China's Increasing Global Financial Impact*

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Abstract

Even without complete financial liberalization, China can exert an influence on global equity markets through its pivotal role in world markets for commodities, goods, and services. In this paper, we investigate the price impact of Chinese portfolio equity investments abroad on individual and country stock returns worldwide. We use granular stock holding data from 2007 to 2019 in the Qualified Domestic Institutional Investors (QDII) program, which provide identification as a source of exposure to a China-specific shock. As a conduit, we focus on Chinese monetary policy that correlates positively with global equity returns after 2007, when the QDII program was introduced. We find that the sensitivity to Chinese monetary policy changes of individual stock returns worldwide depends on the portfolio rebalancing of QDII funds. This sensitivity gets larger when the QDII funds increase their holdings of foreign stocks. We also find that Chinese QDII funds react to monetary policy easing by rebalancing from safe assets such as bank deposits to risky assets and particularly foreign equities. These results speak to a growing global financial impact of China and suggest that a more fully liberalized capital account could indeed have a significant impact on US and world equity markets.

Keywords: Chinese Portfolio Equity investment, QDII Funds, Monetary Policy, Portfolio Rebalancing

JEL Classification: F30, G10

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1 Introduction

There will be sizable capital outflows from China when the country fully liberalizes its capital account according to standard models' predictions for a capital-abundant economy.[1] Given China's economic size, these outflows have the potential to significantly impact global financial markets.[2] Even without complete financial liberalization, China already exerts global influence through trade in goods and services (Miranda-Agrippino, Nenova and Rey 2020), net direct investments, and official capital flows (Horn, Reinhart and Trebesch 2021). Albeit still tightly regulated, China's foreign portfolio equity holdings are approaching a trillion dollars, comparable to advanced economies such as Australia and fully integrated large emerging economies as South Korea (Figure 1). Moreover, the footprint of Chinese portfolio equity investment is global, covering over 38 economies.[3] Given China's increasing global financial integration, an important question is to understand the price impact of Chinese portfolio equity outflows on international equity markets. Is there a significant price impact? What are possible transmission mechanisms? What are the characteristics of this new source of demand?

We investigate these questions using granular stock holding data reported by the Qualified Domestic Institutional Investors (QDII) program, which was launched by China in 2006 to satisfy the growing diversification needs of domestic households and ease the appreciation pressure on the RMB. To control the size of capital outflows, the program caps the total dollar size of the program through quotas assigned to these domestic institutional investors that include mutual funds, banks, insurance companies and trusts. As the mutual funds are subject to disclosure requirements on their stock holdings, in this paper we focus on the QDII funds. In our matched data, the total value of global stocks held by QDII funds is around US$5.2 billion worldwide in 2019, or 1.36% of total Chinese external foreign portfolio equity holdings. The footprint of QDII funds is also

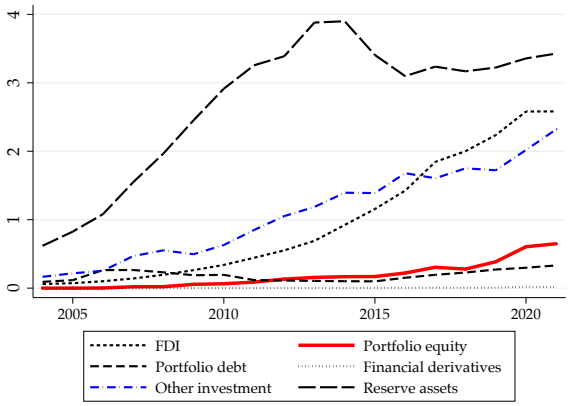
[1] According to the estimation by the IMF economists, the size of net capital outflows is around 10% of GDP once China fully liberalizes its capital account (Bayoumi and Ohnsorge 2013).

[2] Ma, Rogers and Zhou (2020) find that even a controlled stock market liberalization such as the Shanghai/Shenzhen-Hong Kong Stock Connect program can generate a non-trivial price impact in the Hong Kong stock market.

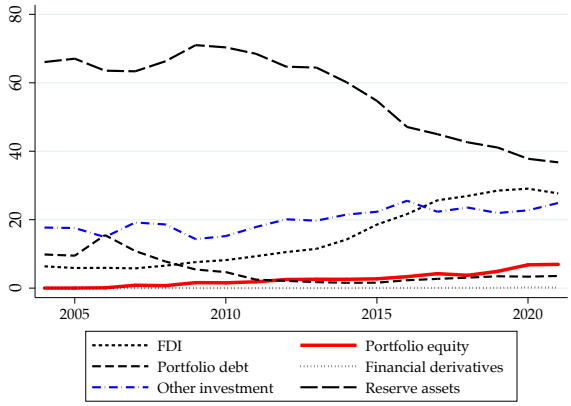
[3] This does not include Chinese mainland A shares.

Figure 1 CHINESE FOREIGN ASSETS

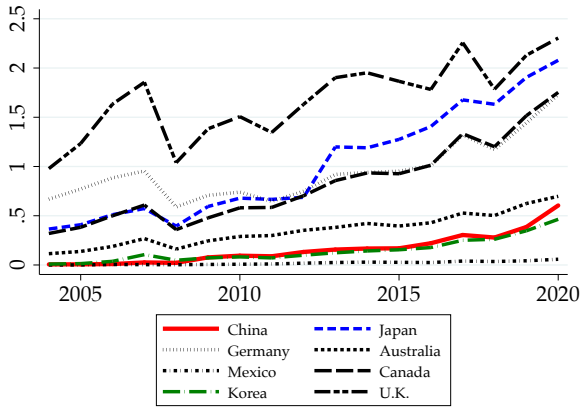
Panel A: Composition (in trillion US dollars)



Panel B: Composition (% of total assets)



Panel C: China and Other Countries Portfolio Equity Assets (in trillion US dollars)



Data sources: State Administration of Foreign Exchange and Lane and Milesi-Ferretti (2007).

wide, covering around 1995 unique firms in 38 economies. Under the assumption that those QDII funds are a representative of Chinese total external assets, we can use their granular stock holding information to understand the price impact of the universe of Chinese portfolio equity investors.

The amount of Chinese total portfolio equity investment is growing with the continuing financial liberalization in China (Figure 1). It was 0.0002 trillion US dollars in 2004, and has reached 0.648 trillion in 2021. Although the lion's share of Chinese external assets is still in official reserves, FDIs, and other investment (typically bank loans and trade credits), the share of portfolio equity has steadily increased from only 0.02% in 2004 to 6.95% in 2021. The size of Chinese portfolio equity assets is comparable to economies such as Australia and South Korea, about one

third of the size for the UK, Japanese, and German investment, but much larger than the size of Mexican investors.

To study the price impact of Chinese portfolio equity investors, we first document a correlation between country-specific MSCI equity market index returns and Chinese monetary policy as measured by M2 growth. Specifically, we find that local market returns in the 70 countries are positively correlated with Chinese M2 growth rate at monthly frequency during the sample period of 1993 to 2019.[4] This positive relationship is robust to conditioning on global factors, including changes in US monetary policy and VIX, as well as local market characteristics such as CPI inflation, industrial production, and unemployment. Moreover, this relationship holds for different currency denomination (dollar vs. local currency) and country groups (advanced vs. emerging market economies). We also find that local currency appreciation is positively correlated with Chinese M2 growth rate, consistent with a higher demand from portfolio equity outflows when monetary policy is looser. We also find that this correlation is driven by the post-2007 sample period, coinciding with the launch of the Chinese QDII program. When we link this correlation to changes in the holding of QDII funds, we find that the positive correlation is stronger when funds increase their holdings of the destination country. These results suggest that Chinese portfolio equity investments can have a significant price impact on international equity markets.

To further understand the transmission mechanism and achieve identification, we also analyse the impact of monetary policy shocks at the *individual* foreign stock level, interacted with QDII fund holding information about that stock. We rely on the monetary policy shocks identified in Chen, Ren and Zha (2018) as a conduit. We first document that the holding changes in QDII funds also strengthen the positive price impact of monetary policy shocks on individual stocks worldwide, consistent with the results shown above at the country level. We further provide evidence on the portfolio rebalancing of QDII funds in response to a monetary policy shock in China to explain the transmission mechanism. Specifically, we show that QDII funds respond to a monetary policy

[4]The local market index is from the MSCI Company, covering 23 developed, 24 emerging markets and 23 frontier markets. For details see https://www.msci.com/our-solutions/indexes/acwi. We start from 1993 due to M2 data availability.

easing by reducing safe assets holdings and increasing risky assets. Such a rebalancing generates a price effect on the individual stocks worldwide, which explains the positive relationship at the country level documented above.

Related Literature

Our paper contributes to several strands of the literature. First, we contribute to the literature on the stock market liberalization in China. For example, Ma, Rogers and Zhou (2020) study the Shanghai/Shenzhen-Hong Kong Stock Connect program. They find that Hong Kong eligible stocks appreciate relative to ineligible stocks on the day when the Stock Connect was launched in November 2014, consistent with our finding on China's increasing international financial impact. Different from their work that mainly focus on the one-time event, we study the channel through Chinese portfolio equity investment affects international market and use monetary policy as a conduit.

