

# Fund Management Company Governance and Strategic Cross-Fund Subsidization

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## Abstract

We manually collect data on the governance structure of Chinese Fund Management Companies (FMCs) and examine its impact on FMCs' strategic cross-fund subsidization. We find that cross-fund subsidization within the same FMC continues even after it was forbidden by the regulator in 2011. FMCs with more shares held by state shareholders or security firms, more efficient board structures, more capable independent directors, and a less powerful CEO conduct fewer cross-fund subsidization behaviors. Cross-fund subsidization becomes more prominent when FMCs have more incentives to inflate their performance, and the deterrent effect of FMCs' governance still holds in such scenarios. In contrast to the focus on mutual fund characteristics in prior studies, our study provides evidence about the importance of FMCs' internal governance, which can effectively mitigate the principal-agent conflicts between funds and fund investors.

**Keywords:** fund management company; cross-fund subsidization; corporate governance; performance manipulation; performance gap

**JEL codes:** G23, G34, G38

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## 1. Introduction

The Chinese mutual fund market has developed rapidly over the past decade. The number of Fund Management Companies (FMCs) has increased to 151, with 9288 existing mutual funds, and the total size of assets under management has risen to the fourth largest in the world<sup>1</sup>. The rapid growth of fund family size and increasing competition among FMCs might cause interest divergence between FMCs and fund investors. To maximize its return, the FMC favors funds more valuable to the company at the expense of other funds' performance in the same family, identified as "cross-fund subsidization" (Gaspar et al., 2006). This illegal action, which was prohibited by the China Securities Regulatory Commission (CSRC) in 2011<sup>2</sup>, sacrifices the interests of existing investors, magnifies the abilities of valuable fund managers, misdirects the asset allocation of potential investors, and intensifies conflicts between FMCs and their investors.

Previous studies examine the effectiveness of mutual fund governance in solving the agency problem between fund managers and investors in terms of performance persistence, managerial herd behavior, fund style drift, and free-rider problems (Lai et al., 2010; Casavecchia and Tooman, 2011; Kurniawan et al., 2016; Adams et al., 2018). However, unlike the U.S. fund market, mutual funds in China do not have their own board of directors but are controlled by FMCs. Investors, as clients of FMCs, cannot exert enough influence on the behavior of funds. Thus, the governance of FMCs might be much more important in China. Since strategic cross-fund subsidization contributes to higher incomes for FMCs and might damage investors' interests at the same time, it remains unknown whether the governance of FMCs can help solve the agency problem between funds and investors. Our study empirically investigates whether FMCs' governance structure protects fund investors by deterring illegal cross-fund subsidizations. We use corporate governance at the investment company level to interpret cross-fund subsidization, which is also most likely to happen at the company level.

Our study focuses on FMCs' rather than funds' governance due to the unique relationship among Chinese FMCs, funds and fund investors. In China, FMCs operate through corporate systems similar to those of regular companies. They have shareholders, boards, independent directors, senior managers, and other essential organizational components mandated by the CSRC and Company Law of the People's Republic of China. FMCs act as fund sponsors, raise capital publicly, and establish delegated agency relationships with investors through fund contracts. Portfolio managers are no longer subject to supervision from the mutual fund directors, but only from the FMCs. Consequently, FMCs hold dominant positions in fund operations and managerial compensation. In

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<sup>1</sup> They are statistics for the end of 2021, reported in the 2022 China Securities Investment Fund Fact Book, published by the Asset Management Association of China (AMAC).

<sup>2</sup> On August 3, 2011, the CSRC issued the Guiding Opinions on Fair Trading System for Securities Investment Fund Management Companies (henceforth referred to as "Opinions"), officially banning the internal transfer of benefits among FMC. Opinions emphasize that "investment activities should treat different portfolios fairly, and it is strictly prohibited to directly or indirectly transfer benefits between different portfolios through transaction arrangements with third parties." Besides, the opinions require FMCs to establish corresponding investment decision-making and internal control systems to ensure fair trading of investment portfolios and to report and explain abnormal performance gaps on schedule.

contrast to FMCs' important role, we know little about their impact on fund investors. In addition, although the CSRC prohibited FMCs from unfairly treating different portfolios and took regulatory measures, a company's overall deceptive investment behavior is more concealed than individual funds. Information asymmetry might cause ineffective supervision by regulators over FMCs and their funds. The internal governance structure of FMCs might possess deeper insights than regulators' external supervision. FMCs' internal governance can serve as a complementary regulatory mechanism, significantly reducing agency costs and fostering robust fund market development.

Different governance structures impose different benefits and costs for firms engaging in illegal activities (Patel and Sarkissian, 2021). FMCs' governance structure is important in the following dimensions: First, state-controlled companies have little incentive to get profits at others' expense since the state is not literally a person who can be benefited directly or personally (Jiang et al., 2010; Jiang and Kim, 2015). Similarly, we expect that state-controlled FMCs might conduct fewer cross-fund subsidizations. Second, independent directors are more vulnerable to regulatory sanctions associated with companies' wrongdoings. Their dissensions can affect audit opinions and increase regulatory attention (Tang et al., 2013; Jiang et al., 2016). Therefore, FMCs with more capable independent directors are less likely to break the rules about cross-fund subsidization. Third, CEOs have incentives to boost companies' earnings in order to raise their own income. They also tend to expand their management scale to enhance their industry and social reputation. As Khanna et al. (2015) show, a powerful CEO boosts organizations' deceptive behavior and reduces the cost of fraud by lowering the probability of being detected. Thus, we argue that FMCs with a more powerful CEO might conduct more cross-fund subsidizations to promote their overall performance.

By manually collecting information from fund prospectuses and other public websites, we obtain data on shareholders, independent directors, and chief executive officers of 132 FMCs. These firms managed about RMB5059.90 billion in equity and equity-oriented hybrid funds by the end of 2021, representing about 58.61% of the entire equity and hybrid fund market<sup>3</sup>. We then construct multidimensional indicators to depict FMCs' governance structure and study their effect on cross-fund subsidization. Meanwhile, the proportion of mutual fund shares owned by institutional investors has increased from 29% in 2012 to 45% in 2020. Institutional investors command substantial capital and have advanced analytical teams and tools. The demand for fund investments stimulates fund market expansion. It is crucial for institutional investors to select funds with superior performance, prudent strategy, and committed responsibility. Our study further validates the significance of FMCs' internal governance and devises quantitative metrics to aid investors' selection of FMCs and their funds.

We begin our empirical investigation with a sample that includes all equity and equity-oriented hybrid funds between 2011 and 2022, excluding index funds. We then examine the effect of FMCs' internal governance on the subsidization behaviors. First, we confirm that the performance gap between high- and low-performing funds within the same FMC exceeds that between comparable

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<sup>3</sup> By the end of 2021, there were 151 FMCs in China's mutual fund market, with a total market size of RMB8633.1 billion for equity and hybrid funds.

funds not affiliated with the same FMC. Following Gaspar et al. (2006), a high-performing (low-performing) fund is defined as a fund with the top (bottom) 20% cumulative returns within an FMC. Our results demonstrate that the difference in daily returns between high- and low-performing funds within the same FMC is 0.485 bp higher than that of the control pairs managed by distinct FMCs, approximately 10% of the average daily return of high-performing funds. The difference cannot be disregarded.

Second, we provide some links between the abnormal performance gap and the performance manipulation behaviors and motivations. We find that the performance gap is greater in families with a higher degree of family co-holding or family pumping, which are indicators positively related to family performance manipulation (Qu and Wu, 2014; Wang, 2017; Yu et al., 2018). Furthermore, the abnormal performance gap increases with FMC's incentive to inflate its performance. Funds actively fight for higher rankings to market their management abilities and attract investors, especially towards the end of the reporting period (Li and Wu, 2019). Thus, the incentive for FMCs to inflate their performance intensifies as the reporting period concludes. The difference in the performance gap reaches 5.797 bp at year-end, equivalent to 120.67% of the average daily return of high-performing funds. In addition, we confirm that the abnormal performance gap is not due to the manipulation of individual fund managers but to FMCs' strategies. Our study shows that the cross-fund subsidization strategy persists within fund families despite the CSRC's efforts. External formal regulations have certain limitations.

Third, we demonstrate that specific governance structures within an FMC can significantly reduce the abnormal performance gap between high- and low-performing funds. We devise an indicator system that depicts FMCs' governance structure from four dimensions: ownership type, board structure, independent director governance ability, and CEO power. We compute a composite indicator for each dimension with principal component analysis. The empirical results show that the abnormal performance gap is narrower for FMCs that have more shares held by state shareholders or security firms and fewer shares owned by private holders. FMCs with more capable independent directors also have smaller abnormal performance gaps than others, while those with inefficient boards and more powerful managers have broader abnormal performance gaps.

Finally, our study shows that the impact of FMCs' internal governance on abnormal performance gaps results from their efforts to reduce family co-holding and pumping. It exerts greater impact when FMCs have more incentives to inflate their performance. At the year-end, we observe narrower abnormal performance gaps in FMCs with more capable independent directors or less powerful managers compared with their peers. We also note that the FMC's internal governance structure extends its influence on funds' portfolio pumping behaviors, which are largely driven by FMCs' strategies in the Chinese mutual fund market (Yu et al., 2018). FMCs with more helpful or prudent shareholders, more efficient board structures, more capable independent directors, and less powerful CEOs mitigate their funds' portfolio pumping behaviors.

This study contributes to the literature in several ways. First, it investigates the governance of FMCs and their protection of stakeholders' rights. FMCs' impact on investors has attracted little attention in the literature, whereas a significant portion of the corporate governance literature predominantly focuses on traditional principal-agent conflicts, including those between managers and shareholders (Ryan and Wiggins, 2004; Morse et al., 2011; Khanna et al., 2015) and between controlling and minority shareholders (Claessens et al., 2002; Chen et al., 2009; Jiang et al., 2010). In these cases, investors have some ways to participate in corporate governance. However, fund

investors have few means to intervene in the governance of FMCs or the supervision of fund managers. The principal-agent relationship between fund investors and FMCs or funds is much looser than that of regular companies. It remains unknown whether FMCs' internal governance protects investors and in what ways. Our study fills the gap in research by showing that FMCs' governance can significantly reduce cross-fund subsidization behaviors and protect fund investors.

