Monetary vs. Non-monetary Macro News: Announcement Equity Premium in China

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Abstract

This paper documents a "pre-announcement drift" of Chinese equity market in response to its central bank PBOC's announcements of measures of monetary aggregates, the critical macro news about China's monetary policy stance. For the period of January 2011 to June 2017, Chinese equity market index rises in excess return of 40 basis points per day in a three-day window prior to the day of monetary announcement. It peaks on the day right before the announcement day and phases out on and after, thus labeled as "pre-drift", which generates a premium that is twice the size of Chinese equity premium. This pre-announcement premium also increases in the number of days with M2 data release delays. However, the pre-announcement premium is completely absent for a comprehensive list of non-monetary macro news. All these findings present a facade of China's equity market resemblance to its U.S. counterpart with respect to pricing of news about domestic macro risk. However, differed from markets of advanced economies, China's equity market is largely immune from the risk of U.S. monetary policy changes when anticipating for the FOMC statement releases.

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1 Introduction

China, a rapidly growing engine, is actively integrating its financial markets to the global system through the decade-long financial reforms and development. For the case of its stock market, however, various trading restrictions are still present including the periodic regulatory interventions, a sizeable fraction of noisy traders, along with the excessive asset price volatilities etc. Critical concerns about the accomplishments of its financial reform and worldwide integration are outstanding (Carpenter et al., 2017). Has China's equity market become more efficient when pricing the economic fundamentals? Do Chinese stock investors now value assets in a similar way compared to those investors in the more developed markets of other countries? How exactly does China's equity market fall short compared with the other markets? Per the complexities of these general concerns, we take a parsimonious approach in this paper to provide answers, at least partially, to a general evaluation of the updated China's equity market. In specific, by looking at China's equity market reactions to a comprehensive list of macro news about the Chinese economy, we show that the recent experience of China's equity market largely resembles its U.S. counterpart. However, when the global markets react to the risk of U.S. monetary policy changes, China's equity market stays immune.

Using a sample ranging from 2011 to 2017, we examine the performance of China's equity market in response to macro announcements regarding the status quo of Chinese macroeconomy. Our focus is on data releases about a wide range of statistics covering the conducts of monetary policy, trade competitiveness, real-sector productivity, and the aggregate price indices. We document the resemblances and differences between our findings about China and the facts associated with other financially developed markets. Among the similarities, first, we find that a robust *pre-announcement drift* of equity returns is lifted a few days *before* the central bank of China, People's Bank of China (PBOC), releases data on its most recent moves on monetary policy. Second, on the basis of close-to-close returns, a sizable of more than doubled Chinese equity premium can be attributed to this pre-announcement drift in response to monetary-related news. This implies a reverse of open-to-close gains due to significant overnight losses. Third, we detect little responses of China's stock market to non-monetary announcements. These findings are largely consistent with Lucca and Moench (2015) that documents a similar pre-drift of U.S. stock market returns in response to the U.S. Federal Reserve Board (FRB)'s announcements of Federal Open Market Committee (FOMC) decisions on U.S. monetary policy stances, i.e. the FOMC statement releases.

Nevertheless, China's equity market also exhibits its own defining characteristics when

incorporating macro news into valuation. First, unlike many other markets, China's stock market returns do not respond at all to the U.S. FOMC statement releases, whereas German DAX, British FTSE 100, French CAC40, Spanish IBEX, Swiss SMI, Canadian TSX index, and Japanese NIKKEI 225 all react with a solid pre-announcement premium (Lucca and Moench, 2015). Second, monthly data releases of monetary aggregates in China loosely follow a fixed schedule, which differs from the FOMC statements that are published according to a strictly pre-scheduled time table. Therefore, delayed release of monetary statistics is possible. We show that the stock investors in China require additional equity premium if the PBOC's announcement is increasingly postponed than expected. Evidence of such "non-linear" pre-drift effects squares well with the revealed preference theory framework adopted in Ai and Bansal (2016) to explain the presence of pre-announcement premium. Intuitively, as the monetary policy risks accumulate between announcements, investors require additional compensation for policy uncertainty. Postponed data releases may have triggered extra learning of additional information about the potential policy actions. As investors are waiting for a few more days, further reduction of policy uncertainty via extra learning results in an increasingly higher pre-announcement premium. Therefore, how much the date of data release deviates from expectation matters for stock prices.

Importantly, this paper distinguishes itself from the large literature that aims to identify the impacts of various macro *shocks* on equity market returns.[1] Rather, our paper is to disentangle the effects of macro *news* on stock market returns regardless of the nature of incoming information, either good or bad shocks to a certain macroeconomic variable. Our results suggest that it's not the information content but the delivery of news that drives up the equity returns ex-ante. With this respect, this paper contributes to the literature by exploring the "informational" linkage between the performance of stock markets and the real economy. In particular, our study of the Chinese equity market highlights the critical importance of how the market expectations about monetary policy risk can affect the equity market.

Related Literature. This paper is related to three strands of literature. First, this paper aligns itself with the stream of works that explores the asset pricing implications of macro announcements for the stock market. Savor and Wilson (2013) finds 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. By studying the U.S. stock markets, Lucca and Moench (2015) detects the pre-announcement premium in response to FOMC statements but finds little evidence for the intra-day equity premium using high frequency

[1]To name a few, Bernanke and Kuttner (2005) considers shocks to the U.S. monetary policy on asset prices whereas Boyd et al. (2005) explores the asset pricing implications of shocks to the U.S. employment.

data. They show that the U.S. stock market kicked off its pre-drift precisely one day before the FOMC statement day. Ai and Bansal (2016) provides a theory that under certain regularlity conditions, a range of utility functions in class of revealed preferences can deliver higher premium in anticipation of macro risk. Bollerslev et al. (2016) gives an elegant identification that uncovers the relationship between trading volume and return volatility in the window of incoming macro announcements. Balduzzi and Moneta (2017) and Altavilla et al. (2017) locate the announcement premium in the treasury market and bond future market respectively. Our paper is the first one that provides empirical evidence on Chinese equity market's reactions to a comprehensive list of macro announcements, and delineates a pre-announcement rather than intra-day premium in response to monetary-related news.

Second, at the firm level, a rich literature has documented higher excess returns on the announcement day of a firm's corporate earnings, which largely echos findings at the aggregate level and is dated back to Beaver (1968). In addition, both the pre-announcement and post-announcement drifts of equity returns are identified around the day of corporate earning announcements (Barber et al., 2013; Bernard and Thomas, 1989; Frazzini, 2006). Dellavigna and Pollet (2009) finds the Friday announcements of corporate earnings have weaker effects on stock performances than those of non-Friday announcements.

Third, this paper joins the works that compare the connection between stock market performance and economic fundamentals in China and that of more financially developed markets. Franklin et al. (2017) finds that the firms listed on Chinese stock market perform worse than the listed and unlisted firms of other advanced economies. Carpenter et al. (2017) argues that China's equity market is increasingly efficient due to rounds of financial reform and development. It implies that the Chinese stock market well reflects the firms' future profit potential. This paper provides additional evidence in the dimension of examining China's equity market relative to other markets. We show that the domestic monetary policy risk generates a pre-announcement equity premium in China, which shares the similarities with the U.S. market despite of the outstanding distinctive features.

The rest of the paper is structured as follows. We discuss the selection of announcement events and data sources in Section 2. Section 3 presents the main empirical findings. Section 4 concludes.