Our paper also belongs to the new literature on understanding China's external claims. For example, Horn, Reinhart and Trebesch (2021) focus on the Chinese overseas lending by the public sector while our paper focuses on the private investors. Cerutti, Koch and Pradhan (2020) study the Chinese private bank lending. Our paper mainly focuses on portfolio equity investment, similar to that in Agarwal, Gu and Prasad (2019) who study the investment behavior of Chinese portfolio investors based on the Factset Ownership dataset. In contrast, we use the granular stock holding level information from Wind dataset and focus the *price impact* from Chinese portfolio equity investment. This is similar to Ahmed and Rebucci (2022) who focus on the price impact of foreign official investors, including China, on US treasury yields.

We also contribute to the literature on the spillover effects of monetary policy. Most existing contributions, focus on the ever growing literature on US monetary policy transmission — among many others, see for example Di Giovanni and Hale (forthcoming) and Jiang et al. (2022). In contrast, Miranda-Agrippino et al. (2020) show strong evidence of increasing/emerging financial spillover effects from China but mainly through trade, global value chains and commodity prices;

and Horn et al. (2021) show the effects from China through official capital flows. Our paper, however, estimates the spillover effects of Chinese monetary policy on global equity markets through the portfolio rebalancing of private investors.

The remainder of the paper is organized as follows. Section 2 provides institutional details on the QDII investment program. Section 3 lays down our working hypothesises and the research design to test them. Section 4 describes the data. Section 5 reports the empirical results. Section 6 concludes. Additional results and details of the analysis are reported in appendix.

2 Institutional Details

China maintains a tight capital controls policy for cross-border portfolio investment. However, the government has created various programs to liberalize its financial markets. With respect to the stock market, traditionally, foreign investors could only purchase Chinese mainland stocks issued as B shares in US dollars (on the Shanghai market) and in HK dollars (on the Shenzhen market). Since the launch of the Qualified Foreign Institutional Investor program (QFII) in 2002, B shares have become less important for foreign investors. The QFII program allows qualified foreign *institutional* investors to invest in mainland China's financial markets but also imposes investment quotas.[5]

On April 13, 2006, the People's Bank of China announced the formal start of the Qualified Domestic Institutional Investor (QDII) program, which allows Chinese domestic investors to invest overseas.[6] This program was not received well initially. The Chinese domestic investors preferred to keep their money at home, thanks to the boom in the Chinese stock markets, there was expectation the RMB would appreciate against the US dollar, and there was concern over the volatility in the global markets and the US subprime mortgage crisis. And the initial regulation of the QDII program imposed tight restrictions on the investment opportunities. However, to further develop the QDII program and as a way to address appreciation pressure on the exchange rate and also pur-

[5]The quota restriction was eliminated in September 2019.

[6]See http://www.pbc.gov.cn/en/3688110/3688181/3699115/index.html.

sue the long term objective to liberalize outflow restrictions, the regulators significantly expanded the program coverage and relaxed certain restrictions on investment opportunities in mid-2007 (see Robinson and Newman 2008).[7]

The regulatory approach to liberalize outflows followed a familiar pattern utilizing quota restrictions. In 2006, the total dollar value of the QDII quota allocated to domestic investors was about US$21 billion, split among banks and insurance companies (receiving roughly slightly more than half of the quota) and mutual funds receiving only US$0.4 billion.[8] Subsequently, the government periodically relaxed the quota restrictions on the QDII program either by increasing the total size of quota or approving more institutional investors to join the program. Over time, the QDII funds become progressively more important. By 2021, QDII funds had US$84 billion under management, representing the largest investor segment (Figure 3, panel A1). Although the QDII program is only one channel through which Chinese investors invest in overseas stock markets, it is the most important one through which Chinese households can have access to the global equity market. In addition to QDII products, since 2014 Chinese households can also participate in the Shanghai/Shenzhen-Hong Kong Stock Connect. However, this program only applies to Hong Kong listed eligible stocks, unlike the QDII program that grants access to all global stocks.

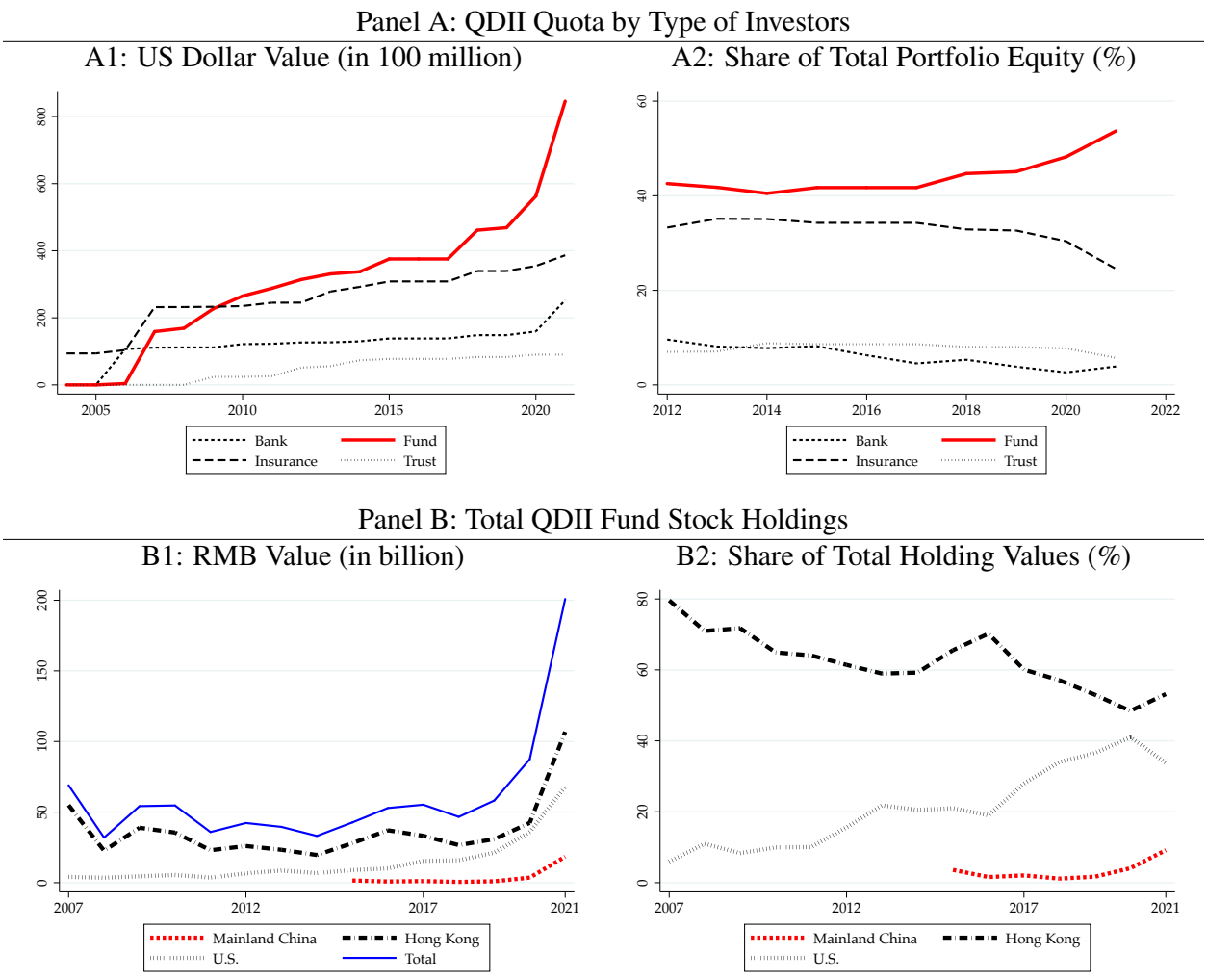
QDII funds do not need to use up all their quotas. They actually invest very cautiously as their liabilities are in RMB and they may face redemption in time of stress in global markets.[9] Typically, QDII funds allocate into stocks (foreign or Chinese A shares), bonds, bank deposits, other mutual funds (such as exchange traded funds (ETFs), derivatives, commodity futures, etc. Overall, QDII funds invest roughly 80% in stocks, about RMB 50 billion before 2019 rising to RMB 200 billion in 2021. Most of their stock holdings are in the Hong Kong market, followed by the US market (Figure 3, panel B1). Interestingly, the Chinese QDII funds only start to invest in Chinese A shares in 2015, when the domestic stock market experiences a sharp and sudden decline.

[7] See http://www.csrc.gov.cn/csrc/c101932/c1044480/content.shtml.

[8] Although the QDII program formally started in 2006, certain insurance companies were allowed some access to foreign equity markets even before 2006.

[9] See Figure A1 for a comparison between QDII fund returns and other Chinese mutual funds, along with the performance of Chinese and US stock markets.

Figure 2 QDII QUOTA BY INVESTORS AND QDII FUNDS' TOTAL STOCK HOLDINGS



NOTE: Panel A presents the QDII quotas granted by the Chinese government to all QDII investors including banks, funds, insurance and trust, in dollar value in panel A1 and in share of total portfolio equity in panel A2. Panel B reports the total stock holdings by QDII funds to a selective list of economies including mainland China, Hong Kong and US based on the location where the stocks are listed, in RMB value in panel B1 and share of total holding values in panel B2. Data source: State Administration of Foreign Exchange and Wind.

