THE STOCK CONNECT TO CHINA

Zhiguo He
Yuehan Wang
Xiaoquan Zhu

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ABSTRACT

As a bridge between Chinese mainland and international financial markets, the Stock Connect program allows investors on both sides to gain mutual access. By analyzing how cross-border flows respond to macro-related shocks, we show that compared with possibly homemade foreign investors, genuine foreign investors are more likely affected by the U.S. monetary shocks, the exchange rate risk, the U.S. market performance as well as the cross-market valuation disparity. The paper highlights the importance of profiling different groups of cross-border participants over market integration.

Zhiguo He
University of Chicago
Booth School of Business
5807 S. Woodlawn Avenue
Chicago, IL 60637
and NBER
zhiguo.he@chicagobooth.edu

Yuehan Wang
School of Finance
Central University of Finance and Economics
39 South College Road
Haidian District, Beijing
P.R.China, 100081
wangyh@cufe.edu.cn

Xiaoquan Zhu
School of Banking and Finance
University of International Business and Economics
10 Huixin East Street
Chaoyang District, Beijing,
P.R.China, 100029
xiaoquan.zhu@uibe.edu.cn

Among all the access points to the Chinese capital market, the Connect program (including both stocks and bonds) represents Beijing's most recent "opening-up" effort and has quickly become the dominant investment channel for foreign investors. On April 10, 2014, the China Securities Regulatory Commission (CSRC, the regulator on the mainland side) and the Securities and Futures Commission (SFC, the regulator on the Hong Kong side) approved the development of a pilot program for establishing mutual market access between the mainland exchanges and Hong Kong Stock Exchange (HKEX). Accordingly, the "Shanghai-Hong Kong Stock Connect" and "Shenzhen-Hong Kong Stock Connect" were officially launched on November 17, 2014, and December 5, 2016, respectively.

The Stock Connect works like a bridge that enables not only foreign investors but also qualified investors from Mainland China to directly trade eligible shares listed on the other market via their local exchanges, *without* the need to adapt to the operational practices on the other side.[1]

1 Cross-border Responses to Macro Shocks

The price impact of China's Stock Connect has been highlighted, for example, by Liu, Wang, and Wei (2021) and Ma, Rogers, and Zhou (2021), who show that connected stocks experience significant appreciation in value. However, little is known about how cross-border flows in the Stock Connect respond to China's macroeconomic conditions and those outside China. At the 2020 Beijing Financial Street Forum, Xiaochuan Zhou, a former head of the People's Bank of China (PBC), instructed the market to pay more attention to broader factors that affect cross-border flows in China's gradual opening-up including the Connect program. In light of this point, the paper analyzes how cross-border investors respond to macro-related shocks, which in turn helps the regulators profile participants in the Stock Connect.

1.1 Data and Variable Construction

Data on aggregate northbound and southbound net inflow are from Choice database. The sample period spans from November 2014 (when the Stock Connect was launched)

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[1]As of December 2022, international investors hold RMB 2.2 trillion of A-shares through the Stock Connect, accounting for 2.53% of A-share total market capitalization. This is more than ten times the amount held through the other two channels combined, i.e., qualified foreign institutional investors (QFII) and Renminbi QFII. For more details about the Stock Connect, please refer to Liu, Wang, and Wei (2021) and He, Wang, and Zhu (2023).

to June 2022. Our methodology follows the growing literature examining the push and pull factors of cross-border equity flows (Ghosh et al., 2014), and further categorizes these factors into four groups, namely stock market forces, monetary shocks, policy uncertainty, and informed trading activities. All variables are standardized with zero mean and unit standard deviation.

Stock Market Forces. Given the prominence of the CAPM, the stock market force is one of the most pervasive factors. We consider three stock market returns, including those in the U.S. (*CRSP Ret*), all other developed countries (*Developed ex US Ret*), and China (*A-share Ret*).[2] We also include the A-H premium (*A-H premium*), computed as the value-weighted average of the ratio of the A-share price (on Chinese mainland exchanges) to its twin H-share price (on the Hong Kong exchange), for all dual-listed firms. The A-H premium captures the valuation disparity of A-share and H-share markets.

Monetary Shocks. Monetary policy shock, especially in the U.S., is another pervasive macro-related risk that affects market returns and global equity flows (Bernanke and Kuttner, 2005; Anaya, Hachula, and Offermanns, 2017). A recent study (Acosta, 2022) decomposes high-frequency monetary shocks into monetary policy shocks (*Monetary Policy Shocks: US*) and information shocks (*Information Shocks: US*). We obtain the two series of shocks from Miguel Acosta's website.[3] China's monetary policy shock (*Monetary Policy Shocks: China*), i.e., weekly PBC net issuance in open market operations, is collected from Choice database.[4] We also explore risk related to the change in exchange rate, which is obtained from the CSMAR database.

