

Report on QFII Strategy

What is QFII?

The Qualified Foreign Institutional Investor (QFII) program, introduced by the Chinese government in 2002, allows specified licensed international investors to participate in mainland China's stock exchanges. Prior to this program, foreign investors were restricted from trading in these markets due to stringent capital controls. The QFII program enables these investors to convert foreign currency into renminbi and invest in yuan-denominated "A" shares of Chinese companies. This initiative aims to internationalize China's financial markets and attract foreign investment by allowing access to stocks, bonds, and other financial instruments approved by the China Securities Regulatory Commission (CSRC)

QFII Directory:

As of April 2024, there are 821 QFII institutions, including prominent names such as UBS, Nomura Securities, and Morgan Stanley. These institutions are mainly located in regions such as Hong Kong, Singapore, the United States, the United Kingdom, and various domestic regions including Hong Kong, Macao, and Taiwan, accounting for 40.68% of the total.

Key Holdings:

As of Q1 2024, QFII institutions hold a total of 750 key stocks, with a combined market value of 111.3 billion yuan, significantly lower than the 371.5 billion yuan in Q1 2021. Notable holdings include *ST Yaxing, Zhangyu A, and

Yinbaoshanxin, each held by an average of five QFIs. Beijing Bank and Nanjing Bank each have key holdings exceeding 10 billion yuan.

Sector Distribution:

QFIs prefer sectors such as banking, electronics, pharmaceuticals, chemicals, food and beverages, and machinery, each constituting more than 5% of their portfolios. They also favor stocks with low beta, large market cap, low volatility, and low turnover.

Foreign Investment Distribution:

As of March 2024, 66 QFI institutions appeared on the list, with cumulative listings totaling 1,098 instances. Prominent institutions include UBS, Gao Sheng Company, and Morgan Stanley International Limited.

Identification System:

According to the official QFI directory, keywords in both Chinese and English are set to match shareholders' accounts.

Challenges in Identifying Real QFI:

Identifying genuine QFI shareholders presents significant challenges due to the lack of standardized naming conventions in shareholder disclosures by listed companies. Some disclosures use Chinese names, others use English names, and these names may not exactly match the QFI list provided by the China Securities

Regulatory Commission (CSRC). Consequently, a key difficulty lies in accurately tracing the transaction activities of actual foreign investors.

Objective:

This research aims to maximize the accuracy of tracing QFII shareholders without utilizing forced learning or machine learning techniques.

Methodology:

A simple algorithm is employed to identify QFII names by calculating the similarity ratio of characters (either Chinese or English) that match the QFII name list provided by the CSRC. A name is identified as QFII if the similarity ratio exceeds a certain threshold. The critical aspect is to determine a threshold that maximizes the inclusion of actual QFII names while excluding non-QFII names. Through trial and error, the optimum threshold was determined to be 0.70.

However, due to the specific structure of Chinese characters, substrings such as “国际有限公司” (translated to “International Limited Company”) frequently appear in shareholder names, increasing the unwanted similarity in results. This leads to the erroneous identification of some Chinese companies as QFII. For instance, “景山国际有限公司” (a Chinese investment company) may be incorrectly identified as QFII due to its similarity ratio of 0.75 with “高盛国际有限公司” (Goldman Sachs International Limited).

Solution:

To address this issue, the substring “国际有限公司” is excluded from comparison when dealing with Chinese characters. This adjustment significantly improves the accuracy of identification. The results are highly accurate, with an accuracy rate exceeding 90%. This methodology allows for the accurate identification of QFII companies and their respective share percentages whenever listed companies disclose their top 10 shareholders as part of their regulatory obligations.

By employing this refined approach, we enhance the precision in tracing the activities of actual foreign institutional investors, thereby providing more reliable insights into QFII transactions.

(attached is a shortcut of list of company in QFII name list to show the accuracy of the algorithm in identifying real QFII)

SECU_NA ME	Date	Holder_Name	Holder_T ype	Share_Percenta ge(%)	SECU_CO DE
002415.S Z	201704 14	新加坡政府投 资	境外法人	0.8	2415
600309.S H	201704 15	挪威中央银行	未知	0.81	600309
002258.S Z	201704 18	澳门金融管理 局	其他	0.68	2258
000404.S Z	201704 18	中金融香港资 产管理	境外法人	1.14	404