The Chinese QDII funds also have a widening global footprint. The total number of distinct individual stocks held by the QDII funds has grown from a few hundred in 2007 to over 3000 in 2021. Moreover, the number of products issued by the QDII funds has increased from less than 10 in 2007 to around 140 in 2021. QDII funds invest globally, cover cover 48 countries and are diversified across industries. Although the dollar value into the US market is smaller than that into HK market, the number of US firms purchased by QDII funds is the largest compared with all other countries.[10] Chinese QDII funds have a preference to invest in firms in high tech industries such as pharmaceutical products, electronic equipment compared to firms in the defense industry, possibly reflecting the diversification needs of domestic Chinese households.

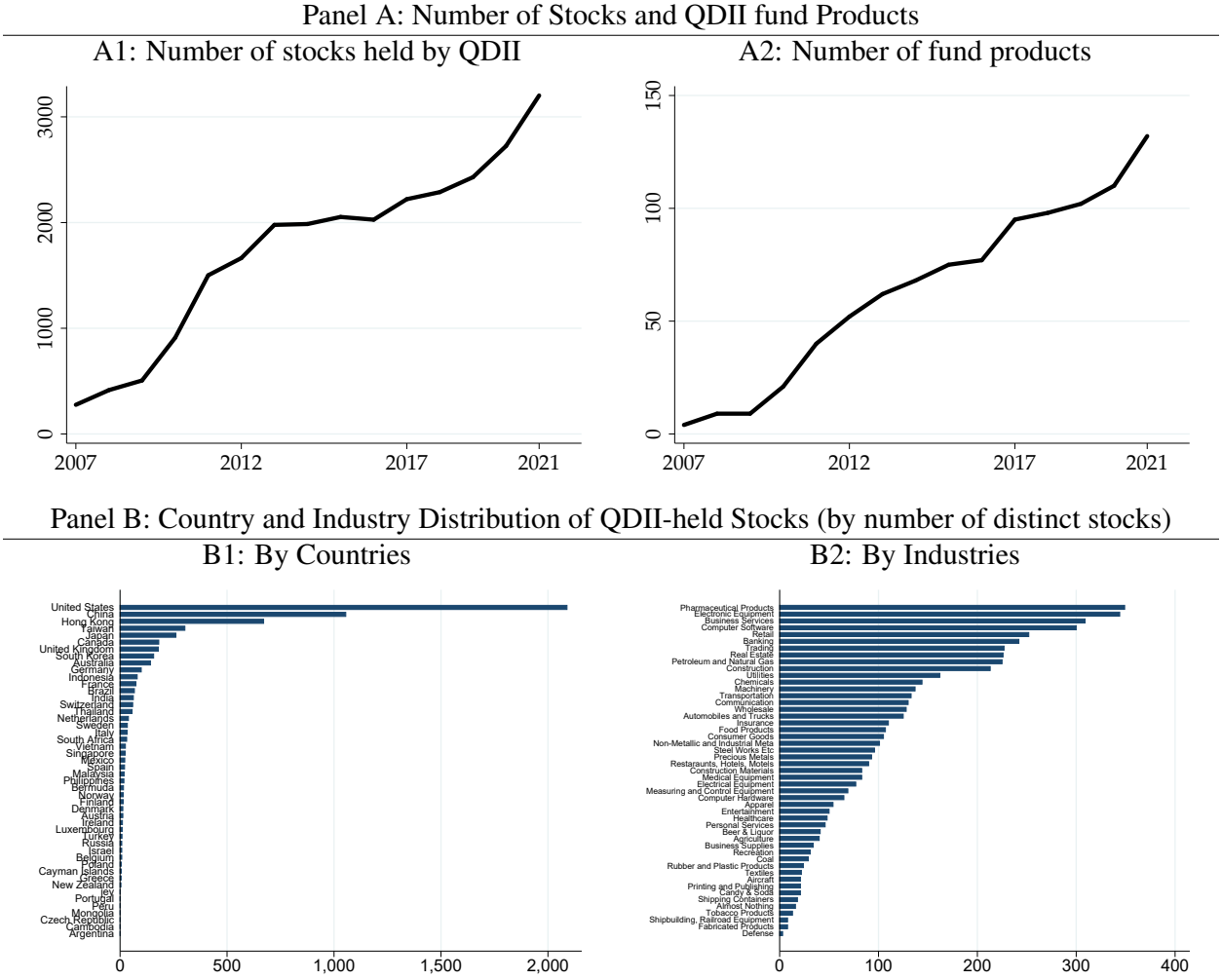
3 Hypotheses and Research Design

As a large country liberalizes its capital outflows, we would expect to see its international financial impact growing. As we do not have detailed information on all Chinese portfolio equity investments, in this paper we use the stock holding information of QDII funds as a proxy for all Chinese private investments, including through other programs and capital flight (i.e. illegal outflows that find their way to legal foreign investments in the receiving countries).[11] The underlying assumption is that the QDII funds are representative of all Chinese private investors' preferences. As a check, we calculate the shares of total QDII funds investment into each country in each half year (available after 2007), such as the share of total QDII funds into US equity market at time t. We then calculate the same variable using the aggregate data from the official source, i.e. the State Administration of Foreign Exchange (available after 2015). The correlation between the same variable constructed using different data sources after 2015 is over 0.8, which suggests that the

[10] We also present the size of QDII holdings in terms of the stock market capitalization and shares outstanding for the stocks they purchased in Table A1. On average, it is 0.13% and varies with the markets QDII funds invested in. For example, in the US market the number is 0.03%, while in Hong Kong the value is 0.27%. These shares are non-trivial, especially compared with the foreign institutional ownership reported by Bena et al. (2017). They find that foreign institutional investors (including Chinese and others) own 13% of stocks for all markets, 8% in the US market, and 11% in the Hong Kong market. If China were to opens up fully, one can imagine these shares increasing further.

[11] Moreover, Chinese investors might play the role of "smart" money to lead other foreign investors to trade certain Chinese externally listed stocks, such as Alibaba.

Figure 3 QDII SCOPE AND FOOTPRINT



NOTE: Panel A1 presents the total number of distinct stocks held by all QDII funds in each year. Panel A2 presents the total number of unique QDII fund products issued by the Chinese brokerage firms in each year. Panel B1 and B2 present the domicile country and industry distribution (SIC code based on Fama-French 49 portfolio) of stocks held by the QDII funds from 2007 to 2020. Data sources: Wind and Worldscope.

assumption on the QDII funds as a representative of all Chinese private investors' preferences is a reasonable assumption.

As we have detailed stock-level holding data, we will use monetary policy as a conduit of shocks from China to abroad and individual stock-position data as a source of exposure of *foreign* stocks to shocks originating in China. Specifically, our mechanism is that Chinese monetary policy can have a financial impact on global equity market through its influence on Chinese private investors. We also notice that there could be alternative channels for the Chinese monetary policy to affect global equity returns. In other words, we use granular QDII fund holdings data to identify a financial channel of transmission of shocks from Chinese private investors to foreign equities.

Figure 4 represents and summarizes the research design. Our main interest is the price effect of Chinese private investors on global financial market, i.e. arrow A. We exploit stock holding information of QDII funds, i.e. arrow D to estimate the impact of arrow A on foreign stock returns. As a conduit, we use China's monetary policy, i.e. arrow B, controlling for the direct impact of of the latter through real channel, i.e. arrow C. Our first hypothesis, therefore, is that Chinese monetary policy and foreign equity market returns are positively correlated.

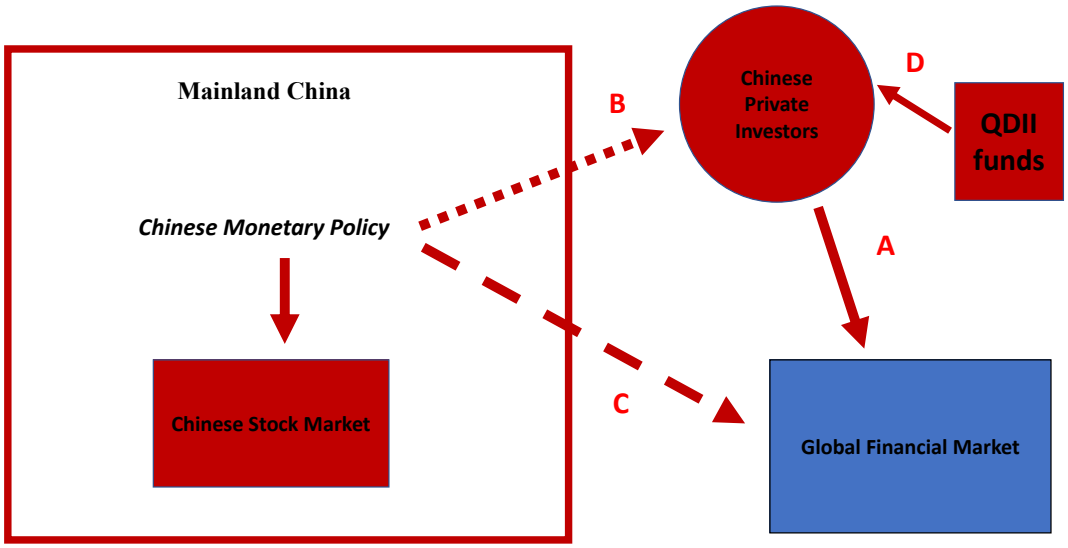
Hypothesis 1. *Chinese monetary policy is positively correlated with global market returns.*