Second, we develop comprehensive quantitative indicators to depict FMCs' governance structure with information manually collected from fund prospectuses and public websites. Prior studies have examined various dimensions of the governance of normal corporates, such as firm ownership characteristics (Claessens et al., 2002; Chen et al., 2009; Chen et al., 2023), features of independent directors (White et al., 2014; Wang et al., 2015; Jiang et al., 2016), board structure (Ferris and Yan, 2007; Zhu et al., 2016; Adams et al., 2018), and executive characteristics (Fan et al., 2007; Khanna et al., 2015; Gunasekara et al., 2020), among others. Inspired by these works, we gather multidimensional and comprehensive data on FMCs' governance structures. We offer valuable insights into the comprehensive assessment of FMCs' internal governance and its impact on fund behaviors. These indicators about governance are also useful in selecting funds with prudent strategy and committed responsibility. In the literature, some papers use fund expense ratios to measure the conflicts between fund management companies and fund investors (Ferris and Yan, 2007; Adams et al., 2010). In China, due to the regulations of the CSRC and industry practice, most funds charge similar management fee rates<sup>4</sup>. Therefore, fund fees contain little information about the agency conflicts. Our measure of FMCs' governance is more fundamental in determining funds' behavior, agency conflicts, and other outcomes of fund investment.

Finally, our paper expands the study on cross-fund subsidization by providing additional evidence for FMCs' participation in it. Existing literature has confirmed the existence of cross-fund subsidizations within fund families, which result in an abnormal performance gap between high- and low-performing funds (Nanda et al., 2004; Gaspar et al., 2006; Qu and Wu, 2014). We provide a link between the performance gap and FMCs' performance manipulation behaviors and motivations. Our findings confirm that the abnormal performance gap originates from the cross-fund subsidization strategy and further consolidates family manipulation evidence. In addition, some empirical works study the relationship between fund features and their deception behaviors (Ferris and Yan, 2007; Patel and Sarkissian, 2021). Our study adds to this sparse strand of research by showing that the governance of FMCs is also important in affecting the deception behaviors of their funds, which are measured with cross-fund subsidizations.

The remainder of this paper is organized as follows. Section 2 describes the data, methodology, variable construction, and summary statistics. Section 3 confirms the existence of FMC's cross-fund subsidization after it was forbidden. Section 4 analyzes the effect of FMCs' governance on cross-fund subsidization behavior. Section 5 presents the robustness tests. Section 6 concludes the paper.

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<sup>4</sup> For instance, more than 90% of the funds in our sample period charge a management fee rate of 1.5%. When the CSRC adjusted the maximum management fee to 1.2% in July 2023, most FMCs in the industry quickly adjusted their management fee rates for actively managed equity funds to 1.2%.

## **2. Data, methodology, and summary statistics**

### **2.1 Sample selection and data sources**

Our raw sample consists of all domestic open-end equity and equity-oriented hybrid funds in China from December 1, 2011, to March 31, 2022. We choose the final sample according to the following rules: (1) We select funds with over 50% stock positions each quarter. (2) We exclude index funds, exchange-traded funds, and other passive funds. (3) We exclude some special funds, such as quantitative investment funds, listed open-ended funds, qualified domestic institutional investors, and Hong Kong Stock Connects. (4) We exclude funds established within one year. We require that our sample funds have at least one complete year for the performance calculation. (5) We include liquidated funds to avoid survivorship bias. (6) We exclude funds whose asset size is less than RMB 50 million. According to Li and Wu (2019), the maintenance cost of small funds exceeds their revenue, and FMCs have incentives to stop operating these funds. Small funds are in a disorder in terms of operation and management.

Each fund might have several records in the Chinese Stock Market and Accounting Research (CSMAR) database. Each record represents a share of the same fund, classified according to sales channels and charging modes. All records of the same fund have the same pool of securities, portfolio managers, and returns before expenses. Fund size is the sum of the total net assets (TNA) of all records in the same fund. Fund return is the TNA-weighted average return across all records of the same fund. Fund age is the oldest record for the same fund.

We manually collect detailed information on FMC shareholders and their shareholding positions, board members, senior managers, and their resumes from the fund prospectus disclosed by the FMCs. We further extract information on the independent directors' professional backgrounds, senior management power, and other relevant governance variables from their resumes. Information on the backgrounds of FMC shareholders is gathered from the National Enterprise Credit Information Publicity System<sup>5</sup>. CSMAR provides data on each fund's daily returns, size, and holding portfolios.

### **2.2 Measurement of the cross-fund subsidization**

We define a fund family as a group or complex of mutual funds managed by the same FMC. In a fund family, funds that attract substantial cash flows and earn higher management fee income are more valuable to the FMC. Given the convexity relationship between funds' historical performance and subsequent flows, a fund company generating one high-performing fund and one under-

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<sup>5</sup> The National Enterprise Credit Information Disclosure System is an information query system of all types of enterprises in China. It was launched in February 2014 by the State Administration for Industry and Commerce of the People's Republic of China. Users can use it to query registration information, license approval, regulatory history, irregular operations, and other content. The system is available at <http://www.gsxt.gov.cn/index>.

performing fund can attract more flows than it produces two average-performing funds (Sirri and Tufano, 1998; Huang et al., 2007). In addition, “star” funds exhibit a positive spillover effect, expand their managed assets, and attract more flows for other funds within the same family (Nanda et al., 2004). Thus, the FMC is incentivized to expand its management assets by sacrificing low-value funds (those with poor historical performance) and favoring high-value funds (those with high historical performance). Then, the performance gap between high- and low-performing funds within a fund family can be persistently higher than that between comparable funds not affiliated with the same FMC.

Following Gaspar et al. (2006) and other relevant studies, we begin by delineating high- and low-performing funds within families and constructing fund pairs. Every quarter, we calculate the cumulative returns for each fund from the start of the year until three days before the end of the quarter<sup>6</sup>. A high-performing (low-performing) fund is the top (bottom) 20% of cumulative returns within an FMC. Subsequently, we match each high-performing fund with all low-performing funds within the same family, form fund portfolios, and document them as experimental pairs.

Next, we select funds outside the family to replace the low-performing funds in each experimental pair. To ensure comparability, the selected external and the low-performing fund must share the same investment style, belong to the same cumulative return decile, and have the smallest differences in size and age. The high-performing fund in an experimental pair and the selected fund replacing the low-performing fund constitute a new fund portfolio, which we designate as the control pair.

After defining the experimental and control pairs in a quarter, we calculate the difference in daily returns within each pair in the subsequent quarter. The performance gap for an experimental pair is the difference in returns between high- and low-performing funds. The performance gap for the control pair is the difference in returns between the same high-performing fund and a matched low-performing fund outside the family. Subsequently, we conduct a regression analysis to investigate the abnormal performance gap between high- and low-performing funds within a fund family.

$$PerfGap_{i,j,t} = \alpha + \beta \times SameFamily_{i,j,t} + controls_{i,j,t} + \varepsilon_{i,j,t} \quad (1)$$

*PerfGap* is the difference in the daily returns between high-performing fund *i* and low-performing fund *j* in a fund pair at time *t*. The dummy variable *SameFamily* takes the value of one if funds *i* and *j* belong to an experimental pair and zero if they belong to a control pair. We control for fund size difference, fund age difference, family asset size, and family age. *SizeDiff* is the difference in the logarithm of the total NAV between funds *i* and *j* at the end of the previous quarter. *AgeDiff* is the age difference between fund *i* and fund *j*. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family

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<sup>6</sup> Yu et al. (2018) find that in the Chinese mutual fund market, funds begin to present abnormally high returns on the third trading day before the end of the reporting period and peak at the end. We choose cumulative returns of funds from the beginning of the year to three days before the quarter-end to sort funds, so that we can compare the difference in performance manipulation in general and the end of the reporting period, as well as to avoid the disruption of fund portfolio pumping. In addition, we use the cumulative returns from the start of the year until two days before the quarter-end and the cumulative returns from the start of the year until four days before the quarter-end, respectively, as the basis of performance grouping in the later period to conduct robustness tests.

that fund  $i$  (fund  $j$ ) belongs to.  $LowFamilyAge$  is the age of the family that fund  $j$  belongs to. We use raw returns to reflect their attractiveness to mutual fund investors (Ben-David et al., 2022), and we also incorporate Fama-French three-factor adjusted returns to control for the investment styles of different funds. The three-factor adjusted returns for time  $t$  are estimated using the daily return data from the previous 250 days.

### 2.3 Measurement of FMC governance

This section briefly introduces the multidimensional internal governance system developed in this study. We depict the FMC's governance structure from four key dimensions: ownership type, board structure, independent director governance ability, and CEO power.

#### 2.3.1 Ownership type

Prior research has confirmed the significant influence of a firm's large shareholder characteristics, including type and background. As common controlling shareholders in state-owned enterprises, governments cannot directly or personally benefit from strategic subsidizations. Thus, they have fewer incentives to exploit investor interests to maximize corporate profits (Chen et al., 2009; Jiang et al., 2010; Jiang and Kim, 2015). Moreover, managers of state-owned enterprises are appointed by the government. Their main incentive is to pursue political advancement, and their income is less directly correlated with corporate profits than that of non-state-owned firms (Jiang and Kim, 2015). Therefore, we anticipate that state-owned firms are less motivated to manipulate performance, while the opposite is true for private ones.

The close relationship between state-owned firms and the government makes it easier for them to obtain assistance with business opportunities and resources. In contrast, privately owned firms rely on social connections. Jiang et al. (2011) find that open-end equity funds in China receive additional support from state owners and that fund performance is positively related to their participation. Shareholder background also plays a role in some key aspects of a company's development. Chen et al. (2023) find that the financing cost of financial leasing companies controlled by non-banks is significantly higher than that controlled by banks. The fund industry requires a high level of professionalism. Shareholders in finance-related sectors accumulate expertise and experience, which may provide valuable insights into FMC operations and management. FMCs with more help from their shareholders might rely less on illegal strategies when facing fierce market competition.

In summary, we categorize the ownership type of FMCs based on three variables related to manipulation motivation and external assistance: *StateShare* (percentage of shares held by state-owned shareholders), *PrivateShare* (percentage of shares held by privately owned shareholders), and *BrokerShare* (percentage of shares held by brokerage firms).

#### 2.3.2 Board structure

The strategic cross-fund subsidization of families boosts the overall revenue of the FMC, thereby benefiting both shareholders and managers. So, conflicts of interest between controlling and non-controlling shareholders and between shareholders and managers are less conspicuous than in

traditional agency problems. Therefore, independent directors are the ones who are more likely to supervise and protect fund investors' interests. Prior studies have confirmed that independent directors voting against proposals can effectively attract auditors' and regulators' attention and improve the probability that a firm receives regulatory penalties for its illegal behaviors (Tang et al., 2013; Jiang et al., 2016). Therefore, we focus on board monitoring functions, especially the factors influencing the effectiveness of independent directors' oversight.

Board size is one of the key aspects that determine directors' monitoring effects. Previous studies find evidence that larger boards exhibit low oversight efficiency (Yermack, 1996; Ferris and Yan, 2007; Adams et al., 2010; Adams et al., 2018). The proportion of independent directors is another important factor related to governance effect. A higher proportion of independent directors is correlated with less willingness to tolerate poor performance (Khorana et al., 2007), lower fund expense ratios (Adams et al., 2010), and less free-rider problems within team-managed funds (Adams et al., 2018).