2 Data

In this section, we summarize the data used for identifying the potential responses of China's equity market to a wide range of macroeconomic announcements published by policy and statistical agencies. Importantly, we focus on the announcements marked by "data-

release" only, which specifically deliver the latest statistics about different facades of Chinese economy to the public, i.e. the "macro news".[2]

2.1 News Categories

We select a range of macroeconomic variables that have data regularly published by different agencies through public announcements. Broadly, we can categorize the selected macro variables into four groups related to monetary policy conducts, trade dynamics, real-sector productivity, and aggregate price indices.[3] We then examine whether Chinese equity market responds to the U.S. FOMC statement releases in a similar way as documented in Lucca and Moench (2015) for a series of advanced economies. Thus we group the FOMC statements into the fifth category of news that are originated from foreign countries but may potentially affect the valuation of China's stock market.

Finally, we come up with 11 macroeconomic announcements that span all the selected macro variables of the five categories. In the following, we discuss each group of macro news in details. In general, most of these announcements are made public in a monthly frequency with a few exceptions noted below. Typically, the announcement made in month t publishes data about the realized value of a given macro variable for month $t-1$.[4]

1. **Monetary Policy Related Announcements**. We are interested in the macro news for releasing China's monetary aggregates data, which are considered key measures of the stance of Chinese monetary policy.[5] Data on the monetary aggregates including M0, M1, M2 are all published by PBOC along with many other monetary and financial statistics including the balance of RMB loans and deposits etc.[6] We label the announcements that publish the most updated M2 data as **M2** announcements. Apart from these news about M2 statistics, we also note the quarterly publication of China's

[2]Those macro news that are ruled out are, for example, general discussions or comments on Chinese economy and financial markets made by public figures of officials or scholars affiliated with the government and its related agencies, the Communist Party of China (CPC), or research institutions etc.

[3]We notice that the very closely related macro data are routinely released at the same time through the same vendor. Data releases in China can take forms like conference press releases, news articles published on the website of the data agency, or public statements etc.

[4]Exceptions are that for certain variables for some unusual time, the month t data may be published in the end of month t. For example, the releases of Manufacturing Purchasing Managers Index (PMI) number occasionally fall into this exceptional cases.

[5]Precisely, the growth rate of M2 is one of most critical policy instruments. Though in mid of interest rate liberalization process in 2010s, various interest rates including the overnight repo rates, the government yields, and the SHIBOR interbank loan rates have developed their importance when gauging the Chinese monetary policy stances. See text in Chen et al. (2016) and Liu et al. (2017).

[6]These statistics appear on the publications of Monthly Financial Statistics, Report on Aggregate Financing to the Real Economy (Flow), and Monthly Report on Aggregate Financing to the Real Economy (Stock). All of the three published on the same day around the same time.

Monetary Policy Report (MPR). Technically, the MPR report does not fit well into the category of announcement that specifically communicates with the public about the most updated data statistics. Rather, the report is a comprehensive summary of PBOC's assessments of the soundness of credit market, macroeconomic and financial stability, and the associated necessity for further adjustment of monetary policy stance.[7] For the sake of completeness, the announcement of these reports are considered as denoted by **MPR** announcements. We will show that both **M2** and **MPR** announcements trigger the pre-drift of equity returns, though the effects of **M2** news are much stronger.

2. **Trade Data Announcements**. Published by the General Administration of Customs of the People's Republic of China (GACC), values of China's imports and exports along with the GACC's discussions of the trade competitiveness of China are all available every month. We call these news releases the **TRD** announcements.

3. **Real Sector Productivity Announcements**. We consider four major macro variables related to the real side of the economy, and their associated data announcements: the fixed assets investment (excluding rural households) (**FAI**), the value added of the industrial enterprises above the designated size (**VAI**), the profits of the industrial enterprises above the designated size (**INP**), and the manufacturing purchasing managers index (**PMI**). All these statistics are published by the National Bureau of Statistics of China (NBS) monthly.[8]

4. **Aggregate Price Indices Announcements**. The NBS announcements of three aggregate price indexes are included: the consumer price index (**CPI**), the producer price index (**PPI**), and the sales price index of residential real estate in 70 large and medium-sized cities (**RST**).

5. **FOMC Announcements**. FOMC meetings that discuss the relevance of U.S. monetary policy changes are regularly held eight times a year and the associated FOMC statements are issued accordingly after the meeting.[9] A FOMC statement is often times

[7]Therefore, MPR report is not directly comparable to other major central banks' policy statements that specifically highlight the explicit policy targets or decisions of monetary policy committee, i.e., the FRB's FOMC statement or European Central Bank (ECB)'s Monetary Policy Accounts

[8]Since 2011, FAI and VAI numbers were published at the same time. These statistics then were announced together with some other measures of the real economy including the total retail sales of consumer goods, the national real estate development and sales statistics, and the private fixed asset investment. Note that the GDP growth rate, a quarterly series, is published along with the data release of these aforementioned statistics only every three months.

[9]Though, during unusual times, extra meetings can take place and emergent statement were sporadically

available to the U.S. public around 2:15 PM in the U.S. Eastern time. Accounting for the China-U.S. time difference, details about the FOMC news are fully accessible by the Chinese market around 2:15 to 3:15 AM of the next day.

2.2 Data Sources

We move on to discuss how we identify the relevant announcement events for our empirical study. Our sample is restricted to a period of January, 2011 to June, 2017. We made this choice primarily for three reasons. First and foremost, by focusing on these years, we abstract from a period of global crisis of financial market turmoil and economic downturn since 2007-2008. A number of countries underwent credit and liquidity distress which were coupled with fiscal and monetary stimulus, all of which could be of the first order importance to drive the stock market valuation worldwide. China enjoyed the benefits from its integration to the global financial system while at the same time bore the cost of excessive turbulences as well. In addition, China provided a massive stimulus package of 4 trillion RMB (roughly US $ 586 billion) to its economy and provided sufficient liquidity support to its financial markets for years of 2008 to 2010. Hence our sample selection helps us better isolate the effects of macro news rather than the nature of macro shocks upon China's stock market prices.

The second merit of focusing on the most recent years is that for the purpose of studying how efficient its stock market incorporates information, China's equity market could have increasingly developed its maturity after rounds of financial reforms upon entering 2011. Last but not least, in the post-2010 period, most macro data are firstly communicated to the public through the internet. The internet news vendor then enables us with good precision to tell on what day and at what time the first piece of information about an updated data is transmitted to the markets. By not doing this, scrambling over old conference documents and looking at government official's informal talks for data releases could have introduced errors for identifying announcement events and large estimation bias.

It is crucial to extract a list of dates and release times for the macro announcements we consider with great precision. We thus employed two separate ways to cross-check the relevant news events. Taken as our benchmark events, the timing information for all the selected data release announcements are downloaded from the Bloomberg Economic Calendar (BEC). For the concern that BEC might not be able to perfectly collect information of all these news published in China, we apply a self-coded web-crawl algorithm that automatically collects the date and time of each piece of macro announcements that firstly appeared on

issued. For example, the occasional issues of FOMC statements in years of 2007-2008 during the financial crisis.

its publisher's official website.[10] We find that apart from the trivial differences regarding the timing of the NBS's managed announcements, there is no single discrepancy between our web-crawled dates and times and those readily available on BEC. However, we still summarize the differences between crawled dates and BEC dates for the announcements managed by NBS in Table A1 in the Appendix. We proceed with our empirical study using the timing information of macro news from the BEC database.

To measure the stock market reactions to news, we obtain the daily open and close price series for the Wind A Share Index, which is constructed by incorporating all firms listed on Shanghai and Shenzhen Stock Market Exchanges. Thus this index is considered the most comprehensive measure of stock performances for the Chinese market. For robustness checks, we also examined the Shanghai Stock Market Exchange Composite Index (SSE) Index and the Shenzhen Stock Exchange Component Index (SZSE) index. All the index series are downloaded from Wind Data Feed Services. Then we construct various measures of daily returns using price data. For the interest of exploiting the information on the exact time of data releases, we also look into the intra-day data sourced from the RESSET High Frequency Database but for the SSE Index only. To calculate the excess returns, we use the daily 10-year treasury bond yield series as the risk free rate, also from Wind Data Feed Services.