We test Hypothesis 1 using the following specification as in Chari, Dilts Stedman and Lundblad (2021) who investigate the relationship between US monetary policy and global market returns:

$$r_{ct} = \beta * \text{MP}_t^{China} + \gamma * \text{MP}_t^{US} + \text{Controls}_{c,t-1} + \varepsilon_{c,t} \tag{1}$$

where r_{ct} is the monthly country-level stock index returns (in log) for country c at time t, MP_t^{China} and MP_t^{US} are monetary policy indicators for China and the United States, respectively. Our proxy for Chinese monetary policy is the M2 growth rate (year-over-year) at monthly frequency. As noted by Chen et al. (2018) and Huang, Ge and Wang (2019), the growth rate of M2 is a reasonably good proxy for China's monetary policy stance. Given China uses capital controls, its monetary policy mainly addresses domestic economic conditions, unlike the typical emerging market economy that

Figure 4 FINANCIAL TRANSMISSION MECHANISM: ROADMAP



NOTE: Our main interest is the price effect of Chinese private investors on global financial market, i.e. arrow A. We exploit stock holding information of QDII funds, i.e. arrow D to estimate the impact of arrow A on foreign stock returns. As a conduit, we use China's monetary policy, i.e. arrow B, controlling for the direct impact of of the latter through real channel, i.e. arrow C.

is more constrained by US monetary policy. Nevertheless, we also control for the change in the Federal Funds rate to proxy for the stance of US monetary policy and the changes in the VIX index to control for US and global financial conditions. Notice that Chinese monetary policy likely affects global market returns primarily through the real economic channels, like trade linkages and commodity prices (Miranda-Agrippino et al. 2020). The real channel of transmission is controlled for by adding to the regression country-level variables such as CPI inflation, industrial production growth and the unemployment rate. As an additional control, we also include the lagged dependent variable. We estimate this equation at monthly frequency using all 70 countries in the MSCI index from 1993 to 2019.

Next, we are interested in estimating dynamics in the coefficient β, which captures the correlation of Chinese monetary policy and international equity returns, controlling for important confounding factors such as US monetary policy and the global financial cycles emphasized in

the previous literature. Such estimates can also shed light on the question whether the correlation between Chinese monetary policy and global equity returns has increased over time. To that end, we estimate the following regression equation:

$$r_{ct} = (\beta_1 * \mathbb{1}_{t<2007} + \beta_2 * \mathbb{1}_{t\geq 2007}) * \text{MP}_t^{China} + \gamma * \text{MP}_t^{US} + \text{Controls}_{c,t-1} + \varepsilon_{c,t} \tag{2}$$

where $\mathbb{1}_{t<2007}(\mathbb{1}_{t\geq 2007})$ is an indicator variable taking the value of one during the sample period before (after) 2007. We intentionally choose 2007 that corresponds with the launch of the QDII program. If Chinese global financial impact increases with the financial liberalization and the QDII program represents a conspicuous portion of it, we should expect that the correlation between Chinese monetary policy and global equity returns is larger after 2007, i.e. $\beta_1 < \beta_2$.

We then link the β coefficient in equation (1), or β_2 in (2) with QDII funds' stock holdings. Our working hypothesis here is that QDII funds portfolio rebalancing induced by monetary policy can strengthen the (positive) correlation between Chinese monetary policy and global equity markets. That is, we want to test the channel from arrow B to arrow A in Figure 4.

Hypothesis 2. *The positive correlation between Chinese monetary policy and global equity returns is stronger in the presence of QDII-fund exposure.*

We test this hypothesis using detailed stock holding information of QDII funds. Specifically, we aggregate stock holdings by QDII funds by target country at semi-annual frequency. Next we construct the change of QDII funds stock holdings by country. We then investigate whether more QDII fund holdings can strengthen the positive correlation of Chinese monetary policy and international stock market returns. Here, the specification is the following:

$$r_{ct} = (\beta_1 + \beta_2 * \Delta w_{c,t-1}) * \text{MP}_t^{China} + \gamma * \text{MP}_t^{US} + \text{Controls}_{c,t-1} + \varepsilon_{c,t} \tag{3}$$

where $w_{c,t-1}$ is the change in the total QDII stock holdings of country c in previous period. As the QDII fund only discloses detailed stock holding information semi-annually, we use the closest

semi-annual holding information to match our monthly stock returns.[12] For robustness, we also estimate a version of equation (3) using individual stock return as the dependent variable. In that regression, rather than using monthly stock returns, we use quarterly stock returns together with the identified Chinese monetary policy shock MPS_t^{China} from Chen et al. (2018) and US monetary policy shock MPS_t^{US} from Rogers, Scotti and Wright (2018), respectively.

Our analysis is premised on the rebalancing behavior of QDII funds in response to Chinese monetary policy, i.e. arrow B in Figure 4. The working hypothesis is that QDII funds respond to monetary policy innovation through standard channels. This is a plausible assumption as QDII funding is in RMB by domestic households and investment in dollar assets. For example, easier monetary policy is more likely to induce households to take on more risk, also investing in foreign stocks, which in turn can affect international equity markets.

Hypothesis 3. *Easing Chinese monetary policy induces QDII funds to reduce their holdings of safe assets and increase their holdings of risky assets.*

We test Hypothesis 3 using the following specification:

$$\Delta x_{f,t} = \beta * \text{MPS}_t^{China} + \gamma * \text{MPS}_t^{US} + \text{Controls}_{f,t-1} + \varepsilon_{f,t} \tag{4}$$

where $x_{f,t}$ is the portfolio share of alternative asset classes (stocks, bonds, mutual funds, bank deposits, other assets) assets in total assets for fund f at the quarter t. As the QDII data is at quarterly, in this step of the analysis, we use identified Chinese monetary policy shock MPS_t^{China} by Chen et al. (2018) and US monetary policy shock MPS_t^{US} by Rogers, Scotti and Wright (2018).

[12] For example, we use the year-end QDII fund information to merge with monthly return from January to June in the next year; and mid-year QDII fund information to merge the monthly return from July to December in the same year.

4 Data

Our data comes from several sources. First, QDII funds stock holding data from 2007 to 2019 are from the *Wind* terminal. By regulation, each QDII fund must disclose detailed stock holding position data semi-annually (quarter 2 and 4) while they only need to report top 10 stock holdings every quarter.[13] We merge QDII fund-held stocks with their annual financial information from Thomson Reuters *Worldscope* using their ISIN (International Securities Identification Number).[14] We also use MSCI country-level market return indexes from the MSCI at monthly frequency from 1993 to 2019.[15] Our individual foreign stock data is from the Worldscope at monthly frequency.

We combine stock-level variables with stock returns. For Chinese monetary policy, we use both the M2 growth rate (year-over-year) from CEIC and identified monetary policy shocks from Chen, Ren and Zha (2018). For the US monetary policy, we use both the Fed Funds rate from FRED and identified by Rogers, Scotti and Wright (2018). The VIX index is from FRED. Other country-level variables, including CPI inflation, industrial production and employment, are from the Global Economic Monitor (GEM). Exchange rate data are from the BIS. All variable construction is in Appendix. The summary statistics is in Table 1.

5 Empirical Results

Our first empirical result is on the correlation between Chinese monetary policy and country equity market index returns. Table 2 reports the results. In our sample of all 70 countries in the MSCI database, the monthly dollar return index is positively correlated with Chinese M2 growth rate, conditional on the change of Fed funds rate and VIX index. We also add the lagged stock returns to control for any serial correlations as in Chari et al. (2021). In this regression, we add country, year and month fixed effects and cluster all standard errors at the country level. Notice that the

[13] All other mutual funds follow the same disclosure policy in China.

[14] The Worldscope database covers more than 96,000 listed firms in over 120 countries and 99% of global market capitalization.

[15] See https://www.msci.com/our-solutions/indexes/acwi. We choose year 1993 as the starting year to match the availability of Chinese monetary policy data.

Table 1 SUMMARY STATISTICS

Panel A: Macro variables	Obs	Mean	S.D.	Min	Max
M2 growth (%, y-o-y)	336	18.26	7.63	7.97	42.95
Change in Fed Funds Rate (%)	336	-0.86	16.35	-96.00	53.00
Change in VIX (%)	336	-1.37	361.58	-1038.52	3087.98

Panel B: Country-level variables	Obs	Mean	S.D.	Min	Max
MSCI Return (USD, %)	12940	0.59	8.05	-60.57	120.46
MSCI Return (LC, %)	12940	0.65	7.18	-50.35	123.64
Exchange rate return (%)	12940	0.18	3.10	-16.62	100.17
CPI inflation (%)	12940	3.97	8.35	-1.78	229.26
Industrial Production (%, y-o-y)	12940	2.24	9.31	-54.88	37.09
Unemployment rate (%)	12940	8.20	4.80	0.45	29.15
QDII funds holding (in shares, %)	12940	0.59	7.00	0.00	95.29
QDII funds holding (in dollar value, %)	12940	0.74	5.75	0.00	81.73

conditional correlation is 0.36 and larger in the emerging market economy sub-sample. Both coefficients on the US monetary policy and VIX index have the expected sign and are statistically significant.

