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Leaving the (fund) gate ajar: Investor protection or marketing ploy?☆

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ABSTRACT

Using a sample of active equity funds in China, we explore for the first time mutual funds that impose discretionary inflow restrictions (gates) on investors. Contrary to managers' claim, we find no compelling evidence that inflow gates serve to protect investor interests. Despite their superior past performance, inflow-restricted funds exhibit a significant decline in subsequent returns. In addition, funds tilt toward a riskier investment strategy when a gate is in place. Our analyses reveal that partly-closed gates further exacerbate investors' chasing of past returns, attracting extra flows and locking in more retail investors. Overall, we suggest that leaving the fund gate ajar to investors appears to be more of a marketing ploy than a form of investor protection. Our findings carry important implications for mutual fund investors, asset managers, and policy makers alike.

1. Introduction

Research shows that mutual funds typically respond to asset growth constraints by altering investment behavior, such as increasing ownership shares (Pollet and Wilson, 2008), trading less, and holding more-liquid stocks (Pástor et al., 2020). A key assumption in this context is that fund managers accept all capital that investors are willing to allocate to them (Berk and Green, 2004). In our study, we examine a distinctive response to asset growth in China's mutual fund market: discretionary inflow restrictions imposed by managers.

China's fund market presents an ideal backdrop for examining fund behavior amid rapid asset growth. Owing to its exponential growth and large retail investor base, China is en-route to becoming the world's second largest fund market that offers significant

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fundraising opportunities. However, fulfilling investor demand appears to be a challenge for portfolio managers in China. From 2006 to 2020, over half of the active equity funds in China imposed various inflow restrictions (gates) on investors, with daily purchase cap per investor ranging from zero (closed gate) to RMB 10 million (USD 1.5 million) (partly-closed gate).[1] This is somewhat puzzling given that managers are competing for greater fund flows. Therefore, our study aims to provide the first exploration of the motivations and implications of discretionary inflow restrictions, a phenomenon rarely observed in developed fund markets.

We consider two basic propositions. The *investor protection* hypothesis posits that inflow gates protect investor interests. Fund managers often claim that inflow gates, regardless of the restriction levels, are necessary "to ensure the smooth operation of the fund and to protect investor interests." This reason seems legitimate. By cooling off accelerating fund flows or preventing funds from growing too big to be managed efficiently, inflow gates might help funds maintain their good performance or optimal portfolios (i.e., Edelen, 1999; Chen et al., 2004; Zhu, 2018; Song, 2020).

However, this hypothesis is at odds with fund managers' incentive to maximize their compensation that is predominantly tied to fund size (Chua and Tam, 2020). Especially in a market absent sufficient external monitoring, it is counterintuitive that fund managers are willing to protect investor interests at the expense of higher rents arising from higher inflows (Gao et al., 2021; Hope et al., 2023). Given anecdotes suggesting that funds limit inflows to lure more investor purchases, we consider the *marketing ploy* hypothesis.[2] It posits that funds restricting inflows aim to differentiate themselves from peers and attract extra flows. We expect such an effect to be particularly profound in funds with partly-closed gates, which are meant to limit but still allow investor purchases.

Utilizing a sample of 1108 inflow restriction events announced by Chinese active equity funds between 2006 and 2020, we show that leaving the fund gate ajar to investors is more of a marketing ploy than a form of investor protection. First, we find little evidence suggesting that managers impose inflow gates to "smooth the operation of the fund." While closed gates help funds mitigate their exposure to market illiquidity risk, funds with partly-closed gates significantly shift their asset allocations by bearing greater market risk and leaning toward growth stocks when the gate is in place. These funds continue to increase their idiosyncratic risk post-restriction, a strong indication of managers' inferior ability or agency issues (Huang et al., 2011).

Second, we find no compelling evidence backing managers' claims that inflow restrictions protect investor interests. Despite their superior past returns, inflow-restricted funds exhibit a significant decline in subsequent returns. For example, the average risk-adjusted return of partly-closed gates drops from a statistically significant 2.1% in the quarter before to a significantly negative −0.35% in the quarter after the restriction. These funds continue to generate negative risk-adjusted returns and underperform compared to their matched no-gate peers for up to four quarters following the imposition of inflow gates.

Importantly, our analyses reveal that announcing the imposition of partly-closed gates exacerbates investors' chasing of past returns rather than cooling off investor purchases. The impact on fund flows is substantial. Compared to their matched no-gate peers, partly-closed gates gain an average extra quarterly flow of 14.9% of the fund's assets, over and above the effect of returns. They also experience on average a 43% surge in the total number of investors and a 5.5% rise in retail investor ownership. This finding is unsurprising in our setting given the dominating presence of retail investors, who are known as less sophisticated and often respond to attention-grabbing or easy-to-process signals (Barber and Odean, 2008; Ben-David et al., 2022). Consequently, the announcements of inflow restrictions, amplified by media coverage,[3] enhance the visibility of a fund's past return and exacerbate investors' behavioral bias, leading to a buying frenzy for the fund (Kaniel and Parham, 2017; Roussanov et al., 2021). Our findings thus suggest that leaving the fund gate ajar distorts investors' capital allocation decisions.

Our inferences are further supported by evidence showing that inflow gates have become popular among smaller funds striving for survival. Utilizing a disclosure policy introduced in 2014, which requires small-size funds to issue a "warning" in their financial reports concerning potential liquidation, we employ a difference-in-differences approach and observe that such struggling funds are more likely to use inflow gates to stay afloat. This finding further corroborates the marketing role of inflow restrictions.

It is worth noting that discretionary inflow gates differ from "hard" closures in the US. Hard closures, referring to mutual funds that completely stop purchases from new investors for years, constitute only a tiny fraction of the US mutual fund population (Zhao, 2004). In contrast, inflow gates in China are frequently imposed by managers at their discretion and feature varying daily caps. Furthermore, unlike US funds, where hard closures are rarely publicly announced to avoid encouraging additional investments (Smaby and Fizel, 1995), Chinese funds publicly announce inflow gates and actively communicate these purchase limits to investors through instant messages or mobile push notifications. These contrasting practices, along with the unique institutional contexts in China, result in differing motivations behind the imposition of inflow restrictions. For example, previous work suggests that US managers close a fund to direct flows toward sibling funds within the family (Zhao, 2004; Chen et al., 2012). We test and rule out this "family spillover" explanation in our setting.

Overall, our findings underscore an unexplored yet crucial feature in China's fund market: discretionary inflow restrictions. This

[1] An inflow gate is the maximum amount of fund assets that an investor is allowed to purchase in a trading day during the inflow restriction period. See examples of inflow gate announcements in Appendix A. On 8 September 2020, Huashang Hongli Youxuan Equity Fund announced an inflow gate, a daily purchase limit of RMB 100,000 (approximately USD 15,000) per investor, effective from the announcement date. In this study, we use the terms "inflow gate", "inflow restriction", "purchase limit", and "purchase cap" interchangeably.

[2] An illustrative example can be found in a *Sina Finance* article in 2020 titled "*Discretionary Purchase Limits Stir Controversy! Hunger Marketing or Performance Preservation?*"(in Chinese). A recent article (in Chinses) on *Securities Times* in China also indicates that inflow-restricted funds are "window-display funds" that are for "hunger marketing" purposes.

[3] Funds with inflow gates are often labeled as "good buys" in news articles. For example, see "Superior performance! Purchase limits on 18 funds with the tightest daily cap at RMB 1,000." (in Chinese) 28 August 2019. *China Fund*.

significant facet has been overlooked in the literature likely due to the absence of relevant event data in the commercial databases, such as Wind or CSMAR, prior to 2017.[4] By providing the first exploration of discretionary inflow restrictions in mutual funds, our study not only contributes to the literature but also flags important policy implications.

We add to the literature examining how mutual funds are marketed to and evaluated by investors (Roussanov et al., 2021). Prior studies conclude that fund investors behave in a simple and naïve way and are susceptible to attention-grabbing tactics (Jain and Wu, 2000; Reuter and Zitzewitz, 2006; Solomon et al., 2014; Kaniel and Parham, 2017; Choi and Robertson, 2020; Ben-David et al., 2022). Our work extends this line of studies by showing that, instead of curtailing investor purchases, inflow restrictions turn the fund into a sought-after product and, consequently, draw in more capital inflows (Stock and Balachander, 2005). This phenomenon is particularly pronounced in retail-dominant markets, such as China (Hong et al., 2023). Our findings are thus important in understanding how individuals' trading biases influence managers' marketing strategies.

Our study also complements the nascent research that explores the increasingly important emerging fund market. With the distinct structure of mutual funds in China, characterized by their contractual form (Chua and Tam, 2020), sole in-house fund managers (Chen et al., 2018), and the absence of a governance body like a board of directors (Firth et al., 2010), existing literature identifies various agency issues. For example, fund managers in China frequently engage in style drift (Chua and Tam, 2020), portfolio pumping (Li and Wu, 2019; Shackleton et al., 2020), and favoritism toward socially connected parties (Chen et al., 2022; Gao et al., 2021; Hope et al., 2023). Our research augments this discourse by documenting that managers may have self-serving incentives to impose certain inflow gates under the guise of investor protection.

From a regulatory perspective, our conclusions beckon significant considerations. In China, managers are allowed to restrict fund inflows when accepting new purchase orders would have an adverse impact on existing investors' interests. However, our findings suggest that discretionary inflow restrictions can be strategically employed by managers to attract additional investments. Our observations align with recent calls from some institutional investors in China for more stringent regulation on discretionary inflow gates, which could impede the growth of the fund industry in the long run.[5] Given that global asset management companies are increasingly tapping into the world's largest retail investor base, our findings hold relevance for fund investors, asset managers, and policy makers alike.

The remainder of this paper proceeds as follows. Section 2 outlines the background of discretionary inflow restrictions in China's mutual fund market. Section 3 describes the characteristics of the sample funds. Section 4 presents our empirical results. Section 5 offers extensions to our main analyses, and Section 6 concludes.

