14)	(0.12)	(0.14)	(0.09)	(0.09)
$\mathbb{I}_{t_{M2}+5}$	0.01	0.12	0.17+	0.31*	0.02	0.08
	(0.09)	(0.12)	(0.12)	(0.16)	(0.08)	(0.09)
Constant	0.14	0.05	-0.05	-0.08	0.13	0.03
	(0.12)	(0.16)	(0.15)	(0.20)	(0.10)	(0.11)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,366	1,186	2,311	1,158	2,351	1,177
R^2	0.01	0.02	0.02	0.02	0.02	0.03

Notes: This table reports the dummy variable regression results of Equation (1). The dependent variable is the monthly excess equity return constructed from the market index of three neighboring markets of China, i.e. HK (Hong Kong: Hang Seng Index), JP (Japan: Nikkei 225 Index), and KR (South Korea: Korea Composite Stock Price Index, KOSPI Index). The risk-free rates for Hong Kong and Japanese markets are proxied by the corresponding 3-month treasury bill yield to maturity, and one-year government bond yields are used for South Korea market. Years of coverage are displayed in the parenthesis in the header of each column. Announcement dummy $\mathbb{I}_{t_{M2}-i}$ equals 1 if it is the i-th trading day before (after if i is negative) a Chinese **M2** announcement made by Chinese central bank PBOC. We align the return data of the first trading day that a neighboring stock market has access to the Chinese news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

then by simply estimating a linear Taylor-type rule using GMM simply for ensuring the robustness. Second, given an estimated M2 growth rule, we take the residuals as the monetary growth surprises. Residuals obtained from three different money operation rules are labeled as $MP_{sup_{CRZ}}$, $MP_{sup_{MS}}$ and $MP_{sup_{GMM}}$, respectively.

Then we run regressions to examine the market return responses to market surprises about the M2 growth rate as in PBOC's announcements. We have the regression results collected in Table B.8. Coefficient estimates in Columns (1)(2) and (3) find that our documented equity premium prior to **M2** announcements is not affected by the unexpected data surprises regardless of measures. This finding is consistent with results in Table 3. Then we check the coefficient estimates for the interaction term of surprises and the announcement day dummy variable $\mathbb{I}_{M2}$. Results in columns (4)(5) and (6) suggest that the unexpected monetary expansion does generate significant and positive excess returns on announcement days. Therefore, we show that the unexpected shocks to money supply are part of the aggregate market risk.

Table B.8: Announced Monetary Statistics as Source of Risk

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$	0.26***	0.26***	0.26***			
	(0.09)	(0.09)	(0.09)			
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot MP_{sup_{CRZ}}$	0.09					
	(0.10)					
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot MP_{sup_{MS}}$		0.09				
		(0.10)				
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot MP_{sup_{GMM}}$			0.09			
			(0.10)			
$\mathbb{I}_{t_{M2}}$				0.19	0.19	0.18
				(0.14)	(0.14)	(0.14)
$\mathbb{I}_{t_{M2}} \cdot MP_{sup_{CRZ}}$				0.25*		
				(0.14)		
$\mathbb{I}_{t_{M2}} \cdot MP_{sup_{MS}}$					0.25*	
					(0.14)	
$\mathbb{I}_{t_{M2}} \cdot MP_{sup_{GMM}}$						0.24*
						(0.14)
Constant	-0.21	-0.21	-0.22	-0.21	-0.21	-0.22
	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Other Anns Window Ctrls	Yes	Yes	Yes	Yes	Yes	Yes
Level Term Ctrls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431
R^2	0.02	0.02	0.02	0.02	0.02	0.02

Notes: Sample: January 2010 to December 2019. The dependent variable is the excess return constructed from the Wind A-Share Index. Announcement day dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals one for the trading days in a three-day window before an **M2** announcement. We align the return data of the first trading day that the equity market has access to the news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Year, month, and weekday dummies along with the remaining day dummies of the announcement window of length of $2T + 1$ as $T = 5$ are included. "Level Term Ctrls": the term of measures of monetary policy surprises is included into a specification for estimation. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.9 Dummy Regressions: Timing of Announcement and the Pre-announcement Premium

Instead of dividing our full sample of return data into two subsamples by months that had announcements made relatively early and those having late announcement arrivals, here we run regressions using the full sample by defining a dummy variable indicate if a month is associated with an announcement arrived earlier than a cutoff day. We estimate the following specifications to examine if excess returns are indeed lower in those months when the PBOC's announcements arrived relatively early.

$$Exret_t = \gamma + \psi \mathbb{I}_{early} + \phi \mathbb{I}_{t_{M2}-1} \cdot \mathbb{I}_{early} + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{B.1}$$

$$Exret_t = \gamma + \psi \mathbb{I}_{early} + \phi \mathbb{I}_{t_{M2}-3, t_{M2}-1} \cdot \mathbb{I}_{early} + \theta \mathbb{I}_{t_{M2}-3, t_{M2}-1} + \sum_{i=-T}^{0} \beta_i \mathbb{I}_{t_{M2}-i} + \sum_{i=4}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{B.2}$$

where $\mathbb{I}_{early} = 1$ if a trading day of a month that had the PBOC announcement arrive on a day earlier than a cutoff day of month. Therefore, $\mathbb{I}_{early} = 0$ if the trading day is associated with a month that had the PBOC announcement arrive on a day on and later than a cutoff day. In our estimations, we check the robustness of our results by varying the cutoff day between 11th and 14th and redefining the dummy variable for each estimation.

Table B.9 summarizes our estimation results. Accordingly, our coefficient estimates for the interaction terms of $\mathbb{I}_{t_{M2}-1} \cdot \mathbb{I}_{early}$ and $\mathbb{I}_{t_{M2}-3, t_{M2}-1} \cdot \mathbb{I}_{early}$ are consistently negative. In case these coefficients are statistically different from zero, they also have similar magnitudes compared to those for the terms $\mathbb{I}_{t_{M2}-1}$ and $\mathbb{I}_{t_{M2}-3, t_{M2}-1}$. These findings suggest generally, the pre-announcement premium exists only when an announcement arrives late in a month.

B.10 Information Acquisition: Early vs. Late Announcements

We report in Table B.10 the results based on estimations using a composite index covering more term searches. We consider the search terms of "M2 growth", "money supply", "total social financing", "monetary policy", "financial institutions", "liquidity of assets" and "economic fundamentals". It can be shown that information acquisition is larger when it comes to late arrivals of announcements. Despite missing statistical the significance for the Wald-test statistic related to the cutoff day of 11th, we confirm that the measured degree of information acquisition among investors for learning about the monetary data is further heightened before announcements when an announcement arrives late in a month.