Even though the MSCI market index is quoted in US dollar, we also check the MSCI return in local currency. If the positive correlation between Chinese monetary policy and global market return is driven by the extra demand from Chinese private investors, we would expect capital flows into the local market, appreciating the exchange rate and also increasing the local stock returns. This is indeed what we find in columns (4) to (6). The positive correlation between M2 growth and MSCI local returns is still positive but smaller than the dollar returns, due to an appreciation of local currency. In columns (7) to (9), we find that local currency appreciation against dollar is positively correlated with M2 growth.

It is important to control for other channels through which Chinese monetary policy can affect international equity markets, in addition to the financial channel studied in this paper. Miranda-Agrippino et al. (2020) find that Chinese monetary policy shocks affect foreign economies through trade, global value chains, and commodity prices. To control for those channels, we add to our baseline regression above country-specific CPI inflation, industrial production growth and the unemployment rate in Table A2. The correlation between monetary policy and equity market return indexes remains significant. If anything, the statistical significance of the conditional correlations

Table 2 CHINESE MONETARY POLICY AND MSCI COUNTRY INDEX RETURNS

	MSCI Return (USD)			MSCI Return (LC)			Exchange Rate Change		
	All Sample	AE	EME	All Sample	AE	EME	All Sample	AE	EME
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
M2 growth	0.360***	0.240***	0.475***	0.228***	0.155***	0.304***	-0.055*	-0.086***	-0.037
	(0.042)	(0.038)	(0.072)	(0.044)	(0.026)	(0.079)	(0.029)	(0.014)	(0.048)
Change in Fed Funds Rate	-0.048***	-0.038***	-0.056***	-0.055***	-0.045***	-0.063***	-0.008***	-0.008***	-0.008**
	(0.006)	(0.005)	(0.011)	(0.006)	(0.005)	(0.011)	(0.002)	(0.002)	(0.004)
Change in VIX	-0.008***	-0.008***	-0.007***	-0.006***	-0.007***	-0.006***	0.001***	0.002***	0.001***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged Dep. Variable	0.006	-0.042***	0.019	0.037	-0.027**	0.052	0.177***	-0.003	0.193***
	(0.010)	(0.010)	(0.013)	(0.029)	(0.013)	(0.036)	(0.050)	(0.010)	(0.056)
Fixed effects	Country, Year, Month								
Number of countries	70	29	41	70	29	41	70	29	41
Observations	19852	9221	10631	19231	8969	10262	22723	9492	13231
R^2	0.196	0.278	0.168	0.178	0.252	0.161	0.092	0.122	0.094

NOTE. The dependent variable is the return on the (i) MSCI USD (Columns 1-3), (ii) MSCI local currency (Columns 4-6), (iii) the bilateral exchange rate with the US (local currency per US dollar) (Columns 7-9). The independent variables are the Chinese M2 growth rate (year-over-year change), change in Fed funds rate, change in VIX index and lagged dependent variable. Our sample consists of monthly stock return data in 70 countries (29 Advanced Economies and 41 Emerging Market Economies) from 1993 to 2019. We also run the regression in all sample, advanced economy (AE) sample and emerging market economy (EME) sample. We include country, year, and month fixed effects. All standard errors are clustered at country level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

becomes stronger after controlling the country fundamentals.

After documenting the positive correlation between Chinese monetary policy and MSCI equity market index returns, we want to investigate whether this correlation is linked/driven by the progressive capital market liberalization of China, including the launching of the QDII program. This part of the analysis includes two separate steps. First, we allow the correlation above to differ before and after 2007, when the QDII program was launched. Second, we allow the correlation to depend on the holding changes with QDII fund holdings to see whether exposure to the QDII program strengthens it.

Table 3 presents the results that allow the correlation to differ after 2007. Indeed, we find that the correlations in Table 2 and A2 are driven by the post-2007 sample. This is consistent with the idea that Chinese private investors are the driving force for the international impact of Chinese monetary policy. However, there are many possible confounding factors that could drive this result.

To control for such possibility, we utilize the stock holding data of QDII funds as discussed above. Table 4 reports these results. To recall, the stock holding information of the QDII funds is available at semi-annual frequency since 2007. To utilize such information, we first aggregate all QDII funds holdings, either by shares (quantity) or by dollar value, of stocks listed in a specific destination country at semi-annual frequency, i.e. $x_{c,t}$ denotes the total QDII funds holdings of stocks listed in country c at time t. We then normalize $x_{c,t}$ by the total stock holdings of QDII funds into country c during our sample period from 2007 and 2019, i.e. $X_{c,t} \equiv \frac{x_{c,t}}{\sum_{s=2007}^{2019} x_{c,s}}$. By doing so, we construct a country-level exposure to Chinese private investors through QDII stock holdings either by the share outstanding or aggregated dollar value. We then take the change of the exposure measure, $X_{c,t}$, to capture the aggregate portfolio rebalancing of Chinese QDII investors. We then interact this term, $\Delta X_{c,t}$ with our monetary policy indicator and investigate whether the correlation between monetary policy and foreign stock returns is stronger when Chinese QDII funds rebalance. Indeed, we find that the interaction term is positive and statistically significantly, suggesting that exposure to QDII portfolio rebalancing can strengthen the correlation.

We also explore whether there is an asymmetric effect from QDII funds rebalancing. To that

Table 3 CHINESE MONETARY POLICY AND MSCI COUNTRY INDEX RETURNS: AN INCREASING ASSOCIATION AFTER 2007

	MSCI Return (USD)			MSCI Return (LC)			Exchange Rate Change		
	All Sample	AE	EME	All Sample	AE	EME	All Sample	AE	EME
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
M2 growth*Pre 2007	0.030	-0.040	0.177	0.071	0.006	0.205	0.064***	0.048***	0.091
	(0.058)	(0.046)	(0.149)	(0.057)	(0.037)	(0.158)	(0.022)	(0.015)	(0.058)
M2 growth*Post 2007	0.678***	0.620***	0.768***	0.417***	0.352***	0.516***	-0.297***	-0.304***	-0.293***
	(0.069)	(0.058)	(0.129)	(0.059)	(0.052)	(0.109)	(0.030)	(0.032)	(0.053)
Change in Fed Funds Rate	-0.048***	-0.040***	-0.061***	-0.053***	-0.045***	-0.064***	-0.007**	-0.008***	-0.006
	(0.008)	(0.006)	(0.018)	(0.008)	(0.006)	(0.017)	(0.003)	(0.002)	(0.006)
Change in VIX	-0.008***	-0.008***	-0.008***	-0.007***	-0.007***	-0.007***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged Dep. Variable	-0.017	-0.039***	-0.013	-0.007	-0.023*	-0.009	0.027	-0.022	0.035
	(0.012)	(0.011)	(0.018)	(0.013)	(0.012)	(0.022)	(0.028)	(0.013)	(0.038)
CPI inflation	0.026***	0.010	0.036***	0.034***	0.006	0.041***	0.019***	-0.002*	0.020***
	(0.009)	(0.035)	(0.008)	(0.011)	(0.032)	(0.009)	(0.006)	(0.001)	(0.005)
Industrial Production	0.015***	0.015***	-0.013	0.008	0.013**	-0.028***	-0.011**	-0.003*	-0.022**
	(0.005)	(0.004)	(0.008)	(0.005)	(0.005)	(0.009)	(0.005)	(0.002)	(0.010)
Unemployment	0.070**	0.033	0.043	0.088**	0.045	0.079	0.024**	0.018**	0.032
	(0.033)	(0.044)	(0.060)	(0.038)	(0.048)	(0.077)	(0.009)	(0.007)	(0.028)
Fixed effects	Country, Year, Month								
Number of countries	52	26	26	52	26	26	52	26	26
Observations	13331	7587	5744	12926	7380	5546	13724	7746	5978
R^2	0.243	0.297	0.217	0.217	0.268	0.192	0.124	0.145	0.124

NOTE. The dependent variable is the return on the (i) MSCI USD (Columns 1-3), (ii) MSCI local currency (Columns 4-6), (iii) the bilateral exchange rate with the US (local currency per US dollar) (Columns 7-9). The independent variables are the Chinese M2 growth rate (year-over-year change), change in Fed funds rate, change in VIX index, lagged dependent variable, CPI inflation, industrial production (year-over-year growth) and unemployment rate. We include two time dummy variables that indicate sample before and after 2007. Our sample consists of monthly stock return data in 52 countries (26 Advanced Economies and 26 Emerging Market Economies) from 1993 to 2019. We also run the regression in all sample, advanced economy (AE) sample and emerging market economy (EME) sample. We include country, year, and month fixed effects. All standard errors are clustered at country level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4 CHINESE MONETARY POLICY AND MSCI COUNTRY INDEX RETURNS: ROLE OF QDII FUNDS PORTFOLIO REBALANCING