600298.S H	201704 19	南山人壽保險 股份	未知	1.05	600298
601116.S H	201704 19	摩根士丹利股 份	其他	2.01	601116
600312.S H	201704 19	Abu Dhabi Investment Authority	未知	0.89	600312
000068.S Z	201704 20	Abu Dhabi Investment Authority	境外法人	0.58	68
000877.S Z	201704 20	Abu Dhabi Investment Authority	境外法人	0.25	877
600066.S H	201704 20	新加坡政府投 资	境外法人	1.61	600066
000417.S Z	201704 20	前海人寿保险 股份	其他	4.75	417
600022.S H	201704 20	华人寿保险股 份	未知	2.26	600022
600276.S H	201704 21	挪威中央银行	其他	0.96	600276

600835.S H	201704 21	新加坡政府投 资	其他	1.35	600835
002840.S Z	201704 21	DPI Partners Limited	境外法人	1.79	2840
600835.S H	201704 21	新加坡金融管 理局	其他	0.45	600835
600683.S H	201704 21	挪威中央银行	未知	0.56	600683
000401.S Z	201704 21	Fubon Life Insurance Co., Ltd.	其他	0.71	401
002233.S Z	201704 21	摩根大通银行	境外法人	0.32	2233
002233.S Z	201704 21	花旗环球金融	境外法人	0.89	2233
002463.S Z	201704 22	Samsung Asset Management Co.,Ltd.	境外法人	0.35	2463

QFII Strategy Logic:

- Fundamental Reversal: Stocks heavily held by QFII institutions typically reflect solid fundamentals, making them suitable for long-term value investment.
- Valuation Rights: Institutions tend to hold stocks with higher market values and significant free float, indicating potential for stable valuation with low volatility.
- Capital Increase: As A-shares become more dispersed, increasing institutional capital inflows create opportunities for enhanced holdings.
- Backtesting Period: From March 31, 2017, to June 16, 2024
- Rebalancing Frequency: Monthly
- Stock Pool: 800 constituent stocks of the CSI 800 Index, with QFII key holdings accounting for a weight of more than 10%
- Selection Criteria: Stocks held by QFII institutions during the disclosure period
- Portfolio Construction: calculate the amount of cap used for each stocks, select first 1/3 of those selected by QFII, and construct portfolio based on this. Also making sure no individual stocks should receive weight not significantly greater than 0.10

Date	SECU_CODE	industry	Share Percentage	Market Cap	QFII_ALPHA
2017/5/2	600376	10	1.32	2.982E+10	0.0055968
2017/5/2	600276	3	0.96	1.2474E+11	0.01702757
2017/5/2	600312	17	0.89	2.0327E+10	0.00257228
2017/5/2	600066	13	1.61	4.4146E+10	0.01010598
2017/5/2	600022	26	2.26	2.2567E+10	0.00725168
2017/5/2	600660	13	2.43	5.5315E+10	0.01911222
2017/5/2	600019	26	0.23	1.388E+11	0.00453935
2017/5/2	600332	3	0.44	4.4807E+10	0.00280323
2017/5/2	600663	10	1.27	7.6616E+10	0.01383521
2017/5/2	601333	0	0.42	3.308E+10	0.0019755
2017/5/2	600739	28	4.03	2.6326E+10	0.0150854
2017/5/2	600820	9	0.38	3.2416E+10	0.00175146
2017/5/2	600827	4	0.87	2.7655E+10	0.00342096
2017/5/2	600835	12	1.8	2.1518E+10	0.00550738
2017/5/2	600867	3	1.26	3.0515E+10	0.0054669
2017/5/2	600874	16	0.11	2.716E+10	0.0004248

(This snapshot provides an overview of the QFII (Qualified Foreign Institutional Investor) portfolio on May 2, 2017. The table below summarizes key details of the portfolio, including the date, security code of stocks, industry index, percentage of shares held by QFII, market capitalization of the listed companies, and the QFII alpha (percentage of allocation to the stocks by the QFII strategy).)

Backtests Performance and Result

PnL (Profit and Loss)

Definition: The daily gain or loss of the portfolio, representing the net change in value from one day to the next.

Cumulative Long PnL

Definition: The total profit or loss from long positions accumulated over time.

Excess Return

Definition: The return of the portfolio relative to a benchmark, typically the average return of the overall market.

Turnover Ratio

Definition: The frequency at which the assets in the portfolio are traded.

Cumulative IC (Information Coefficient)

Definition: The cumulative sum of the Information Coefficient, which measures the correlation between predicted and actual returns.