Table B.9: Dummy Regressions: Pre-announcement Premium and Timing of Announcements

VARIABLES	(1) 11^{th}	(2) 12^{th}	(3) 13^{th}	(4) 14^{th}	(5) 11^{th}	(6) 12^{th}	(7) 13^{th}	(8) 14^{th}
$\mathbb{I}_{t_{M2}-5}$	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
$\mathbb{I}_{t_{M2}-4}$	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}-3}$	0.21	0.21	0.21	0.21				
	(0.16)	(0.16)	(0.16)	(0.16)				
$\mathbb{I}_{t_{M2}-2}$	0.22+	0.22+	0.22+	0.22+				
	(0.14)	(0.14)	(0.14)	(0.14)				
$\mathbb{I}_{t_{M2}-1}$	0.40***	0.54***	0.58***	0.65**				
	(0.14)	(0.15)	(0.20)	(0.26)				
$\mathbb{I}_{t_{M2}-1} \cdot \mathbb{I}_{Early}$	-0.65+	-0.57**	-0.45*	-0.49*				
	(0.40)	(0.27)	(0.25)	(0.29)				
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$					0.32***	0.39***	0.42***	0.33*
					(0.10)	(0.12)	(0.16)	(0.19)
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \mathbb{I}_{Early}$					-0.46**	-0.35**	-0.29+	-0.11
					(0.23)	(0.17)	(0.18)	(0.21)
$\mathbb{I}_{t_{M2}}$	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
$\mathbb{I}_{t_{M2}+1}$	-0.08	-0.08	-0.08	-0.08	-0.08	-0.07	-0.07	-0.08
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
$\mathbb{I}_{t_{M2}+2}$	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
$\mathbb{I}_{t_{M2}+3}$	-0.10	-0.10	-0.10	-0.10	-0.10	-0.09	-0.09	-0.10
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+4}$	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.16
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
$\mathbb{I}_{t_{M2}+5}$	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Constant	-0.19	-0.18	-0.18	-0.19	-0.19	-0.17	-0.18	-0.19
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2431	2431	2431	2431	2431	2431	2431	2431
R^2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equations (B.1) and (B.2). The dependent variable is the excess return constructed from the Wind A-Share Index. Announcement day dummy $\mathbb{I}_{t_{M2}-i}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. We align the return data of the first trading day that the equity market has access to the news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals 1 if a trading day falls in the 3-day window before the announcement. $\mathbb{I}_{early} = 1$ if the trading day is associated with a month that had the **M2** announcement arrived earlier than a cutoff day of month. Columns differ in the cutoff day, e.g.11^{th}, 12^{th}, 13^{th} and 14^{th} by which the dummy variable $\mathbb{I}_{early} = 1$ is redefined accordingly. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

B.11 Dummy Regressions: Timing of Announcement and Information Acquisition

We run regressions using the full sample of our measured index of information acquisition in a regression setting with an interaction term. We estimate the following specifications to examine if information acquisition is indeed lower in those months when the PBOC's announcements arrived

Table B.10: Information Acquisition: Early vs. Late M2 Announcements

	Panel A				Panel B			
VARIABLES	$< 11^{th}$	$< 12^{th}$	$< 13^{th}$	$< 14^{th}$	$\geq 11^{th}$	$\geq 12^{th}$	$\geq 13^{th}$	$\geq 14^{th}$
$\mathbb{I}_{t_{M2}-5}$	0.07	0.07***	0.07***	0.07***	0.08***	0.08***	0.08***	0.08***
	(0.05)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}-4}$	0.14***	0.09***	0.07***	0.07***	0.07***	0.08***	0.10***	0.11***
	(0.05)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}-3}$	0.15***	0.09***	0.08***	0.08***	0.09***	0.10***	0.13***	0.14***
	(0.05)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)
$\mathbb{I}_{t_{M2}-2}$	0.14***	0.08***	0.07***	0.08***	0.09***	0.11***	0.13***	0.13***
	(0.05)	(0.03)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}-1}$	0.15***	0.09***	0.12***	0.13***	0.15***	0.19***	0.20***	0.20***
	(0.05)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
$\mathbb{I}_{t_{M2}}$	0.23***	0.17***	0.16***	0.18***	0.19***	0.21***	0.25***	0.24***
	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+1}$	0.17***	0.13***	0.11***	0.12***	0.13***	0.15***	0.18***	0.19***
	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+2}$	0.15***	0.12***	0.11***	0.12***	0.12***	0.13***	0.17***	0.16***
	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+3}$	0.16***	0.12***	0.11***	0.11***	0.12***	0.13***	0.16***	0.16***
	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+4}$	0.11***	0.10***	0.10***	0.10***	0.11***	0.12***	0.14***	0.14***
	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+5}$	0.08**	0.07***	0.07***	0.08***	0.09***	0.11***	0.13***	0.13***
	(0.04)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)
Constant	-0.33***	-0.19***	-0.14***	-0.14***	-0.10***	-0.08***	-0.09***	-0.11***
	(0.05)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	551	1,464	2,226	2,591	3,101	2,188	1,426	1,061
R^2	0.39	0.34	0.38	0.37	0.33	0.33	0.30	0.31
Late - Early: $\mathbb{I}_{t_{M2}-1}$ (Wald Test: χ^2 *Stat.*)					0.00 [0.99]	11.2 [0.00]	7.61 [0.01]	5.40 [0.02]

Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equation (7). The dependent variable is the detrended Baidu keywords-based search index with respect to a few terms about the monetary statistics announced each month: "M2 growth", "money supply", "total social financing", "monetary policy", "financial institutions", "liquidity of assets" and "economic fundamentals". Announcement day dummy $\mathbb{I}_{t_{M2}-i}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. We first compute simple averages of the considered search index series for different key words, $\overline{index}_t^{raw}$, and then apply the normalization by removing the 30-day moving-average trend in logarithm, $trend^{MA}_{index,t}$. The exact normalization follows that: $index_t^{norm} = log(\frac{1+\overline{index}_t^{raw}}{1+trend^{MA}_{index,t}})$. Each column summarizes the estimation results based on a restricted sample that includes data of trading days for a selected number of months. Regression results with the daily measure of search index in a month where the PBOC's M2 announcement arrived earlier than a cutoff day of month, e.g. $11^{th}, 12^{th}, 13^{th}$ and 14^{th} are shown in Panel A (Early Group). By contrast, regression results based on daily search index in a month with the announcements arriving on and after one the cutoff day of month are shown in Panel B (Late Group). Year, month, and weekday dummies are included. The actual date and time information of the PBOC's announcements is used for dividing the event sample into two groups. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses. P-values of the wald-statistic are reported in the brackets besides the statistics.

relatively early.

$$Info_t = \gamma + \psi \mathbb{I}_{early} + \phi \mathbb{I}_{t_{M2}-1} \cdot \mathbb{I}_{early} + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{B.3}$$

$$Info_t = \gamma + \psi \mathbb{I}_{early} + \phi \mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \mathbb{I}_{early} + \theta \mathbb{I}_{t_{M2}-3,t_{M2}-1} + \sum_{i=-T}^{0} \beta_i \mathbb{I}_{t_{M2}-i} + \sum_{i=4}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{B.4}$$

where $\mathbb{I}_{early} = 1$ if our measured information acquisition index aligned with a trading day is associated with a month that had the PBOC announcement arrive on a day earlier than a cutoff day of month. Therefore, $\mathbb{I}_{early} = 0$ if information acquisition is associated with a month that had the PBOC announcement arrive on a day on and later than a cutoff day. In our estimations, we check the robustness of our results by varying the cutoff day between the 11th and the 14th and redefining the dummy variable for each estimation.

Table B.11 summarizes our estimation results. The coefficient estimates for the interaction terms of $\mathbb{I}_{t_{M2}-1} \cdot \mathbb{I}_{early}$ and $\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \mathbb{I}_{early}$ are consistently negative. These findings suggest that information acquisition is further increased before announcements when an announcement arrives late in a month.

B.12 Intraday Return Volatility in Windows of M2 Announcements

In this subsection, we examine the intra-day dynamics of realized return volatility in windows of the **M2** announcements. These intra-day data are sourced from the RESSET High Frequency Database.