	MSCI Return (USD)			MSCI Return (LC)			Exchange Rate Change		
	All Sample (1)	AE (2)	EME (3)	All Sample (4)	AE (5)	EME (6)	All Sample (7)	AE (8)	EME (9)
Panel A: $X_{c,t-1} \equiv \frac{x_{c,t-1}}{\sum_{s=2007}^{2019} x_{c,s}}$, where $x_{c,t-1}$ is the total shares of stocks listed in country c held by all Chinese QDII fund at time $t-1$.									
$\Delta X_{c,t-1}$ * M2 growth	0.436***	0.343**	0.434	0.282***	0.147	0.279	-0.167*	-0.158*	-0.251
	(0.160)	(0.162)	(0.348)	(0.093)	(0.140)	(0.249)	(0.096)	(0.083)	(0.171)
M2 growth	0.340***	0.229***	0.522***	0.237***	0.146***	0.387***	-0.097***	-0.088***	-0.114***
	(0.051)	(0.032)	(0.118)	(0.042)	(0.025)	(0.100)	(0.015)	(0.014)	(0.032)
$\Delta X_{c,t-1}$	-0.075***	-0.062***	-0.071	-0.045***	-0.031*	-0.033	0.033**	0.026**	0.056**
	(0.023)	(0.021)	(0.061)	(0.013)	(0.017)	(0.044)	(0.015)	(0.012)	(0.023)
Observations	13331	7587	5744	12926	7380	5546	13724	7746	5978
R^2	0.239	0.291	0.215	0.215	0.266	0.192	0.116	0.132	0.119
Panel B: $X_{c,t-1} \equiv \frac{x_{c,t-1}}{\sum_{s=2007}^{2019} x_{c,s}}$, where $x_{c,t-1}$ is the total dollar value of stocks listed in country c held by all Chinese QDII fund at time $t-1$.									
$\Delta X_{c,t-1}$ * M2 growth	0.507***	0.256	0.654***	0.306***	0.114	0.257	-0.193*	-0.089	-0.456***
	(0.161)	(0.333)	(0.220)	(0.085)	(0.267)	(0.197)	(0.112)	(0.095)	(0.146)
M2 growth	0.340***	0.228***	0.521***	0.237***	0.146***	0.386***	-0.097***	-0.087***	-0.114***
	(0.051)	(0.032)	(0.118)	(0.042)	(0.025)	(0.100)	(0.016)	(0.014)	(0.032)
$\Delta X_{c,t-1}$	-0.085***	-0.056	-0.098*	-0.046***	-0.029	-0.012	0.037**	0.018	0.096***
	(0.022)	(0.043)	(0.050)	(0.013)	(0.035)	(0.040)	(0.018)	(0.014)	(0.031)
Observations	13331	7587	5744	12926	7380	5546	13724	7746	5978
R^2	0.239	0.291	0.215	0.215	0.266	0.192	0.116	0.132	0.119

NOTE. The dependent variable is the return on the (i) MSCI USD (Columns 1-3), (ii) MSCI local currency (Columns 4-6), (iii) the bilateral exchange rate with the US (local currency per US dollar) (Columns 7-9). The QDII holding information includes shares in Panel A and values in Panel B. For each semi-annual year, we first aggregate the QDII holding information to an individual country, and then normalize it by all the holdings during our sample period from 2007 to 2019. We also lag the QDII information by one semi-annual period. Our regressions have the same control variables and fixed effects as in Table A2. All standard errors are clustered at country level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

end, we construct two dummy variables for QDII funds increasing or decreasing their holdings of a country, respectively. We then interact the dummy variables with the M2 growth rate variable in Table A3. We find that the stronger effect is present only when the QDII funds increase their stock holdings of a given country, but not when they decrease holdings.

Having established the strengthening effects of QDII funds holding on local market returns, our next step is to see whether such an effect is consistent when we change to specification at the individual stock level. To that end, we explore two specifications. First, we conduct our analysis at quarterly frequency to match the monetary policy shocks identified by Chen et al. (2018) as opposed to the M2 growth rate conducted above at the monthly frequency. Second, we match the semi-annual disclosure of QDII funds to the quarterly individual stock holdings.[16] By doing so, we can establish a causal relationship between Chinese monetary policy shocks and individual stock returns worldwide.

Table 5 presents the results. We find that the interaction term between a monetary policy shock and changes in QDII holdings on individual stocks is positive and statistically significant. This is true using either holding shares (quantity measure) or holding values. As we add both firm and time fixed effects, the average effect of Chinese monetary policy shocks is absorbed.

Our last step of the empirical analysis is on the portfolio rebalancing of QDII funds following a monetary policy easing, i.e. establishing arrow B in Figure 4. As QDII funds disclose aggregated information on their holdings in different asset classes each quarter, we investigate the rebalancing channel at quarterly frequency. QDII funds typically invest in stocks, bonds, mutual funds (mainly ETFs), bank deposits, and other assets (such as derivatives). We construct their share change for each QDII fund at each quarter end. We then regress the shares on monetary policy shocks from Chen et al. (2018) together with US monetary policy shocks from Rogers et al. (2018) in Table 6. We find that QDII funds cut their holdings of safe assets like bank deposits and increase holdings of stocks and other risky assets (mutual funds shares), a behavior that is consistent with monetary policy lowering the funding costs of QDII funds and increasing their risk-taking behavior

[16] We match reported QDII holdings in June to Q3 and Q4 return observations in the same year, and reported QDII holding in December to Q1 and Q2 observations the next year.

Table 5 CHINESE MONETARY POLICY AND INTERATIONAL INDIVIDUAL STOCK RETURNS: ROLE OF QDII FUNDS PORTFOLIO REBALANCING

	Holding Shares			Holding Values		
	(1)	(2)	(3)	(4)	(5)	(6)
$MPS_t^{China} * \Delta X_{i,t-1}$	1.508***	1.360***	1.329***	0.606**	0.553**	0.558**
	(0.548)	(0.491)	(0.508)	(0.279)	(0.273)	(0.272)
$\Delta X_{i,t-1}$	0.042***	0.038***	0.037***	0.038***	0.031***	0.031***
	(0.010)	(0.009)	(0.009)	(0.006)	(0.005)	(0.005)
Size		0.129***	0.128***		0.129***	0.128***
		(0.001)	(0.001)		(0.001)	(0.001)
Local Market Return		0.179***	0.177***		0.179***	0.177***
		(0.002)	(0.002)		(0.002)	(0.002)
GDP Growth			-0.002***			-0.002***
			(0.000)			(0.000)
Population			-0.221***			-0.221***
			(0.015)			(0.015)
GDP per capita			-0.132***			-0.132***
			(0.005)			(0.005)
Constant	0.081***	-3.034***	2.329***	0.081***	-3.033***	2.329***
	(0.002)	(0.033)	(0.290)	(0.002)	(0.033)	(0.290)
Fixed Effects			Firm, Time			
Observations	1972906	1893003	1811174	1972906	1893003	1811174
Adjusted R^2	0.093	0.189	0.188	0.093	0.189	0.188

NOTE. The dependent variable is the log stock return in local currency at quarterly frequency. The independent variables are the Chinese M2 growth rate shock identified by Chen et al. (2018), QDII holding information, firm size, local market return, GDP growth rate, population and GDP per capita. We construct the change in shares and values (normalized by the market capitalization of individual stocks) held by QDII funds. We use previous QDII holding information at stock level. We include both firm and time(year-quarter) fixed effects. All standard errors are clustered at firm and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 6 PORTFOLIO REBALANCING OF QDII FUNDS TO CHINESE MONETARY POLICY SHOCK

	(1) Δ Stock Shares	(2) Δ Bond Share	(3) Δ Mutual Fund Share	(4) Δ Bank Deposit	(5) Δ Other Asset Share
MPS_t^{China}	0.655***	-0.129	0.013	-0.428***	-0.119*
	(0.173)	(0.111)	(0.048)	(0.128)	(0.061)
MPS_t^{US}	0.014	0.018	-0.011	-0.015	0.021
	(0.026)	(0.016)	(0.013)	(0.026)	(0.016)
Change in VIX	-0.036***	-0.001	-0.002	0.033***	0.001
	(0.008)	(0.001)	(0.003)	(0.007)	(0.004)
Constant	0.012***	-0.001**	0.001**	-0.009***	-0.001
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
Fixed effects			QDII Fund		
Observations	2363	2363	2363	2363	2363
R^2	0.072	0.041	0.054	0.044	0.006

NOTE. The dependent variable is the asset shares in the total asset for each QDII fund. The independent variables are the Chinese M2 growth shock identified by Chen et al. (2018), the US monetary policy shocks identified by Rogers et al. (2018) and changes in VIX index (in log). All variables are in quarterly frequency. The standard errors are clustered at the fund level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

in international stock markets.

We also investigate which category of stocks exposed to QDII funds rebalance more towards foreign equities following an easing monetary policy in Table A4. Specifically, we divide stocks into Chinese A-share stocks, Chinese externally listed stocks, defined as in Allen, Qian, Shan, Zhu et al. (2021), and foreign stocks. We find that among all those stock categories, Chinese QDII funds rebalance more towards foreign stocks following the Chinese monetary policy shocks.