Size Exposure and Industry Exposure

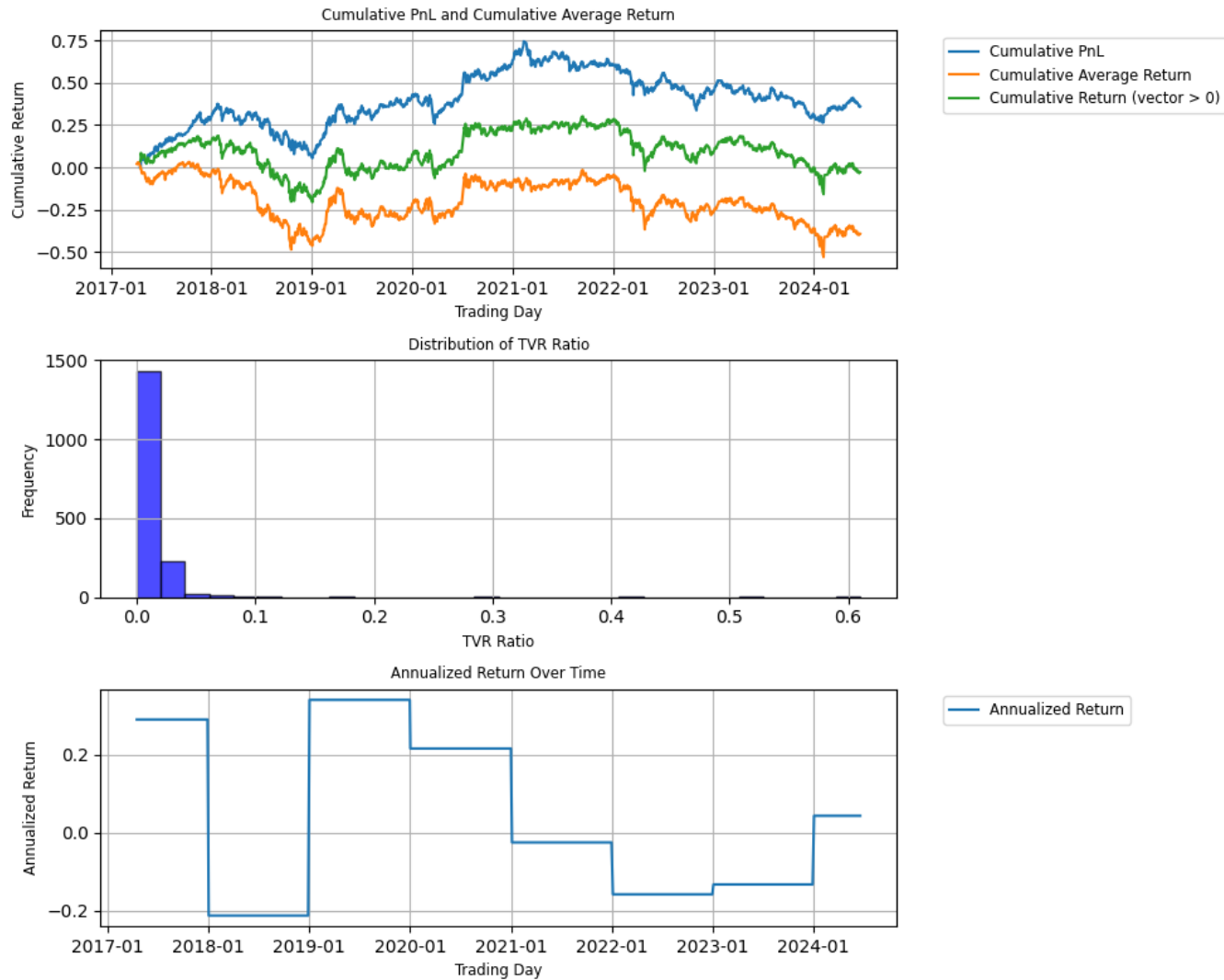
Definition: The exposure of the portfolio to different market capitalizations and industry sectors.

Sharpe Ratio

Definition: Measures the risk-adjusted return of the portfolio.

Maximum Drawdown

Definition: The largest peak-to-trough decline in the portfolio's value.



Market Cap Weighted Portfolio (Blue Line): This line represents the performance of a market cap-weighted portfolio that follows the QFII money flow.

Even Weight Portfolio (Green Line): This line represents the performance of an equally weighted portfolio of stocks selected by QFII.

Market Average Return (Yellow Line): This line represents the average return of the overall market.