2. Discretionary inflow gates in China's fund market

Mutual fund managers in China frequently impose inflow gates on investors. For example, in 2006 and 2007, roughly 64% of all active equity funds imposed at least one inflow restriction. This surge can be partly attributed to the significant average quarterly flows, which stood at 60% during that period. As a comparison, domestic equity funds in the US received a mere 3%–4% quarterly fund flows (e.g., Dubofsky, 2010). In addition to a booming stock market in these two years, the world's largest retail investor base also contributed to hectic fund flows. By the close of 2007, 9% of all domestic equity funds had over a million investors each, with the largest fund having 3.3 million investors. Furthermore, herding behavior among fund investors in China is pronounced during up markets (Cheng et al., 2022). Under such circumstances, inflow gates seem to be an effective tool to help temper rapid fund flows and prevent funds from growing too big to be managed efficiently.

However, inflow restrictions do not come without drawbacks. Imposing purchase limits can be costly to fund managers in terms of forgone management fees arising from higher inflows they deter (Bris et al., 2007). Inflow gates also impair investors' options and create unfairness for potential investors because inflow restrictions bar them from investing in well-performing funds and leave them with other obscure funds available (Chen et al., 2012). More broadly, managers' discretionary interventions to fund flows prevent competitive allocation of capital by investors, adding friction to the process of restoring market equilibriums (Berk and Green, 2004). This would be detrimental to the overall growth of the fund industry. A further intriguing feature is the apparent asymmetry in flow restrictions within China's fund market. Although inflow restrictions are prevalent, there is an absence of discretionary redemption gates throughout our sample period. Against this backdrop, we investigate the underlying motives behind fund managers' choice to impose discretionary inflow gates.

Inflow gates in China's fund market exhibit distinct characteristics. First, discretionary inflow gates have varying daily caps and are applied uniformly to all investors. This differs from fund hard closures in the US that stop inflows from new investors. When closing a fund completely, the manager expresses concerns about rapid capital influx or large fund size. By freezing fund flows, managers may be able to preserve fund performance and manage their portfolios efficiently. However, research indicates that hard closures in the US do not help preserve closed funds' superior past performance. Instead, managers either increase the management fee of closed funds for a higher rent (Bris et al., 2007) or divert potential investors' attention to sibling funds within the same family (family-spillovers) (Zhao, 2004; Chen et al., 2012). In the context of discretionary inflow gates in China, imposing a partly-closed gate (e.g., a daily purchase cap of RMB 100,000 per investor) may suggest that fund inflow or size is less of a concern for the manager, since the fund remains open to purchases. One might argue that partly-closed gates may not work to cap fund inflows, because the restriction is to set a purchase cap

[4] Data on inflow restriction events have been cataloged by Wind only since 2017 and are still absent from CSMAR databases.

[5] "Discretionary fund inflow restrictions cause controversy and the industry calls for tighter regulation." (in Chinese) 23 September 2019. *China Fund*.

per investor and not on the total number of (new) investors. In addition, since inflow gates are imposed on a daily basis, investors may split their purchases over multiple days and the fund size continues to grow. Thus, it remains an empirical question as to how effective these inflow gates are in managing fund inflows or controlling fund size.

The second unique feature is that inflow gates in China's mutual fund market are all publicly announced, supplemented by direct notifications to existing investors via instant messages, mobile notifications, or emails (See Appendix A for examples). This stands in stark contrast to US practices, where fund hard closures are seldom publicly announced, "because the goal of closing the fund was to preserve performance and not increase the asset size, funds did not want public announcements to generate additional investments" (Smaby and Fizel, 1995). Hence, we argue that the publicity of a partly-closed gate significantly increases the salience of a fund's past return, making the fund more visually prominent and thus amplifying investors' chasing of past returns. This effect is evident among retail investors, who only consider a limited set of attention-grabbing options rather than wading through all available investment choices when making buying decisions (Barber and Odean, 2008; Evans and Sun, 2021; Roussanov et al., 2021).

The third unique aspect is the relatively short duration of inflow restrictions in China's fund market. Approximately 25% of all inflow gates last less than one week, with a median duration of only 27 days. This is in stark contrast to the median duration of 20 months for fund hard closures in the US (Chen et al., 2012). Such a short restriction period appears to be more of a signaling mechanism and raises doubts about the efficacy of inflow gates in protecting investor interests in the long run.

Last, our setting provides an empirical advantage in that we have sufficient observations on inflow restriction events. Over half of domestic equity funds in China imposed at least one inflow restriction between 2006 and 2020, yielding a total of 1108 events. Comparatively, prior US studies identify far fewer hard closure events (e.g., 228 events over 1995–2004 in Chen et al. (2012) and 140 events over 1993–2004 in Bris et al. (2007)). Therefore, our setting enables us to better examine the impact of flow restrictions with event dates available.

3. Data

We obtain a dataset on inflow restriction events in China's mutual fund market between 2006 and 2020 from Wind Information Co. (WIND). The unique advantage of WIND for our study lies in its detailed records on inflow restriction events.[6] Specifically, inflow restriction events are cataloged by WIND based on funds' public announcements, which all follow a standardized format. The variables that we obtain from WIND include the fund name, fund code, affiliated fund family, date when the announced inflow restriction starts, daily purchase cap per investor for each restriction event, and a stated reason for restricting fund inflows.[7]

We restrict our analysis to domestic active equity open-end mutual funds by excluding index and bond funds as well as Fund-of-funds (FoFs) due to their distinct investment objectives and portfolios (Li and Wu, 2019). We also exclude international funds, such as Qualified Domestic Institution Investor (QDII) funds that invest in overseas securities (Chua and Tam, 2020), Qualified Foreign Institutional Investor (QFII) funds that invest in China by foreign institutional investors (Hu et al., 2023), and funds listed on Hong Kong Stock Exchange due to distinct financial reporting requirements (Cheng et al., 2022). We further exclude funds with an operating history of fewer than one year to mitigate incubation bias (Evans, 2010). Our sample selection aligns with, and can be compared to, prior research on fund hard closures in the US (Zhao, 2004; Bris et al., 2007; Chen et al., 2012) and most studies on Chinese mutual funds. The final sample consists of 1322 unique equity funds, with 720 of them invoking at least one inflow restriction from January 2006 to December 2020.

We source fund characteristics from the Wind database, including fund size (*TNA*), age (in months), raw return (available on daily, monthly, and quarterly intervals), cash holdings, stock holdings (*Top-10 weight (%)*, *Stock concentration*, and *Number of stocks*), and investor base (*Number of investors*, and *Ownership of retail investors (%)*). We next summarize the sample of inflow restriction events and characteristics of inflow-restricted funds.

3.1. Descriptive statistics of inflow gates

Fig. 1 presents the monthly proportion of aggregate fund-day observations with inflow restrictions, together with the Shanghai Stock Exchange (SSE) Composite Index over the period 2006–2020. Generally, months with large proportions of inflow restrictions coincide with rebounds in China's stock market. For example, as shown in Table 1 Panel A, over 60% of equity funds in 2006 and 2007 announced at least one inflow restriction event. This is unsurprising, as the SSE Index increased by 237% in these two years and there were only a few hundred domestic equity open-end funds operating. Another spike of inflow restrictions occurred in early 2015 when the SSE index gained 84% in less than six months from the fourth quarter of 2014. The feverish fund purchase requests in the first half of 2015 triggered some 110 inflow gates. Overall, 54.5% of all domestic equity funds imposed at least one inflow restriction, with a

[6] Although fund inflow restrictions in China are all publicly announced, the compiled data were not available in most mutual fund databases in China until early 2017 when WIND first collated such information. The other popular database, CSMAR, does not offer this specific dataset. In addition, as one of the most comprehensive financial databases in China, WIND has become increasingly popular in Chinese mutual fund studies (i.e., Li and Wu, 2019; Chua and Tam, 2020; Cheng et al., 2022; Ammer et al., 2023; Hong et al., 2023).

[7] Appendix A, Example 1, visually presents the relevant data for each restriction event: *Fund Name* (Huashang Hongli Youxuan Equity Fund), *Fund Code* (100026), *Affiliated fund management company* (Huashang Fund Management Co., Ltd), and a breakdown of the inflow restriction specifics (*Commencement date* – 08 September 2020, *Daily purchase cap per investor* – RMB 10,000, and *Reason for restricting inflows* – To ensure the smooth operation of the fund and to protect the interests of fund investors).