2.3 Timing of News

From our sample ranging from 2011 to 2017 with 1577 trading days, we finalize with 719 macro announcement events. Table A2 in the Appendix summarizes all the announcements that we consider in our empirical study with their publishers, related statistics that are published at the same time, i.e. concurrent news, and the starting month with regular data release frequency. Since the timing of macro news is critical for us to identify the announcement-related premium, we give an extensive summary of the day and time details associated with date releases. More tables of data summaries are left in the Appendix for reference.

We define the day of a data announcement as the first trading day that Chinese financial markets have access to the macro news. Table 1 shows the day distribution of selected macro announcements. Though PBOC does not officially claim that the **M2** announcement dates are completely pre-scheduled, we see in the table that 75 % of the monetary aggregates data were announced between the 8th and the 14th day of a month. It is reasonable to believe

[10]For the FOMC statement dates, we didn't apply the crawling algorithm for BEC should be able to give a good summary of them.

that every month, financial market participants anticipate that there will be an updated M2 number to be made public, either sooner or later, but extremely rare to see the number delayed beyond the mid of the month. Also, not pre-scheduled either, three fourths of the quarterly **MPR** announcements are publicly available early in a month.

For the non-monetary policy related news, with an official announcement schedule set by GACC, it says all **TRD** announcements are always published before the 15th day of the month. As for the announcements related to the real-sector productivity, the release schedule is also pre-fixed. Statistics managed by the NBS are announced following a pre-fixed schedule since 2007. 75 % of **FAI** and **VAI** data were published in the first half of a month. Three quarters of **INP** announcement is scheduled to be available on the 27th day of the month near the end of a month. The **PMI** announcements are found to be routinely published on the first day of a month but occasionally, we see PMI data in the end of a month. For those rare cases, this release is the fastest publication about the month t PMI index. We note that these real sector-related statistics about month January will be always postponed to be announced in March instead of February. More importantly, these postponed announcements made in March only state the aggregated but not the individual numbers for the months of January and February. The **CPI** and **PPI** are mostly published before the 11th day of the month. The **RST** data is scheduled to be published mostly on the 18th day of a month. With time-difference conversion adjusted, the **FOMC** statement release dates were found to be evenly distributed over a given month.

Table 2 gives the summary for the day of week distribution across different announcements. We can see that though **M2** and **MPR** announcements are often times issued on weekdays, a portion of 33% and 42% of them fall on Fridays respectively. On the other hand, announcements like **PMI**, **TRD**, and **RST** are evenly distributed on each day of a week. We will explore if announcing the data near the weekend does make a difference for the stock market performance.

Table 3 shows the distribution of point of time of data releases for all selected announcements. In general, all these macro data can be published on either weekdays or weekends and within, before or after trading hours. **M2** and **MPR** news are mostly published after trading hours if on weekdays. Also, a considerable portion of these announcements fall between weeks that are after trading hours on Friday till a few minutes before the trading sessions of the next trading Monday. The international trade data, real-sector variables, and the price indices announcements are regularly made available within trading hours and sometimes the news can be published during weekends. Exceptions are with the **PMI** data, which mostly are announced around 9:00 AM on weekdays.

Importantly, across the table results, by focusing on monetary policy related announce-

ments, we see drastic differences between PBOC and the FRB when picking the right day and the point of time in a day for releasing the data on policy actions. PBOC's **M2** and **MPR** announcements can be made public on any day within a week, whereas the FOMC statement releases predominantly fall on Thursdays of early AM in local Beijing time (Wednesdays P.M. in the U.S. Eastern Time). Moreover, a large fraction of the monetary-related announcements in China are made out of the trading sessions including periods of post-trading hours and between-weeks of weekends. However, the FOMC statements are issued within trading hours and on weekdays. These findings again may suggest that PBOC are making an effort to avoid releasing monetary policy statistics on weekdays and within-trading hours.

Table 1: Day of Month Distribution of Announcements

	M2	**MPR**	**TRD**	**FAI**	**VAI**	**INP**	**PMI**	**CPI**	**PPI**	**RST**	**FOMC**
Min	8	1	8	9	9	3	1	8	8	17	1
25.Perctl	11	5	8	11	11	27	1	9	9	18	14
Median	12	7	10	13	13	27	1	9	9	18	19
75.Perctl	14	11	10	15	16	27	1	11	11	18	28
Max	18	30	15	21	21	29	31	20	20	26	31
Mode	11	6	8	13	13	27	1	9	9	18	28
No. Events	78	26	78	71	65	38	79	78	78	76	52

Notes: Sample: January, 2011 to June, 2017. This table shows the day of month distribution of announcements by their percentile cut-off days of a month. The number i in a cell denotes the i-th day of a month. Min: the earliest day of month for a data release in the sample; Max: the latest day of data release; Percentiles: percentiles of the day of month distribution; Median: 50 % percentile cut-off. Mode: the day of month with most monthly announcements. Numbers reported are rounded up if they contain decimal points.

Table 2: Day of Week Distribution of Announcements

	M2	**MPR**	**TRD**	**FAI**	**VAI**	**INP**	**PMI**	**CPI**	**PPI**	**RST**	**FOMC**	**Subtotal**
Mon	.10		.17	.13	.14	.08	.11	.10	.10	.18		.11
Tue	.18	.19	.13	.18	.18	.16	.15	.18	.18	.13		.15
Wed	.13	.12	.13	.20	.20	.08	.15	.13	.13	.14	.08	.14
Thu	.18	.15	.18	.08	.08	.18	.13	.17	.17	.12	.88	.20
Fri	.33	.42	.14	.25	.26	.21	.16	.26	.26	.21	.04	.23
Sat	.03	.08	.13	.10	.08	.11	.13	.09	.09	.12		.09
Sun	.05	.04	.13	.06	.06	.18	.16	.08	.08	.09		.09
No. Events	**78**	**26**	**78**	**71**	**65**	**38**	**79**	**78**	**78**	**76**	**52**	**719**

Notes: Sample: January, 2011 to June, 2017. This table shows the percentage of announcements (in decimals) made in each day of week for a given data publication.

Table 3: Time Distribution of Macroeconomic Announcements

			M2	MPR	TRD	FAI	VAI	INP	PMI	CPI	PPI	RST	FOMC
Sample 2011M1-2017M6	**Weekday before trading hours**	No. Anns.	3						58				54
		Avg. Ann. Time	8:40						9:00				2:03
	Weekday within trading hours	No. Anns.	19		60	62	58	27		67	67	63	
		Avg. Ann. Time	10:28		10:40	11:14	11:09	9:39		9:36	9:36	9:32	
	Mon-Thur after trading hours	No. Anns.	31	12	1	1	1						
		Avg. Ann. Time	15:57	17:52	15:34	15:40	15:40						
	Between weeks	No. Anns.	28	14	20	11	9	11	23	14	14	16	
		Avg. Ann. Time	15:41	18:27	10:28	13:27	13:26	9:43	9:00	9:30	9:30	9:33	
	Total		**81**	**26**	**81**	**74**	**68**	**38**	**81**	**81**	**81**	**79**	**54**

Notes: This table depicts the time distribution of macroeconomic announcements. Shanghai and Shenzhen Stock Exchanges are open for trading from Monday to Friday, with call auction from 9:15 to 9:25, continuous auction in 9:30 - 11:30 and 13:00 - 15:00. Intent orders for block trades are accepted between 9:30 and 11:30 and again between 13:00 and 15:30, while execution orders and fixed-price orders for block trades are accepted from 15:00 to 15:30. Special block trade sessions are held on an ad hoc basis between 15:00 and 17:00. Based on this, we categorize the announcements into four groups by the time of their release: (1) announcements released before trading hours in weekdays; (2) announcements released within trading hours (we also include announcements released between morning session and afternoon session); (3) announcements released after trading hours from Monday to Thursday; (4) announcements released between market closure on Friday and market openness on next Monday. This table reports the number of announcements of each groups and the averaged release time within the group.