We first compute the average return volatility constructed from returns over 5-minute trading blocks of the Shenzhen and Shanghai market indexes conditional on whether a day is falling in an **M2** announcement 7-day window. In Figure B.1, averaged across all **M2** announcements for the period of January 2010 to December 2019, the red solid lines denote the 7-day mean return volatility based on the two market indexes starting 3 days before the PBOC's announcement. The day of the **M2** announcement is marked by 0 in the middle of the x-axis. 90% confidence bands are drawn along the mean return volatility. For comparison, we also plot the dark dashed lines to denote the average return volatility across all "non-announcement" 7-day windows, in which there is no **M2** announcement falling on any day of these 7 days.

Accordingly, upper panel of the two subplots in Figure B.1 says that the intraday realized return volatility on both market exchanges are roughly lower over a 7-day interval centering an average **M2** announcement than that outside an announcement window. To clarify the picture, we then remove the first and last five minutes trading blocks for plotting purposes because there are volatility spikes and troughs clustered at the market open or close on each day. We then plot the intraday return volatility series in the lower panel of the two subplots with trading blocks at

Table B.11: **Dummy Regressions: Information Acquisition and Timing of Announcements**

VARIABLES	(1) 11^{th}	(2) 12^{th}	(3) 13^{th}	(4) 14^{th}	(5) 11^{th}	(6) 12^{th}	(7) 13^{th}	(8) 14^{th}
$\mathbb{I}_{t_{M2}-5}$	0.07***	0.07***	0.07***	0.07***	0.07***	0.07***	0.07***	0.07***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}-4}$	0.09***	0.09***	0.09***	0.09***	0.09***	0.09***	0.09***	0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}-3}$	0.07***	0.07***	0.07***	0.07***				
	(0.02)	(0.02)	(0.02)	(0.02)				
$\mathbb{I}_{t_{M2}-2}$	0.09***	0.09***	0.09***	0.09***				
	(0.02)	(0.02)	(0.02)	(0.02)				
$\mathbb{I}_{t_{M2}-1}$	0.29***	0.36***	0.35***	0.34***				
	(0.03)	(0.03)	(0.04)	(0.04)				
$\mathbb{I}_{t_{M2}-1} \cdot \mathbb{I}_{Early}$	-0.11**	-0.22***	-0.12***	-0.09*				
	(0.05)	(0.04)	(0.05)	(0.05)				
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$					0.15***	0.18***	0.19***	0.18***
					(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}-3,t_{M2}-1} \cdot \mathbb{I}_{Early}$					-0.02	-0.10***	-0.07***	-0.05*
					(0.03)	(0.02)	(0.03)	(0.03)
$\mathbb{I}_{t_{M2}}$	0.42***	0.42***	0.42***	0.42***	0.42***	0.42***	0.42***	0.42***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+1}$	0.27***	0.27***	0.27***	0.27***	0.27***	0.27***	0.27***	0.27***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+2}$	0.19***	0.19***	0.19***	0.19***	0.19***	0.19***	0.19***	0.19***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+3}$	0.17***	0.17***	0.17***	0.17***	0.17***	0.17***	0.17***	0.17***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}+4}$	0.13***	0.13***	0.13***	0.13***	0.13***	0.13***	0.13***	0.13***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
$\mathbb{I}_{t_{M2}+5}$	0.10***	0.10***	0.10***	0.10***	0.10***	0.10***	0.10***	0.10***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,652	3,652	3,652	3,652	3,652	3,652	3,652	3,652
R^2	0.26	0.27	0.26	0.26	0.25	0.25	0.25	0.25

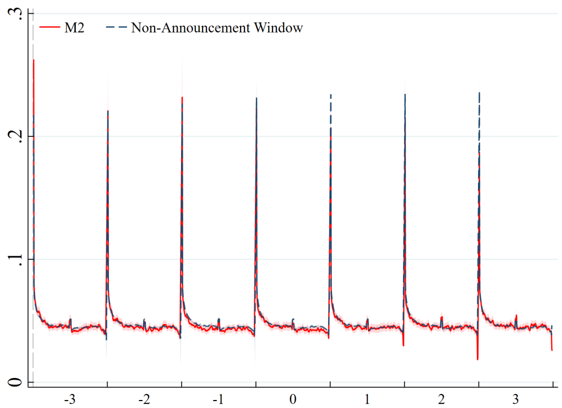
Notes: Sample: January 2010 to December 2019. This table reports dummy variable regression results of Equations (B.3) and (B.4). The dependent variable is the detrended Baidu keywords-based search index with respect to a few terms about the monetary statistics announced each month: "M2 growth", "money supply" and "total social financing". We first compute simple averages of the considered search index series for different key words, $\overline{index}_t^{raw}$, and then apply the normalization by removing the 30-day moving-average trend in logarithm, $trend_{index,t}^{MA}$. The exact normalization follows that: $index_t^{norm} = log(\frac{1+\overline{index}_t^{raw}}{1+trend_{index,t}^{MA}})$. Announcement day dummy $\mathbb{I}_{t_{M2}-i}$ equals one if the i-th trading day is before (or after if i is negative) an **M2** announcement. Announcement dummy $\mathbb{I}_{t_{M2}-3,t_{M2}-1}$ equals 1 if a trading day falls in the 3-day window before the announcement. We align the search data of the first trading day that the equity market has access to the news to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. $\mathbb{I}_{early} = 1$ if the search index realigned with a trading day is associated with a month that had the PBOC announcement arrive on a day earlier than a cutoff day of month. Columns differ in the cutoff day, e.g.$11^{th}, 12^{th}, 13^{th}$ and 14^{th} by which the dummy variable $\mathbb{I}_{early} = 1$ is redefined accordingly. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses. parentheses.

market open and close removed. Our findings are robust.

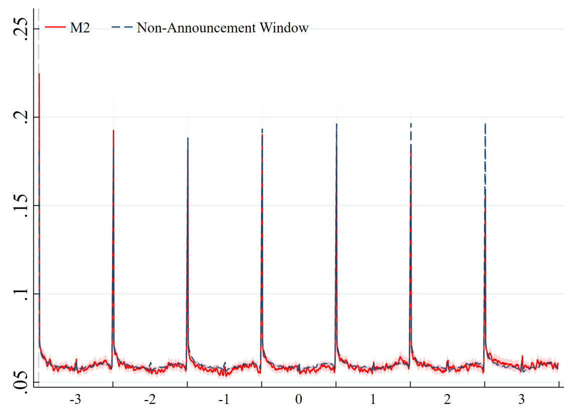
B.13 Trading Volume Prior to Announcements

We further document that the trading volume in China is little changed within the windows of PBOC's announcements of monetary aggregates relative to that outside the windows. We estimate

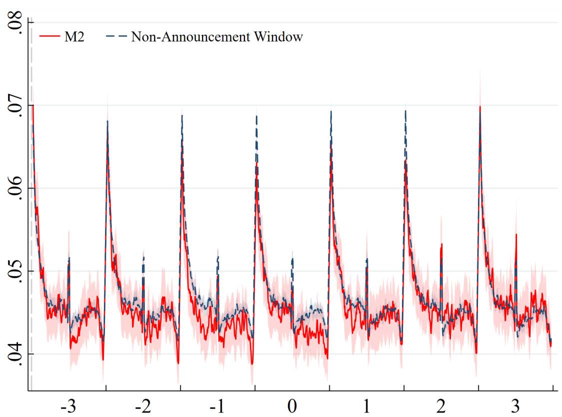
Figure B.1: Intraday Dynamics Within and Outside M2 Windows: Return Volatility