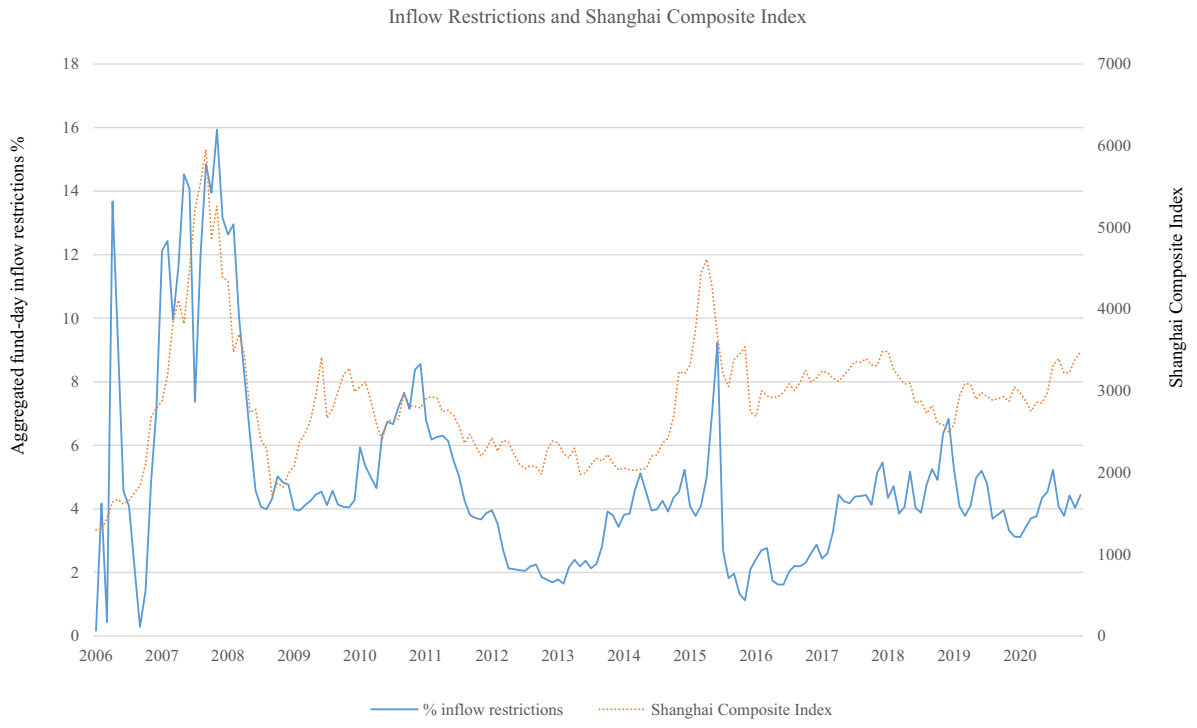

Fig. 1. Inflow restrictions in active equity funds and Shanghai Composite Index between 2006 and 2020.
This figure presents the monthly proportion of fund-day observations with inflow restrictions in our sample, together with the Shanghai Stock Exchange (SSE) Composite Index over the period 2006–2020. The solid line represents the proportion of aggregated fund-day observations with inflow restrictions in each month. The dotted line is the SSE Composite index.

total of 1108 events, during the sample period.

Table 1 Panel B presents the distribution of closed and partly-closed gates, and the duration of inflow restriction events by gate categories. There are 517 closed gates and 591 partly-closed gates during the sample period. The median duration of all inflow restriction events is 27 days, with the bottom (top) decile at 6 (109) days. As a comparison, the median duration of fund closures in the US is 20 months (Chen et al., 2012). It is doubtful whether an inflow restriction that only lasts for a few days would serve as an effective tool to restrict fund inflows or is it an implicit advertising strategy to attract investors' attention.

3.2. *Characteristics of inflow-restricted funds*

In Table 2, columns (1) and (2) report the mean and median value of various characteristics of inflow-restricted funds. The unit of observation is a fund-quarter (calendar quarter), and all variables are measured with a one-quarter lag.[8] Column (3) includes all fund-quarters with no inflow restrictions, and column (4) summarizes the full sample.

On average, fund-quarters with inflow restrictions are larger in size, deliver higher past returns, and exhibit greater fund flows prior to restrictions. For example, the average total net assets (TNA) of closed-gate funds is RMB 9.8 billion (USD 1.5 billion), which is almost three times the average fund size of the full sample. In addition, funds with closed gates exhibit an average implied fund flow of 45.2% in the quarter prior to restrictions. This compares with an average of 0.9% implied flows for fund-quarters without inflow restrictions. As expected, inflow-restricted funds all have higher past returns. The cumulative 12-month raw return in funds with closed (partly-closed) gates stands at 31.7% (30.5%), compared to the sample average of 12.1%. Further, inflow-restricted funds' average stock holding concentration is nearly twice as high as the full sample average.

Our comparison of fund characteristics among gate categories also reveals interesting patterns. The mean (median) TNA of closed-gate funds is almost three times the mean (median) size of partly-closed funds. Similarly, the total number of investors in closed-gate funds has a median value of 248,170, as opposed to 58,520 in funds with partly-closed gates. The average number of stocks in closed-gate funds is 95, which is 1.5 times the number of stocks held in partly-closed funds. This implies that size is a concern for those funds imposing closed gates. Moreover, partly-closed funds have a relatively higher top-10 stock weight (47.3%) than the sample average

[8] For instance, when a closed gate is observed in a fund in a calendar quarter (event-quarter), this event is included in column (1) of Table 2, and the mean and median of the fund's characteristics are measured at the end of the preceding quarter.

Table 1
Descriptive statistics of inflow restriction events.

Panel A. Frequency of inflow restriction events by year

Year	# of equity funds	# of events	# of funds with at least one event	% of funds with at least one event
2006	95	125	67	70.5
2007	163	151	99	60.7
2008	197	14	13	6.6
2009	236	19	16	6.8
2010	288	59	36	12.5
2011	338	48	11	3.3
2012	394	25	7	1.8
2013	427	33	29	6.8
2014	468	65	46	9.8
2015	567	110	70	12.3
2016	676	43	33	4.9
2017	798	88	54	6.8
2018	993	86	71	7.2
2019	1189	115	67	5.6
2020	1322	127	101	7.6
All	1322	1108	720	54.5

Panel B. Duration of inflow gate (in calendar days)

	# of events	Mean	p10	Median	p90
Closed gate (*Daily purchase cap = 0*)	517	58	5	29	94
Partly-closed gate (*0 < Daily purchase cap*)	591	73	9	26	136
Total	1108	61	6	27	109

This table summarizes our sample inflow restriction events. Panel A reports the number of domestic active equity funds and the frequency of inflow restriction events by year over the sample period 2006–2020. Panel B reports the duration of inflow gates (in days), segmented by gate categories. All inflow gates are categorized into two groups based on the daily purchase limit per investor in each event: (1) *closed gate*, when a fund is completely closed to all investors, and (2) *partly-closed gate*, when the daily investment cap is set above zero.

(40%). Overall, the descriptive statistics in Table 2 indicate that funds limit investor purchases when they experience excessive cash inflows and superior past performance.

4. Empirical analysis

This section presents our empirical results and associated discussions. We start by exploring the determinants of inflow gates. We then proceed to test the "*investor protection*" hypothesis, with a particular focus on investigating whether funds maintain their existing portfolios during inflow restrictions and comparing funds' performance pre- and post-restriction with that of their matched peers. We further test the "*marketing ploy*" hypothesis by examining the changes in both flows and investor base of funds with inflow restrictions.

4.1. Determinants of inflow restrictions

As an exploratory study on inflow restrictions in mutual funds, we draw upon the supply-demand framework in economics and posit that two primary forces drive fund managers' decisions to restrict investor purchases: (1) high demand for the fund, and (2) high cost of supplying additional fund units. On the demand side, fund managers are likely to introduce inflow restrictions when they perceive heightened or anticipated investment interest. We thus include fund flows and fund past performance as proxies for investors' demand.

From the supply side, the asset composition in a fund could affect the manager's ability to further expand the fund size. For example, highly concentrated portfolios often yield better performance (Kacperczyk et al., 2005), which may encourage managers to curb incoming capital that could erode fund returns. We thus expect that funds with more concentrated portfolios, which are captured by stock concentration ratios and the weight of top-10 stock holdings, are more prone to impose inflow gates due to concerns about return dilution.

Furthermore, a lack of fresh investment opportunities might compel managers to limit inflows, allowing them to maintain existing investment strategies instead of diversifying into less attractive stocks. Prior studies show that a large cash reserve in a fund suggests that the manager is less willing to invest and awaiting better investment opportunities (Simutin, 2014). Therefore, we include the total number of underlying stocks and a fund's cash position as proxies for fund managers' ability or willingness to exploit additional investment opportunities.

We use logistic regression models to examine the determinants of inflow restrictions. Specifically, we model the likelihood of a

Table 2
Summary statistics.

	(1) Closed gate *(Daily purchase cap = 0)*		(2) Partly-closed gate *(0 < Daily purchase cap)*		(3) No gate		(4) All equity funds	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
TNA (in RMB million)	9851.24	7708.82	3839.92	2758.90	2915.08	1616.74	3166.43	1730.78
Fund age (months)	80.40	60.00	80.27	51.50	81.73	59.20	80.67	58.20
Flow (%)	45.21	−3.67	13.05	−2.98	0.92	−3.89	3.14	−3.85
Cum. *12-month return (%)*	31.68	15.69	30.54	24.92	9.45	3.71	12.05	3.99
Fund raw return (%)	8.46	5.69	6.21	5.59	2.25	0.35	2.66	0.57
Alpha (%)	2.41	1.75	1.96	1.78	0.78	0.11	0.88	0.10
MAX (%)	3.78	2.53	4.91	3.90	3.31	2.82	3.35	2.11
Number of investors (in '000)	492.75	248.17	129.32	58.52	137.09	54.88	148.05	57.16
Ownership of retail investors (%)	83.89	95.26	69.08	75.82	82.12	90.70	81.71	90.47
Top-10 weight (%)	37.32	36.06	47.32	42.71	39.93	39.12	40.02	39.21
Stock concentration	1.73	1.40	1.56	1.19	0.82	0.53	0.88	0.57
Number of stocks	95.43	73.00	63.39	51.00	63.40	50.00	64.37	51.00
Cash holdings (%)	11.67	9.26	10.13	7.88	11.72	9.76	11.65	9.66
# fund-quarters	1027		1266		21,786		24,079	

This table reports the mean and median value of various characteristics of inflow-restricted funds and of the full sample. Columns (1) and (2) report the mean and median value of various characteristics of inflow-restricted fund-quarters. The unit of observation is a fund-quarter (calendar quarter) in which a closed or a partly-closed gate is observed, and all variables are measured with a one-quarter lag. Column (3) includes all fund-quarters with no inflow restrictions, and column (4) summarizes the full sample. *TNA* is a fund's total net assets measured in millions of RMB. *Fund age (months)* is the number of months from a fund's inception day to the reporting quarter. *Flow (%)* is implied fund flows, calculated as $\frac{TNA_{i,t} - TNA_{i,t-1} \times (1 + RET_{i,t})}{TNA_{i,t-1}} \times 100$, following Sirri and Tufano (1998). Cum. *12-month return (%)* is the cumulative fund raw return over the 12-month window. *Fund raw return (%)* is quarterly fund raw return. *Alpha (%)* or risk-adjusted return is a compound return in a given quarter based on monthly risk-adjusted returns estimated as the intercept term plus the monthly residual from the Fama and French (1993) three factor model regressions. *MAX (%)* is a fund's maximum daily return in a quarter. *Number of investors (in '000)* is the total number of investors (in thousands) in a fund. *Ownership of retail investors (%)* is the proportion of total net assets in a fund owned by retail investors. *Top-10 weight (%)* is the total weight of the ten largest stocks position. *Stock concentration* is the value-weighted ratio of a fund's holding in individual stocks relative to the total market value of those stocks. *Number of stocks* is the total number of stocks in a fund's equity portfolio. *Cash holdings (%)* is cash reserve as a percentage of total net assets in a fund. All variables are sourced from the WIND database.

given equity fund *i* imposing at least one inflow restriction in quarter *t* as a function of various fund-specific characteristics measured as of the previous quarter-end, including the cumulative 12-month raw return (Cum. *12-month return*), quarterly risk-adjusted return (*Alpha*), fund size (*Ln(TNA)*), *Fund age*, *Stock concentration*, *Top-10 weight*, *Cash holdings*, *Number of stocks*, *MAX*. Variable definitions are detailed in Table 2. We also include time (year-quarter), fund style, and fund family indicators. Results are reported in columns (1)–(2) of Table 3.