Tenure is also an important dimension for measuring the governance efficiency of independent directors. Prolonged tenure fosters a close relationship between the company and its independent directors. The independence of independent directors is reduced. Moreover, adverse selection also leads to non-monitoring independent directors being more likely to maintain their positions on the board and, therefore, have a longer tenure (Gao and Huang, 2023).

We assess board effectiveness using three variables related to independent directors' oversight role: *BoardSize* (the total number of directors on the board), *RationIndep* (the proportion of independent directors), and *IndepTenure* (the average tenure of independent directors on the board).

### 2.3.3 Independent directors

Educational background and work experience can influence independent directors' abilities and willingness to perform their duties (Tang et al., 2013; White et al., 2014). Independent directors with expertise in firms' business areas demonstrate higher values (Wang et al., 2015). Considering the high professionalism of the fund industry, we hypothesize that independent directors with educational backgrounds or work experience in finance perform better at overseeing FMCs.

Influenced by Chinese Confucian culture, independent directors with political connections typically hold a higher seniority and informal hierarchy on the board (Zhu et al., 2016). Consistent with the social network theory, independent directors with higher social status can access information quickly and more accurately, helping them provide timely and well-informed recommendations (Chen and Xie, 2011). The seniority and social status of independent directors protect against potential "dismissal" by management, allowing them greater freedom to voice dissenting opinions (Tang et al., 2013; Jiang et al., 2016; Zhu et al., 2016).

We evaluate independent directors' monitoring capabilities from four aspects: *NoFinanceExp* represents the proportion of independent directors without prior work experience in finance-related industries; *FinanceEdu* indicates the proportion of independent directors with a financial education background; *RegulatorExp* denotes the proportion of independent directors with work experience in regulatory roles; and *GoverRel* illustrates the proportion of independent directors who have previously or are currently serving in government positions.

### 2.3.4 CEO power

A powerful CEO can interfere with corporate governance. For instance, the CEO can influence the selection of board members, and directors appointed during the current CEO's tenure are less likely to monitor (Shivdasani and Yermack, 1999; Morse et al., 2011; Coles et al., 2014). Firms with a higher proportion of directors appointed during the current CEO's tenure have more corporate fraud, fewer chances of detection, and a longer detection process (Khanna et al., 2015). Moreover, an extended CEO tenure increases the influence on board and decrease governance effectiveness (Ryan and Wiggins, 2004; Gunasekarage et al., 2020). In cases where the CEO's tenure surpasses that of the longest-serving independent director, based on the Chinese traditional value of "respecting seniority" (Hwang, 2001), we hypothesize a stronger ability to counteract independent directors' governance.

The CEO's position on the board of directors amplifies control over the firm (Ryan and Wiggins, 2004; Morse et al., 2011). Similarly, CEOs with exceptional professional competence and political connections are less likely to face challenges and may have a stronger grip on a firm (Finkelstein, 1992; Fan et al., 2007; Gunasekarage et al., 2020). Furthermore, educational attainment mirrors a CEO's professional skills, symbolizing prestige and reputation in traditional Chinese Confucian culture (Hwang, 2001; Gunasekarage et al., 2020). Therefore, we hypothesize that CEOs with higher education levels have more power to intervene in corporate governance.

Following Finkelstein (1992), we define various variables to measure FMC's CEO power. *CEODuality* represents the level of board positions held by the CEO. *CEOTenure* counts the number of months since the CEO took office. *LongTenure* takes the value of one if the CEO term exceeds the maximum tenure of independent directors and zero otherwise<sup>7</sup>. *CEORegulatorExp* takes the value of one if the CEO has regulatory work experience and zero otherwise. *CEOGoverRel* takes the value of one if the CEO has political connections or plays a key role in industry associations and zero otherwise. *CEOEdLevel* represents a CEO's educational level. *BetterEdu* takes the value of one if the CEO's education level surpasses the average education level of independent directors and zero otherwise.

To account for the CEO's influence on the appointment of independent directors, we follow Coles et al.'s (2014) approach to calculate *Co\_option*, representing the percentage of independent directors appointed during the current CEO's tenure. CEOs have limited involvement in the nomination and selection process of independent directors when the appointment dates of CEOs and independent directors are very close. Therefore, we only count those independent directors who were formally appointed 12 months after the CEO started chairing the FMC management.

### 2.3.5 Composite indicators

In each dimension, we employ principal component analysis to consolidate variables that might

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<sup>7</sup> We also let *LongTenure* take the value of one if the CEO's term is greater than the average tenure of independent directors and zero otherwise. The results are consistent with the use of maximum tenure.

be highly correlated. The composite proxy is defined as the first principal component resulting from the orthogonal linear transformation of variables.

The composite indicator of ownership type, *Sharehold*, exhibits positive loadings on *StateShare* and *BrokerShare* and negative loadings on *PrivateShare*. Therefore, a higher *Sharehold* implies fewer incentives to erode investors' interests and greater support from experts and resources.

The composite indicator of board structure, *Boardset*, exhibits positive loadings on *BoardSize* and *IndepTenure* and negative loadings on *RationIndep*. Thus, a higher *Boardset* represents an ineffective board that prevents independent directors' from performing their oversight role.

The composite indicator about the governance ability of independent directors, denoted as *BoardExp* exhibits positive loadings on *RegulatorExp*, *GoverRel*, and *FinanceEdu*, and negative loadings on *NoFinanceExp*. A high *BoardExp* score implies that the FMC has independent directors willing and able to monitor its operations.

The composite indicator of CEO power, *CEOPower*, has positive loadings on *CEODuality*, *CEOTenure*, *LongTenure*, *CEORegulatorExp*, *CEOGoverRel*, *CEOEdLevel*, *BetterEdu*, and *Co\_option*. Therefore, a higher value of *CEOPower* indicates that the FMC's CEO possesses more power to counteract monitoring by directors, seek more private profits, and satisfy their pursuit of social status.

## 2.4 Descriptive statistics

### 2.4.1 Experimental and control pairs

Table 1 presents the descriptive statistics for the experimental and control pairs. The mean values of *SizeDiff* and *AgeDiff* for the experimental pairs are -0.022 and -0.808, while the mean values of *SizeDiff* and *AgeDiff* for the control pairs are 0.142 and -0.669, respectively. The experimental pairs exhibit a smaller size difference, and interestingly, the low-performing funds are slightly larger than the high-performing funds, facilitating low-performing funds to boost the returns of the latter. Furthermore, lower-performing funds in experimental pairs are established earlier, rendering their cash flows less sensitive to performance (Brown and Wu, 2016). This finding suggests that the FMC subsidizes more valuable funds while mitigating cash flow losses in less valuable ones. Additionally, we observe that high-performing fund families are established earlier and manage larger assets. Given these differences between the pairs, we account for these characteristics in our regression analyses.

The mean daily performance gap between high- and low-performing funds in the experimental pairs is 0.391 bp. It markedly exceeds the performance gap between high- and low-performing funds at the same level managed by distinct families, where the mean value of *PerfGap* is 0.150 bp. This preliminary evidence suggests an abnormal performance gap exists between high- and low-performing funds within the fund family.

### 2.4.2 Governance indicators

Table 2 provides the descriptive statistics of the governance indicators in our sample. We gather information on the largest shareholders' backgrounds for each FMC and observe that brokerage firms (*Broker*) constitute 50.8% of the largest shareholders. This suggests that, in China, securities

brokerages aligning closely with the business scope of FMCs are prominent among the shareholders.

The average board size (*BoardSize*) of FMCs is approximately 8.954, and the average percentage of independent directors (*RationIndep*) is approximately 37.3%, slightly exceeding one-third of the board size required by the regulatory policy<sup>8</sup>. The average tenure of independent directors (*IndepTenure*) is approximately 60.558 months, and the term of office for independent directors is over five years. About 3.6% of independent directors have experience in financial regulation, 14.3% have served as government officials, and 56.2% have a financial education background. However, on average, 68.4% of independent directors lack work experience in brokerages, FMCs, banks, trusts, or other financial institutions.

The average tenure of CEOs in FMCs ranges from four to five years, with frequent turnovers. Approximately 19.4% of the CEOs have political connections or play key roles in industry associations, while 12.4% have previous experience in financial regulatory agencies. The average *CEODuality* value is 1.225, consistent with the regulatory mandate that the CEO should be a board member. Additionally, 31.5% of the CEOs possessed a higher education level than independent directors within the same FMC, with the average CEOs' education level surpassing a master's degree.

### 3. Family cross-fund subsidization strategy

This section focuses on whether cross-fund subsidization within a family persists despite the CSRC prohibiting fund families from treating different portfolios unfairly and implementing regulatory measures in 2011.

#### 3.1 Difference in performance gaps between fund pairs

Table 3 reports the differences in performance gaps between the two types of fund pairs. The coefficients of *SameFamily* are significant in all the specifications, demonstrating that the performance gap between high- and low-performing funds in the same family is significantly greater than that between comparable funds affiliated with distinct families.

In Column (1), the model includes fund and month fixed effects to account for time-invariant fund characteristics and time-varying aggregate trends. The difference in daily returns between high- and low-performing funds within the same FMC is 0.485 bp higher than that between funds from distinct FMCs, which is approximately 10% ( $0.485 \div 4.804$ ) of the average daily returns of high-performing funds. Hence, neither the impact of the fund family's subsidization strategy on fund performance nor the erosion of investor interests can be underestimated. Our results demonstrate that funds with low cumulative return rankings within the fund family exhibit notably inferior performance in the subsequent quarter compared with market-equivalent funds. This reveals that the fund family might enhance the return of "high-value funds" at the expense of "low-value

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<sup>8</sup> The current Administrative Measures for Securities Investment FMCs require that "fund management companies shall establish a sound system of independent directors, with the number of independent directors not less than 3 and not less than 1/3 of the number of board members."

funds,” resulting in worse performance for poor historically performing funds.

The results are consistent when we adjust our model to include family and month fixed effects in Column (2). It also remains robust when we use the Fama-French three-factor adjusted return to control for the investment styles of different funds in Column (3).

### 3.2 Cross-fund subsidization strategy

Similar to prior research, our results demonstrate a significant difference in the performance gaps between the two types of fund pairs. We further provide some evidence that this difference in performance gaps originates from the family’s cross-fund subsidization strategy, which is closely related to family co-holding and family pumping.