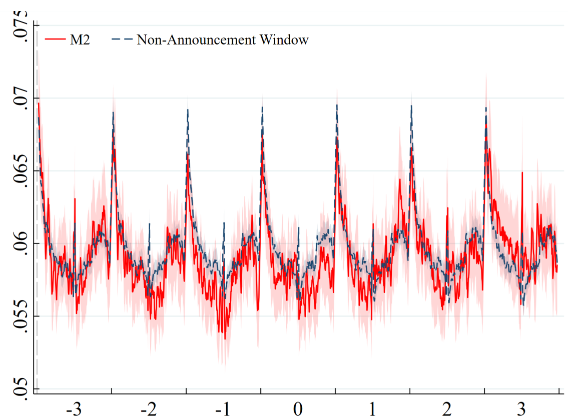
(a) Return Volatility: Shenzhen Stock Exchange



(b) Return Volatility: Shanghai Stock Exchange



(c) Return Volatility: Shenzhen Stock Exchange
(First and Last 5 Mins Removed)



(d) Return Volatility: Shanghai Stock Exchange
(First and Last 5 Mins Removed)

Notes: Sample: January 2010 to December 2019. This figure shows the average return volatility over 5-minute blocks in each day on the SZSE Component Index (First Column) and the SSE Composite Index (Second Column) of a 7-day announcement window centering **M2** announcements. The solid red line of a subplot captures the average return volatility across all 7-day announcement windows. The announcement day, that is, the first trading day when the market has access to the monetary data, is centered in the middle. The dashed dark line denotes the average return volatility across 7-day windows with no announcement day falling in between. The lighter red color-shaded areas mark the 90% confidence bands around the average return volatility in announcement windows. The subplots in the second row plot the intraday return volatility with the first and last five-minutes trading blocks removed.

the following specification:

$$log(Volume_t) = \gamma + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{B.5}$$

$log(Volume_t)$ denotes the logged trading volume on market index such as the Wind-A, SSE and SZSE. Accordingly, the estimate of β_i captures the size of daily trading volume i day before (after if positive) an **M2** announcement of a given market exchange, relative to that of days outside the announcement windows. Our estimation results in Table B.12 suggest that the trading volume changes little within the **M2** announcement windows.

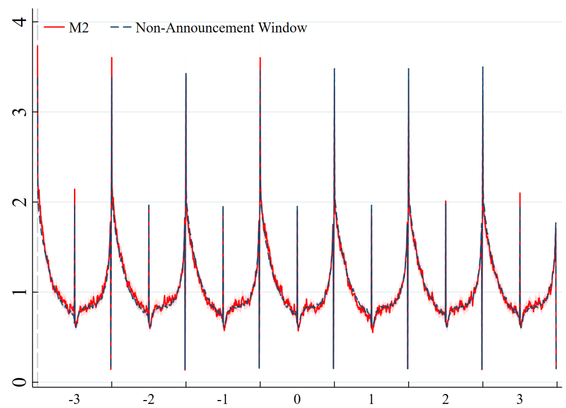
Table B.12: Trading Volume in Windows of M2 Announcements

VARIABLES	(1) Wind A	(2) Wind A	(3) Wind A	(4) Wind A	(5) SSE	(6) SZSE
$\mathbb{I}_{t_{M2}-5}$	0.02		0.02	0.02	0.03	0.01
	(0.03)		(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}-4}$	0.00		0.00	0.00	0.01	-0.01
	(0.03)		(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}-3}$	0.01	0.01	0.01			
	(0.03)	(0.03)	(0.03)			
$\mathbb{I}_{t_{M2}-2}$	0.02	0.02				
	(0.03)	(0.03)				
$\mathbb{I}_{t_{M2}-1}$	0.00	0.00				
	(0.03)	(0.03)				
$\mathbb{I}_{t_{M2}-2,t_{M2}-1}$			0.01			
			(0.02)			
$\mathbb{I}_{t_{M2}-3,t_{M2}-1}$				0.01	0.02	0.01
				(0.02)	(0.02)	(0.02)
$\mathbb{I}_{t_{M2}}$	0.02	0.02	0.02	0.02	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}+1}$	0.01	0.00	0.01	0.01	0.00	0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}+2}$	0.02	0.02	0.02	0.02	0.01	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}+3}$	0.01	0.01	0.01	0.01	0.01	0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}+4}$	-0.00		0.00	0.00	-0.00	-0.00
	(0.03)		(0.03)	(0.03)	(0.04)	(0.03)
$\mathbb{I}_{t_{M2}+5}$	-0.01		-0.01	-0.01	-0.01	-0.00
	(0.03)		(0.03)	(0.03)	(0.04)	(0.03)
Constant	25.97***	25.97***	25.97***	25.97***	25.42***	25.10***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)
Year/Month/Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,431	2,431	2,431	2,431	2,431	2,431
R^2	0.77	0.77	0.77	0.77	0.69	0.82

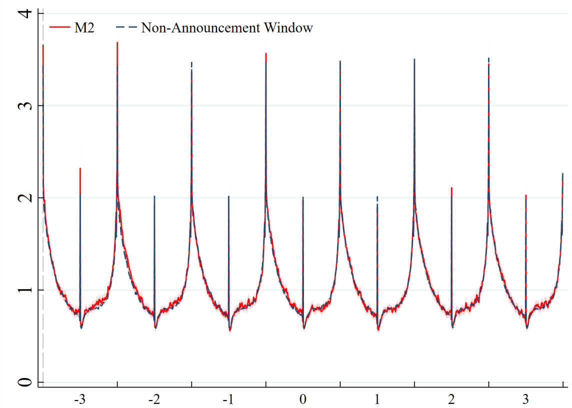
Notes: Sample: January 2010 to December 2019. This table reports the estimation results of Equation (B.5). The dependent variable is the daily trading volume in log. We align the data of the first trading day on which the equity market has access to the monetary aggregate data to the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. Announcement dummy $\mathbb{I}_{t_{M2}-i}$ equals one for the day that is i day before (i is negative if after) an **M2** announcement. "Year/Month/Weekday Dummies": controlling for the year, month, and weekday effects. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

We then compute and plot the average intraday trading volume in and outside the **M2** announcement windows in Figure B.2. These intra-day data are sourced from the RESSET High Frequency Database. It shows that the intraday trading volume on both market exchanges are indistinguishable in **M2** announcement day relative to that outside an announcement window. This holds regardless of whether we remove the first and last five minutes trading blocks in plots.