Overall, our logistic regression results suggest that funds with elevated purchase demands, larger sizes, and shorter operating histories are more likely to impose inflow restrictions. As expected, we also observe that funds with highly concentrated portfolios are positively associated with the use of inflow gates.

To further explore managers' choice between a closed and partly-closed gate, we next estimate a multinomial logistic regression model as follows:

$$Gate^{z}_{i,t} = \alpha + \beta^{z}\mathbf{X_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

where $Gate^{z}_{i,t}$ takes on the values of 0, 1, or 2 if fund *i* imposes no gate (the reference category), a closed gate, or a partly-closed gate, respectively, in quarter *t*. **X** represents a vector of fund characteristics.

The multinominal regression results, presented in columns (3)–(4) of Table 3, uncover differential drivers for the tightness of inflow restrictions. Funds with larger sizes, higher cash reserves, and a larger number of stocks tend to opt for closed gates, while funds with superior past performance, shorter operating histories, and an exceptional MAX are more likely to enact partly-closed gates.

Collectively, the findings in Table 3 suggest that mutual funds are more likely to restrict inflows when facing an imbalance between elevated investor demand and the cost of rapidly augmenting fund supply. This seems to suggest that inflow restrictions serve as a legitimate tool for optimizing fund operations and maintaining an ideal portfolio composition.

4.2. Fund risk shifting behavior during the inflow restriction period

Having documented the determinants of inflow restrictions, we next consider the *investor protection* hypothesis. Specifically, we aim to verify managers' claim that inflow restrictions help managers to "smooth the operation of the fund." Under certain circumstances, fund managers may have difficulties adding existing favorable stocks to their portfolios (Pollet and Wilson, 2008), or managers may

Table 3
Determinants of inflow restrictions.

	(1)	(2)	(3)	(4)
Dependent Var.	*Inflow gate (0/1)*		*Inflow gate (0,1,2)*	
			Closed gate	Partly-closed gate
Cum. *12-month return*	0.046***	0.041**	0.006	0.074***
	(6.57)	(2.34)	(0.58)	(6.33)
Alpha	0.008**	0.010*	0.135	0.142*
	(2.35)	(1.72)	(1.02)	(1.74)
Ln(TNA)	0.293***	0.127	0.129***	0.128
	(3.32)	(1.43)	(3.64)	(1.53)
Fund age	−0.077*	−0.077	−0.049	−0.098***
	(−1.71)	(−1.57)	(−1.41)	(−3.76)
Stock concentration		0.242***	0.068	0.453***
		(3.02)	(0.97)	(7.40)
Top-10 weight		0.026***	0.026***	0.013**
		(3.69)	(3.62)	(2.17)
Cash holdings		0.000	0.022**	−0.013
		(0.07)	(2.54)	(−1.54)
Number of stocks		0.003*	0.006***	−0.002
		(1.84)	(6.45)	(−1.23)
MAX		0.238	0.116	0.398***
		(1.55)	(1.03)	(4.15)
Time indicators	Yes	Yes	Yes	
Fund family indicators	Yes	Yes	Yes	
Fund style indicators	Yes	Yes	Yes	
Pseduo-R^2	0.54	0.64	0.72	
N	22,780	22,780	23,972	

This table presents the determinants of inflow restrictions in equity mutual funds. In columns (1) and (2), a logistic regression is performed. The dependent variable takes the value of one if an equity fund announces at least one inflow restriction event in a given quarter, and zero otherwise. In columns (3) and (4), a multinomial logistic regression is performed. The dependent variable is a categorical variable, which takes values of 0, 1, or 2 if a fund imposes no inflow gate (the reference category), a closed gate, or a partly-closed gate, respectively, in a given quarter. All independent variables are measured as of the previous quarter-end. All variables are as defined in Table 2. Time (year-quarter), fund style, and fund family indicators are included. *z*-statistics are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

not be able to identify further attractive investment opportunities (Simutin, 2014). As such, stopping or slowing down fund inflows could enable managers to continue with their existing investment strategies. If these claims are true, then we would expect fund managers to maintain relatively stable investment allocations rather than shifting fund risk exposures during periods of inflow restrictions.

To test the "smooth operation" claim, we regress fund daily excess return on the Fama and French (1993) three factors (*mkt*, *smb*, *hml*) plus the Amihud (2002) market-wide illiquidity factor (*illiq*) (Model 1) or the Carhart (1997) momentum factor (*umd*) (Model 2), as well as their respective interaction terms with the inflow gate categorical variable as follows:

$$\begin{aligned} Daily\ Excess\ Return_{i,t} = {} & a + \beta_1 mkt_t + \beta_2 smb_t + \beta_3 hml_t + \beta_4 illiq_t\ (or\ umd_t) + \boldsymbol{\lambda_1^z} Gate_{i,t}^z \times mkt_t + \boldsymbol{\lambda_2^z} Gate_{i,t}^z \times smb_t + \boldsymbol{\lambda_3^z} Gate_{i,t}^z \times hml_t \\ & + \boldsymbol{\lambda_4^z} Gate_{i,t}^z \times illiq_t\ (or\ umd_t) + \delta \times Gate_{i,t}^z + e_{i,t} \end{aligned} \quad (2)$$

where $Daily\ Excess\ Return_{i,t}$ is fund *i*'s return (in percentage) in day *t* in excess of the risk-free rate.[9] $Gate_{i,t}^z$ is a categorical variable taking values of $z = 0$, 1, or 2 if fund *i* imposes no restriction (the reference category), a closed gate, or a partly-closed gate, respectively, on day *t*. We also include fund fixed effects in eq. (2). Of particular interest are the coefficients $\boldsymbol{\lambda^z}$, which capture changes in fund portfolio allocations or risk exposures when an inflow gate *z* is in place. This regression model takes advantage of daily observations on inflow restrictions, allowing us to draw clear inferences on fund risk shifting behavior during the restriction period. Regression results are reported in Table 4.

We find strong evidence of risk shifting behavior in partly-closed funds during the restriction period. The coefficients on the interaction term, *Partly-closed gate* × *MKT* (*Partly-closed gate* × *HML)*, in Models 1 and 2 are all positive (negative) and statistically significant at the 1% level. These results suggest that, instead of maintaining their prior portfolio allocations, partly-closed funds shift their risk exposures drastically by bearing greater market risk and tilting toward growth stocks when the gate is in place. In other words, partly-closed funds tend to pursue a more aggressive investment strategy during inflow-restriction periods. This is contrary to managers' claim of maintaining stability. As expected, the significantly negative coefficient on *Closed gate* × *ILLIQ* implies that a closed gate helps the fund effectively mitigate its exposure to market illiquidity risk (Fulkerson and Riley, 2017).

[9] Risk-free rate is the daily interest rate on the one-year official deposit rate (e.g., Chen et al., 2018). The Fama-French (1993) three factors and the Carhart (1997) momentum factor are sourced from the China Asset Management Academy. The market-wide illiquidity factor is calculated based on Amihud (2002).

Table 4
Fund risk shifting during the inflow restriction period.

	Model 1		Model 2	
	Coef.	*t*-stat	Coef.	*t*-stat
MKT	59.943***	(63.69)	59.171***	(63.03)
Closed gate × *MKT*	−1.268	(−0.43)	−1.261	(−0.42)
Partly-closed gate × *MKT*	13.079***	(4.98)	12.902***	(4.74)
SMB	0.214	(0.29)	−1.562**	(−2.24)
Closed gate × *SMB*	−13.492***	(−3.85)	−11.221***	(−3.34)
Partly-closed gate × *SMB*	4.669	(0.98)	4.079	(0.80)
HML	−38.886***	(−42.37)	−35.054***	(−38.45)
Closed gate × *HML*	1.177	(0.21)	0.978	(0.17)
Partly-closed gate × *HML*	−34.397***	(−4.75)	−37.008***	(−5.05)
ILLIQ	0.071***	(15.34)		
Closed gate × *ILLIQ*	−0.060***	(−4.22)		
Partly-closed gate × *ILLIQ*	0.251	(1.08)		
UMD			11.640***	(31.34)
Closed gate × *UMD*			−1.697	(−0.80)
Partly-closed gate × *UMD*			−4.929	(−1.00)
Closed gate	0.010	(1.17)	0.004	(0.47)
Partly-closed gate	−0.048**	(−2.04)	−0.034***	(−3.65)
Fund fixed effect	Yes		Yes	
Adj-R^2	0.88		0.93	
N	1,663,385		1,663,385	