Portfolio Performance

Year	Annual Return	IC	Sharpe Ratio	Maximum Drawdown	Turnover Ratio
2017(starting from 03-31)	0.29	0.1227	2.5203	0.051	0.0285
2018	-0.213	0.0243	-1.019	0.0432	0.0169
2019	0.34	0.0119	1.876	0.0432	0.0135
2020	0.215	-0.0052	1.076	0.0427	0.015
2021	-0.025	-0.0026	-0.932	0.051	0.0123
2022	-0.158	0.0043	-1.024	0.0524	0.0119
2023	-0.133	0.0021	-1.074	0.021	0.0102
2024(ends in 06-17)	0.0431	0.0396	0.492	0.0181	0.0098
Compound	0.0448	0.0193	0.2995	0.051	0.0147

The analysis reveals that the portfolios selected by QFII show a high correlation with market movements but consistently outperform the market. This outperformance suggests that QFII's stock selection process effectively identifies stocks that deliver superior returns relative to the market average.

The comprehensive backtest conducted over an 8-year period reveals that the strategy generated an annual return of 4 percent, calculated using single

profit backtesting rather than compound returns. The strategy achieved an Information Coefficient (IC) of 0.0193, indicating a modest but positive correlation between predicted and actual returns. With a Sharpe ratio of 0.2995, the strategy demonstrated its ability to generate risk-adjusted returns relative to its volatility. The maximum drawdown of 0.051 highlights the largest peak-to-trough decline experienced, providing insight into the strategy's downside risk. Additionally, the turnover ratio of 0.0147 signifies a relatively low frequency of portfolio rebalancing, indicating efficient trading activity levels.

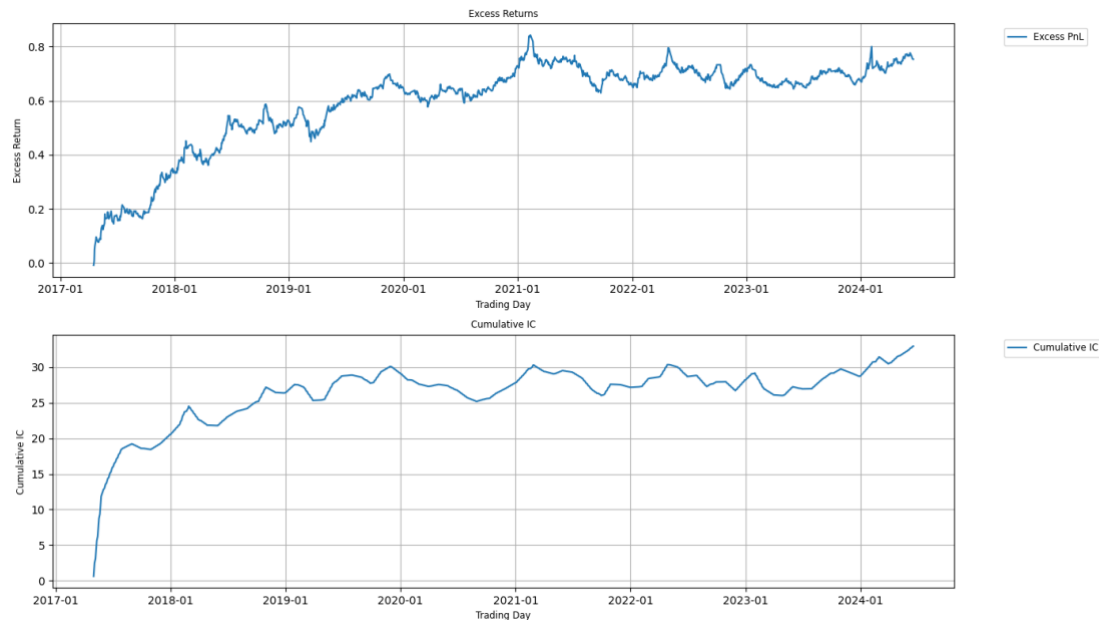
Turnover Ratio

The QFII strategy demonstrates a low turnover ratio (concentrated heavily around 1 percent with 90 percent of the circumstances less than 10 percent), which is well-suited for institutional trading. The strategy generates new signals primarily when companies announce their quarterly or annual reports, leading to infrequent portfolio adjustments. Additionally, as large institutions, foreign investors are less likely to make substantial changes to their asset allocations, contributing to the low turnover rate. This characteristic results in lower transaction fees and easier execution of trades.

Annual Return Characteristics

The third plot presents the annual returns of the QFII strategy, highlighting its beta exposure. The strategy generates positive returns during years when the market increases but struggles to achieve positive returns when the market

declines. This heavy beta exposure indicates that the strategy's performance is closely tied to overall market trends, benefiting from market upswings but facing challenges during downturns.