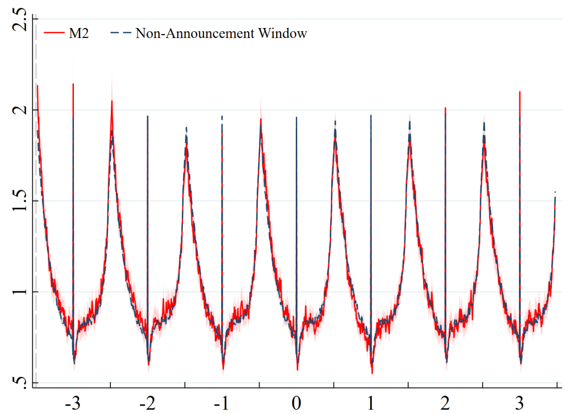
Figure B.2: Intraday Dynamics Within and Outside M2 Windows: Trading Volume



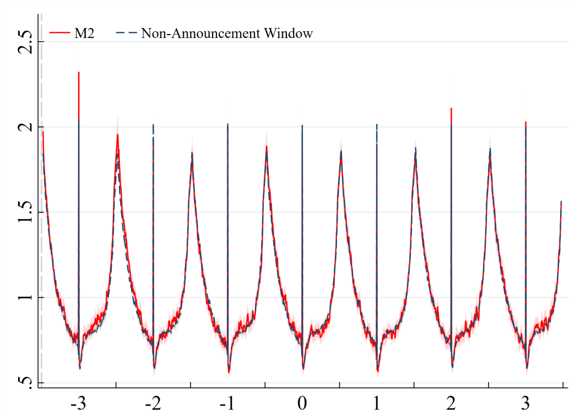
(a) Trading Volume: Shenzhen Stock Exchange



(b) Trading Volume: Shanghai Stock Exchange



(c) Trading Volume: Shenzhen Stock Exchange (First and Last 5 Mins Removed)



(d) Trading Volume: Shanghai Stock Exchange (First and Last 5 Mins Removed)

Notes: Sample: January 2010 to December 2019. This figure shows the average trading volume over 5-minute blocks in each day on the SZSE Component Index (First Column) and the SSE Composite Index (Second Column) of a 7-day announcement window centering **M2** announcements. The solid red line of a subplot captures the average trading volume across all 7-day announcement windows. The announcement day, that is, the first trading day when the market has access to the monetary data, is centered in the middle. The dashed dark line denotes the average trading volume across 7-day windows with no announcement day falling in between. The lighter red color-shaded areas mark the 90% confidence bands around the average trading volume in announcement windows. The subplots in the second row plot the intraday trading volume with the first and last five-minutes trading blocks removed.

C Pre-FOMC Announcement Period: the U.S. Evidence

In this section, we discuss the relevance of our key mechanism, i.e. the information-driven uncertainty reduction channel, for rationalizing the pre-FOMC announcement premium in the U.S. market. According to Lucca and Moench (2015), excess returns are accrued over a few hours starting from the afternoon on the day before the FOMC day till 2:15 PM to 2:30 PM on the day when the FOMC statement is released.

In the following, we first show that our defined quasi-scheduled announcement environment accommodates the extreme case of the U.S. whereby the FOMC announcements are pre-scheduled and the market is pre-informed of the announcement dates. The pre-FOMC premium is accrued while the U.S. market investors are acquiring information to learning about the to-be-announced decision of the Federal Reserve Board right before the FOMC statement release. We then provide empirical evidence that is well consistent with our theoretical discussions. In particular, both the increased information acquisition and reduction in market uncertainty before FOMC announcements are observed in the U.S. market. It can be shown that the size of pre-FOMC premium is positively correlated with the intensity of information acquisition ex-ante.

However, without the exogenous variations with respect to the announcement timing across events as we have for China, the U.S. evidence, though well consistent with our theoretical discussions in line with Ai, Bansal, and Han (2022) highlighting the endogenous information acquisition, may also be partly driven by other potential channels (Wachter and Zhu, 2021; Cocoma, 2022). Therefore, China's unique setting of quasi-scheduled central bank announcements provides the exact data structure for identifying the *causal* mechanism of the information acquisition channel.

C.1 Theoretical Discussions

With an announcement falling on a single day instead of a range of days having nontrivial probability in each announcement cycle, we see that a slightly modified Definition 1 yields the pre-scheduled announcement environment.

Definition 2 (Pre-scheduled Announcements) *Announcements are pre-scheduled if market investors know that there is a unique day $n \in \{1, ..., N\}$ in an announcement cycle as pre-scheduled, on which the announcement falls with probability one such that $Prob(t^A = n) = 1$.*

By Definition 2, the U.S. market investors are well informed of the exact dates of the FOMC announcements ahead of time. Therefore, the market standing at day t perfectly understands when the probability of seeing an announcement next day would go up from 0 to 1 if $t^A = t + 1$. Given extensive evidence showing that the U.S. market uncertainty is heightened some days prior to FOMC announcements (Lucca and Moench, 2015; Hu et al., 2021), sudden shifts for $Prob(t^A = t + 1 | \{t^A \neq i\}_{i=1}^{i=t}) = 1$ right before the FOMC day increases the value for acquiring information among uninformed investors on day t. As a result, the stock prices go up as information acquisition mitigates the market noises, which lowers the market uncertainty.

C.2 Pre-FOMC Premium and Uncertainty Reduction: More Recent Years

First, by extending the sample in Lucca and Moench (2015), we reaffirm the robustness of pre-FOMC equity premium in the U.S. market over years of 2004 to 2017 by taking market data of more recent years. Such evidence itself sheds light on the ongoing discussions on whether the U.S. pre-announcement premium had disappeared lately at least conditionally (Lucca and Moench, 2018; Kurov, Wolfe, and Gilbert, 2021). In specific, over 3-day windows centering the FOMC statement release dates, we compute and plot in Figure C.1 the average cumulative returns on the SP500 market index and the cumulative changes in the option-implied volatility index using minute-ticker data.

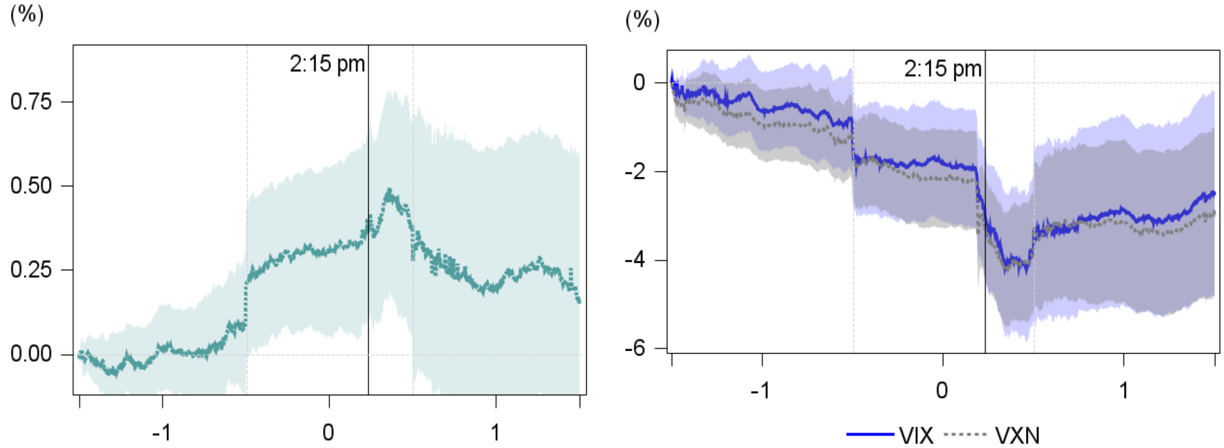
According to Panel (a) of this figure, in line with Savor and Wilson (2013) and Lucca and Moench (2015), we confirm the stock prices of the U.S. market jump on the FOMC days. Importantly, we emphasize that the positive FOMC-related positive returns are accumulated over the pre-announcement hours starting from the afternoon of the day before the FOMC day until the FOMC statement release. Moving to Panel (b), it shows that the U.S. market uncertainty starts declining one day before the FOMC day. This is true regardless of whether the uncertainty is measured by the SP500 implied volatility index, VIX or the Nasdaq-100 implied volatility index, VXN. This pre-announcement reduction of market uncertainty stops until reaching the bottom slightly after the FOMC statement is issued. Therefore, the U.S. market sees that the ex-ante build-ups of stock returns are coupled with declining market uncertainty.