This table presents results from regressing fund daily excess returns on the Fama and French (1993) three factors (mkt, smb, hml) plus the Amihud (2002) market-wide illiquidity factor (illiq) (Model 1) or the Carhart (1997) momentum factor (umd) (Model 2) and their respective interactions with the inflow gate categorical variable. The test sample consists of fund-day observations during the sample period. The regression model is specified as follows: $Daily\ Excess\ Return_{i,t} = a + \beta_1 mkt_t + \beta_2 smb_t + \beta_3 hml_t + \beta_4 illiq_t\ (or\ umd_t) + \lambda_1^z Gate_{i,t}^z \times mkt_t + \lambda_2^z Gate_{i,t}^z \times smb_t + \lambda_3^z Gate_{i,t}^z \times hml_t + \lambda_4^z Gate_{i,t}^z \times illiq_t\ (or\ umd_t) + \delta Gate_{i,t}^z + e_{i,t}$. *Daily excess return*$_{i,t}$ is fund *i*'s return in day *t* in excess of the risk-free rate. $Gate_{i,t}^z$ is a categorical variable and takes the values of $z = 0$, 1, or 2, if fund *i* imposes no inflow gate (the reference category), a closed gate (daily purchase cap = 0), or a partly-closed gate (daily purchase cap >0), respectively, in day *t*. Fund fixed effects are included and standard errors are clustered at the fund-level. *t*-statistics are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

One might argue that partly-closed funds tilting toward a riskier strategy are not inherently harmful to investors. The results in Table 4 could be interpreted as evidence of managerial skill in stock selection and market timing. In addition, the increased risk might be justifiable if it results in commensurate or better returns for the investors. However, the negative coefficients on *Partly-closed gate* in Table 4 imply that the risk shifting behavior actually leads to negative risk-adjusted returns during periods of inflow restriction. This finding is consistent with Huang et al. (2011) suggesting that risk shifters are likely driven by agency issues and perform poorly.

Our inferences are supported by further evidence showing that partly-closed funds continue to increase their idiosyncratic risk subsequent to inflow restrictions (untabulated). We find that, although all inflow-restricted funds exhibit risk-taking behavior one quarter before restrictions start, partly-closed funds continue to take significant idiosyncratic risk from the event-quarter *t* (when the gate is in place) to quarter $t + 3$.

Overall, our results offer robust evidence suggesting that partly-closed gates do not necessarily protect investor interests but appear to be more consistent with agency problems. We thus rule out the possibility that fund managers impose inflow gates in order to preserve optimal portfolio allocations or to "smooth the operation of the fund."

4.3. Fund performance around inflow restriction events

We further test the *investor protection* hypothesis by examining inflow-restricted funds' pre- and post-restriction performance through an event-study approach. Specifically, we compare the risk-adjusted returns of inflow-restricted funds to their matched peers around the inflow restriction event in quarter *t* (when the inflow gate is in place) (i.e., Aiken et al., 2015). Matched peers or control funds have ex-ante observable fund characteristics similar to inflow-restricted funds but do not impose inflow gates. To this end, we use a propensity score matching (PSM) approach to select control funds. We first obtain the propensity score by estimating a logistic regression model using observable fund characteristics to predict the probability of imposing a closed or a partly-closed gate in quarter *t*. Next, for each treated fund, we select a control fund from the same event-quarter that has the closest propensity score. The control fund is then 1:1 matched with the treated fund in each event-quarter on ex-ante fund characteristics, including the ex-ante determinants of inflow gates in Table 3 and fund styles. Given that closed gates differ from partly-closed gates, we construct a matched sample for each gate category.

Table 5 presents the pre- and post-restriction risk-adjusted returns of inflow-restricted funds and their matched peers which are selected through the nearest neighbor PSM approach. Fig. 2 also visually illustrates the performance comparison up to one year before and after inflow restrictions in both groups. Overall, although inflow-restricted funds display superior performance prior to the event-

Table 5
Fund risk-adjusted returns around inflow restriction events (matched samples).

Panel A. Closed gate

Quarter	Quarterly risk-adjusted return (1) No gate	(2) Closed gate	(3) Diff. (1)–(2) *t*-stat.
t − 1	2.55	2.31	0.24
			(1.14)
t	2.68	2.87	−0.19
			(0.40)
t + 1	2.42	1.89	0.53
			(1.18)
t + 2	1.87	1.60	0.27
			(0.56)
t + 3	1.68	1.19	0.49
			(1.04)
t + 4	1.01	1.18	−0.17
			(−1.11)

Panel B. Partly-closed gate

Quarter	Quarterly risk-adjusted return (1) No gate	(2) Partly-closed gate	(3) Diff. (1)–(2) *t*-stat.
t − 1	1.74	2.10	−0.36
			(−1.06)
t	1.35	1.16	0.19
			(1.52)
t + 1	0.51	−0.35	0.86**
			(2.07)
t + 2	0.63	−0.79	1.42***
			(3.99)
t + 3	−0.05	−1.25	1.20***
			(3.13)
t + 4	0.17	−1.05	1.22**
			(2.25)

This table compares risk-adjusted returns of inflow-restricted funds with control funds around the restriction event-quarter *t* (when a gate is in place). We select control funds using a propensity score matching (PSM) approach. We first estimate a logistic model to predict the probability of imposing a closed or a partly-closed gate in quarter *t*. We next match each inflow-restricted (treated) fund in the event-quarter with a no-gate (control) fund that has the closest predicted probability but does not impose an inflow gate. The control fund is then 1:1 matched with an inflow-restricted fund on ex-ante observable fund characteristics (see Table 3 for the ex-ante determinants of inflow gates) and fund styles. We report mean quarterly risk-adjusted returns of closed-gate funds versus their matched no-gate peers in Panel A, and that of partly-closed funds versus their matched no-gate peers in Panel B, respectively. Risk-adjusted returns are calculated using the Fama and French (1993) three-factor model. *t*-statistics (in parentheses) in column (3) are for testing the difference in the means of risk-adjusted returns between inflow-restricted funds and their matched control funds. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

quarter, they all experience a decline in returns subsequent to flow restriction events. This is not surprising considering the often-cited caveat in mutual fund sales — "past performance does not guarantee future results" (Bollen and Busse, 2005).

Two further interesting observations emerge. For closed-gate funds, the risk-adjusted returns from quarter *t* to *t* + 4 do not significantly deviate from those of their matched counterparts.[10] In other words, closed-gate funds do not outperform their matched peers in subsequent periods. One might interpret this as evidence that closed gates are neutral in terms of their impact, neither harming nor benefiting investors. In contrast, partly-closed funds show a marked decline in average risk-adjusted returns, plunging from a statistically significant 2.1% in the pre-event quarter to a statistically negative −0.35% in the post-event quarter. They continue to generate negative risk-adjusted returns and underperform their matched peers for up to four quarters following the inflow restrictions. These diverging trajectories are consistent with our earlier findings in Section 4.2, which suggests that partly-closed gate funds

[10] There are no significant differences in the past return between inflow-restricted funds and control funds because both groups are matched on past performance.

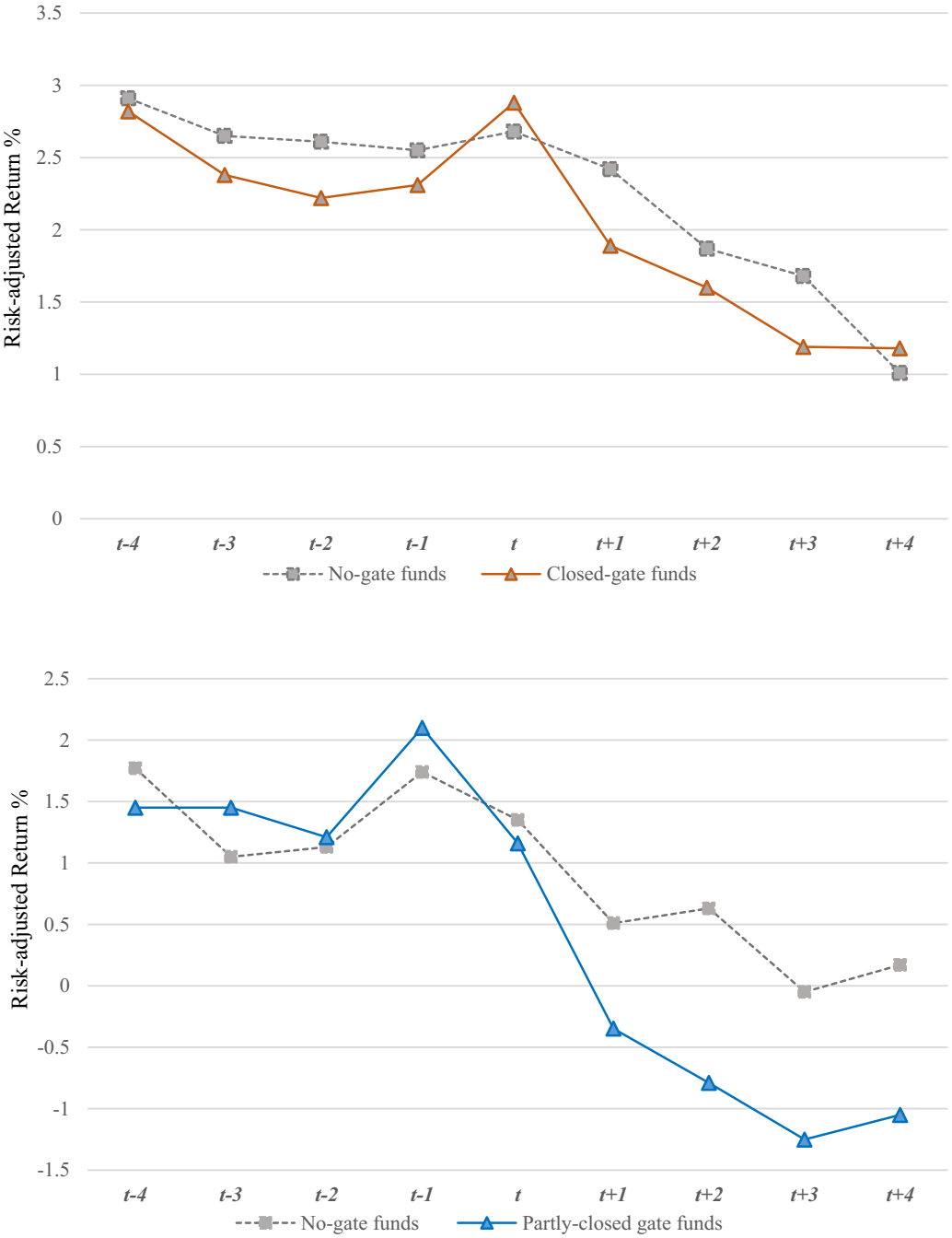

Fig. 2. Risk-adjusted returns of inflow-restricted funds around inflow restrictions.
This figure plots risk-adjusted returns of inflow-restricted funds and their matched no-gate funds from quarter $t - 4$ to $t + 4$, with quarter t as the event-quarter (when the gate is in place). Risk-adjusted returns are calculated using the Fama and French (1993) three-factor model. We select matched funds using a propensity score matching approach. See Table 5 for details of the matching process.

typically engage in risk-shifting behavior without corresponding benefits to investors.