6 Conclusions

In this paper, we study China's increasing financial impact on international equity markets due to its gradual liberalization of portfolio equity flows. Given the overall size of the portfolio equity flows, it is possible that China already exerts some price impact on the international equity markets despite the continued presence of tight capital controls.

We find that the portfolio rebalancing of Chinese private investors (as proxied by the QDII quota funds) strengthens the positive correlation between Chinese monetary policy shocks and country MSCI equity index returns. We also find evidence that, in response to a Chinese monetary policy easing shock, QDII funds reduce their holding of safe and short duration assets such as bank deposits and increase stock holdings, particularly foreign stocks. Taken together, these two pieces of evidence suggest that Chinese private investors already have some price impact on international equity markets.

Our study has both global and regional implications. (Carpenter and Whitelaw, 2017) show that the Hong Kong market is the most exposed to China's growing financial integration with world equity markets, especially through the new Stock Connect program (as in Ma et al. 2020). Our study also suggests that Chinese monetary policy not only can affect foreign economies through commodity markets, trade linkages and supply chains (Miranda-Agrippino et al. 2020), but also though a portfolio equity financial channel.

Interesting areas of future research include (1) investigating the return behavior of QDII funds

held stocks relative to otherwise similar stocks in the same market following a China specific shock, and (2) more directly estimating the demand elasticity of Chinese QDII funds as for example in Koijen and Yogo (2019).

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A Data Appendix

Advanced economies (29) include Australia, Austria, Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Lithuania, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, South Korea, Spain, Sweden, Switzerland, Taiwan, United Kingdom, United States.

Emerging market economies (41) include Argentina, Bahrain, Bangladesh, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech, Egypt, Hungary, India, Indonesia, Jordan, Kazakhstan, Kenya, Kuwait, Lebanon, Malaysia, Mauritius, Mexico, Morocco, Nigeria, Oman, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Russian Federation, Serbia, South Africa, Sri Lanka, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, Vietnam.

B Variable Construction

Chinese QDII Fund Variables

QDII funds holding (in shares, %) Total share of stocks listed in country c held by all QDII funds at time t, normalized by the (time-series) sum of total shares of stocks listed in country c held by all QDII funds over the sample period from 2007 and 2019. Source: Wind.

QDII funds holding (in dollar value, %) Total dollar value of stocks listed in country c held by all QDII funds at time t, normalized by the (time-series) sum of total dollar value of stocks listed in country c held by all QDII funds over the sample period from 2007 and 2019. Source: Wind.

Δ **Bank deposit** The change of bank deposit share (in total assets) for each QDII fund, quarterly frequency. Source: Wind.

Δ Bond share The change of bond shares (in total assets) for each QDII fund, quarterly frequency. Source: Wind.

Δ Mutual fund share The change of mutual fund shares (in total assets) for each QDII fund, quarterly frequency. Source: Wind.

Δ Other asset share The change of other asset shares (in total assets) for each QDII fund, quarterly frequency. Other asset includes reserve, dividend, and other receivables etc. Source: Wind.

Δ Stock share The change of stock shares (in total assets) for each QDII fund, quarterly frequency. Source: Wind.

Macro Variables

CPI inflation Year-over-year change in the consumer price index. Source: Global Economic Monitor (GEM) .

Industrial production Year-over-year change in the industrial production measures, i.e. the industrial sector including manufacturing, mining and utilities, constant US$ and seasonally adjusted. The base year is 2005. Source: Global Economic Monitor (GEM) .

MPS$_t^{\text{US}}$ Combination of three monetary policy surprises at each FOMC announcement, converted to quarterly as a simple aggregation of each surprise within each quarter. Rogers et al. (2018).

MPS$_t^{\text{China}}$ Shock to Chinese M2 growth rate. Source: Chen et al. (2018).

M2 growth Year-over-year M2 growth rate. Source: Chen et al. (2018).

Unemployment rate The numbers of unemployed people as a percentage of the labour force, seasonally adjusted. Source: Global Economic Monitor (GEM) .

International Financial Market

Change in Fed Funds Rate The change of Federal Reserve target interest rate in a given month. Source: St Louis Fed.

Change in VIX The change of average value of Implied volatility of S&P 500 index options in a given month. Source: Chicago Board Options Exchange (CBOE).

Exchange Rate Return The change of end-of-month value of foreign currency against dollar. Source: Bank for International Settlements.

MSCI return (LC) Monthly return on the Morgan Stanley Capital International (MSCI) local currency index. Source: MSCI Company.

MSCI return (USD) Monthly return on the Morgan Stanley Capital International (MSCI) dollar index. Source: MSCI Company.

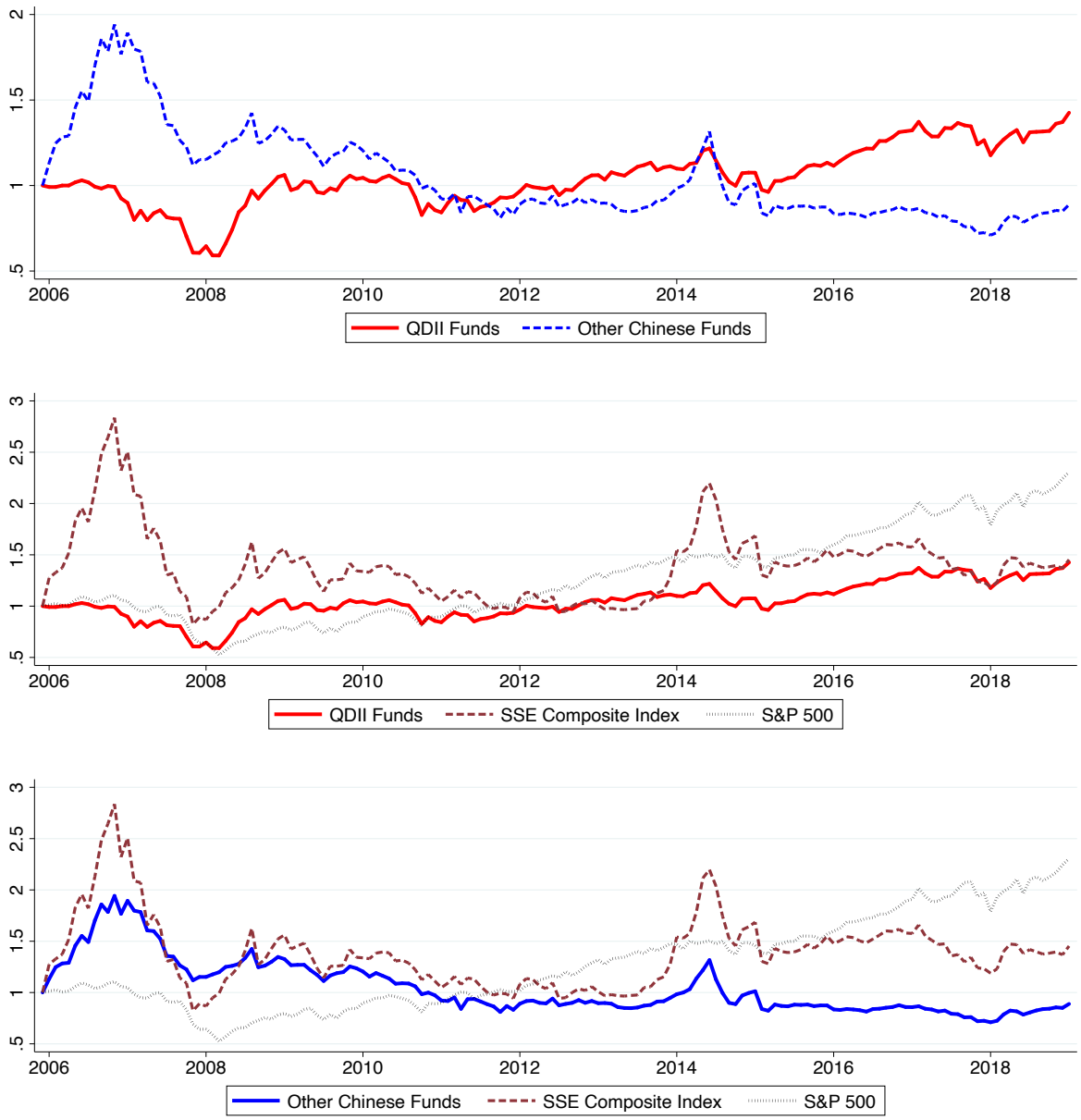
C Additional Figures and Tables

Table A1 SUMMARY STATISTICS: QDII HOLDINGS

All countries	Obs	Mean	S.D.	p10	p90
QDII Holding(%)	45549	0.1339	0.5555	0.0004	0.2890
QDII Value (%)	45549	0.1321	0.8798	0.0004	0.2667
USA					
QDII Holding(%)	19563	0.0317	0.2511	0.0003	0.0275
QDII Value (%)	19563	0.0349	0.3250	0.0004	0.0274
CHN (mainland)					
QDII Holding(%)	7951	0.3543	1.1008	0.0022	0.9122
QDII Value (%)	7951	0.3809	0.9106	0.0023	1.0078
HKG					
QDII Holding(%)	6356	0.2988	1.8644	0.0013	0.6182
QDII Value (%)	6356	0.2704	0.7557	0.0013	0.6839
CAN					
QDII Holding(%)	1348	0.0819	0.5442	0.0004	0.0383
QDII Value (%)	1348	0.0743	0.5382	0.0004	0.0430
TWN					
QDII Holding(%)	1313	0.1277	0.2119	0.0048	0.3404
QDII Value (%)	1313	0.1429	0.2605	0.0051	0.3643
GBR					
QDII Holding(%)	1175	0.0128	0.0680	0.0002	0.0166
QDII Value (%)	1175	0.0111	0.0549	0.0002	0.0162
AUS					
QDII Holding(%)	1060	0.0692	0.6257	0.0003	0.0965
QDII Value (%)	1060	0.0361	0.1182	0.0003	0.0883
DEU					
QDII Holding(%)	1025	0.0080	0.0551	0.0007	0.0077
QDII Value (%)	1025	0.0079	0.0543	0.0006	0.0083
JPN					
QDII Holding(%)	900	0.0172	0.1280	0.0002	0.0220
QDII Value (%)	900	0.0222	0.1637	0.0003	0.0192

NOTE. QDII holdings (value) are calculated using the shares (dollar value) held by QDII funds divided by the shares outstanding (market capitalization) for a firm at fiscal (calendar) year end.