In a regression setting, we provide additional evidence to establish the pre-FOMC equity premium and the ex-ante reduction of market uncertainty in the U.S. market. In specific, we estimate the following specification:

$$Exret_t^{US} = \gamma + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{FOMC}-i} + \beta_x X_t + e_t \tag{C.1}$$

where $Exret_t^{US}$ denotes the daily excess returns of the U.S. stock market portfolio on day t. The 1-month U.S. treasury bill yields are taken as the risk-free rates. In particular, our stock returns

Figure C.1: Pre-FOMC Cumulative Returns and Volatility Changes



(a) Cumulative SP500 Stock Returns

(b) Reduction of the U.S. Market Uncertainty

Notes: Sample: January 2004 to July 2017. This figure shows the average cumulative returns over 1-minute blocks on the SP500 Market Index in Panel (a) and cumulative changes of volatility indexes in Panel (b) over 3-day FOMC announcement windows. The FOMC announcement day is centered in the middle and a vertical line marks the scheduled time for most of the FOMC statement issuances in our sample, i.e. 2:15 PM. The shaded areas mark the 2 standard deviation confidence band around the average cumulative returns and changes in volatility measures. VIX: CBOE Volatility Index measures the market expectations of 30-day volatility for the SP500 index, as implied by the price of options on this index. VXN: CBOE Volatility Index measures the market expectations of 30-day volatility for the Nasdaq-100 index, as implied by the price of options on this index. The color of the confidence bands of the VIX index is lighter than that of the VXN index.

are computed as the log differentials of the market index as of 2PM of day t relative to that of 2PM on day $t-1$. Hence, on the FOMC day t_{FOMC}, our constructed stock returns $Exret^{US}_{t_{FOMC}}$ better capture the exact component of the pre-FOMC equity premium as accrued several hours before the release of FOMC statements. Though, we also take the standard measure of close-to-close daily returns to ensure the robustness of our results.

Table C.1 summarizes the estimation results per Equation (C.1). First, by columns (1) to (3), the statistically significant coefficient estimates for dummy indicator $\mathbb{I}_{t_{FOMC}}$ suggest that the U.S. market investors indeed earned positive excess returns over the 2PM to 2PM duration before the FOMC statement releases. Importantly, with close-to-close daily returns, the size of the coefficient estimates across columns (4) to (6) is little changed. Such finding implies that most of the U.S. equity premium realized on the FOMC days, if not entirely, is accrued before the FOMC statement release.

Then we estimate the regression model to identify the magnitude of uncertainty reduction in

Table C.1: **Returns on SP500 Market Index in Windows of FOMC Announcements**

VARIABLES	(1) $[2PM, 2PM]$	(2) $[2PM, 2PM]$	(3) $[2PM, 2PM]$	(4) Close-Close	(5) Close-Close	(6) Close-Close
$\mathbb{I}_{t_{FOMC}-5}$			-0.08			-0.08
			(0.09)			(0.13)
$\mathbb{I}_{t_{FOMC}-4}$			0.07			0.22**
			(0.10)			(0.09)
$\mathbb{I}_{t_{FOMC}-3}$			-0.05			-0.24**
			(0.09)			(0.12)
$\mathbb{I}_{t_{FOMC}-2}$		-0.03	-0.02		-0.05	-0.04
		(0.09)	(0.09)		(0.09)	(0.09)
$\mathbb{I}_{t_{FOMC}-1}$		-0.19+	-0.18		-0.04	-0.04
		(0.13)	(0.13)		(0.16)	(0.16)
$\mathbb{I}_{t_{FOMC}}$	0.32***	0.29**	0.28**	0.29**	0.28**	0.26*
	(0.12)	(0.12)	(0.12)	(0.13)	(0.14)	(0.14)
$\mathbb{I}_{t_{FOMC}+1}$		-0.11	-0.12		-0.25*	-0.25*
		(0.13)	(0.13)		(0.13)	(0.13)
$\mathbb{I}_{t_{FOMC}+2}$		-0.05	-0.05		-0.01	-0.01
		(0.10)	(0.10)		(0.13)	(0.14)
$\mathbb{I}_{t_{FOMC}+3}$			0.05			0.22*
			(0.19)			(0.12)
$\mathbb{I}_{t_{FOMC}+4}$			0.18			0.03
			(0.16)			(0.15)
$\mathbb{I}_{t_{FOMC}+5}$			-0.14			-0.19*
			(0.10)			(0.11)
Year / Month / Weekday Dummies		Yes	Yes		Yes	Yes
Observations	3,372	3,372	3,372	3,398	3,398	3,398
R^2	0.00	0.01	0.01	0.00	0.01	0.01

Notes: Sample: January 2004 to June 2017. This table reports dummy variable regression results of Equation (C.1). The dependent variable is the log excess return constructed from the U.S. SP500 market index and 1-month treasury bill rates. The duration of daily return is computed either over an interval of 2PM of day $t-1$ to 2PM of day t as in Columns (1) to (3) or from market close to market close as in Columns (4) to (6). The announcement dummy $\mathbb{I}_{t_{FOMC}-i}$ equals one if the i-th trading day is before (or after if i is negative) an FOMC announcement. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

the U.S. stock market prior to FOMC announcements.

$$\Delta Unc_t^{US} = \alpha + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{FOMC}-i} + \beta_x X_t + u_t \tag{C.2}$$

ΔUnc_t^{US} denotes the daily log changes in measures of market uncertainty. To align the estimation results to those regarding market returns, changes in volatility-based market uncertainty are also computed using differentials of the volatility index as of 2PM of day t relative to that of 2PM on day $t-1$. Such cutoffs help confirm if market uncertainty reduction co-moves with the return accumulations over the same duration in time.

Table C.2 summarizes the estimation results. We see the coefficient estimate for the day dummy variable $\mathbb{I}_{t_{FOMC}}$ is negative across all columns. In addition, the size of coefficient estimate outweighs that of the constant term, which is significantly positive. Therefore, the U.S. market uncertainty is lower before the FOMC announcement relative to that of an average day outside the FOMC announcement window. This holds true regardless of how market uncertainty is measured. We thus confirm that the U.S. market sees its uncertainty reduction during the same hours of return accumulations, i.e. over the 2PM to 2PM interval before the FOMC statement release. Interestingly, we should also note that turning to day 3 from day 4 prior to FOMC announcements, heightened uncertainty is also detected as coefficient estimate for dummy variable $\mathbb{I}_{t_{FOMC}-3}$ is positive and statistically significant. Such evidence well echoes findings in (Lucca and Moench, 2015; Hu et al., 2021) suggesting that market uncertainty before the window in which pre-FOMC premium is realized is relatively higher.