In sum, our findings do not lend compelling support to the claim that managers impose inflow restrictions to maintain good past performance or act in the best interests of investors. This leads us to question the managerial motives for such decisions.

4.4. Inflow gate, fund flows, and investor base

After ruling out the *investor protection* hypothesis, we turn our attention to the *marketing ploy* hypothesis. It posits that inflow gates, especially partly-closed gates, serve as a driver of fund flows by "advertising" both the quality (i.e., good past performance and stewardship) and scarcity of a fund (i.e., in short supply) (Verhallen and Robben, 1994). This empirical prediction is based on anecdotes and the well-documented correlation between attention-grabbing marketing strategies and extra fund flows. For example, Jain and Wu (2000) show that advertising boosts future fund flows, despite the absence of sustained superior performance in the post-advertisement period. Similarly, Reuter and Zitzewitz (2006) and Kaniel and Parham (2017) show that investor behavior is influenced by mutual fund recommendations and media attention, even when these do not predict superior future returns. In a similar vein, if inflow-restricted funds do not yield superior future performance but experience increased fund flows, it would provide empirical support for the *marketing ploy* hypothesis.

To examine the impact of inflow gates on future fund flows, we employ the following regression model:

$$Flow_{i,t+1} = \alpha + \beta^{z} Gate^{z}_{i,t} + \delta \mathbf{F} + \varepsilon_{i,t} \tag{3}$$

where *Flow* is implied fund flow (%)commonly used in the literature (Sirri and Tufano, 1998). We use a categorical variable approach to investigate whether different restriction levels work differently to stem or attract future fund flows. The categorical variable $Gate^{z}_{i,t}$ takes the values of $z = 0$, 1, or 2 if fund i imposes no restriction (the reference group), a closed gate, or a partly-closed gate, respectively, in quarter t. Of particular interest is the coefficient β^{z} on $Gate^{z}_{i,t}$. A significantly positive (negative) β^{z} suggests that fund gate z attracts

Table 6
Inflow gates and future fund flows.

	Dependent variable: Fund flow$_{t+1}$		
	(1)	(2)	(3)
Dependent Var.	*Flow (%)*	*Flow (%)*	*Flow (%)*
	(Full sample)	(Full sample)	(Matched sample)
Closed gate	−5.617	−3.859	
	(−0.60)	(−0.41)	
Partly-closed gate	**19.289****	**18.071*****	**14.946*****
	(2.51)	**(2.92)**	**(3.45)**
Ln(TNA)	−34.166***	−33.138***	−7.890***
	(−8.15)	(−8.45)	(−4.65)
Fund age	6.538	2.657	3.991
	(1.04)	(0.47)	(0.24)
Cum. *12-month return*	0.942***	1.0133***	0.1035*
	(6.17)	(8.50)	(1.72)
Alpha$_t$		1.159***	0.951
		(5.87)	(1.03)
Alpha$_{t-1}$		0.706***	1.058
		(3.94)	(1.51)
MAX		14.207*	14.038
		(1.80)	(1.51)
Stock concentration		0.332	0.589
		(1.12)	(1.03)
Top-10 weight		0.288	1.055
		(0.47)	(1.40)
Cash holdings		2.778	1.131
		(0.79)	(0.39)
Number of stocks		1.084	0.618
		(1.33)	(1.23)
Time fixed effect	Yes	Yes	Yes
Fund fixed effect	Yes	Yes	Yes
Adj-R^2	0.21	0.28	0.37
N	21,279	21,279	9874

This table reports results from regressing future fund flows on different gate categories and fund characteristics. The basic regression model is $Flows_{i,t+1} = \alpha + \beta^{z} Gate^{z}_{i,t} + \lambda \mathbf{X} + \varepsilon_{i,t}$. $Gate^{z}_{i,t}$ is a categorical variable and takes the values of $z = 0$, 1, or 2 if fund i imposes no inflow gate (the reference category), a closed gate (daily purchase cap = 0), or a partly-closed gate (daily purchase cap >0), respectively, in quarter t. $\beta^{z}$is the coefficient corresponding to gate category z. $\mathbf{X}$ is a vector of fund-level control variables. Variable definitions are detailed in Table 2. In columns (1) and (2), the test sample is the full sample. In column (3), the test sample is the matched sample with the treatment group being partly-closed gate funds and the control group being no-gate funds that are selected through the nearest neighbor propensity score matching approach. We include time (year-quarter) and fund fixed effects. Standard errors are clustered by fund and year-quarter. Regression intercepts and fixed effects are combined together and omitted from the table for brevity. t-statistics are reported in parentheses. The coefficients of primary interest are highlighted in bold. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

(stems) future fund flows after controlling for a set of fund characteristics **F**. We estimate eq. (3) with both time (year-quarter) and fund fixed effects. Standard errors are clustered at both the fund and time levels.

The results of regressing future fund flows on different gate categories are presented in columns (1) and (2) of Table 6. Consistent with the *marketing ploy* hypothesis, we find that partly-closed inflow gates are associated with a 19.3% increase in subsequent quarter fund flows, controlling for fund size, age, and the cumulative 12-month raw return. We continue to obtain a positive and statistically significant coefficient on *Partly-closed gate* after including additional controls that may affect fund flows as documented in prior studies, e.g., lagged risk-adjusted returns (Jain and Wu, 2000), stock concentration (Kacperczyk et al., 2005), and the MAX effect (Akbas and Genc, 2020; Hu et al., 2023), etc. Meanwhile, the coefficient on *Closed gate* remains statistically insignificant across columns (1)–(2), suggesting that closed gates not only stem fund purchases, but also encourage existing investors to stay in the closed funds, resulting in negligible net redemptions.

One potential concern with respect to the validity of our results in columns (1)–(2) of Table 6 is that inflow-restricted funds and no-gate funds may be intrinsically different, despite our efforts to control for *observable* fund characteristics as well as fund and time fixed effects. To address this concern, we re-estimate eq. (3) using the matched sample in Table 5, comparing partly-closed gate funds with their matched no-gate peers. In column (3) of Table 6, *Partly-closed gate* is an indicator variable that equals 1 if a fund has a partly-closed gate in place in a given quarter, and 0 otherwise. We show that partly-closed gates attract, on average, an extra quarterly flow of 14.9% of the fund's assets compared to their matched peers, over and above the effect of returns.[11] Our findings thus suggest that funds that leave the gate ajar to investors experience greater future fund flows, controlling for other potential contributing factors.

We next delve into the specific sources of increased fund flows brought about by partly-closed inflow gates. We aim to answer two questions: Do inflow gates attract new money from existing investors or new investors? Are the greater fund flows primarily from retail or institutional investors? To explore these questions, we adapt the baseline model in eq. (3) by using *Investor base* as the dependent variable, which is measured two ways: natural logarithm of the number of investors (*Ln(Number of investors)*) and percentage of retail investor ownership (*Ownership of retail investors (%)*).[12] The coefficients on the categorical variable $Gate^z$ indicate whether inflow gate category z attracts new investors and increases retail investor ownership.

Table 7 reports the results of regressing fund investor base on inflow gates. In columns (1) and (2), we report results of regressing *Ln (Number of investors)* on different gate categories and control variables. The significantly positive coefficient on *Partly-closed gate* (coef. = 0.36, *t*-stat. = 6.54) in column (1) suggests a surge of approximately 43% in the number of investors following the implementation of partly-closed gates. Since the mean number of investors in domestic equity funds is around 148,000, such a huge increase is clearly attributable to an influx of new retail clients. Columns (4) and (5) report results of regressing *Ownership of retail investors (%)* on different gate categories and control variables. These results support the view that partly-closed gates are associated with a larger retail client base. Our findings are also robust to the matched-sample test reported in columns (3) and (6). For instance, as shown in column (6), the average retail investor ownership in partly-closed funds rises by 5.5% following the inflow restriction (*t*-stat. = 3.15), when compared to their matched no-gate peers. Together, our findings provide strong evidence to support the *marketing ploy* hypothesis. Funds impose partly-closed inflow gates to exacerbate investors' chasing of past returns and substantially expand their retail investor base.

A follow-up question we investigate is: why do partly-closed funds target retail clients? One plausible explanation is that retail investors exhibit behavior that is generally considered unsophisticated (Song, 2020). Due to limited resources, time, and cognitive skills, retail investors only consider a list of attention-grabbing options rather than doing due diligence over all possible choices (Barber and Odean, 2008). As such, managers' marketing effort with any eye-catching signals (i.e., a signal of scarcity via a purchase cap on fund assets) can influence investors' considerations in choosing funds (Choi and Robertson, 2020). Importantly, once retail investors put money in a fund, they are fairly insensitive or tolerant to poor performance (Chevalier and Ellison, 1997; Sirri and Tufano, 1998). As a result, money from retail investors tends to be more “sticky” to the fund for a longer term (Sialm et al., 2015).