3 Monetary News: Announcement Equity Premium

In this section, we present the main empirical findings of this paper. First, we document a pre-announcement drift of equity returns in response to monetary-related macro announcements using the Wind A Share Index as our benchmark for valuing the Chinese stock market. Then we show that such pre-drift is sizable, persistent, and robust to various specifications. Finally, we examine if the announcement equity premium exists in anticipation of other non-monetary and foreign-based macro announcements.

3.1 Equity Market Responses to M2 Announcements

To examine the performance of China's equity market during the announcement window of a monetary policy news, we estimate a baseline empirical model as specified below:

$$Exret_t = \beta_0 + \sum_{i=-T}^{T} \beta_i \mathbb{I}_{t_{M2}-i} + \beta_x X_t + \upsilon_t \tag{1}$$

A period t corresponds to a day. $Exret_t$ denotes the log excess return constructed from the Wind A Share Index. The baseline $Exret_t$ is measured by the close-to-close daily returns based on daily close price series. We will show that using open-to-close returns does not affect our main results. Our explanatory variables $\mathbb{I}_{t_{M2}-i}$ are dummy variables that equal to one if the day t is the i-th trading day before (or, after if i is negative) an **M2** announcement. $i = 0$ denotes the exact day on which an announcement is available to the public.

For the complications that an **M2** news can be announced either on weekdays or between-weeks, we align the return data of the first trading day that the equity market has access to the news with the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. In other words, the **M2** data may be announced either after the trading hours of day $t_{M2}-1$ or before the trading hours of day t_{M2}, or within the trading sessions of day t_{M2}. In addition, we set the window of announcement with length of $2T + 1$ days. Ceteris paribus, the coefficients β_i is interpreted as the mean excess return difference on the i-th day before or after the announcement day relative to the average daily excess return outside all the $2T+1$ windows of **M2** announcements. We check for the robustness of results by controlling for additional covariates in a variable vector X_t. Precisely, the weekday dummies are included in X_t to capture the calendar effect.

Table 4 reports the coefficient estimates of Equation (1) based on our baseline sample of years 2011 to 2017. We set $T \leq 5$ such that at maximum, an announcement window of 11 trading days is imposed to the estimations. With $T = 3$, results in Columns (1) and (2) suggest that the coefficients β_i for $i \geq 0$ are all insignificant except for the ones associated

with the dummy variables $\mathbb{I}_{t_{M2}-1}$ regardless of whether or not we control for the weekday fixed effects. Precisely, it implies that the excess return on the previous trading day before an **M2** announcement is 44 basis points (bps) higher than the mean daily return of all days outside the seven trading day announcement windows. It is important to note that we don't find a significant premium *on* the **M2** announcement day. Rather than an intra-day announcement premium, these results suggest the presence of a pre-announcement equity premium before the **M2** news is publically announced. This finding is largely consistent with Lucca and Moench (2015), which documents a sizeable excess return of the U.S. equity market for the day right before the day of FOMC statement release.

In addition, Column (3) shows that the additional equity premium generated by the pre-drift of stock market on day $t_{M2}-1$ is robust, a magnitude of 44 bps even if we measure the excess daily returns of non-**M2** announcement days outside the announcement windows using open-to-close returns. Column (4) presents an similar estimate of the pre-announcement premium when we extend the length of the **M2** announcement windows by including more trading days.

In Table A5 of Appendix, we also show that constructing China's equity market returns using alternative stock market index such as the Shanghai Stock Exchange Composite (SSE) Index or Shenzhen Stock Exchange Component Index (SZSE) Index for estimations does not alter our main results of a sizable pre-announcement premium for **M2** news.

3.2 Alternative Specifications

We further apply a series of robustness checks to confirm the results suggesting the presence of a pre-announcement equity premium. First and foremost, as implied by the marginal significance of coefficient estimates of $t_{M2}-3$ across columns in Table 4, we explore the possibility that the pre-drift of China's equity market does not have to fall on the exact day right before the day of an **M2** announcement. We test the null hypothesis that the daily excess returns do not react to the **M2** announcement any earlier than the day of t_{M2-1}. Respectively, we use generalized dummy variables to denote those trading days that fall into a j-trading day window with $j = 2, 3, 5$ before **M2** announcement day t_{M2} and estimate the following model:

$$Exret_t = \beta_0 + \beta_j \mathbb{I}_{t_{M2}-1,j} + \beta_x X_t + \upsilon_t \tag{2}$$

β_j can be interpreted as the average daily return of those days that fall into the j-day window before an **M2** announcement day, relative to daily returns that are outside of these windows. Estimation results are summarized in Table 5.

Table 4: Wind A Share Index Returns in Windows of M2 Announcements

VARIABLES	(1) Close-to-close	(2) Close-to-close	(3) Open-to-close	(4) Close-to-close
$\mathbb{I}_{t_{M2}-5}$				0.19
				(0.20)
$\mathbb{I}_{t_{M2}-4}$				-0.15
				(0.22)
$\mathbb{I}_{t_{M2}-3}$	0.34*	0.33	0.36*	0.35*
	(0.21)	(0.21)	(0.21)	(0.21)
$\mathbb{I}_{t_{M2}-2}$	0.20	0.23	0.21	0.25
	(0.18)	(0.18)	(0.16)	(0.18)
$\mathbb{I}_{t_{M2}-1}$	0.44***	0.44**	0.44***	0.45***
	(0.16)	(0.17)	(0.17)	(0.17)
$\mathbb{I}_{t_{M2}}$	0.15	0.16	0.08	0.17
	(0.18)	(0.18)	(0.16)	(0.18)
$\mathbb{I}_{t_{M2}+1}$	-0.13	-0.16	-0.08	-0.14
	(0.17)	(0.17)	(0.17)	(0.18)
$\mathbb{I}_{t_{M2}+2}$	0.05	0.04	0.04	0.05
	(0.20)	(0.21)	(0.19)	(0.21)
$\mathbb{I}_{t_{M2}+3}$	-0.01	0.02	-0.04	0.03
	(0.19)	(0.19)	(0.17)	(0.19)
$\mathbb{I}_{t_{M2}+4}$				0.13
				(0.19)
$\mathbb{I}_{t_{M2}+5}$				0.00
				(0.22)
Weekday FE		YES	YES	YES
Constant	-0.03	0.07	0.25***	0.07
	(0.06)	(0.10)	(0.09)	(0.11)
Observations	1,577	1,577	1,577	1,577
R-squared	0.01	0.01	0.01	0.01

Notes: Sample: January, 2011 to June, 2017. This table reports dummy variable regression results of Equation (1) for different specifications. The dependent variable is the log excess return constructed from the Wind A Share Index. Announcement dummy $\mathbb{I}_{t_{M2}-i}$ equals to one if the i-th trading day 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 with the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in parentheses.

In Column (1), we firstly drop all the dummy variables other than $\mathbb{I}_{t_{M2}-1}$, and use the estimation results as reference for cross-specification comparison. The back of envelope calculation says if the window premium, if any, is solely driven by the $t_{M2} - 1$ premium of 40 bps, the daily announcement premium in window j should be approximately about $40/j$ bps. Columns (2)(3) and (4) respectively shows the coefficient estimates of β_j when $j = 2, 3, 5$, which are all statistically positive and much larger than $40/j$ bps. Therefore, we find that the announcement premium to **M2** news does not only realize on the exact day of one day before the announcement. Importantly, by Column (3), the magnitude of 3-day window premium estimate turns out to be the largest for the three-day windows earlier than the announcement day.