Table C.2: Relatively Low Uncertainty Prior to FOMC Announcements

VARIABLES	(1) ΔVIX_t [2PM,2PM]	(2) ΔVIX_t [2PM,2PM]	(3) ΔVIX_t [2PM,2PM]	(4) ΔVXN_t [2PM,2PM]	(5) ΔVXN_t [2PM,2PM]	(6) ΔVXN_t [2PM,2PM]
$\mathbb{I}_{t_{FOMC}-5}$			0.63			0.67
			(0.58)			(0.53)
$\mathbb{I}_{t_{FOMC}-4}$			0.02			-0.36
			(0.66)			(0.54)
$\mathbb{I}_{t_{FOMC}-3}$			1.71**			1.33**
			(0.68)			(0.59)
$\mathbb{I}_{t_{FOMC}-2}$		0.56	0.56		0.91+	0.91+
		(0.63)	(0.64)		(0.59)	(0.59)
$\mathbb{I}_{t_{FOMC}-1}$		0.51	0.47		-0.08	-0.12
		(0.70)	(0.71)		(0.66)	(0.66)
$\mathbb{I}_{t_{FOMC}}$	-2.25***	-1.93***	-1.80***	-2.62***	-2.18***	-2.09***
	(0.57)	(0.59)	(0.60)	(0.48)	(0.50)	(0.51)
$\mathbb{I}_{t_{FOMC}+1}$		-0.26	-0.12		0.20	0.28
		(0.84)	(0.84)		(0.77)	(0.77)
$\mathbb{I}_{t_{FOMC}+2}$		0.10	0.25		0.25	0.36
		(0.63)	(0.64)		(0.58)	(0.58)
$\mathbb{I}_{t_{FOMC}+3}$			-0.53			-0.34
			(0.73)			(0.67)
$\mathbb{I}_{t_{FOMC}+4}$			-1.24*			-1.20*
			(0.73)			(0.65)
$\mathbb{I}_{t_{FOMC}+5}$			0.97+			0.84*
			(0.60)			(0.48)
Year / Month / Weekday Dummies		Yes	Yes		Yes	Yes
Observations	3,372	3,372	3,372	3,372	3,372	3,372
R^2	0.00	0.02	0.02	0.01	0.03	0.04

Notes: Sample: January 2004 to June 2017. This table reports dummy variable regression results of Equation (C.2). The dependent variable is the log changes of market uncertainty measures, i.e. the minute-level ticker data of VIX or VXN index, over an interval of 2PM of day $t-1$ to 2PM of day t. Announcement dummy $\mathbb{I}_{t_{FOMC}-i}$ equals one if the i-th trading day is before (or after if i is negative) an FOMC announcement. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

C.3 Pre-FOMC: Increased Information Acquisition

We further provide evidence showing that the U.S. market sees increased efforts of acquiring information to learn about the Fed's decision before the FOMC day. We take two empirical proxies to measure the degree of information acquisition in the market, the daily Google search index that captures the aggregate intensity across U.S. Google users searching for the keyword "fed" (Base Measure), and that for the associated keywords "fed" and "FOMC" (Composite Measure). These measures of the degree of information acquisition are comparable to what we used for the Chinese markets.

We run the following regression specification to identify the dynamics of information acquisition over days in the FOMC announcement windows:

$$Info_t^{US} = \gamma + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{FOMC}-i} + \beta_x X_t + \upsilon_t \tag{C.3}$$

$Info_t^{US}$ denotes the measured intensity of information acquisition on day t. Note that the pre-FOMC accumulation of stock returns and uncertainty reduction in the U.S. market are relatively short-lived, which last a few hours starting from the afternoon of the day before the FOMC day. Therefore, it is ideal to frame our regressions using the search index of higher frequency rather than daily to better capture the information dynamics over those important hours. However, with daily data available at best, we have to carry on such data caveats.

Table C.3 summarizes the estimation results per Equation (C.3). Results in columns (1) and (2) suggest that regardless of which search index is used for regression, the coefficient for dummy variable $\mathbb{I}_{t_{FOMC}-1}$ is statistically significant and positive. This indicates that on the day before FOMC announcements, greater intensity of information acquisition is associated with searching for information related to the Fed and the FOMC decision than that of days outside the announcement windows. This holds true if the length of FOMC announcement window considered in regression is extended from 7 days ($T = 3$) to 11 days ($T = 5$) according to estimates in columns (3) and (4). Based on data of more recent years since 2012, our regression results in columns (5) to (6) confirm that information acquisition increases on the day before the FOMC day. In addition, we find that the increased intensity of pre-FOMC information acquisition starts to decay and eventually dies out within three days after peaking on the FOMC day.

Overall, we document that the search-based information acquisition dynamics in the U.S. market before FOMC announcements shares a very similar pattern with that of Chinese market prior to PBOC's monetary announcements. This implies that information acquisition channel could be the potential driver of the pre-FOMC uncertainty reduction and accumulation of equity returns in the

U.S. market.

Table C.3: Increased Information Acquisition Prior to FOMC Announcements

VARIABLES	(1) Base Post-2004	(2) Composite Post-2004	(3) Base Post-2004	(4) Composite Post-2004	(5) Base Post-2012	(6) Composite Post-2012
$\mathbb{I}_{t_{FOMC}-5}$			-1.39	-0.77	-0.87	-0.63
			(1.21)	(0.62)	(1.68)	(0.86)
$\mathbb{I}_{t_{FOMC}-4}$			-1.58+	-0.75	-0.82	-0.40
			(1.04)	(0.53)	(1.55)	(0.79)
$\mathbb{I}_{t_{FOMC}-3}$			-0.35	-0.10	-0.39	-0.14
			(0.99)	(0.50)	(1.29)	(0.66)
$\mathbb{I}_{t_{FOMC}-2}$	0.92	0.84+	1.13	0.95*	1.03	0.84
	(1.03)	(0.53)	(1.05)	(0.53)	(1.35)	(0.69)
$\mathbb{I}_{t_{FOMC}-1}$	3.32***	2.26***	3.47***	2.33***	3.24**	2.24***
	(1.13)	(0.58)	(1.14)	(0.59)	(1.33)	(0.69)
$\mathbb{I}_{t_{FOMC}}$	16.91***	11.21***	16.79***	11.13***	17.41***	11.24***
	(1.55)	(0.84)	(1.56)	(0.85)	(2.60)	(1.43)
$\mathbb{I}_{t_{FOMC}+1}$	6.04***	3.51***	5.85***	3.41***	4.77***	2.79***
	(1.17)	(0.60)	(1.18)	(0.61)	(1.56)	(0.80)
$\mathbb{I}_{t_{FOMC}+2}$	1.73+	1.08*	1.73+	1.09*	0.87	0.53
	(1.09)	(0.56)	(1.10)	(0.56)	(1.25)	(0.63)
$\mathbb{I}_{t_{FOMC}+3}$			2.03**	1.07**	-0.06	-0.04
			(1.03)	(0.53)	(1.27)	(0.65)
$\mathbb{I}_{t_{FOMC}+4}$			1.76+	0.82	0.99	0.44
			(1.20)	(0.61)	(1.43)	(0.74)
$\mathbb{I}_{t_{FOMC}+5}$			0.20	-0.05	-2.09+	-1.34*
			(1.28)	(0.65)	(1.41)	(0.71)
Year / Month / Weekday Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,372	3,372	3,372	3,372	1,365	1,365
R^2	0.51	0.51	0.51	0.51	0.73	0.73

Notes: Samples: January 2004 or January 2012 to June 2017. This table reports the dummy variable regression results of Equation (C.3). The dependent variable is the daily Google search index that captures the searching intensity for the keyword "fed" (Base Measure) and word pairs of "fed" & "FOMC" (Composite Measure). Announcement dummy $\mathbb{I}_{t_{FOMC}-i}$ equals one if the i-th trading day is before (or after if i is negative) an FOMC announcement. ***, **, *, and + denote significance at 1%, 5%, 10%, and 15%, respectively. Robust standard errors are in parentheses.

C.4 Correlations: Equity Premium, Uncertainty and Information Acquisition

We then explore if larger pre-FOMC equity premium is associated with greater uncertainty reduction and more intense information acquisition efforts prior to FOMC announcements.