Policy Uncertainty. French and Li (2022) document that cross-border fund flows are likely sensitive to the economic policy uncertainty (EPU) of the destination market. Here, we consider factors related to U.S. and China economic policy uncertainty ($\Delta US\ EPU$ and $\Delta China\ EPU$). Data on EPU in the U.S. are collected from the Federal Reserve Economic Data. Data on EPU in China are from the website of Paul Luk, who builds on the work of Baker, Bloom, and Davis (2016) to

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[2]The first two sets of returns are from Kenneth French's data library, `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french`. China's market return data are from the CSMAR database. All three time-series of market returns are winsorized at the 5% and 95% levels to limit the effect of abysmal market situations, e.g., the global outbreak of COVID during March 2020.

[3]`https://www.acostamiguel.com`. Observations in months without an FOMC announcement are valued as zero following Bu, Rogers, and Wu (2021).

[4]Weekly PBC net issuances in open market operations exhibit a quite weak series autocorrelation (-0.069), capturing monetary policy innovations to the market.

develop the EPU indices for China.[5]

Informed Trading Activities. As noted in Yoon (2021), there is an increase in private disclosure to foreign investors among connected firms right after the Connect program is officially announced, potentially lending information advantage to the new foreign capital. This motivates us to study insider trading—a stylized form of informed trading activities—in the mainland market and examine its correlation with cross-borders flows. We collect relevant data from Wind database and apply standard filters following He, Wang, and Zhu (2023). Net insider purchase is computed as the average ratio of trading amount by insiders to the stock's market capitalization in one week across all stocks.

1.2 Time Series Regressions

We regress weekly equity flows of northbound and southbound investors on contemporary macro-related variables. In Table 1, Columns (1) and (3) show the results of univariate regressions while Columns (2) and (4) are multivariate kitchen-sink regressions.

We first investigate the relationship between northbound flows and stock market performances. Consistent with the rebalancing effect wherein a high U.S. market return is accompanied by flows toward the rest of world (Bohn and Tesar, 1996), we find that northbound flows are positively correlated with U.S. market returns, but southbound flows are not.

Second, it is worth noting that northbound and southbound flows display opposite correlations with the A-H premium. A one standard deviation increase in the A-H premium is associated with a 0.138 standard deviation more southbound flow and a 0.110 standard deviation less northbound flow. This finding supports the cross-market arbitrage theory, as domestic (foreign) investors flow toward (back to) the Hong Kong market when A-shares are overvalued relative to their legally identical H-shares.

Contrary to what may be widely believed, our results indicate that both northbound and southbound flows have little correlation with either U.S. or Mainland Chinese policy uncertainty.

Finally, it appears that a U.S. contractionary monetary policy shock has a mild impact on northbound flows. Interestingly, this result changes when we later zoom in and decompose the aggregate flows based on heterogeneity in investor type.

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[5]https://economicpolicyuncertaintyinchina.weebly.com/.

2 Heterogeneity in Northbound Participants

A growing literature explores the informativeness of cross-border flows through the Stock Connect (Chen, Wang, and Zhu, 2019; Bian et al., 2020; Lundblad et al., 2022; He, Wang, and Zhu, 2023). He, Wang, and Zhu (2023) study one of the dark sides of the Stock Connect program: a regulatory loophole that opens the door for opportunistic mainland investors (say, corporate insiders) to conduct potentially illicit trading. In the context of this paper, this implies that these bogus foreign investors are more likely to be positively correlated with the Chinese stock market's performance while other risk factors, e.g., exchange rate risk, are more likely to discourage genuine foreign investors.

2.1 Why Such Northbound Heterogeneity?

Hong Kong adopts an indirect securities holding system, in which financial intermediaries hold their clients' securities under the names of custodians. The Chinese mainland market, however, adopts a "see-through" supervision model, for which trading orders are labeled with an account number that maps to the investor's real identity. During the first three years after the launch of the Stock Connect, northbound trading followed a scheme that is consistent with Hong Kong's jurisdiction, giving mainland investors an opportunity to engage in northbound trading as though they were "foreign investors."

The see-through regulatory reform in the third quarter of 2018 is a game changer. On August 24, 2018, regulators on both sides announced that the Connect would establish the Northbound Investor Identification System, under which northbound custodians are required to assign a unique identifier to their northbound clients, known as the broker-to-client assigned number (BCAN). Every northbound order is tagged with the BCAN, which allows the HKEX to assist mainland regulators with fighting against financial crimes.