Then we consider some restrictions to our **M2** news sample. It's possible that announcements made in different point of time of a year may generate different sizes of "news"

impacts on equity returns. We have this hypothesis as findings at the firm-level suggest that the stocks react stronger in response to interim (e.g. quarterly) corporate earnings announcements (Barber et al., 2013). By the same token, we explore in the following the news effects of **M2** data announced in February only, along with those related to announcements that publish quarterly **M2** data.

There are important reasons to study the **M2** announcements in February exclusively. February announcement of M2 data contains monetary aggregate measures for the month of January, the first data point of a new year. Hence, the February M2 news may somewhat predict the PBOC's policy moves for the entire year at least partially. To capture the news effects of quarterly announcements of monetary aggregate data, we then restrict our **M2** news sample to include announcements made in the four months of February, April, July and October. All these announcements summarize monetary aggregate data for the fourth quarter of the previous year along with those of the first, the second, and the third quarter of the following year. We thus conjecture that investors are drawing excessive attention to these important interim monetary announcements relative to others, which leads to a larger pre-announcement equity premium for these months.

In Column (5), we present the estimation results when we exclusively focus on February stock market returns and the February **M2** announcements. Results find that the three-day window pre-drift of equity returns is more than twice larger than our estimate of three-day window premium when all **M2** announcements are considered as shown in Column (3). Column (6) then shows that the three-day window pre-announcement premium related to quarterly **M2** announcements are even stronger with additional increases of 87 bps in excess returns. Column (6) implies that the pre-announcement premium is not driven by the effects of February **M2** announcements alone. More importantly, both columns of estimates lend credence to our conjecture that a stronger pre-announcement premium is associated with the those interim **M2** news.

3.3 Evidence from High Frequency Data

We then look into the higher frequency data to identify the pre-drift of China's stock returns in response to **M2** announcements. In particular, we explore if it takes a few days for the equity market index to reach its plateau. For the availability of the high frequency data, we focus on the SSE stock market index. We plot two graphs of excess returns constructed from SSE index in Figure 1. These plots graphically confirm our story which is consistent with the regression results in previous sections.

We first examine the plot on the left hand side. The solid line denotes the average

Table 5: Wind A Share Index Returns in Windows Prior to M2 Announcements

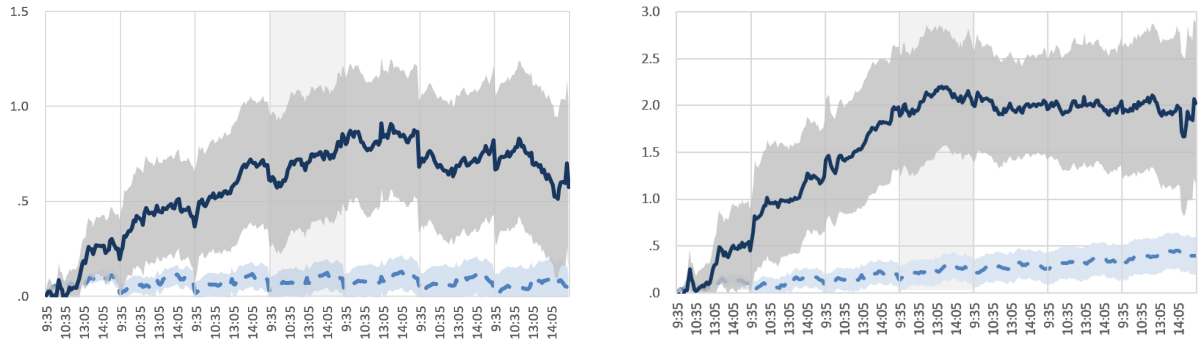
VARIABLES	(1) All Anns	(2) All Anns	(3) All Anns	(4) All Anns	(5) Feb	(6) Qtr. Anns
$\mathbb{I}_{t_{M2}-1,1}$	0.40**					
	(0.17)					
$\mathbb{I}_{t_{M2}-1,2}$		0.31**				
		(0.12)				
$\mathbb{I}_{t_{M2}-1,3}$			0.33***		0.68**	0.87***
			(0.11)		(0.29)	(0.21)
$\mathbb{I}_{t_{M2}-1,5}$				0.20**		
				(0.10)		
Constant	0.10	0.09	0.07	0.06	0.08	0.07
	(0.09)	(0.09)	(0.10)	(0.10)	(0.36)	(0.16)
Weekday FE	YES	YES	YES	YES	YES	YES
Observations	1,577	1,577	1,577	1,577	116	486
R-squared	0.01	0.01	0.01	0.01	0.04	0.04

Notes: Sample: January, 2011 to June, 2017. This table reports the dummy variable regression results of Equation (2). "All Anns sample" columns summarize the results considering all **M2** announcements in our sample; "Feb" present results estimated from a sample restricted to **M2** news issued on Februaries only; "Qtr.Anns" present results estimated from a sample that covers **M2** announcements of February, April, July, and October. The dependent variable is the log close-to-close excess return constructed from the Wind A Share Index. We align the return data of the first trading day that the equity market has access to the news to the day t_{M2}. Announcement dummy $\mathbb{I}_{t_{M2}-1,j}$ equals to one for the trading days in a j-trading-day window before a **M2** Announcement. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in parentheses.

cumulative intra-day returns based on SSE Composite Index over all seven-day windows centering around all **M2** announcements for a period of January, 2011 to December, 2016. The one standard deviation confidence band is plotted along the cumulative returns. Timing of news are aligned to daily returns in consistent with the treatment done for the regression analysis. That is, the grey bar marks the first trading day on which the market is informed of the recent **M2** news. The dashed line captures the average cumulative returns over all seven-day intervals. Strikingly, we see that the return starts accumulating three days prior to the actual announcement until it reaches the peak on the announcement day, clear evidence in favor of the pre-announcement premium. For robustness, we also plot the cumulative return paths in the seven-day windows using the quarterly news sample only. On the right hand side of Figure 1, with news issued on February, April, July, and October, we are able to see a pre-drift of equity returns with a clearer trend.

In terms of the size of such pre-announcement premium in response to **M2** news, we see the cumulative returns reach to peaks of 85 bps and 200 bps respectively for the two plots. These square well with our estimates of daily premium of 30 bps and 90 bps respectively in response to monthly and quarterly **M2** news in the regression section despite using a different benchmark index. In addition, these plots show that the SSE index becomes flattens out after the announcement is made if not drops.

Figure 1: Cumulative Stock Market Returns Around M2 Announcements



(a) post-2010 sample (b) post-2010 quarter sample

This figure shows the average cumulative log return on the SSE Composite Index over seven-day windows. The solid line is the average cumulative retrun in seven-day windows centering on the first trading day when the market has access to the **M2** announcements as shaded by the grey bar. The dashed line denotes the average cumulative returns on the SSE Composite Index . The shadow areas mark $+1/-1$ standard deviation around average returns. (a) Sample: January, 2011 to December, 2016; (b) Sample: returns and **M2** news for months of February, April, July, and October only for years of 2011-2016.

3.4 Announcement Delays and Pre-announcement Premium

Previous sections suggest that the pre-drift of China's equity market returns can take place a few days earlier before the **M2** announcement is made public. This can be related to the fact that the monetary aggregate data in China is only loosely pre-scheduled. We thus check if an increasingly prolonged delay of releasing **M2** announcements could have additional effects on market returns.