First, we group the FOMC announcement events into two by the size of pre-FOMC premium, which is measured by the excess returns accrued over the critical hours from 2PM on the day before the FOMC day to 2PM on the FOMC day. An FOMC announcement event is then assigned to the "High Premium Group" if its pre-FOMC premium is greater than or equal to the median premium of all announcement events, or grouped to the "Low Premium Group" otherwise. Then we check the between-group mean difference with respect to the magnitude of uncertainty reduction, and that of the intensity of information acquisition on days before and after the FOMC days.

C.4.1 Uncertainty Changes

Table C.4 summarizes the comparisons of mean daily uncertainty changes between two groups of announcement events in 5-days windows centering the FOMC days. For those announcement events realized with high Pre-FOMC premium, the U.S. market uncertainty declines by about 1% as measured by the log difference in VIX or VXN as of 2PM on day $t_{FOMC} - 1$ relative to 2PM on day $t_{FOMC} - 2$. A larger uncertainty reduction of roughly 4.6% is realized over the 2PM-2PM interval on day t_{FOMC} relative to day $t_{FOMC} - 1$. Focusing on daily changes in VIX and VXN index over close-to-close intervals for those announcement events that realized larger pre-FOMC premium, market uncertainty declines by more than 4 % on the FOMC day relative to the previous day.

Conversely, concerning the low-premium group, we find that the market uncertainty, instead of declining, climbs by about 2% by 2PM on day $t_{FOMC} - 1$. More importantly, over the 2PM-2PM intervals from day $t_{FOMC} - 1$ to the FOMC day t_{FOMC}, very limited uncertainty changes can be detected. In addition, when uncertainty changes are captured over close-to-close intervals, uncertainty goes up on the day before the FOMC day and drops by about 1.4% on the FOMC day.

Finally, regarding the high-minus-low group difference in daily uncertainty changes in columns ($t_{FOMC} - 1$) and (t_{FOMC}), we see that the between-group t-statistics are consistently greater than 2, indicating that uncertainty changes between the two groups during the pre-FOMC period are statistically different from zero. Our findings suggest that the U.S. market accrues sizable pre-FOMC premium only when the market uncertainty is significantly lowered ex-ante.

C.4.2 Information Acquisition

Table C.5 presents the results regarding the between-group difference in the average intensity of information acquisition. By focusing on the group difference in column ($t_{FOMC} - 1$), we find that the intensity of information acquisition regarding the Fed's decision and the FOMC-related news on the day before the FOMC day, $t_{FOMC} - 1$, is higher among the group of FOMC announcement events in the high premium group than that of the low premium group. With t-statistics of around 2, the between group difference is statistically significant. Therefore, we conclude that increased information acquisition before FOMC announcements is observed only among announcements of

Table C.4: **Daily Uncertainty Changes (%) in Windows of FOMC Announcements**

Variables	Group	N	$(t_{FOMC}-2)$	$(t_{FOMC}-1)$	(t_{FOMC})	$(t_{FOMC}+1)$	$(t_{FOMC}+2)$
ΔVIX$_t$ $[2PM, 2PM]$	High Premium Group	55	0.96	-1.19	-4.69	-0.42	0.23
	Low Premium Group	55	1.47	2.67	0.30	-0.28	-0.63
	Difference		-0.51	-3.87	-4.99	-0.13	0.86
	t - Statistics		-0.42	**-2.93**	**-4.91**	-0.08	0.72
ΔVXN$_t$ $[2PM, 2PM]$	High Premium Group	55	1.23	-0.97	-4.64	-0.21	0.14
	Low Premium Group	55	2.31	1.57	-0.43	0.37	-0.62
	Difference		-1.08	-2.54	-4.21	-0.58	0.76
	t - Statistics		-0.94	**-2.00**	**-4.91**	-0.39	0.69
ΔVIX$_t$ $close-close$	High Premium Group	55	1.49	-2.70	-4.57	0.84	-0.21
	Low Premium Group	55	0.39	3.71	-1.46	1.71	-1.19
	Difference		1.10	-6.40	-3.11	-0.88	0.98
	t - Statistics		0.84	**-4.69**	**-2.20**	-0.56	0.79
ΔVXN$_t$ $close-close$	High Premium Group	55	1.66	-2.09	-4.13	0.39	-0.37
	Low Premium Group	55	0.99	2.45	-1.42	1.65	-1.40
	Difference		0.68	-4.53	-2.71	-1.26	1.03
	t - Statistics		0.65	**-4.05**	**-2.52**	-0.95	0.95

Notes: Sample: January 2004 to June 2017, with 110 5-day FOMC window events included. Difference: mean measure of uncertainty changes between the High Premium Group and that of the Low Premium Group. Uncertainty changes are measured by the log changes in return volatilities, i.e. the minute-level ticker data of VIX or VXN index, over an interval of 2PM of day $t-1$ to 2PM of day t ($[2PM, 2PM]$), or over an interval of market close to market close ($close-close$). Indicator $t_{FOMC}-i$ denotes the i-th trading day if it is before (or after if i is negative) an FOMC announcement. High (Low) Premium Group includes those FOMC announcement events that realized greater than and equal to (Smaller than) the median of pre-FOMC premium over duration of 2PM of $t_{FOMC}-1$ to 2PM of t_{FOMC} in our sample.

high-premium group.

Again, we highlight the caveat of using daily search index, which makes us unable to perfectly isolate those hours of return accumulation and uncertainty reduction. Therefore, we cannot simply separate the pre-FOMC information acquisition from those after the statement release by simply looking at the numbers shown in column (t_{FOMC}). That's why we focus on column $(t_{FOMC}-1)$ for the comparison analysis. Nevertheless, our evidence well demonstrates that the U.S. market realizes sizable pre-FOMC premium only when the efforts for acquiring information to learn about the Fed and FOMC-related information are higher.

Table C.5: Information Acquisition in Windows of FOMC Announcements

Variables	Group	N	$(t_{FOMC}-2)$	$(t_{FOMC}-1)$	(t_{FOMC})	$(t_{FOMC}+1)$	$(t_{FOMC}+2)$
Base Measure $Attn_t^{US}$	High Premium Group	55	64.69	69.05	83.00	70.62	64.96
	Low Premium Group	55	60.53	63.44	78.33	68.53	62.91
	Difference		4.16	5.62	4.67	2.09	2.05
	t - Statistics		1.47	**1.93**	1.52	0.74	0.71
Composite Measure $Attn_t^{US}$	High Premium Group	55	33.19	35.73	44.84	36.36	33.06
	Low Premium Group	55	31.09	32.75	42.42	35.14	32.14
	Difference		2.10	2.98	2.42	1.23	0.92
	t - Statistics		1.48	**2.01**	1.43	0.85	0.62

Notes: Sample: January 2004 to June 2017, with 110 5-day FOMC window events included. Difference: information acquisition measure of the High Premium Group minus that of the Low Premium Group. The degree of acquired information is proxied by the daily Google search index to capture the search intensity among U.S. Google users for the keyword "fed" (Base Measure) and "fed" & "FOMC" (Composite Measure). Indicator $t_{FOMC}-i$ denotes the i-th trading day if it is before (or after if i is negative) an FOMC announcement. High (Low) Premium Group includes those FOMC announcement events that realized greater than and equal to (Smaller than) the median of pre-FOMC premium over duration of 2PM of $t_{FOMC}-1$ to 2PM of t_{FOMC} in our sample.