We conjecture that among all foreign custodians, before the regulatory reform Chinese mainland investors were more likely to engage in homemade foreign trading via those less prestigious ones, because those custodians suffer less reputational damage for potential misconduct. Meanwhile, among all mainland custodians, cross-operating custodians can better accommodate homemade foreign trading thanks to mainland investors' hometown preference as well as those custodians' business connections.[6] In fact, He, Wang, and Zhu (2023) study the stock re-

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[6]Following He, Wang, and Zhu (2023), all custodians are first sorted into 29 foreign custodians,

turn predictability of custodian-based northbound flows and present evidence that homemade foreign trading is more likely to be hidden behind less prestigious foreign custodians and cross-operating mainland custodians.

2.2 Heterogeneous Responses to Macro Shocks

For each category of custodians, northbound net flows are constructed as the change in holding value after adjusting for the effects of market performance. Following He, Wang, and Zhu (2023), the sample period for custodian-based flow spans from March 2017 (when the regulator started releasing custodian holdings to the public) to December 2019.

Table 2 presents the results of multivariate kitchen-sink regressions. First, flows from foreign custodians, especially more prestigious ones, show a higher correlation with the contemporary U.S. market return: a one standard deviation higher U.S. market return is associated with a 0.225 standard deviation greater investment flow from more prestigious foreign custodians (Column 4). In contrast, flows from cross-operating mainland custodians show a higher correlation with the Chinese mainland market return than their non-cross-operating counterparts (0.321 v.s. −0.297).

For the A-H premium, as stated in Section 1.2, we observe the strongest effect among more prestigious foreign custodians, who are more likely to be genuine foreign investors and thus sophisticated participants in arbitraging activities.

In terms of the heterogeneous relationship between northbound flows and monetary shocks, the coefficient of the U.S. monetary policy shock is only significantly negative for flows from more prestigious foreign custodians. This suggests that U.S. contractionary monetary policy shocks deter flows from genuine foreign investors to the Chinese stock market, which is consistent with the spillover effect as in Anaya, Hachula, and Offermanns (2017). Note that Ma, Rogers, and Zhou (2021) find that investment by firms in the Stock Connect is negatively affected by the contractionary U.S. monetary policy; and our paper provides corroborating evidence for their channel.

Moving on to exchange rate risk, note that connected A-shares are quoted and traded in RMB. Then, compared to investors—say, homemade foreign investors—

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82 Hong Kong, Macau, and Taiwan custodians, and 77 Chinese mainland custodians. We define a foreign custodian as being more prestigious, if it i) ranks above the median for "fee and commission income," or ii) is voted as a leader in custody in the emerging markets. We match custodians with their parent company and classify a custodian as cross-operating if its parent company appears on the list that report both mainland and overseas brokerage revenues to the Securities Association of China in that year.

who already own offshore RMB, genuine foreign investors who hold USD (or HKD that is pegged to USD) are more likely subject to currency risk. Consistent with this hypothesis, we observe that flows from foreign custodians shrink when USD weakens against RMB, and this pattern is more pronounced among more prestigious foreign custodians.

Finally, we provide further evidence of the presence of round-tripping mainland insiders as documented in He, Wang, and Zhu (2023). We add net insider purchase, a post dummy equal to one for observations after the day when regulatory reform was announced (2018/8/24) and their interaction term in our regressions. The co-efficient in the interaction term is negative for cross-operating mainland custodians, indicating that the reform weakens the relation between mainland insider trading and northbound trading of homemade foreign investors.

3 Conclusion

Compared with round-tripping investors through the Stock Connect, genuine international investors are more likely to be affected by macroeconomic fundamentals including monetary shocks in the U.S., exchange rate risk, U.S. market returns, and the cross-market valuation disparity. On December 19, 2022, the mainland and Hong Kong exchanges reached an agreement on the further expansion of eligible stocks under Stock Connect. We hope our study can offer useful insights to regulators on both sides for better monitoring and supervision going forward.

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Table 1: Aggregate Northbound/Southbound Flow and Macro-Related Shocks

The table shows the coefficients of northbound and southbound flows on factors of the corresponding week. All variables are standardized with zero mean and unit standard deviation. The sample period spans from November 2014 to June 2022. Robust t-statistics are reported in parentheses; ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