We hypothesize that before the announcement is actually made, the risk of getting to know the **M2** numbers may be accumulating with the passage of time. Hence, the market tends to price the equity with a higher premium for the duration of waiting for a few more days. To test the null, we run an empirical test according to the following specification:

$$Exret_t = \beta_0 + \beta_1 \mathbb{I}_{t_{M2}-1} + \beta_2 \cdot Delay_{t_{M2}} + \beta_3 \cdot \mathbb{I}_{t_{M2}-1} \cdot Delay_{t_{M2}} + \beta_x X_t + \upsilon_t \tag{3}$$

where $Delay_{t_{M2}} = Day_t - \mathbb{E}(Day_{t_{M2}})$. The dummy variable $\mathbb{I}_{t_{M2}-1}$ equals to one if day t is exactly one day before the announcement day t_{M2}. Day_t is captured by the i-th day of a month for that day of t. $\mathbb{E}(Day_{t_{M2}})$ denotes the markets' expectation about the actual day of **M2** announcement for the month. We measure the market expectations using the previous month *de facto* date of announcement of **M2** data. Therefore $Delay_{t_{M2}}$ measures the deviation of actual **M2** announcement day for this month from the market expectation. When this gap is positive, we have a delayed **M2** announcement for that month. Therefore, the coefficient β_3 on the interaction term gives us the estimate of the additional premium that compensates for waiting for **M2** data a bit longer than expected. Hence, this coefficient reveals the potential non-linear nature conditional on the size of announcement delays.

Results in Table 6 show that the extra premium is present for investors to hold stocks longer while waiting for the updated monetary numbers. Across specifications, results in Columns (2) to (5) all point to the fact that not only the pre-announcement premium is consistently robust but more importantly, the coefficient estimate of β_3 is statistically positive and large in size. Intuitively, with one more day of **M2** announcement delay, on average, there will be an extra pre-announcement premium of 14 bps.

Table 6: Extra Waiting and Additional Pre-announcement Premium

VARIABLES	(1) All Anns	(2) All Anns	(3) All Anns	(4) All Anns	(5) Excl. Feb
$\mathbb{I}_{t_{M2}-1}$	0.40**	0.38**	0.54***	0.57***	0.59***
	(0.17)	(0.17)	(0.19)	(0.19)	(0.22)
$\mathbb{I}_{t_{M2}-1} \cdot Delay_{t_{M2}}$			0.14**	0.14**	0.15**
			(0.06)	(0.06)	(0.07)
$Delay_{t_{M2}}$		-0.01*	-0.01*	-0.01	-0.01
		(0.01)	(0.01)	(0.01)	(0.01)
Win_dum Ctrls				YES	YES
Weekday FE	YES	YES	YES	YES	YES
Constant	0.10	0.12	0.12	0.09	0.10
	(0.09)	(0.10)	(0.10)	(0.11)	(0.11)
Observations	1,577	1,555	1,555	1,555	1,439
R-squared	0.01	0.01	0.01	0.01	0.01

Notes: Sample: January, 2011 to June, 2017. This table reports the dummy variable regression results of Equation (3). "All Anns sample" columns summarize the results considering all **M2** announcements in our sample; "Excl. Feb" present results estimated from a sample that excludes February **M2** news. Column (1) is a copy of results from Column (1) in Table 5 as our reference. The dependent variable is the log close-to-close excess return constructed from Wind A Share Index. "Win_dum Ctrls": whether or not controls for other announcement day dummy variables $\mathbb{I}_{t_{M2}-i}$ up to a window length of $2T+1$ with $T=3$. "Weekday FE": the weekday fixed effects controls. See text for the definitions of variables. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in parentheses.

3.5 Pre-announcement Premium: Scale of Equity Premium

From previous sections, we see that the daily pre-announcement premium is largest in size for a three-day window prior to a **M2** news is made. We then ask the question up to what percent this pre-announcement premium can account for the overall Chinese equity market premium. Table 7 summarizes the key results.

For our baseline sample of years 2011 to 2017, the average daily close-to-close excess return of Wind A Share Index is about a scant size of 2 bps, with an annualized return of approximately 5 %. Our daily pre-announcement premium associated with the three-day **M2** windows, once annualized with a factor of 36, scales China's equity premium by a factor of 2.17 in annual term according to panel (a) of the table. The Sharpe Ratio for a trading strategy of buy-and-hold the Wind A Share Index for three days prior to the **M2**

announcements for twelve times a year yields a large number of 1.15, which is more than six times of the average Sharpe Ratio of 0.18 based on the buy-and-hold the benchmark index throughout the year. Therefore, the pre-announcement premium associated with **M2** news is sizable in both absolute and risk-adjusted terms.

On the right hand side of the Table, Panel (b) calculates China's equity premium and the pre-announcement premium using open-to-close returns. In specific, the scale factor of the pre-announcement premium drops to fractions of 45 %. The relative size of Sharpe Ratio is limited about 1.22. Intuitively, while the actual size of pre-announcement premium gets larger, it is the greater jumps of average equity premium based on open-to-close returns that drive down the magnitude of pre-announcement scale. Increases in both premium terms are attributed to the facts that the overnight returns in China's equity markets on average are negative. This dilutes the gains from open-to-close returns that lead to a lower close-to-close returns. However, in general, our results strongly emphasize the critical importance for studying monetary-based macro news. In sum, holding stocks a few days before the monetary policy news are announced can bring about a significant amount of equity premium.

Table 7: China's Equity Premium and Pre-announcement Premium of M2 News

		(a) Close-to-close Returns			(b) Open-to-close Returns		
	No.Obs	Daily average	Annualized	S.R.	Daily average	Annualized	S.R.
All trd day	1577	0.02	4.89	0.18	0.13	32.45	1.32
M2 Anns.	234	0.30	10.63	1.15	0.41	14.71	1.61
Scale/Ratio			2.17	6.39		.45	1.22

Notes: This table presents excess log returns of Wind A Share index earned in three-day Pre-M2 trading windows comparing to the average level with different measurements denoted at the top of each panel. "Annualized" stands for cumulative annual excess return, assuming there are 250 trading days in a calendar year. "M2 Anns." presents respective returns earned in the three-day pre-M2 trading window. "All trd day" presents respective returns earned in all trading days of the sample range. "S.R." denotes the annualized Sharpe ratio on pre-M2 window returns. Since there are 12 three-day window per year, we calculate the annualized announcement Sharpe ratio as the per day Sharpe ratio times $\sqrt{36}$. "Scale/Ratio" shows the scale or the ratio of returns earned in the three-day pre-M2 trading window to those earned in all trading days. Panel (A) summarizes results based on close-to-close returns; Panel (b) summarizes results based on open-to-close returns. Returns shown are all in percentage.

3.6 Equity Market Responses to MPR Announcements

For robustness, we further examine if the pre-announcement premium associated with **M2** announcements also applies to other types of monetary policy related news such as the **MPR** announcements. Table 8 summarizes the key findings. Column (1) takes our estimation results of a three-day daily premium due to **M2** news from Table 5 as reference. By focusing on quarterly **MPR** announcements only, Column (2) says that this type of monetary-related news can similarly generate jumps in excess returns of roughly 30 bps

despite of an attenuated statistical significance. A larger standard error associated with this coefficient estimate may be related to the fact that the **MPR** report, though covering statistics about the conducts of Chinese monetary policy, delivers information that is beyond the simple data releases. Results of Column (3) show the estimates of the pre-announcement premium by considering all dates of **M2** and **MPR** announcements. In terms of both the magnitude and the statistical significance, we can see that the pre-announcement premium associated with monetary news is sizable and robust.

Table 8: Wind A Share Index Returns in Windows Prior to M2 and MPR Announcements

VARIABLES	(1) M2 Announcements	(2) MPR Announcements	(3) M2 and MPR Announcements
$\mathbb{I}_{t_{M2}-1,3}$	0.33***	0.28*	0.31***
	(0.11)	(0.16)	(0.09)
Weekday FE	YES	YES	YES
Constant	0.07	0.10	0.08
	(0.10)	(0.09)	(0.07)
Observations	1,577	1,577	3,154
R-squared	0.01	0.01	0.01

Notes: Sample: January, 2011 to June, 2017. This table reports dummy variable regression results of Equation (2). The dependent variable is the log close-to-close excess return constructed from Wind A Share Index. Announcement dummy $\mathbb{I}_{t_{M2}-1,3}$ equals to one if day t belongs to a three-trading-day window before an M2 or MPR Announcement. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in parentheses.