#### 3.2.1 Family strategy versus fund manager personal behavior

China’s fund manager bonus structure always depends on the fund’s performance ranking (Li and Zhao, 2016). This may create distorted incentives for fund managers to enhance the performance of the top-ranked funds they manage at the expense of poorly performing funds. Therefore, fund managers’ strategies, rather than families’, may be responsible for the difference in the performance gaps between the two types of fund pairs. To address this concern, we introduce common manager indicators in Equation (1) to distinguish between the cross-fund subsidization strategies of fund families and individual fund managers.

Table 4 presents the regression results. Following Brown and Wu (2016), we calculate the manager overlap rate between the two funds in a fund pair (*OverLap*) to gauge common manager effects in Columns (1) and (2). For added robustness, we employ *SameManager* as a proxy for the common manager in Columns (3) and (4), which takes the value of one when the two funds in a pair share the same manager and zero otherwise. We use raw return as the measure of fund performance in Columns (1) and (3) and use the Fama-French three-factor adjusted return to control for investment styles in Columns (2) and (4).

In Column (4), the coefficient of *SameManager* is marginally negatively significant. It suggests that the performance gap between high- and low-performing funds managed by the same manager is lower than that by different managers. After controlling for the common manager effect, the coefficients of *SameFamily* remain significant and positive in all specifications. This affirms that the difference in the performance gaps between the two types of fund pairs is not attributed to fund managers but is a consequence of family strategy.

#### 3.2.2 Family co-holding, pumping, and the difference in performance gaps

If the differences in the performance gap between the two types of fund pairs stem from fund families’ cross-fund subsidization strategies, the extent of family performance manipulation should correlate with the magnitude of such a difference. To explore this, we introduce family co-holding and family pumping into Equation (1), which are indicators positively related to family performance manipulation, as in previous studies.

Qu and Wu (2014) confirm the relationship between family co-holding and performance manipulation in the Chinese mutual fund market. They find that the performance differences in the

same stocks among different funds within a family cannot be solely attributed to the fund manager's competence but rather to the families' cross-fund subsidization strategy.

Utilizing data on the funds' top ten stock holdings from quarterly fund reports, we first identify the stocks simultaneously held by low- and high-performing funds within the family. We then aggregate the number of co-holding stocks held by each low-performing fund and divide this by the total number of low-performing funds managed by the family. In addition, we use the methodology above to calculate the family co-holding indicators between high- and non-high-performing funds. We recompute this indicator every quarter and assign *HighCoHolding* a value of one if family co-holding exceeds the sample median for the corresponding period and zero otherwise.

Table 5 displays the results. In Column (1) of Panel A, *HighCoHolding* is computed using the holdings of the high- and low-performing funds. Its intersection term with *SameFamily* is significantly positive, implying that the performance gap between high and low-performing funds widens as the family manipulates more. Column (2) demonstrates the persistence of the results when using the holdings of high- and non-high-performing funds.

However, poorly skilled fund managers may be motivated to mimic the stockholdings of high-performing funds and act as if they possess exceptional investment skills. Hence, a high degree of family co-holding may stem from managers' herd behavior rather than family performance manipulation. To address this concern, Wang (2017) constructs an indicator denoting family pumping. He finds that the returns of star funds within a family are more prominent at the end of the reporting period and the short-term performance of other funds is worse when the family pumping indicator is larger.

Following the approach in Wang (2017), we use the holdings of high-performing funds within the family in the previous quarter as weights and add up the net increase in stock holdings of non-high-performing funds within the family in the current quarter to calculate the family pumping indicators<sup>9</sup>. We let *HighFamilyPumping* take the value of one if family pumping surpasses the sample median for the corresponding period and zero otherwise.

We use the top ten stock holdings in Column (3) and all stock holdings in Column (4). In both specifications, the coefficients of the interaction terms between *HighFamilyPumping* and *SameFamily* are significantly positive. This reaffirms that the difference in the performance gaps between the two types of fund pairs stems from the FMC's cross-fund subsidization strategy. These conclusions remain robust when we control for the investment styles of funds in Panel B of Table 5.

### 3.2.3 The end of the reporting period and the difference in performance gaps

Chinese fund investors always view fund performance rankings as a reflection of fund managers' capabilities and use rankings as a significant criterion when selecting funds. Consequently, funds actively vie for higher rankings to attract investors, especially toward the end

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<sup>9</sup> We calculate the net increase in stock holdings as the net increase in the value of the stock divided by the market value of the stock's all outstanding shares. Besides, the calculation of the family pumping indicator is described in detail in the Appendix A1.

of the reporting period (Li and Wu, 2019). Thus, the incentive for fund families to inflate the returns of high-performing funds intensifies as the reporting period concludes, and the disparity between the two types of fund pairs is expected to widen further. To test this hypothesis, we introduce dummy variables signifying the end of the reporting period and their intersection terms with *SameFamily* into Equation (1) to construct the following Equation (2):

$$\begin{aligned} \text{PerfGap}_{i,j,t} = & \alpha + \beta_1 \times \text{SameFamily}_{i,j,t} + \beta_2 \times \text{QuartLast}_t + \beta_3 \times \text{YearLast}_t \\ & + \beta_4 \times \text{QuartLast}_t \times \text{SameFamily}_{i,j,t} + \beta_5 \times \text{YearLast}_t \times \text{SameFamily}_{i,j,t} \\ & + \text{controls}_{i,j,t} + \varepsilon_{i,j,t} \#(2) \end{aligned}$$

*QuartLast* equals one if time  $t$  is the quarter's last trading day (excluding the fourth quarter) and zero otherwise. *YearLast* takes the value of one if time  $t$  is the year's last trading day and zero otherwise.

Table 6 presents the regression results. In Column (1), we use raw return to measure fund performance. The coefficient of *SameFamily* is significantly positive, suggesting that the difference in the daily performance gaps between the two types of fund pairs is 0.468 bp. Meanwhile, the term intersecting *YearLast* with *SameFamily* is also significantly positive, which means that at the year-end, the difference in the daily performance gaps between the two types of fund pairs widens by an additional 5.328 to 5.796 bp, corresponding to 120.65% ( $5.796 \div 4.804$ ) of the average daily return of high-performing funds. The result indicates that, at the year-end, FMCs intensify their efforts to bolster the high-performing funds' market rankings, causing low-performing funds to bear more expenses. This further supports the idea that the difference in the performance gaps between the two types of fund pairs are closely related to FMCs' cross-fund subsidization strategies.

This conclusion remains robust when we use the Fama-French three-factor adjusted return to control for the investment styles of different funds in Column (2) of Table 6. Moreover, we observe that the coefficient of the intersection term *QuartLast*  $\times$  *SameFamily* shows a significant positive value only in Column (2) and is smaller than that of *YearLast*  $\times$  *SameFamily*. This is consistent with the findings that fund manipulation behaviors are more noticeable and significant at the year-end (Hu et al., 2014; Li and Wu, 2019).

#### 4. FMC governance and cross-fund subsidization

Our findings suggest that the cross-fund subsidization strategy persists despite the CSRC prohibiting unfair treatment of different portfolios within fund families and implementing appropriate regulatory measures in 2011. Formal regulations appear to have fallen short of their intended effects. This section investigates whether the FMC's internal governance can significantly change its performance strategies, including the performance gap, family co-holding & pumping, and the pumping behavior of individual funds<sup>10</sup>.

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<sup>10</sup> Prior research find that fund managers excessively buy stocks they own to push the fund's net asset value at the end of the reporting period, known as portfolio pumping. This short-term boost induces a decline in fund returns on the following day and adversely affects funds' long-term performance (Carhart et al., 2002; Ben-David et al., 2013; Bhattacharyya and Nanda, 2013). Individual funds' portfolio pumping is closely related FMCs' cross-fund subsidization strategies (Wang, 2017; Yu et al., 2018). Thus, if better governance effectively dampens FMCs' cross-fund subsidization, we expect that this influence could be extended to portfolio pumping. Our empirical findings

#### 4.1 FMC governance and the difference in performance gaps

We first investigate whether FMC governance can mitigate the abnormal performance gap between high- and low-performing funds. Therefore, we incorporate the governance indicators for each family, i.e. *Sharehold*, *Boardset*, *BoardExp*, and *CEOPower*, and their intersection terms with *SameFamily* in Equation (1).

Table 7 presents the regression results. We use raw returns in Column (1) as fund performance. Consistent with our hypothesis, the intersection terms *Sharehold*  $\times$  *SameFamily* and *BoardExp*  $\times$  *SameFamily* have significantly negative coefficients, whereas the intersection terms between *CEOPower* and *SameFamily* have significantly positive coefficients.

FMCs with more shares held by the state shareholders or security firms and fewer shares owned by the private are less likely to erode investors' interests and more likely to get resources and supports. State or security firm shareholders reduce the difference in the daily performance gaps between the two types of fund pairs by 0.371 bp ( $0.434 \times 0.854$ ), equivalent to 87.71% ( $0.371 \div 0.423$ ) of the total abnormal difference<sup>11</sup>. Independent directors with financial experience, relevant educational backgrounds, regulations or government service experience have a strong willingness and ability to monitor FMCs' operations. Capable independent directors narrow the daily performance gaps between the two types of fund pairs by 0.194 bp, accounting for approximately 45.86% of the total abnormal return spread. However, the greater the power of FMCs' CEOs, the more challenging it becomes to monitor them. Powerful top managers contribute to a 0.310 bp increase in the difference in the daily performance gaps between the two types of fund pairs, constituting 73.29% of the total abnormal difference.

When we use the Fama-French three-factor adjusted return to control for the investment styles of different funds in Column (2), the coefficients of the intersection terms between *Boardset* and *SameFamily* become significantly positive. Larger board, lower proportion of independent directors, and longer average independent director tenures indicate ineffective board structures in FMCs. Low governance efficiency increases the difference in the daily performance gaps between the two types of fund pairs by 0.806 bp.

Our results show that the FMC's internal governance structure significantly impacts the abnormal performance gap between high- and low-performing funds.

#### 4.2 FMC governance, family co-holding, and pumping

In Section 3.2.2, we find a significant association between family co-holding & pumping and the abnormal performance gap between high- and low-performing funds. If the impact of FMC governance on the abnormal performance gap in Section 4.1 is due to the family cross-fund

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indicate that FMCs' governance structure can indeed significantly influence individual funds' pumping behavior, and provide some additional evidence about the dampening effect of FMCs' governance on their cross-fund subsidization. We do not report the calculations, equations, and results about individual funds' portfolio pumping in the main contents for brevity. We add them in Appendix A1.