| | | (1) | (2) | (3) | (4) |
| | | Northbound | | Southbound | |
		Univariate	Multivariate	Univariate	Multivariate
Stock market forces	CRSP Ret	0.315***	0.146*	-0.044	-0.082
		(5.18)	(1.81)	(-0.64)	(-1.24)
	A-share Ret	0.345***	0.239***	0.058	0.097**
		(5.87)	(4.16)	(0.98)	(2.00)
	Developed ex US Ret	0.327***	0.088	-0.011	0.017
		(5.71)	(1.14)	(-0.16)	(0.24)
	A-H premium	-0.119**	-0.110**	0.164***	0.138***
		(-2.35)	(-2.28)	(3.72)	(3.13)
Monetary shocks	Monetary Policy Shocks: US	-0.046	-0.057	0.093	0.200**
		(-0.77)	(-1.25)	(1.51)	(2.28)
	Information Shocks: US	0.006	-0.011	0.083**	0.162***
		(0.10)	(-0.21)	(2.39)	(2.71)
	Monetary Policy Shocks: China	-0.039	0.007	0.004	0.029
		(-0.72)	(0.15)	(0.06)	(0.50)
	ΔRMB/USD	-0.243***	-0.144***	-0.025	-0.004
		(-4.00)	(-3.02)	(-0.47)	(-0.10)
Policy uncertainty	ΔUS EPU	-0.137*	-0.077	0.065	0.058
		(-1.94)	(-1.50)	(0.71)	(0.73)
	ΔChina EPU	-0.047	-0.030	-0.003	-0.000
		(-0.71)	(-0.51)	(-0.06)	(-0.01)
Informed trading activities	Net insider purchase	-0.083	-0.003	-0.160***	-0.078
		(-1.07)	(-0.04)	(-3.57)	(-1.53)
	Post	0.132***	0.249***	0.182***	0.108
		(2.62)	(2.69)	(3.66)	(1.38)
	Post*Net insider purchase	-0.056	0.126	-0.179***	-0.014
		(-0.65)	(0.98)	(-3.30)	(-0.16)
	Obs.		388		386
	R-Squared		0.245		0.099

Table 2: Custodian-Level Northbound Flow and Macro-Related Shocks

The table shows the kitchen sink regression coefficients of northbound flows from different categories of custodians on factors of the corresponding week. All variables are standardized with zero mean and unit standard deviation. The sample period spans from March 2017 to December 2019. Robust t-statistics are reported in parentheses; ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

		(1) Foreign	(2) Mainland	(3) Less-prestigious Foreign	(4) More-prestigious Foreign	(5) Cross-operating Mainland	(6) Non-cross-operating Mainland
Stock market forces	CRSP Ret	0.241** (2.21)	0.018 (0.15)	0.201* (1.71)	0.225** (2.02)	0.016 (0.14)	0.010 (0.08)
	A-share Ret	0.163** (2.05)	0.151* (1.65)	0.229** (2.45)	0.136* (1.73)	0.321*** (3.28)	-0.297*** (-2.65)
	Developed ex US Ret	0.109 (0.84)	0.291** (2.09)	0.254** (2.11)	0.074 (0.57)	0.193 (1.48)	0.159 (1.30)
	A-H premium	-0.216** (-2.54)	-0.157* (-1.67)	-0.064 (-0.73)	-0.224** (-2.56)	-0.115 (-1.16)	-0.074 (-0.66)
Monetary shocks	Monetary Policy Shocks: US	-0.256* (-1.96)	-0.004 (-0.03)	0.022 (0.18)	-0.283** (-2.14)	-0.035 (-0.26)	0.055 (0.49)
	Information Shocks: US	-0.035 (-0.23)	0.142 (1.02)	0.053 (0.41)	-0.048 (-0.31)	0.043 (0.31)	0.171 (1.02)
	Monetary Policy Shocks: China	-0.115 (-1.53)	0.034 (0.43)	0.110 (1.20)	-0.146* (-1.94)	0.073 (0.99)	-0.061 (-0.68)
	ΔRMB/USD	-0.228*** (-2.65)	-0.006 (-0.07)	-0.135* (-1.78)	-0.224** (-2.45)	-0.072 (-0.92)	0.113 (0.87)
Policy uncertainty	ΔUS EPU	-0.072 (-0.94)	0.038 (0.52)	-0.005 (-0.07)	-0.078 (-0.99)	-0.003 (-0.05)	0.068 (0.82)
	ΔChina EPU	0.047 (0.60)	0.002 (0.03)	0.002 (0.02)	0.050 (0.63)	0.024 (0.32)	-0.038 (-0.35)
Informed trading activities	Net insider purchase	0.096 (0.55)	0.077 (0.40)	-0.013 (-0.09)	0.106 (0.61)	0.185 (0.98)	-0.187 (-1.48)
	Post	-0.085 (-0.56)	-0.226 (-1.56)	-0.064 (-0.59)	-0.082 (-0.52)	-0.178 (-1.36)	-0.070 (-0.48)
	Post*Net insider purchase	-0.348 (-1.39)	-0.271 (-1.21)	-0.010 (-0.06)	-0.377 (-1.46)	-0.413* (-1.86)	0.243 (1.11)
	Obs.	140	140	140	140	140	140
	R-Squared	0.346	0.188	0.366	0.320	0.252	0.182