Cumulative Excess Return Analysis

The plot of cumulative returns highlights the consistent excess returns generated by the QFI strategy. The strategy's market cap-weighted and evenly weighted portfolios both demonstrate persistent outperformance relative to the market average. However, it is evident that the strategy achieves higher excess returns primarily during favorable market conditions, underscoring its strong beta alignment. This indicates that the QFI strategy benefits significantly from market upswings.

Market Cap Weighted Portfolio (Blue Line): This line represents the performance of a market cap-weighted portfolio that follows the QFI money flow.

Even Weight Portfolio (Green Line): This line represents the performance of an equally weighted portfolio of stocks selected by QFII.

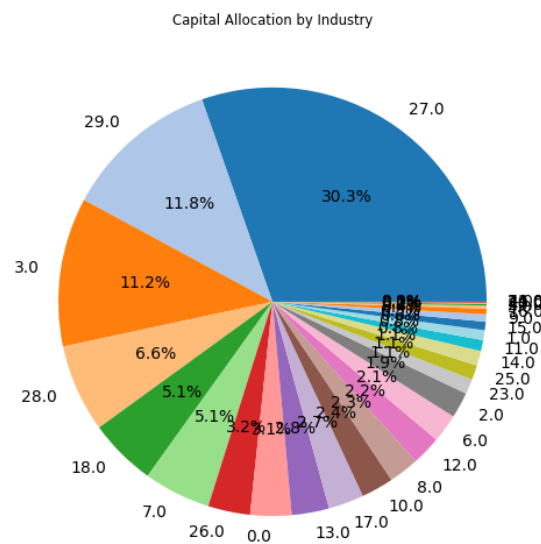
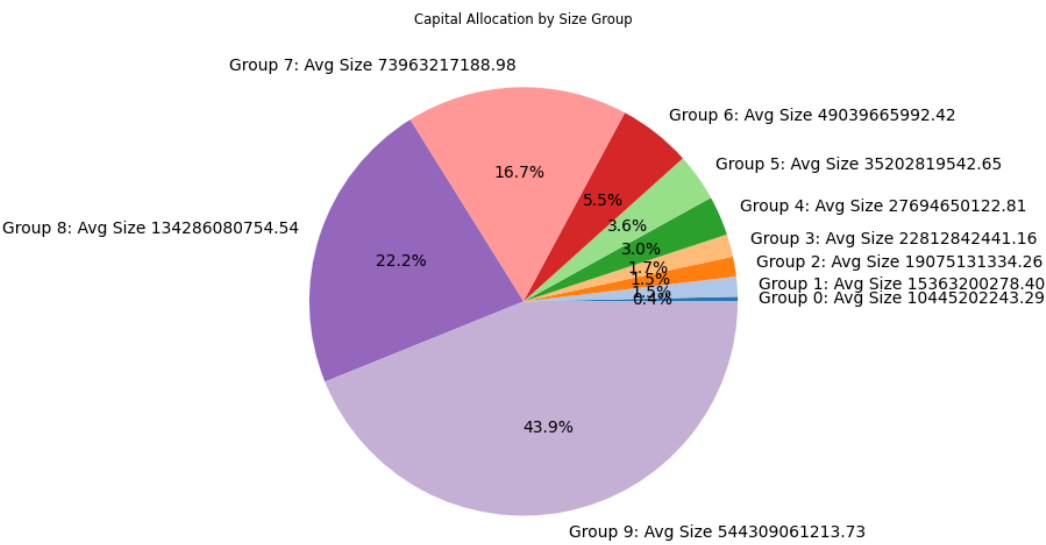
Market Average Return (Yellow Line): This line represents the average return of the overall market.

Information Coefficient (IC) Analysis

Despite the strong beta alignment, the underlying logic of the QFII strategy remains robust, as evidenced by the cumulative IC lines. The cumulative IC measures the correlation between the factor values assigned to stocks and their subsequent returns. An increasing cumulative IC line indicates that stocks with high factor values (those heavily held by QFII) tend to deliver positive future returns.

The cumulative IC plot reinforces the strategy's efficacy in stock selection. The consistently rising IC line suggests that the QFII strategy successfully identifies stocks with strong potential for future gains, validating the strategic

rationale behind QFII's investment decisions.