<sup>11</sup> The conclusion is based on the situation where the ownership type composite indicator *Sharehold* reaches the third quartile of the sample (*Sharehold* = 0.854). The conclusions for other comprehensive indicators are similar.

subsidization strategies, we will observe fewer family co-holding and pumping behaviors in FMCs with specific governance structures. We construct Equation (3) as follows:

$$\begin{aligned}
 & HighCoHolding_{f,t} (HighFamilyPumping_{f,t}) \\
 = & \alpha + \beta_1 \times Sharehold_{f,t-1} + \beta_2 \times Boardset_{f,t-1} + \beta_3 \times BoardExp_{f,t-1} + \beta_4 \times CEOPower_{f,t-1} \\
 & + \beta_5 \times FamilyReturn_{f,t-1}^{0,-1} + \beta_6 \times FamilyReturn_{f,t-1}^{-1,-4} + \beta_7 \times NumFunds_{f,t-1} \\
 & + \beta_8 \times DistinctStyle_{f,t-1} + \beta_9 \times FamilyManagementFee_{f,t-1} + \beta_{10} \times FamilySize_{f,t-1} \\
 & + \gamma \times QuartFE_t + \lambda \times FamilyFE_f + \varepsilon_{f,t} \# \quad (3)
 \end{aligned}$$

The dependent variables *HighCoHolding* and *HighFamilyPumping* are defined previously. We control for the family's return at current quarter, family historical performance, number of funds managed by the family, number of fund types managed by the family, family management fees, and family asset size. *FamilyReturn*<sup>-1,-3</sup> is the size-weighted cumulative return during the last three quarters over all funds managed by the family. *NumFunds* is the total number of funds the family manages, excluding monetary funds. *DistinctStyle* is the ratio between the number of fund types divided by *NumFunds*. *FamilyManagementFee* is the size-weighted management fee charged by all funds within the family. *FamilySize* is the logarithm of the total size of all equity and hybrid funds the family manages. To mitigate endogeneity effects, we lag the internal corporate governance variable by one period and include family and quarter fixed effects.

Table 8 displays the regression results for Equation (3). When we use the holdings of high- and low-performing funds to calculate *HighCoHolding* in Column (1), the coefficient of *BoardExp* is significantly negative. It indicates that independent directors with strong governance abilities significantly reduce the level of family co-holding. This finding remains consistent when we use the holdings of high- and non-high-performing funds to calculate *HighCoHolding*, as shown in Column (2).

In Column (3) and (4), we use funds' top ten stock holdings and entire stock holdings to calculate *HighFamilyPumping* respectively. The coefficients of *BoardExp* are significantly negative in both columns. This suggests that independent directors with strong governance abilities significantly reduce the level of family pumping. In all regressions, we control for other factors that may affect the family co-holding or pumping, including number of fund types, number of funds, asset size, previous performance of a family.

Thus, we demonstrate that FMCs with more capable independent directors conduct less family co-holding and family pumping behavior, thus narrows the abnormal performance gaps.

#### 4.3 FMC governance at the end of the reporting period

In Section 3.2.3, we find that the abnormal performance gap between high- and low-performing funds is especially larger at the end of the reporting period, when FMCs have more incentives to inflate their overall performance. In Sections 4.1 and 4.2, we find that good FMC governance can help reduce family co-holding and pumping, therefore the abnormal performance gap. We expect that the impact of FMC governance on the abnormal performance gap will be especially greater at the end of the reporting period. We intersect variables about FMC governance with the important independent variables in Equation (2) and run a model with three-way intersection terms.

Panel A and B of Table 9 present the regression results with raw returns and Fama-French three-factor adjusted returns respectively. Each panel presents all the coefficients of only one regression model. The first column of Panel A presents the coefficients of those independent variables, similar to Equation (2). The second column of Panel A presents the coefficients of the intersection terms

between the composite indicator of FMC's ownership type, *Sharehold*, and those important independent variables in Equation (2). The other columns present the coefficients of the three-way intersection terms intersected with the other composite indicator of FMC's governance.

The coefficients of the intersection terms between the FMC's governance variables and *SameFamily* align with our previous findings in Section 4.1. In general time period, FMCs' governance structure significantly changes the abnormal performance gap. In both Panel A and Panel B, the coefficients of *YearLast*  $\times$  *SameFamily*  $\times$  *BoardExp* are significantly negative, whereas the coefficients of *YearLast*  $\times$  *SameFamily*  $\times$  *CEOPower* are significantly positive. This is consistent with our hypothesis that the impact of FMCs' governance on abnormal performance gaps is greater when FMCs have more incentives to inflate their overall performance.

## 5. Robustness checks

### 5.1 Endogeneity of FMCs' governance variables

In the literature, some other variables are found to be closely related to the potential conflicts between FMCs, funds, and fund investors. We control for the number of funds, number of styles, management fees, asset size, and previous performance of each FMC. The neglect of these variables, which might be related to our composite governance indicators, makes it easy to cause the endogeneity problem. We also prudently add the fund fixed effect in all regressions to control for those unobservable heterogeneities at the fund level, which might cause the endogeneity of FMCs' governance variables. We control for month, quarter, or year fixed effects in regressions with different data frequencies.

In addition, the multidimensional internal governance system developed in this study are very fundamental in determining other aspects of FMCs and funds. Some of the dimensions are established at the start of a FMC and do not change often. We compute how the governance metrics of the FMCs changed over time within our sample (detailed results are not reported for brevity). Compared with the other variables, FMC governance variables demonstrate greater stability and persistence over time. It is least likely that these variables are determined by some neglected factors that may simultaneously affect the abnormal performance gap. Besides, the composite indicators of the FMCs' governance include the majority of corporate governance variables that might affect each other. Endogeneity resulting from omitting critical explanatory variables can be mitigated to some extent.

It is difficult for us to find exogenous instrumental variables or shocks that can change the stable FMC governance system. We construct a panel VAR Model to test whether the family pumping behaviors affect the FMCs' governance indicators in the future. We estimate the following Equations (4) to (8) simultaneously with the Generalized Method of Moments (GMM). We employ governance indicators in previous four to sixteen quarters as instrumental variables to estimate Equation (4).

$$\begin{aligned} FamilyPumping_{f,t+1} = \alpha & + \beta_1 \times FamilyPumping_{f,t} + \beta_2 \times Sharehold_{f,t} \\ & + \beta_3 \times Boardset_{f,t} + \beta_4 \times BoardExp_{f,t} + \beta_5 \times CEOPower_{f,t} \\ & + controls_{f,t} + \gamma \times QuartFE_t + \lambda \times FamilyFE_f + \varepsilon_{f,t} \# (4) \end{aligned}$$

$$\begin{aligned} Sharehold_{f,t+1} = \alpha & + \beta_1 \times FamilyPumping_{f,t} + \beta_2 \times Sharehold_{f,t} + \beta_3 \times Boardset_{f,t} \\ & + \beta_4 \times BoardExp_{f,t} + \beta_5 \times CEOPower_{f,t} + controls_{f,t} + \gamma \times QuartFE_t \\ & + \lambda \times FamilyFE_f + \varepsilon_{f,t} \# (5) \end{aligned}$$

$$\begin{aligned} Boardset_{f,t+1} = \alpha & + \beta_1 \times FamilyPumping_{f,t} + \beta_2 \times Sharehold_{f,t} + \beta_3 \times Boardset_{f,t} \\ & + \beta_4 \times BoardExp_{f,t} + \beta_5 \times CEOPower_{f,t} + controls_{f,t} + \gamma \times QuartFE_t \\ & + \lambda \times FamilyFE_f + \varepsilon_{f,t} \# \end{aligned} \quad (6)$$

$$\begin{aligned} BoardExp_{f,t+1} = \alpha & + \beta_1 \times FamilyPumping_{f,t} + \beta_2 \times Sharehold_{f,t} + \beta_3 \times Boardset_{f,t} \\ & + \beta_4 \times BoardExp_{f,t} + \beta_5 \times CEOPower_{f,t} + controls_{f,t} + \gamma \times QuartFE_t \\ & + \lambda \times FamilyFE_f + \varepsilon_{f,t} \# \end{aligned} \quad (7)$$

$$\begin{aligned} CEOPower_{f,t+1} = \alpha & + \beta_1 \times FamilyPumping_{f,t} + \beta_2 \times Sharehold_{f,t} + \beta_3 \times Boardset_{f,t} \\ & + \beta_4 \times BoardExp_{f,t} + \beta_5 \times CEOPower_{f,t} + controls_{f,t} + \gamma \times QuartFE_t \\ & + \lambda \times FamilyFE_f + \varepsilon_{f,t} \# \end{aligned} \quad (8)$$

The dependent variables in these equations are family pumping and the four dimensions of the composite governance indicators: *Shareholder*, *Boardset*, *BoardExp*, and *CEOPower*. These models incorporate the same control variables as in Equation (3), which might be correlated with family pumping or FMC governance indicators.

Table 10 presents the regression results. The results suggest that shareholders with less motivation to violate regulation rules or more assistance to provide to FMCs, independent directors with strong governance abilities, and less powerful CEOs can mitigate family pumping, while FMC's family pumping behavior does not significantly affect its future governance structure. The results are consistent with our previous findings after controlling for reverse causality and further strengthen the robustness of the main conclusions.

## 5.2 Alternative definitions of high- and low-performing funds

In the previous sections, a high-performing (low-performing) fund is defined as the top (bottom) 20% in terms of cumulative returns within an FMC. In this section, we use 10% and 25% percentiles to cut the sample, define high- and low-performing funds, and re-estimate Equation (1).

Table 11 summarizes the results. Raw returns are used to calculate fund performance in Columns (1) to (3), whereas the Fama-French three-factor adjusted returns are employed in Columns (4) to (6). In all columns, consistent with the results in Table 3, performance gap between high- and low-performing funds managed by the same company is significantly larger than that between funds managed by different companies. Interestingly, as the cutoff percentiles change from 25% to 10%, the daily abnormal performance gap between the high- and low-performing funds steadily increases.

We also use alternative definitions of high- and low-performing funds to re-estimate the relationship between FMC governance and the difference in performance gaps. As the cutoff percentiles change from 25% to 10%, FMC's internal governance structure keeps its significant impact on the abnormal performance gap. We show the influence in Table 12.

## 5.3 Other robustness checks

### *Event window length*

In previous sections, we calculate the cumulative fund returns from the start of the year to three days before the end of the quarter. For robustness check, we calculate cumulative returns from the start of the year to two or four days before the quarter's end. All results with new calculations are similar.

### *Internal governance indicators*

In previous sections, we use four composite indicators to depict the four dimensions of FMCs'

governance structures. Alternatively, we employ the original variables from our multidimensional internal governance system to replace the composite indicators. The results are basically the same.

#### *Measures of family co-holding*

We calculate family co-holding in an alternative way. We first identify the stocks held simultaneously by low- and high-performing funds within the same family. We then calculate the number of low-performing funds holding these stocks and use the ratio of the number divided by the total number of low-performing funds in the family to measure family co-holding. Our main findings remain unchanged. More family co-holding correlates with a greater difference in performance gaps between the two fund types. FMCs' governance dampens family co-holding.