4 Responses to Other Macro Announcements

Having identified the pre-announcement premium associated with monetary-related news, we proceed to look for other potential abnormal excess returns around the announcement windows of other macroeconomic news. Table 9 reports our benchmark dummy regression results using the post-2010 baseline sample. Importantly, we don't find the similar pre-drift of equity return patterns associated with announcements other than the **M2** and **MPR** news. Since most of the estimated coefficients are statistically insignificant, we discuss a few findings of interest only in the following.

Table 9: Wind A Share Index Returns in Windows of Other Macroeconomic Announcements

Announcement	(1) M2	(2) MPR	(3) TRD	(4) IVA	(5) FAI	(6) INP	(7) PMI	(8) CPI	(9) PPI	(10) RST	(11) FOMC
$\mathbb{I}_{t_{Anns}-3}$	0.33	0.06	0.17	0.36*	0.23	-0.24	-0.27	0.18	0.18	-0.33*	-0.42
	(0.21)	(0.27)	(0.20)	(0.22)	(0.21)	(0.22)	(0.23)	(0.14)	(0.14)	(0.19)	(0.32)
$\mathbb{I}_{t_{Anns}-2}$	0.23	0.55**	0.26	0.27	0.22	-0.13	-0.21	-0.10	-0.10	0.06	-0.31
	(0.18)	(0.22)	(0.20)	(0.22)	(0.21)	(0.19)	(0.22)	(0.21)	(0.21)	(0.21)	(0.29)
$\mathbb{I}_{t_{Anns}-1}$	0.44**	0.28	0.18	-0.01	0.01	-0.22	0.25	-0.01	-0.01	0.05	0.16
	(0.17)	(0.30)	(0.19)	(0.19)	(0.18)	(0.19)	(0.17)	(0.21)	(0.21)	(0.21)	(0.21)
$\mathbb{I}_{t_{Anns}}$	0.16	0.57	0.40**	0.01	0.08	-0.01	0.23	0.06	0.06	-0.27	-0.20
	(0.18)	(0.37)	(0.20)	(0.22)	(0.21)	(0.22)	(0.22)	(0.23)	(0.23)	(0.21)	(0.23)
$\mathbb{I}_{t_{Anns}+1}$	-0.16	0.49**	-0.02	0.06	0.02	0.08	0.24	0.18	0.18	0.08	0.06
	(0.17)	(0.23)	(0.18)	(0.19)	(0.18)	(0.18)	(0.21)	(0.18)	(0.18)	(0.20)	(0.25)
$\mathbb{I}_{t_{Anns}+2}$	0.04	-0.23	0.07	-0.13	-0.07	-0.11	0.27	-0.01	-0.01	0.06	-0.05
	(0.21)	(0.17)	(0.19)	(0.23)	(0.21)	(0.19)	(0.18)	(0.19)	(0.19)	(0.18)	(0.26)
$\mathbb{I}_{t_{Anns}+3}$	0.02	0.17	0.17	0.06	0.08	0.53***	0.10	0.04	0.04	-0.09	0.20
	(0.19)	(0.24)	(0.14)	(0.17)	(0.17)	(0.16)	(0.18)	(0.17)	(0.17)	(0.20)	(0.19)
Weekday FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.07	0.08	0.06	0.09	0.09	0.10	0.07	0.09	0.09	0.12	0.13
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.11)
Observations	1,577	1,577	1,577	1,577	1,577	1,577	1,595	1,577	1,577	1,577	1,577
R-squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Notes: Sample: January, 2011 to June, 2017. The dependent variable is the log close-to-close excess return constructed from Wind A Share Index. Announcement dummy $\mathbb{I}_{t_{Anns}-1}$ equals to one if the i-th trading day 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 with the dummy variable $\mathbb{I}_{t_{Anns}} = 1$ when $i = 0$. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in parentheses.

We see that for a few *lead* terms related to the **MPR** on day t_{Anns+1} and **INP** news on day t_{Anns+3}, the partial effects of our dummies are significantly positive. We don't call these partial effects the "news" effects of announcements highlighted in this paper. As the nature of macro risk has been notified to the public on t_{Anns}, the markets are riding on the updated news content rather than on their expectations about the incoming news. Also, in response to the announcements of China's trade statistics, the Chinese stock market reacts with a large 40 bps in excess returns relative to no news daily returns. We show that such positive returns realized on the announcement day are largely driven by the "favorable" trade news in the sample years of 2011-2017. Thus this premium associated with trade data announcements depends on the nature of shocks and is not directly comparable again to the news effects related to the monetary announcements.

Last but not least, we focus on China's equity markets reactions to the U.S. FOMC statement releases. According to Column (11) of Table 9, it is important to note that for all lag and lead terms, there is no excess return statistically different from zero. We conclude that China's equity market does not price in the risk of the incoming U.S. FOMC statement releases at least in the sample considered in our paper. This finding contrasts with the evidence documented in Lucca and Moench (2015) that the stock markets of a number of

advanced economies have positive pre-drift in anticipation of FOMC news.

We offer two explanations for the differences in findings regarding responses to U.S. FOMC announcements. First, even if China has undergone a series of financial reforms, its integration to the global financial markets is yet to complete. In this case, most of the more developed markets consider changes in the U.S. interest rates as an important global risk that may affect their domestic asset prices, capital flows, exchange rates, international trade dynamics, and its real-sector growth through financial and trade linkages. China, due to the limited participation of its investors into foreign capital markets, highly regulated exchange rate and managed capital accounts, may be potentially isolated from the U.S. monetary policy risk. Second, we note the sample differences of our paper (years of 2011-2017) and a pre-2011 periods in Lucca and Moench (2015). Thus, we have examined China's equity market responses to a period when the U.S. Federal Funds rate, a benchmark monetary policy instrument, is largely fixed near a zero lower bound for years since the full blow of financial crisis in 2008 until it's lifted up in the end of 2015. Therefore, it might be the reason that the U.S. FRB well managed both the U.S. domestic market as well as the international markets such as China by convincing the investors that the rate won't experience a hike if there is no clear signal suggesting the improved U.S. fundamentals (Yellen, 2015). All these hypotheses are worth further exploring.

5 Conclusion

This paper documents a pre-announcement drift of China's equity market returns in response to the **M2** announcements, critical news that sheds light on Chinese central bank's moves on its monetary policy. On average, in anticipation of the **M2** announcements, China's equity market reacts with an approximately 40 basis points per day increases in excess return a few days earlier, and peaks on the day right before the announcement day. A buy-and-hold strategy of Chinese market equity portfolio in response to monetary news can generate a Sharpe Ratio of 1.15 and an annualized return of 11 %, which is more than twice the size of average Chinese equity premium for the period of years 2011-2017.

In addition, per the fact that the exact dates of monetary announcements are not completely pre-scheduled, we found the pre-announcement premium is larger as investors are waiting for the M2 data a bit longer. As for the macro news about the trade competitiveness, the real-sector productivity and the aggregate price indices, no announcement-related premium is found.

In line with Carpenter et al. (2017), these findings present another facade of China's equity market resemblance to its U.S. counterpart with respect to pricing news about do-

mestic macro risk. However, differed from other markets of a range of advanced economies, China's equity market is largely immune from the risk of U.S. monetary policy changes when anticipating for the FOMC statement releases in recent years.