Figure A1 QDII FUNDS, OTHER CHINESE FUNDS AND STOCK RETURN PERFORMANCE



NOTE: This figure plots the monthly average net asset value (NAV) for QDII funds and other Chinese funds respectively, along with the SSE composite index and S&P 500. All time series are normalized to 1 at Nov 2006. Data source: CSMAR and WIND.

Table A2 CHINESE MONETARY POLICY AND MSCI COUNTRY INDEX RETURNS: ROBUSTNESS

	MSCI Return (USD)			MSCI Return (LC)			Exchange Rate Change		
	All Sample	AE	EME	All Sample	AE	EME	All Sample	AE	EME
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
M2 growth	0.340***	0.227***	0.525***	0.237***	0.146***	0.388***	-0.097***	-0.087***	-0.116***
	(0.051)	(0.032)	(0.118)	(0.042)	(0.025)	(0.099)	(0.016)	(0.014)	(0.033)
Change in Fed Funds Rate	-0.047***	-0.038***	-0.059***	-0.052***	-0.044***	-0.063***	-0.008***	-0.009***	-0.008
	(0.008)	(0.006)	(0.018)	(0.008)	(0.006)	(0.017)	(0.003)	(0.002)	(0.006)
Change in VIX	-0.008***	-0.008***	-0.008***	-0.007***	-0.007***	-0.007***	0.002***	0.001***	0.002***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged Dep. Variable	-0.014	-0.035***	-0.011	-0.005	-0.021*	-0.009	0.032	-0.015	0.038
	(0.012)	(0.011)	(0.018)	(0.013)	(0.012)	(0.022)	(0.029)	(0.013)	(0.039)
CPI inflation	0.024***	-0.018	0.034***	0.033***	-0.008	0.041***	0.019***	-0.001	0.019***
	(0.009)	(0.036)	(0.008)	(0.010)	(0.033)	(0.009)	(0.006)	(0.001)	(0.004)
Industrial Production	0.018***	0.016***	-0.008	0.010*	0.014**	-0.025**	-0.012**	-0.004***	-0.025**
	(0.005)	(0.004)	(0.009)	(0.005)	(0.005)	(0.010)	(0.005)	(0.002)	(0.010)
Unemployment	0.073**	0.029	0.049	0.090**	0.043	0.083	0.022**	0.016**	0.029
	(0.034)	(0.045)	(0.059)	(0.039)	(0.048)	(0.077)	(0.009)	(0.007)	(0.028)
Fixed effects	Country, Year, Month								
Number of countries	52	26	26	52	26	26	52	26	26
Observations	13331	7587	5744	12926	7380	5546	13724	7746	5978
R^2	0.239	0.291	0.214	0.215	0.266	0.192	0.116	0.132	0.118

NOTE. The dependent variable is the return on the (i) MSCI USD (Columns 1-3), (ii) MSCI local currency (Columns 4-6), (iii) the bilateral exchange rate with the US (local currency per US dollar) (Columns 7-9). The independent variables are the Chinese M2 growth rate (year-over-year change), change in Fed funds rate, change in VIX index, lagged dependent variable, CPI inflation, industrial production (year-over-year growth) and unemployment rate. Our sample consists of monthly stock return data in 52 countries (26 Advanced Economies and 26 Emerging Market Economies) from 1993 to 2019. We also run the regression in all sample, advanced economy (AE) sample and emerging market economy (EME) sample. We include country, year, and month fixed effects. All standard errors are clustered at country level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A3 CHINESE MONETARY POLICY AND MSCI COUNTRY INDEX RETURNS: ASYMMETRIC EFFECTS OF QDII FUNDS PORTFOLIO REBALANCING

	MSCI Return (USD)			MSCI Return (LC)			Exchange Rate Change		
	All Sample (1)	AE (2)	EME (3)	All Sample (4)	AE (5)	EME (6)	All Sample (7)	AE (8)	EME (9)
Panel A: QDII funds increases holding									
$\mathbb{1}_{c,t-1}^{\text{Increase Holding}} * \text{M2 growth}$	0.065**	0.088**	0.108*	0.016	0.027	0.047	-0.055***	-0.059***	-0.075*
	(0.030)	(0.036)	(0.059)	(0.022)	(0.028)	(0.030)	(0.015)	(0.015)	(0.042)
M2 growth	0.334***	0.217***	0.516***	0.236***	0.143***	0.386***	-0.092***	-0.081***	-0.109***
	(0.052)	(0.032)	(0.119)	(0.043)	(0.025)	(0.100)	(0.015)	(0.014)	(0.032)
$\mathbb{1}_{c,t-1}^{\text{Increase Holding}}$	-0.007*	-0.011**	-0.013	0.001	-0.002	-0.002	0.009***	0.009***	0.012*
	(0.004)	(0.004)	(0.010)	(0.003)	(0.004)	(0.006)	(0.002)	(0.002)	(0.007)
Observations	13331	7587	5744	12926	7380	5546	13724	7746	5978
R^2	0.239	0.291	0.215	0.215	0.266	0.192	0.116	0.133	0.119
Panel B: QDII funds decreases holding									
$\mathbb{1}_{c,t-1}^{\text{Decrease Holding}} * \text{M2 growth}$	-0.041	-0.031	-0.016	-0.036	-0.025	-0.034	0.006	0.008	-0.019
	(0.032)	(0.030)	(0.070)	(0.022)	(0.020)	(0.057)	(0.015)	(0.013)	(0.032)
M2 growth	0.344***	0.230***	0.526***	0.240***	0.148***	0.391***	-0.098***	-0.088***	-0.115***
	(0.052)	(0.034)	(0.119)	(0.043)	(0.026)	(0.100)	(0.016)	(0.015)	(0.032)
$\mathbb{1}_{c,t-1}^{\text{Decrease Holding}}$	0.005	0.005	0.001	0.004	0.004	0.002	-0.001	-0.001	0.001
	(0.004)	(0.003)	(0.010)	(0.003)	(0.003)	(0.008)	(0.002)	(0.002)	(0.004)
Observations	13331	7587	5744	12926	7380	5546	13724	7746	5978
R^2	0.239	0.291	0.214	0.215	0.266	0.192	0.116	0.133	0.119

NOTE. The dependent variable is the return on the (i) MSCI USD (Columns 1-3), (ii) MSCI local currency (Columns 4-6), (iii) the bilateral exchange rate with the US (local currency per US dollar) (Columns 7-9). For each semi-annual year, we first aggregate the QDII holding shares to individual country, and then normalize it by the total QDII holding shares. We then construct a dummy variable for the increase (decrease) of the QDII funds holding shares. We then lag the dummy variables by one semi-annual period. Our regressions have the same control variables and fixed effects as in Table A2. All standard errors are clustered at country level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A4 PORTFOLIO REBALANCING OF QDII FUNDS TO CHINESE MONETARY POLICY SHOCK: ALTERNATIVE CATEGORIES OF STOCKS

	(1) All Stocks	(2) A-share Stocks	(3) Chinese Externally Listed Stocks	(4) Foreign Stocks
MPS_t^{China}	0.655***	0.013	0.070	0.571***
	(0.184)	(0.011)	(0.144)	(0.163)
MPS_t^{US}	-0.006	-0.013**	-0.029	0.036
	(0.039)	(0.006)	(0.037)	(0.030)
Change in VIX	-0.004	0.001	-0.013	0.008
	(0.016)	(0.002)	(0.014)	(0.012)
Constant	0.020***	-0.000	0.006	0.014***
	(0.003)	(0.000)	(0.003)	(0.003)
Fixed effects			QDII Fund	
Observations	1158	1158	1158	1158
R^2	0.119	0.430	0.042	0.118

NOTE. The dependent variable is the total stock holdings in the total asset for each QDII fund. We then divide the total stocks into Chinese A-share stocks, Chinese externally listed stocks and foreign stocks. The independent variables are the Chinese M2 growth shock identified by Chen et al. (2018), the US monetary policy shocks identified by Rogers et al. (2018) and changes in VIX index (in log). All variables are in quarterly frequency. The standard errors are clustered at the fund level and reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.