To verify this explanation, we examine cumulative fund flows from quarter $t+1$ to $t+$ n ($n = 2, 3, 4$). Untabulated results suggest that partly-closed gates are associated with noticeably higher fund flows for up to a year post-restriction. This long-lasting marketing effect of partly-closed gates is consistent with the argument that funds leave the gate partly closed to attract naïve (sticky) clients, who are less likely to withdraw from the fund even if its performance declines subsequently (Huang et al., 2007; Barberis and Xiong, 2009).

Overall, our findings indicate that, although closed gates have a neutral impact on investors, partly-closed restrictions are likely to be used for marketing purposes. Such strategies are consistent with the scarcity principle in marketing, which aims to enhance the

[11] We also rerun equation (3) using the matched sample of closed gate funds and their matched peers. The coefficient on *Closed gate* remains statistically insignificant (untabulated).

[12] Mutual funds in China are required to disclose their investor base in regular financial statements. Such disclosures include the total number of investors, number and percentage of fund units held by individual/retail investors, as well as number and percentage of fund units held by institutional investors. These data points are available on commercial databases such as WIND. Nevertheless, mutual funds in China do not provide a more granular breakdown of the types or categories within their institutional investor base. In the context of Chinese mutual funds, institutional investors typically include entities, such as insurance companies, social security funds, asset management portfolio of securities companies, trust funds, and FOFs, among others. Although certain types of institutional investors (i.e., FOFs) might exert considerable influence on target funds' operational and strategic decisions, we do not consider this in our study primarily due to unavailability of relevant data. Importantly, FOFs in China were only launched in August 2017, which is relatively late compared to our sample period of 2006–2020. Thus, we believe that the potential influence of FOFs over our findings is likely minimal give our extensive sample period. Nonetheless, we acknowledge that the interplay between FOFs and their target funds in the Chinese context would be an interesting question to be further explored and we leave it to future research when more granular data becomes available.

Table 7
Inflow gates and investor base.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Var.	*Ln(Total number of investors)*	*Ln(Total number of investors)*	*Ln(Total number of investors)*	*Ownership of retail investor (%)*	*Ownership of retail investor (%)*	*Ownership of retail investors (%)*
	(Full sample)	(Full sample)	(Matched sample)	(Full sample)	(Full sample)	(Matched sample)
Closed gate	0.005	0.003		−0.515	−0.351	
	(0.13)	(0.08)		(−0.69)	(−0.47)	
Partly-closed gate	**0.361*****	**0.370*****	**0.294*****	**6.812*****	**5.497*****	**5.536*****
	(6.54)	**(6.77)**	**(4.73)**	**(4.11)**	**(3.33)**	**(3.15)**
Ln(TNA)	0.590***	0.609***	0.592***	−3.098***	−3.286***	−2.213**
	(43.21)	(44.76)	(43.43)	(−9.79)	(−10.32)	(−2.22)
Fund age	9.016	8.322*	7.101	−8.456	−9.112	−6.612
	(1.31)	(1.81)	(0.97)	(−1.21)	(−1.03)	(−1.19)
Cum. *12-month return*	0.013***	0.014***	0.076	−0.251***	−0.527***	−0.210
	(3.83)	(4.59)	(1.36)	(−10.59)	(−11.48)	(−1.61)
$Alpha_t$		0.001	0.000		−0.161***	−0.250**
		(0.21)	(0.16)		(−5.05)	(−2.61)
$Alpha_{t-1}$		0.004***	0.003**		−0.138***	−0.308
		(3.28)	(2.51)		(−4.34)	(−0.96)
MAX		0.932**	0.812**		0.359	0.277
		(2.32)	(2.14)		(1.58)	(1.04)
Stock concentration		0.102	0.496		0.066	0.032
		(0.35)	(1.11)		(1.36)	(1.04)
Top-10 weight		−0.313	−0.422		−1.011	−0.033
		(−0.62)	(−0.99)		(−0.35)	(−1.15)
Cash holdings		0.799	0.359		−0.804	−0.269
		(1.57)	(1.02)		(−1.33)	(−0.85)
Number of stocks		0.514	0.560		0.453	0.122
		(1.06)	(0.87)		(1.21)	(1.03)
Time fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Fund fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.91	0.92	0.94	0.55	0.58	0.62
N	21,279	21,279	9874	21,279	21,279	9874

This table reports results from regressing fund investor bases on different gate categories and fund characteristics. The dependent variable is measured two ways: *Ln(Total number of investors)*, and *Ownership of retail investors (%)*. The key variable of interest is $Gate^{z}_{i,t}$, a categorical variable that takes the values of $z = 0$, 1, or 2 if fund i imposes no inflow gate (the reference category), a closed gate (daily purchase cap = 0), or a partly-closed gate (daily purchase cap >0), respectively, in quarter t. All variables are defined in Table 2. In columns (1), (2), (4), and (5), the test sample is the full sample. In columns (3) and (6), the test sample is the matched sample. We include time (year-quarter) and fund fixed effects. Standard errors are clustered by fund and year-quarter. t-statistics are reported in parentheses. The coefficients of primary interest are highlighted in bold. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

perceived value of a product and to create a buying frenzy among uninformed customers (Lynn, 1991; Verhallen and Robben, 1994; Stock and Balachander, 2005; Eisend, 2008). Our results are also in line with the extant literature on mutual fund marketing tactics, which often fail to predict fund future performance but greatly increase the visibility of a fund and boost future fund flows (see Jain and Wu, 2000; Reuter and Zitzewitz, 2006; Solomon et al., 2014; Kaniel and Parham, 2017). Our analysis further adds another dimension to this body of work by revealing how fund managers leverage cognitive biases of retail investors (i.e., fear of missing out) to attract extra flows. This tactic greatly benefits managers as their compensation is predominantly tied to fund size (Jun et al., 2017; Chua and Tam, 2020). Therefore, we provide novel evidence suggesting that the practice of leaving fund gates partly closed appears to be more of a marketing ploy than a form of investor protection.

5. Extensions

This section offers extensions to our main analyses. We investigate the potential "family spillover" effect, which is identified as a motive for fund hard closures in the US context (Zhao, 2004; Chen et al., 2012). In addition, we utilize a regulatory change of fund disclosures in China, which required small funds to disclose potential liquidation risks, to provide further evidence on the marketing role of inflow gates. We further assess whether the duration of a restriction matters in attracting fund investors and flows.

Table 8
Inflow gates and fund family spillovers.

	(1)	(2)	(3)
Dependent Var.	*Implied fund flows (%)*	*Ln(Number of investors)*	*Ownership of retail investors (%)*
Family closed gate	−4.553	−0.075	2.293
	(−0.65)	(−1.08)	(1.57)
Family partly-closed gate	1.460	0.065	−0.040
	(1.24)	(1.35)	(−0.03)
Ln(Fund TNA)	−20.861***	0.560***	−3.541***
	(−8.31)	(14.86)	(−3.23)
Fund age	7.026	6.125*	−7.008
	(1.22)	(1.73)	(−0.57)
Cum. *12-month return*	0.767***	0.004***	−0.199***
	(4.50)	(2.69)	(−5.60)
Ln(Family TNA)	0.041	0.002	0.199
	(0.06)	(0.23)	(0.54)
Family performance	0.3018	0.001	−0.134***
	(1.36)	(0.77)	(−2.73)
Time fixed effect	Yes	Yes	Yes
Fund fixed effect	Yes	Yes	Yes
Adj-R^2	0.35	0.91	0.49
N	15,423	15,423	15,423

This table reports results from regressions of non-restricted funds' future flows and investor bases on fund family's inflow restriction events. The test sample includes non-restricted funds that had never imposed any inflow gate during the sample period. *Family closed (partly-closed) gate*$_{i,t}$ is an indicator that equals one if a non-restricted fund *i*'s family imposes at least one closed (partly-closed) gate on other same-family funds in quarter *t*, and zero otherwise. **X** is a vector of various fund- and family-level controls. Fund-level control variables are the same as those in Tables 5 and 6. Family-level control variables include *Ln(Family TNA)*, which is the natural logarithm of total net assets of all other equity funds in the same fund family (excluding fund *i*) to which fund *i* belongs, and *Family performance*, which is the asset-weighted average of fund raw returns of all other equity funds in the same family (excluding fund *i*). We include time (year-quarter) and fund fixed effects. Standard errors are clustered by fund and year-quarter. *t*-statistics are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

5.1. Inflow gate and family spillover effect

Prior studies on fund hard closures in the US suggest that fund houses stop investor purchases in a particular fund to divert investors' attention to other sibling funds (Zhao, 2004). In this section, we test the potential motive of family spillovers in the Chinese mutual fund context.

Specifically, we first identify inflow restriction activities at the family (fund house) level. We construct an indicator variable, *Family closed (partly-closed) gate*, which equals one if a non-restricted fund's family imposes at least one closed (partly-closed) inflow gate on other family equity funds in a given quarter, and zero otherwise. Then, we regress non-restricted funds' flows/investor bases on the family-level inflow restriction activities, controlling for fund- and family-level characteristics. Regression results, reported in Table 8, show no significant coefficients on either *Family closed gate* or *Family partly-closed gate*, suggesting that spillover effects within fund families are not a primary reason for the implementation of inflow gates in our setting.[13]

Additionally, we consider individual manager-level spillover effects, given that mutual funds in China are predominantly managed by solo in-house managers (Chen et al., 2018). Our results (untabulated) show little evidence to support this notion. Therefore, funds imposing a purchase limit seem to have put a spotlight on themselves, rather than benefiting other funds in the same house or managed by the same individual. Taken together, our results suggest that, unlike the US setting, family- or manager-level spillover is not a key motive for managers in China to impose discretionary inflow restrictions.