Appendix

A Other Summaries of News Timing

Table A3 reports the number of a particular announcement that falls on the same day when other data releases are also announced. Out of the 78 **M2** announcements, 13 pieces shared the same day with **FAI** and **VAI** announcements, and 11 were co-released with **CPI** and **PPI**. Since 2009, **CPI** and **PPI** data are released at the same time and PPI sometimes preceded the CPI announcement by one day before 2009.

For comparisons, we also summarize the time distribution of an extended sample by including macro announcements starting from January, 2000. Table A4 shows that by looking at **M2** announcements of a longer sample, we can infer that PBOC used to issue monetary related data mostly during weekdays and even within trading hours before 2011. Furthermore, in early 2000s, PBOC tended to publish **MPR** reports before rather than after the trading hours.

B Additional Tables

Table A1: Cross-check of NBS Announcement Dates Based on Two Data Sources

Year	BEC Y / WC N	-15	-11	-10	-9	-8	-7	-4	-3	-2	-1	0	1	2	BEC N / WC Y
2002	20	1			1			1		1		12			10
2003	25							3				16	1		9
2004	27		1			1		2	1	1		14			5
2005	27										5	24			
2006	41							2		1	4	20			
2007	25										9	28			1
2008	23									3	6	28	1		2
2009	37										6	19			2
2010	34						1				1	22	4		16
2011	15			1			1		1	1		58	1		2
2012	5								1			73	1		1
2013	4											76			1
2014	1											73		1	6
2015	1										1	64	4		12
2016	1									1		64	2		12
2017	1											32	1		6
Total	**331**	**1**	**1**	**1**	**1**	**1**	**2**	**8**	**3**	**8**	**32**	**623**	**15**	**1**	**85**

Notes: This table reports the differences of NBS announcement dates between two sources: Bloomberg Economic Calendar (BEC) and author-designed NBS website crawling algorithm (WC). "BEC Y / WC N" denotes number of announcements that are included in Bloomberg but missed by web crawler, "BEC N / WC Y" denotes exactly the opposite. Numbers in the first row denote the number of days by which a Bloomberg announcement date leads the corresponding web crawler date. We report the number of mismatched announcements in this table for a sample of Jan, 2002 to June, 2017.

Table A2: Snapshot of Selected Announcements

Ticker	Publisher	Key and Concurrent Released Statistics	Starting Month of Regular Release
M2	PBC	M2/M1 Growth Credit Growth Aggregate Financing to the Real Economy *	Feb-2000
MPR	PBC	Monetary Policy Report	May-2001
TRD	GACC	Import/Export Growth	Jan-2000
FAI	NBS	Investment in Fixed Assets Retail Sales of Consumer Goods GDP Growth	Jul-2002
VAI	NBS	Value Added of Industrial Enterprises	Mar-2000
INP	NBS	Profits of Industrial Enterprises	Sep-2005
PMI	NBS	Manufacturing/Non-manufacturing PMI	Aug-2005
CPI	NBS	CPI	Jan-2000
PPI	NBS	PPI	Jul-2002
RST	NBS	Price Indices of Residential Buildings	Feb-2011
FOMC	U.S. FRB	FOMC Statement	Feb-1994

Notes: This table reports a summary of the selected announcements considered in this paper. *: This statistic started to be released with monetary aggregates on a monthly basis since 2012.

Table A3: Concurrent Macroeconomic Announcements

	M2	**MPR**	**TRD**	**FAI**	**VAI**	**INP**	**PMI**	**CPI**	**PPI**	**RST**	**FOMC**
M2	78	2	5	14	13			11	11		1
MPR		26	3				1	2	2		1
TRD			78					1	1		1
FAI				71	65			20	20	3	
VAI					65			18	18	3	
INP						38					
PMI							79				2
CPI								78	78		
PPI									78		
RST										76	4
FOMC											52

Notes: Sample: January, 2011 to June, 2017. The crossing number of the table is the number of pairwise concurrent announcements (on the same date). Note that the row or column sum does not have to be equal to the total number of announcements for a given variable.

Table A4: Time Distribution of Macroeconomic Announcements

			M2	MPR	TRD	FAI	VAI	INP	PMI	CPI	PPI	RST	FOMC
Sample 2000M1-2017M6	**weekday before trading hours**	No. Anns.	12	34	23	18	20		109	27	19		143
		Avg. Ann. Time	8:43		8:35	8:47	8:47		9:00	8:31	8:45		2:25
	weekday within trading hours	No. Anns.	53		133	135	152	58	2	166	144	63	
		Avg. Ann. Time	11:27		11:00	10:41	10:35	9:50	10:00	10:00	9:55	9:32	
	Mon-Thur after trading hours	No. Anns.	95	16	22	2	2		1	3	1		4
		Avg. Ann. Time	16:05	17:58	16:38	15:20	15:20		20:00	17:40	15:00		20:53
	between weeks	No. Anns.	51	14	33	13	15	12	34	16	17	16	
		Avg. Ann. Time	15:31	18:27	12:12	12:55	13:04	9:45	9:00	9:33	9:47	9:33	
	Total		**211**	**64**	**211**	**168**	**189**	**70**	**146**	**212**	**181**	**79**	**147**

Notes: This table depicts the time distribution of macroeconomic announcements. Shanghai and Shenzhen Stock Exchanges are open for trading from Monday to Friday, with call auction from 9:15 to 9:25, continuous auction in 9:30 - 11:30 and 13:00 - 15:00. Intent orders for block trades are accepted between 9:30 and 11:30 and again between 13:00 and 15:30, while execution orders and fixed-price orders for block trades are accepted from 15:00 to 15:30. Special block trade sessions are held on an ad hoc basis between 15:00 and 17:00. Based on this, we categorize the announcements into four groups by the time of their release: (1) announcements released before trading hours in weekdays; (2) announcements released within trading hours (we also include announcements released between morning session and afternoon session); (3) announcements released after trading hours from Monday to Thursday; (4) announcements released between market closure on Friday and market openness on next Monday. This table reports the number of announcements of each groups and the averaged release time within the group.

Table A5: Alternative Indices: Equity Returns in Windows of M2 Announcements

VARIABLES	(1) Wind A Share Index	(2) SSE Composite Index	(3) SZSE Component Index
$\mathbb{I}_{t_{Anns}-3}$	0.33	0.25	0.22
	(0.21)	(0.16)	(0.19)
$\mathbb{I}_{t_{Anns}-2}$	0.23	0.14	0.20
	(0.18)	(0.14)	(0.16)
$\mathbb{I}_{t_{Anns}-1}$	0.44**	0.26*	0.35**
	(0.17)	(0.14)	(0.17)
$\mathbb{I}_{t_{Anns}}$	0.16	0.12	0.07
	(0.18)	(0.15)	(0.19)
$\mathbb{I}_{t_{Anns}+1}$	-0.16	-0.14	-0.19
	(0.17)	(0.14)	(0.18)
$\mathbb{I}_{t_{Anns}+2}$	0.04	-0.05	-0.08
	(0.21)	(0.19)	(0.21)
$\mathbb{I}_{t_{Anns}+3}$	0.02	-0.01	-0.01
	(0.19)	(0.15)	(0.19)
Weekday FE	YES	YES	YES
Constant	0.07	0.04	0.09
	(0.10)	(0.08)	(0.10)
Observations	1,577	1,577	1,577
R-squared	0.01	0.01	0.01

Notes: Sample: January, 2011 to June, 2017. This table reports dummy variable regression results of Equation (1) for different specifications. The dependent variable is the log close-to-close excess return constructed from different market indices. SSE Index: Shanghai Stock Exchange Composite (SSE) Index; SZSE Index: Shenzhen Stock Exchange Component Index (SZSE) Index. Announcement dummy $\mathbb{I}_{t_{M2}-i}$ equals to one if the i-th trading day 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 with the dummy variable $\mathbb{I}_{t_{M2}} = 1$ when $i = 0$. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in parentheses.

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