## 6. Conclusion

We confirm that the performance gap between high- and low-performing funds within the same FMC in the Chinese mutual fund industry exceeds that observed between comparable funds managed by distinct FMCs. This abnormal performance gap is not attributed to fund managers' behaviors but increases with the degree of family co-holding and family pumping. Moreover, it escalates with the family's incentive to inflate its performance. Our study highlights that cross-fund subsidization strategy persists within the fund family despite the CSRC's efforts to prohibit fund families from unfairly treating different portfolios since 2011. This demonstrates the limitations of the formal regulations.

Furthermore, we investigate the role that FMC's internal governance structures play in their cross-fund subsidization strategies. By manually collecting data from fund prospectus and other public websites, we establish a comprehensive governance indicator system from four dimensions: ownership type, board structure, independent director governance ability, and CEO power. The empirical results show that the abnormal performance gap is narrower for FMCs that have more shares held by state shareholders or security firms and fewer shares owned by private holders. FMCs with more capable independent directors also have smaller abnormal performance gaps than others, while those with inefficient boards and more powerful managers have broader abnormal performance gaps.

We then show that the impact of FMCs' internal governance on abnormal performance gap results from their efforts to reduce performance manipulation behavior and exert stronger oversight when FMCs have more incentives to inflate their performance. More capable independent directors constrain family co-holding and family pumping. However, an inefficient board structure raises the likelihood of FMCs' inflating the performance of high-performing funds at the expense of non-high-performing funds. Additionally, we notice that the FMC's internal governance extends its influence to the behavior of individual funds. FMCs that have more efficient board structure, more capable independent directors, less powerful managers, and more shares held by owners with fewer violation incentives and greater support resources, mitigate fund portfolio pumping.

Our study illustrates the substantial impact of FMC's governance structures on fund behavior and provides policy insights for securities regulators. Stable, persistent, and efficient internal governance within FMCs can regulate the conduct of funds, safeguard investors' interests, and mitigate the principal-agent problem. FMC governance structure works as a valuable complement to formal regulations. Guiding FMCs in establishing a normative governance structure is crucial to enhance monitoring efficiency and ensure healthy fund market development. Meanwhile, the

empirical results strongly support the current regulatory policies of the CSRC and provide valuable insights into FMCs' board structure arrangements, the appointment of independent directors, and the selection of senior managers.

With the rapid growth of China's fund market, the numbers and types of funds available to investors have increased significantly. Moreover, the introduction of the Guidelines for Pension Target Securities Investment Funds (for Trial Implementation) in 2018 and the official release of the Guiding Opinions on Regulating the Asset Management Business of Financial Institutions (the "New Rules on Asset Management") push mutual funds to become a crucial asset allocation choice for institutional investors seeking reliable income. Therefore, identifying high-quality funds is a matter of great concern. However, current fund evaluation criteria emphasize risk-adjusted returns, managerial capabilities, and performance persistence, ignoring the significance of FMC features. Our study highlights that governance structure plays a pivotal role in safeguarding investors' interests by mitigating the agency costs between investors, funds, and FMCs. Thus, we expect to introduce a new dimension to help investors find funds with prudent strategies and committed responsibilities.

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## Tables

**Table 1**

The descriptive statistics for both the control and experimental pairs.

The sample consists of actively managed Chinese domestic open-end equity and hybrid funds from December 1, 2011, to March 31, 2022. The experimental pair is a high-performing fund and a low-performing fund within the same family. The control pair is the high-performing fund in an experimental pair and the replacing fund belongs to distinct families. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *HighFamilyAge* (*LowFamilyAge*) is the age of the high-performing (low-performing) fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. *HighReturn* (*LowReturn*) is the daily return of the high-performing (low-performing) fund. *PerfGap* is the difference in the daily return between the high- and low-performing fund within a fund pair.

	Mean	Sd	Min	P25	Median	P75	Max	N
<i>Control pair</i>								
<i>SizeDiff(log)</i>	0.142	1.673	-6.023	-1.012	0.108	1.255	6.001	748,593
<i>AgeDiff(year)</i>	-0.669	5.574	-17.000	-4.167	-0.250	2.833	17.250	748,593
<i>HighFamilyAge (year)</i>	17.170	4.154	2.833	14.420	17.080	20.580	26.500	748,593
<i>LowFamilyAge (year)</i>	15.780	4.970	1.583	12.750	16.000	19.580	26.420	748,593
<i>HighFamilySize (log)</i>	25.160	1.089	20.950	24.330	25.280	26.000	27.300	748,593
<i>LowFamilySize (log)</i>	24.550	1.440	18.670	23.730	24.540	25.750	27.300	748,593
<i>HighReturn (bp)</i>	4.772	147.500	-644.600	-77.040	8.029	92.070	505.200	748,593
<i>LowReturn (bp)</i>	4.622	135.000	-645.400	-70.920	5.213	82.840	504.500	748,593
<i>PerfGap(bp)</i>	0.150	113.500	-865.100	-60.250	1.779	63.010	899.400	748,593
<i>Experimental pair</i>								
<i>SizeDiff(log)</i>	-0.022	1.665	-6.063	-1.206	-0.062	1.101	6.074	755,840
<i>AgeDiff(year)</i>	-0.808	5.636	-16.750	-4.417	-0.417	2.750	17.250	755,840
<i>HighFamilyAge (year)</i>	17.190	4.149	2.833	14.420	17.170	20.580	26.500	755,840
<i>HighFamilySize (log)</i>	25.170	1.083	20.950	24.340	25.290	26.000	27.300	755,840
<i>HighReturn (bp)</i>	4.804	147.500	-644.600	-76.920	8.084	92.060	505.200	755,840
<i>LowReturn (bp)</i>	4.413	135.800	-645.400	-71.170	5.297	83.020	504.100	755,840
<i>PerfGap(bp)</i>	0.391	111.600	-887.400	-57.390	1.829	60.690	782.200	755,840

**Table 2**

The descriptive statistics for internal governance indicators in our sample.

*Broker* is the percentage of brokers in the controlling shareholder's industry category. *BrokerShare* is the shareholding rate owned by brokers. *PrivateShare* is the shareholding rate owned by private. *StateShare* is the shareholding rate owned by the state. *Sharehold* is the composite indicator representing ownership type. *BoardSize* is the total number of directors on the board. *RationIndep* is the proportion of independent directors. *IndepTenure* is the average tenure of independent directors on the board. *Boardset* is the composite indicator representing board structure. *NoFinanceExp* is the proportion of independent directors without working experience in finance-related industries. *FinanceEdu* is the proportion of independent directors with a financial education background. *RegulatorExp* is the proportion of independent directors with regulation working experience. *GoverRel* is the proportion of independent directors who have previously or are currently serving in government positions. *BoardExp* is the composite indicator representing independent director governance ability. *Co\_option* is the percentage of independent directors appointed during the current CEO's tenure. *CEODuality* is the board positions held by the CEO. *CEOTenure* is the number of months since the CEO takes office. *LongTenure* takes the value of one if the CEO term exceeds the maximum tenure of independent directors, and zero otherwise. *CEORegulatorExp* takes the value of one if the CEO has regulatory work experience, and zero otherwise. *CEOGoverRel* takes the value of one if the CEO has political connections or plays a key role in industry associations, and zero otherwise. *CEOEdLevel* is the CEO's level of education. *BetterEdu* takes the value of one if the CEO's education level surpasses the average education level of independent directors, and zero otherwise. *CEOPower* is the composite indicator representing CEO power.

	Mean	SD	Min	P25	P50	P75	Max	N
<i>Ownership type</i>								
<i>Broker</i>	0.508	0.500	0	0	1	1	1	106,367
<i>BrokerShare</i>	0.292	0.278	0	0	0.333	0.510	100	106,367
<i>PrivateShare</i>	0.129	0.239	0	0	0	0.150	100	106,367
<i>StateShare</i>	0.628	0.267	0	0.506	0.610	0.835	100	106,367
<b><i>Sharehold</i></b>	<b>0.217</b>	<b>1.042</b>	<b>-3.121</b>	<b>-0.178</b>	<b>0.472</b>	<b>0.854</b>	<b>2.206</b>	<b>106,367</b>
<i>Board structure</i>								
<i>BoardSize</i>	8.954	1.673	5	8	9	10	13	106,367
<i>RationIndep</i>	0.373	0.073	0	0.333	0.364	0.429	0.667	106,367
<i>IndepTenure(mon)</i>	60.558	36.370	0	34.333	54.333	76.667	218	104,863
<b><i>Boardset</i></b>	<b>0.445</b>	<b>1.123</b>	<b>-4.019</b>	<b>-0.327</b>	<b>0.637</b>	<b>1.270</b>	<b>2.624</b>	<b>104,863</b>
<i>Independent directors</i>								
<i>NoFinanceExp</i>	0.684	0.281	0	0.500	0.667	1	1	104,863
<i>FinanceEdu</i>	0.562	0.279	0	0.333	0.667	0.750	1	104,863
<i>RegulatorExp</i>	0.036	0.108	0	0	0	0	0.667	104,863
<i>GoverRel</i>	0.143	0.209	0	0	0	0.250	1	104,863
<b><i>BoardExp</i></b>	<b>0.166</b>	<b>1.322</b>	<b>-1.973</b>	<b>-0.779</b>	<b>-0.009</b>	<b>0.904</b>	<b>4.363</b>	<b>104,863</b>
<i>CEO power</i>								
<i>Co_option</i>	0.122	0.153	0	0	0	0.222	0.571	104,863
<i>CEOTenure(mon)</i>	48.870	43.450	0.033	14.630	35.870	71.830	211.300	106,367
<i>LongTenure</i>	0.287	0.453	0	0	0	1	1	106,367
<i>CEOGoverRel</i>	0.194	0.395	0	0	0	0	1	106,367
<i>CEORegulatorExp</i>	0.124	0.330	0	0	0	0	1	106,367
<i>CEODuality</i>	1.184	0.584	0	1	1	1	3	106,367
<i>CEOEdLevel</i>	2.182	0.574	0	2	2	3	3	106,367
<i>BetterEdu</i>	0.315	0.465	0	0	0	1	1	106,367
<b><i>CEOPower</i></b>	<b>0.326</b>	<b>1.692</b>	<b>-2.326</b>	<b>-1.034</b>	<b>-0.167</b>	<b>1.421</b>	<b>5.777</b>	<b>104,863</b>