5.2. Inflow gate and small-size funds

One interesting trend is the rising prevalence of inflow restrictions, in particular partly-closed gates, among small-sized funds. Nearly 12.5% of all inflow-restricted fund-quarter observations belong to funds in the bottom size quintile, with the proportion increased from 3% in 2013 to 9% in 2014 and 19% in 2016 (untabulated). This is puzzling as small-size funds are far from reaching their capacity constraints. Even if their past performance is superior, small funds should welcome additional investments for growth. Considering our empirical evidence presented in Section 4, we argue that the *marketing ploy* hypothesis is a plausible explanation for such a trend among small-size funds facing heightened competition.

To explore this further, we consider a regulatory change in 2014 by the China Securities Regulatory Commission (CSRC). The new disclosure policy (CRSC [2014] No.104) requires a fund to disclose in its financial reports if (i) the fund size is falling below RMB 50 million (USD 7.5 million), or (ii) the number of investors is fewer than 200, for 20 consecutive business days. If either of the two fund

[13] We also test a potential spillover from family flagship inflow gates, which are identified as a family's flagship fund that imposes a closed or partly-closed gate, and we find no significant results (untabulated).

conditions lasts for >60 consecutive trading days, then the fund has to file with CSRC a planned solution (e.g., merge with other funds or liquidate). In other words, this signals a high risk of liquidation. The required disclosure is also accompanied by a heading with a negative tone: "*Warning about fund size or number of fund investors*". Therefore, we expect that small-size funds are strongly motivated to stay afloat and avoid disclosing this negative news that may lead to redemption runs.

We conjecture that using inflow gates might be an effective marketing strategy for such struggling funds. This proposition aligns with two key observations. First, some of these small-size funds explicitly state in their financial reports that they plan to intensify marketing efforts to stave off liquidation.[14] Second, in order to increase fund assets and investors, fund managers need to attract capital inflows and avoid capital outflows. Given the almost complete absence of redemption gates in practice, fund managers have limited tools at their disposal to both attract and retain capital. Importantly, our previous evidence suggests that partly-closed inflow gates drive fund flows and closed gates retain existing investors. For these reasons, we expect a significant increase in the likelihood of small-size funds imposing inflow gates after CSRC's new disclosure rules.

Utilizing a difference-in-differences (DID) approach, we estimate a linear probability regression model as follows:

$$Inflow\ gate_{i,t} = a + \beta Small\ fund_{i,t} + \gamma Small\ fund_{i,t} \times Post_t + \delta Controls_{i,t-1} + fund\ and\ time\ FE + e_{i,t} \quad (4)$$

where the dependent variable *Inflow gate*$_{i,t}$ is an indicator variable that equals 1 if fund *i* imposed at least one gate in quarter *t*, and 0 otherwise. *Small fund* is an indicator variable that equals 1 if (1) the fund is close to the alert threshold as indicated by the beginning-of-quarter fund size being lower than RMB 60 million or the number of investors being fewer than 300, and 0 otherwise (Model 1); or if (2) the beginning-of-quarter fund size is ranked in the bottom quintile among all equity funds, and 0 otherwise (Model 2). *Post* is an indicator variable that equals 1 for quarters ending on or after the third quarter in 2014 when CSRC [2014] No. 104 became effective, and 0 otherwise. *Controls* include fund- and family-level characteristics. We also include fund and time (year-quarter) fixed effects; therefore, *Post* is omitted in eq. (4). The coefficient of interest is γ on *Small fund* × *Post*, which captures the change in the probability of small funds using inflow gates following CSRC [2014] No. 104. Table 9 presents the regression results.

Consistent with our prediction, our DID analysis suggests that small-size funds are indeed more likely to employ inflow gates after the CSRC [2014] No. 104 became effective. The coefficient on *Treat* × *Post* is positive and statistically significant at the 5% level in both models. Again, this result corroborates the marketing role of inflow gates, which have become favored among small-size funds that are striving for survival.

5.3. Duration of inflow restrictions

In our main tests, we categorize inflow gates based on their daily purchase caps, not the duration of the restrictions. One might ask whether the duration of a restriction matters in attracting fund investors and flows. To answer this question, we re-run the baseline model in eq. (3) using the matched sample and adding an interaction term between *Partly-closed gate* and *Gate duration*, along with other control variables. *Gate duration* is coded as 1 if the partly-closed gate lasts for an entire calendar quarter, and 0 otherwise.

We obtain insignificant coefficients on *Partly-closed gate* × *Gate duration* across all model specifications (untabulated). This suggests that the marketing role of partly-closed gates is more of a signaling effect, seemingly independent of the duration of inflow restrictions. However, we interpret this result with caution because our analysis is constrained by the availability of fund flow data, which are reported on a quarterly basis in China's market.

6. Conclusion

Utilizing a sample of Chinese active equity funds, this study explores the motives and effects of discretionary inflow restrictions in mutual funds. We categorize inflow gates into closed and partly-closed gates. We show that, although closed gates have a neutral impact on investors, funds with partly-closed gates attract greater future fund flows and a larger retail investor clientele, despite their future underperformance. Our findings are consistent with anecdotal evidence that funds restrict investor purchases for marketing purposes.

We rule out other alternative motives for restricting fund inflows. Contrary to managers'

"investor protection" claim, we find no clear evidence that funds impose inflow gates to maintain superior past performance or existing investment strategies. Rather, partly-closed funds implement a riskier investment strategy following inflow restrictions. Further, there is no family- or manager-level spillover effect by restricting a fund's inflows.

Our empirical analyses have several potential limitations. First, our conclusions are partly constrained by the quarterly frequency of available fund flow data, which could potentially impact the inferences we draw. Second, the practice of discretionary inflow gates is less observed in developed markets like the US, limiting the external validity and broader applicability of our findings. Third, our focus in this study is restricted to equity mutual funds, leaving open the question of whether the motivations for implementing inflow gates differ across other types of funds, such as bonds or money market funds. Future research could expand upon these areas for a better understanding of managerial motives and consequences.

Despite these constraints, our study stands as a pioneering exploration into the role of discretionary inflow gates in mutual funds.

[14] For example, the Wanjia SSE 50 ETF reported a warning about its fund size being below RMB 50 million for at least 60 consecutive trading days in its fourth quarter financial report in 2016. The fund added that it would greatly increase marketing efforts to solve the size problem.

Table 9
Inflow gates and small-size funds.

Dependent variable: Inflow gate (0,1)		
	Model 1	Model 2
Small fund	0.010	0.026
	(0.60)	(1.36)
Small fund × *Post*	0.042**	0.029**
	(2.13)	(2.10)
Cum. *12-month return*	0.002***	0.002***
	(4.18)	(4.08)
Alpha	0.016***	0.009***
	(3.22)	(4.01)
Flow	0.000*	0.000*
	(1.86)	(1.89)
Ln(TNA)	0.021**	0.027***
	(2.47)	(2.70)
Fund age	−1.223*	1.058
	(−1.70)	(1.33)
Stock shareholding concentration	0.024**	0.023**
	(2.57)	(2.51)
Top-10 weight	0.001**	0.001**
	(2.13)	(2.14)
Cash holdings	0.000	0.000
	(0.51)	(0.48)
Number of stocks	0.000	0.000
	(1.15)	(1.29)
Ln(Family TNA)	0.004	0.004
	(0.47)	(0.52)
Family performance	0.002***	0.002***
	(3.36)	(3.25)
Time fixed effect	Yes	Yes
Fund fixed effect	Yes	Yes
Adj-R^2	0.38	0.52
N	20,606	20,606

This table reports the linear probability regression results of eq. (4): $Inflow\ gate_{i,t} = a + \beta_1 Small\ fund_{i,t} + \gamma Small\ fund_{i,t} \times Post_t + \delta Controls_{i,t-1} + fund\ and\ time\ FE + \varepsilon_{i,t}$. The dependent variable, $Inflow\ gate_{i,t}$, is an indicator variable that equals 1 if fund *i* imposed at least one gate in quarter *t*, and 0 otherwise. *Small fund* is an indicator variable that equals 1 if (1) the fund is close to the alert threshold as indicated by the beginning-of-quarter fund size being lower than RMB 60 million or the number of investors being fewer than 300, and 0 otherwise (Model 1); or if (2) the beginning-of-quarter fund size is ranked at the bottom quintile among all equity funds, and 0 otherwise (Model 2). *Post* is an indicator variable that equals 1 for quarters ending on or after the third quarter in 2014 when CSRC [2014] No. 104 became effective. *Controls* include fund-level controls that are defined in Table 2 and family-level control variables that are defined in Table 7. We include fund and time (year-quarter) fixed effects in the regressions, so *Post* in eq. (4) is omitted. *t*-statistics are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Not only do we identify a subtle marketing tool that helps promote fund sales, but we also shed light on the motives of fund managers that are swayed by investor behavioral bias. Our findings also suggest future research should consider the potentially distorting effects of inflow restrictions on fund flows and investor purchasing decisions when studying the important emerging fund market.

Appendix A. Examples of inflow gate announcements

A.1. Public announcement of an inflow gate

Fund Name		Huashang Hongli Youxuan Equity Fund
Fund Code		100,026
Fund Management Company		Huashang Fund Management Co., Ltd
Inflow Gate	Commencement date	2020-09-08
	Daily purchase cap per investor (RMB)	100,000
	Reason for restricting inflows	To ensure the smooth operation of the fund and to protect the interests of fund investors.
Announcement Date		2020-09-08

A.2. Notification of inflow gate through instant messages

The screenshot below is a notification of an inflow gate announcement sent to investors by an instant message. It was sent by China Southern Asset Management (CSAM) Company on 25 November 2019 to the existing investors of CSAM Gaotie mutual fund, which imposed an inflow gate with daily investment cap of RMB 1 million per investor, starting from 27 November 27, 2019.

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