Industry Name	index
Transportation	0
Media	1
Agriculture, Forestry, Animal Husbandry and Fishery	2
Pharmaceutical	3
Commercial Retail	4
Defense and Military	5
Basic Chemicals	6
Home Appliances	7
Building Materials	8
Construction	9
Real Estate	10

Non-ferrous Metals	11
Machinery	12
Automobile	13
Consumer Services	14
Coal	15
Electricity and Utilities	16
Electric Power Equipment and New Energy	17
Electronics	18
Petroleum and Petrochemicals	19
Textiles and Apparel	20
Comprehensive	21
Comprehensive Finance	22
Computer	23
Light Manufacturing	24
Telecommunications	25
Steel	26
Banking	27
Non-Banking Finance	28
Food and Beverage	29

To further investigate the industry and size exposure of QFII strategy, or the industry and size preference of QFII, pie chart are plotted to analyze size and industry distribution.

It turns out that foreign investors tend to pick Chinese Stocks with high market cap, which may be due to/ the fact that these stocks in China tend to have high dividend paid and relatively low but steady return YOY(due to the fact that majority of them are stated owned or nation owned). When conducting a 10 group analysis over the distribution of money among different market cap, it is found that over 50 percent of the allocation is allocated to the largest group, with average market cap of 500 billion CNY.

As of industry distribution, foreign investors' preference is heavily tilted, with the most weight allocated to bank (represented by state-owned bank such as 601398 中国工商银行), followed by food and food and beverage (one typical one would be 600519 贵州茅台)

Conclusion:

Compared to domestic institutions, foreign investors bring more incremental capital, injecting vitality into the capital market. Their investment characteristics lean towards medium to long-term holdings, potentially offering an advantage in selecting quality stocks. As of the end of 2023, foreign investors accounted for 17.33% of the \$78.05 trillion market capitalization of U.S. stocks, second only to mutual funds among institutional investors, and their share is continuously rising. As of March 2024, the market value of stocks held by foreign institutions and individuals was 2.79 trillion CNY, accounting for 3.17% of the total market capitalization of A-shares.

Foreign investment in A-shares mainly includes three models: QFII, strategic investment, and stock connect. Considering the scale and nature of investments, this report focuses on northbound funds and QFII, as well as the long-term investment opportunities they bring.

Since the launch of the Shanghai-Hong Kong Stock Connect and Shenzhen-Hong Kong Stock Connect, the scale of northbound funds has steadily increased, peaking in 2021 before declining. As of the end of March 2024, the scale was 2.12 trillion CNY, accounting for 76.08% of the total stocks held by

foreign investors, making it the primary force of foreign capital. Northbound funds favor industries such as food and beverage, new energy, pharmaceuticals, banking, home appliances, and electronics, and prefer low-beta, large-cap stocks. On April 12, 2024, the Shanghai and Shenzhen stock exchanges announced adjustments to the disclosure mechanisms for the Stock Connect, including real-time, post-trade, and settlement disclosures. Although the loss of northbound fund flow data impacts industry rotation strategies, it has minimal effect on northbound following strategies.

The CSRC (China Securities Regulatory Commission) discloses the QFII list monthly. As of April 2024, there were 821 QFII institutions, including prominent names like UBS, Nomura Securities, and Morgan Stanley. These institutions are primarily based in Hong Kong, Singapore, the United States, the United Kingdom, South Korea, and Taiwan, with domestic regions (Hong Kong, Macau, Taiwan) accounting for 40.68%. By matching account names of the top ten shareholders with QFII keywords, we can roughly estimate the stock holdings of foreign capital and indirectly analyze QFII investment behavior.

QFII holdings are likely to contribute to long-term stable returns. Firstly, if a stock is held by foreign investors, it indirectly signifies solid fundamentals and long-term investment value. Secondly, the QFII portfolio style is relatively stable, especially among the top ten holdings, which tend to exhibit low volatility. Furthermore, increasing institutional entry often leads to additional investments

in previously favored stocks, potentially bringing new opportunities through incremental capital.

Based on this, QFII index strategies and QFII heavy stock strategies have been constructed. The QFII index strategy yielded an annualized return of 4 percent, with an Information Coefficient (IC) of 0.0193, a Sharpe ratio of 0.2995, a maximum drawdown of 5.1 percent, and a turnover ratio of 1.47 percent. It has consistently generated excess returns annually, with maximum drawdowns improving in most years. The QFII heavy stock strategy achieved an annualized return of 17.77 percent, with an excess return of 12.59 percent, a maximum drawdown of 38.20 percent, and an information ratio of 1.19. The annual excess returns are more stable, making the QFII heavy stock strategy particularly notable.