**Table 3**

The difference in performance gaps between two types of fund pairs.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Columns (1) and (2). The Fama-French three-factor adjusted return is the measure of fund performance in Column (3). We estimate the risk factor-adjusted alpha based on data for the past 250 days. In addition, we control fund- and month-fixed effects in Columns (1) and (3) and family- and month-fixed effects in Column (2). T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) Raw return	(2) Raw return	(3) FF3 alpha
<i>SameFamily</i>	0.485*** (3.351)	0.457*** (3.172)	0.567*** (3.816)
<i>SizeDiff</i>	-1.411*** (-10.638)	-0.911*** (-8.693)	-1.152*** (-9.879)
<i>AgeDiff</i>	0.102*** (3.617)	0.043 (1.454)	0.046* (1.678)
<i>LowFamilyAge</i>	0.066* (1.904)	0.043 (1.274)	-0.042 (-1.483)
<i>HighFamilySize</i>	-0.911 (-0.991)	-1.268** (-1.970)	0.532 (0.619)
<i>LowFamilySize</i>	-0.877*** (-6.795)	-0.675*** (-5.399)	-0.501*** (-4.782)
Constant	43.820* (1.880)	48.114*** (2.947)	-1.353 (-0.063)
Month fixed effects	Yes	Yes	Yes
Fund fixed effects	Yes	No	Yes
Family fixed effect	No	Yes	No
N	1504433	1504433	1420402
adj. <i>R</i> <sup>2</sup> (%)	1.169	0.942	0.832

**Table 4**

Family strategy versus fund manager personal behavior.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *OverLap* is the manager overlap rate between the two funds in a fund pair. *SameManager* takes the value of one when the two funds in a pair share the same manager and zero otherwise. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Columns (1) and (3). The Fama-French three-factor adjusted return is the measure of fund performance in Columns (2) and (4). We estimate the risk factor-adjusted alpha based on data for the past 250 days. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) Raw return	(2) FF3 alpha	(3) Raw return	(4) FF3 alpha
<i>SameFamily</i>	0.486*** (3.326)	0.591*** (3.856)	0.483*** (3.319)	0.601*** (3.906)
<i>OverLap</i>	-0.042 (-0.056)	-0.835 (-1.248)		
<i>SameManager</i>			0.036 (0.061)	-0.860* (-1.661)
<i>SizeDiff</i>	-1.411*** (-10.630)	-1.153*** (-9.879)	-1.411*** (-10.629)	-1.154*** (-9.882)
<i>AgeDiff</i>	0.102*** (3.615)	0.045* (1.668)	0.102*** (3.617)	0.045* (1.666)
<i>LowFamilyAge</i>	0.066* (1.904)	-0.042 (-1.494)	0.066* (1.904)	-0.043 (-1.499)
<i>HighFamilySize</i>	-0.911 (-0.990)	0.533 (0.620)	-0.911 (-0.991)	0.534 (0.621)
<i>LowFamilySize</i>	-0.877*** (-6.793)	-0.503*** (-4.802)	-0.877*** (-6.792)	-0.503*** (-4.809)
Constant	43.817* (1.880)	-1.330 (-0.062)	43.824* (1.880)	-1.329 (-0.061)
Month fixed effects	Yes	Yes	Yes	Yes
Fund fixed effects	Yes	Yes	Yes	Yes
N	1504433	1420402	1504433	1420402
adj. R <sup>2</sup> (%)	1.169	0.832	1.169	0.832

**Table 5**

Family co-holding, pumping, and the difference in performance gaps.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *HighCoHolding* takes a value of one if family co-holding exceeds the sample median for the corresponding period, zero otherwise. In Column (1), *HighCoHolding* is computed using the holdings of high- and low-performing funds. In Column (2), *HighCoHolding* is computed using the holdings of high- and non-high-performing funds. *HighFamilyPumping* takes a value of one if family pumping surpasses the sample median for the same period, and zero otherwise. In Column (3), *HighFamilyPumping* is computed using the top ten stock holdings data based on quarterly fund reports. In Column (4), *HighFamilyPumping* is computed using the data of all holdings based on annual and semi-annual fund reports. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Panel A. The Fama-French three-factor adjusted return is the measure of fund performance in Panel B. We estimate the risk factor-adjusted alpha based on data for the past 250 days. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Raw return

	(1) <i>High and Low</i>	(2) <i>High and Others</i>	(3) <i>Top 10 holdings</i>	(4) <i>All holdings</i>
<i>HighCoHolding</i> × <i>SameFamily</i>	1.242** (2.438)	1.262** (2.190)		
<i>HighFamily</i> is <i>HighCoHolding</i>	-0.427 (-0.616)	0.452 (0.374)		
<i>LowFamily</i> is <i>HighCoHolding</i>	-0.420 (-1.302)	-0.732** (-2.160)		
<i>HighFamilyPumping</i> × <i>SameFamily</i>			1.347*** (2.781)	0.723* (1.864)
<i>HighFamily</i> is <i>HighFamilyPumping</i>			-0.158 (-0.216)	-4.810*** (-3.988)
<i>LowFamily</i> is <i>HighFamilyPumping</i>			-1.054*** (-3.088)	-2.243*** (-5.617)
<i>SameFamily</i>	-0.557 (-1.249)	-0.645 (-1.236)	-0.653 (-1.517)	0.013 (0.038)
<i>SizeDiff</i>	-1.411*** (-10.632)	-1.406*** (-10.594)	-1.410*** (-10.593)	-1.389*** (-10.428)
<i>AgeDiff</i>	0.101*** (3.585)	0.101*** (3.562)	0.101*** (3.568)	0.091*** (3.222)
<i>LowFamilyAge</i>	0.069** (1.986)	0.066* (1.917)	0.069** (1.969)	0.065* (1.883)
<i>HighFamilySize</i>	-0.928 (-1.009)	-0.956 (-1.037)	-0.994 (-1.060)	-1.088 (-1.155)
<i>LowFamilySize</i>	-0.842*** (-6.500)	-0.787*** (-5.833)	-0.795*** (-5.845)	-0.583*** (-4.212)
Constant	44.016* (1.888)	42.883* (1.831)	44.800* (1.899)	46.556** (1.970)
Month fixed effects	Yes	Yes	Yes	Yes
Fund fixed effects	Yes	Yes	Yes	Yes
N	1504433	1504433	1481160	1504433
adj. <i>R</i> <sup>2</sup> (%)	1.169	1.169	1.179	1.180

Panel B. FF3 alpha

	(1) <i>High and Low</i>	(2) <i>High and Others</i>	(3) <i>Top 10 holdings</i>	(4) <i>All holdings</i>
<i>HighCoHolding × SameFamily</i>	1.332*** (2.698)	1.306** (2.264)		
<i>HighFamily is HighCoHolding</i>	-1.733** (-2.280)	0.832 (0.858)		
<i>LowFamily is HighCoHolding</i>	-0.426 (-1.304)	-0.233 (-0.704)		
<i>HighFamilyPumping × SameFamily</i>			1.287** (2.411)	0.998*** (2.779)
<i>HighFamily is HighFamilyPumping</i>			0.717 (0.983)	-5.853*** (-4.392)
<i>LowFamily is HighFamilyPumping</i>			-0.762** (-2.449)	-1.361*** (-3.790)
<i>SameFamily</i>	-0.547 (-1.281)	-0.642 (-1.203)	-0.490 (-1.034)	-0.188 (-0.597)
<i>SizeDiff</i>	-1.151*** (-9.867)	-1.155*** (-9.879)	-1.139*** (-9.706)	-1.134*** (-9.668)
<i>AgeDiff</i>	0.046* (1.682)	0.045 (1.646)	0.038 (1.386)	0.040 (1.436)
<i>LowFamilyAge</i>	-0.041 (-1.455)	-0.040 (-1.413)	-0.044 (-1.550)	-0.035 (-1.228)
<i>HighFamilySize</i>	0.505 (0.588)	0.519 (0.603)	0.270 (0.310)	0.488 (0.574)
<i>LowFamilySize</i>	-0.452*** (-3.906)	-0.485*** (-4.258)	-0.309*** (-2.582)	-0.334*** (-2.808)
Constant	-0.073 (-0.003)	-2.073 (-0.096)	0.329 (0.015)	1.308 (0.062)
Month fixed effects	Yes	Yes	Yes	Yes
Fund fixed effects	Yes	Yes	Yes	Yes
N	1420402	1420402	1395981	1420402
adj. R <sup>2</sup> (%)	0.833	0.832	0.836	0.845

**Table 6**

The end of the reporting period and the difference in performance gaps.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *QuartLast* takes the value of one on the quarter's last trading day (excluding the fourth quarter) and zero otherwise. *YearLast* takes the value of one on the year's last trading day and zero otherwise. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Column (1). The Fama-French three-factor adjusted return is the measure of fund performance in Column (2). We estimate the risk factor-adjusted alpha based on data for the past 250 days. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) <i>Raw return</i>	(2) <i>FF3 alpha</i>
<i>SameFamily</i>	0.468*** (3.188)	0.521*** (3.451)
<i>QuartLast</i> × <i>SameFamily</i>	-0.301 (-0.305)	2.086** (1.992)
<i>YearLast</i> × <i>SameFamily</i>	5.328*** (4.054)	2.449** (1.972)
<i>QuartLast</i>	42.566*** (20.715)	25.447*** (14.725)
<i>YearLast</i>	14.697*** (6.029)	5.976*** (2.746)
<i>SizeDiff</i>	-1.286*** (-9.727)	-1.089*** (-9.312)
<i>AgeDiff</i>	0.077*** (2.724)	0.032 (1.163)
<i>LowFamilyAge</i>	0.061* (1.765)	-0.043 (-1.507)
<i>HighFamilySize</i>	-1.152 (-1.257)	0.401 (0.467)
<i>LowFamilySize</i>	-0.844*** (-6.540)	-0.487*** (-4.653)
Constant	48.406** (2.085)	1.169 (0.054)
Month fixed effects	Yes	Yes
Fund fixed effects	Yes	Yes
N	1504433	1420402
adj. <i>R</i> <sup>2</sup> (%)	1.374	0.932

**Table 7**

FMC governance and the difference in performance gaps.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *Sharehold* is the composite indicator representing ownership type. *Boardset* is the composite indicator representing board structure. *BoardExp* is the composite indicator representing independent director governance ability. *CEOPower* is the composite indicator representing CEO power. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Column (1). The Fama-French three-factor adjusted return is the measure of fund performance in Column (2). We estimate the risk factor-adjusted alpha based on data for the past 250 days. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) <i>Raw return</i>	(2) <i>FF3 alpha</i>
<i>Samefamily</i>	0.423** (2.400)	0.139 (0.798)
<i>Sharehold</i> × <i>SameFamily</i>	-0.434** (-2.529)	-0.514*** (-3.221)
<i>Boardset</i> × <i>SameFamily</i>	-0.016 (-0.137)	0.635*** (5.435)
<i>BoardExp</i> × <i>SameFamily</i>	-0.215** (-2.511)	0.024 (0.277)
<i>CEOPower</i> × <i>SameFamily</i>	0.218*** (3.064)	0.157** (2.122)
<i>Sharehold</i>	1.621 (0.886)	3.869* (1.706)
<i>Boardset</i>	1.399* (1.873)	-0.597 (-0.905)
<i>BoardExp</i>	-0.259 (-0.631)	-0.581 (-1.430)
<i>CEOPower</i>	-0.418* (-1.787)	-0.512** (-2.213)
<i>SizeDiff</i>	-1.420*** (-10.674)	-1.165*** (-10.196)
<i>AgeDiff</i>	0.104*** (3.662)	0.045* (1.657)
<i>LowFamilyAge</i>	0.087** (2.404)	-0.055* (-1.921)
<i>HighFamilySize</i>	-0.777 (-0.827)	0.628 (0.719)
<i>LowFamilySize</i>	-0.975*** (-7.380)	-0.532*** (-5.094)
Constant	41.481* (1.740)	-2.804 (-0.128)
Month fixed effects	Yes	Yes
Fund fixed effects	Yes	Yes
N	1498256	1414512
adj. <i>R</i> <sup>2</sup> (%)	1.176	0.838

**Table 8**

FMC governance, family co-holding, and family pumping.

In Columns (1) and (2), the dependent variables are *HighCoHolding*, which takes a value of one if family co-holding exceeds the sample median for the corresponding period, zero otherwise. In Column (1), *HighCoHolding* is computed using the holdings of high- and low-performing funds. In Column (2), *HighCoHolding* is computed using the holdings of high- and non-high-performing funds. In Columns (3) and (4), the dependent variables are *HighFamilyPumping*, which takes a value of one if family pumping surpasses the sample median for the same period, and zero otherwise. In Column (3), *HighFamilyPumping* is computed using the top ten stock holdings data based on quarterly fund reports. In Column (4), *HighFamilyPumping* is computed using the data of all holdings based on annual and semi-annual fund reports. *Sharehold* is the composite indicator representing ownership type. *Boardset* is the composite indicator representing board structure. *BoardExp* is the composite indicator representing independent director governance ability. *CEOPower* is the composite indicator representing CEO power. The control variables include: family historical performance  $FamilyReturn^{-1,-3}$  is the size-weighted cumulative return over the last three quarters of all funds managed by the family; the number of funds managed by the family *NumFunds* is the total number of funds managed by the family, excluding money funds; the number of fund types managed by the family *DistinctStyle* is the ratio of the number of fund types divided by *NumFunds*; family management fee *FamilyManagementFee*, is the size-weighted management fee charged by all funds within the family; family asset size *FamilySize* is the logarithm of the total size of all equity and hybrid funds managed by the family. All the independent variables are lagged by one period, and we control family- and quarter-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	<i>HighCoHolding</i>	<i>High and Others</i>	<i>Top 10 holdings</i>	<i>All holdings</i>
	<i>High and Low</i>			
<i>Sharehold</i>	-0.178 (-0.527)	-0.309 (-0.771)	-0.427 (-1.089)	-0.237 (-0.423)
<i>Boardset</i>	0.121 (0.580)	0.053 (0.177)	0.307 (1.366)	-0.002 (-0.008)
<i>BoardExp</i>	-0.326*** (-3.359)	-0.443*** (-4.715)	-0.263*** (-2.712)	-0.371* (-1.920)
<i>CEOPower</i>	0.101 (1.452)	0.049 (0.455)	0.053 (0.580)	0.016 (0.113)
<i>FamilyReturn</i> <sup>-1,-3</sup>	-2.021* (-1.883)	-0.279 (-0.279)	-0.360 (-0.303)	0.251 (0.163)
<i>NumFunds</i>	0.015* (1.756)	0.008 (0.671)	0.003 (0.245)	0.000 (0.020)
<i>DistinctStyle</i>	-4.125*** (-3.088)	-4.568*** (-2.781)	-2.441* (-1.666)	-8.207*** (-3.189)
<i>FamilyManagementFee</i>	1.655 (0.711)	-0.623 (-0.252)	-0.957 (-0.408)	-3.917 (-0.631)
<i>FamilySize</i>	0.382* (1.848)	0.672** (2.278)	0.692*** (2.666)	0.843* (1.931)
Constant	-12.716** (-2.022)	-14.912* (-1.745)	-16.238** (-2.240)	-0.237 (-0.423)
Quarter fixed effect	Yes	Yes	Yes	Yes
Family fixed effect	Yes	Yes	Yes	Yes
N	3161	3161	3161	1418
pseudo R <sup>2</sup>	49.696	58.042	56.058	66.257

**Table 9**

FMC governance at the end of the reporting period.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *Sharehold* is the composite indicator representing ownership type. *Boardset* is the composite indicator representing board structure. *BoardExp* is the composite indicator representing independent director governance ability. *CEOPower* is the composite indicator representing CEO power. *QuartLast* takes the value of one on the quarter's last trading day (excluding the fourth quarter) and zero otherwise. *YearLast* takes the value of one on the year's last trading day and zero otherwise. We add the same control variables as in Equation (2), but the results are not reported. The raw return is the measure of fund performance in Panel A. The Fama-French three-factor adjusted return is the measure of fund performance in Panel B. We estimate the risk factor-adjusted alpha based on data for the past 250 days. Each panel presents all the coefficients of only one regression model. The first column of Panel A presents the coefficients of those independent variables, similar to Equation (2). The second column of Panel A presents the coefficients of the intersection terms between the composite indicator of FMC's ownership type, *Sharehold*, and those important independent variables in Equation (2). The other columns present the coefficients of the three-way intersection terms intersected with the other composite indicator of FMC's governance. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Raw return

	constant	The intersection terms with the variables about FMCs' governance			
		<i>Sharehold</i>	<i>Boardset</i>	<i>BoardExp</i>	<i>CEOPower</i>
<i>SameFamily</i>	0.409** (2.280)	-0.417** (-2.401)	-0.000 (-0.004)	-0.206** (-2.359)	0.196*** (2.724)
<i>QuartLast</i> × <i>SameFamily</i>	-0.248 (-0.198)	-0.649 (-0.553)	-0.513 (-0.570)	0.201 (0.303)	0.518 (1.048)
<i>YearLast</i> × <i>SameFamily</i>	4.709** (2.567)	-1.443 (-1.024)	-1.102 (-0.915)	-2.937*** (-3.439)	2.031*** (3.196)
<i>QuartLast</i>	42.498*** (16.819)	-0.546 (-0.255)	-1.313 (-0.768)	-3.328** (-2.402)	1.290 (1.130)
<i>YearLast</i>	15.768*** (5.447)	-4.279* (-1.722)	1.557 (0.870)	2.859** (2.033)	-1.455 (-1.289)
Constant	45.861* (1.931)	1.630 (0.888)	1.362* (1.839)	-0.233 (-0.577)	-0.429* (-1.842)
Month fixed effects	Yes	N		1498256	
Fund fixed effects	Yes		adj. <i>R</i> <sup>2</sup> (%)	1.385	
Controls	Yes				

Panel B. FF3 alpha

	Constant	The intersection terms with the variables about FMCs' governance			
		<i>Sharehold</i>	<i>Boardset</i>	<i>BoardExp</i>	<i>CEOPower</i>
<i>SameFamily</i>	0.116 (0.653)	-0.516*** (-3.214)	0.623*** (5.257)	0.048 (0.554)	0.137* (1.838)
<i>QuartLast</i> × <i>SameFamily</i>	1.338 (0.973)	-0.230 (-0.211)	0.635 (0.764)	-0.667 (-0.947)	0.420 (0.782)
<i>YearLast</i> × <i>SameFamily</i>	0.625 (0.343)	0.822 (0.649)	0.467 (0.462)	-2.558*** (-3.135)	1.903*** (3.125)
<i>QuartLast</i>	24.877*** (12.437)	2.081 (1.141)	-2.104 (-1.601)	0.274 (0.246)	2.479*** (2.724)
<i>YearLast</i>	7.108*** (2.650)	-1.639 (-0.780)	-0.464 (-0.267)	2.892** (2.177)	-0.735 (-0.685)
Constant	-0.332 (-0.015)	3.851* (1.687)	-0.536 (-0.815)	-0.598 (-1.490)	-0.556** (-2.402)
Month fixed effects	Yes	N		1414512	
Fund fixed effects	Yes		adj. <i>R</i> <sup>2</sup> (%)	0.943	
Controls	Yes				

**Table 10**

Panel VAR model, family pumping and FMCs' governance structure

In Columns (1) to (5), the dependent variables are, respectively: family pumping, calculated using the top ten stock holdings based on quarterly fund reports; *Sharehold*, the composite indicator representing ownership type; *Boardset*, the composite indicator representing board structure; *BoardExp*, the composite indicator representing independent director governance ability; *CEOPower*, the composite indicator representing CEO power. The panel VAR is run for the Equation (4) to (8) simultaneously to control the effect of each variable on the others at the same time. We estimate these models using GMM, employing governance indicators in previous four to sixteen quarters as instrumental variables to estimate Equation (4). We incorporate control variables like: *FamilyReturn*<sup>-1,-3</sup> is the size-weighted cumulative return over the last three quarters of all funds managed by the family; *NumFunds* is the total number of funds managed by the family, excluding money funds; *DistinctStyle* is the ratio of the number of fund types divided by *NumFunds*; *FamilyManagementFee* is the size-weighted management fee charged by all funds within the family; *FamilySize* is the logarithm of the total size of all equity and hybrid funds managed by the family. In addition, we control family- and quarter-fixed effects. Z-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	<i>FamilyPumping</i> <sub>t+1</sub>	<i>Sharehold</i> <sub>t+1</sub>	<i>Boardset</i> <sub>t+1</sub>	<i>BoardExp</i> <sub>t+1</sub>	<i>CEOPower</i> <sub>t+1</sub>
<i>FamilyPumping</i>	0.247*** (3.523)	-0.002 (-1.229)	-0.000 (-0.062)	-0.003 (-0.244)	-0.000 (-0.012)
<i>Sharehold</i>	-4.470*** (-2.786)	0.936*** (25.156)	-0.289** (-2.177)	-0.613** (-2.319)	-0.532* (-1.758)
<i>Boardset</i>	0.654 (0.975)	0.000 (0.032)	0.930*** (15.685)	0.075 (0.816)	0.242** (2.242)
<i>BoardExp</i>	-0.775*** (-3.000)	-0.001 (-0.115)	-0.013 (-0.587)	0.849*** (15.456)	-0.176** (-2.102)
<i>CEOPower</i>	0.735*** (4.627)	-0.004 (-1.372)	0.014 (1.071)	0.103** (2.155)	1.031*** (17.534)
<i>FamilyReturn</i> <sup>-1,-3</sup>	5.355*** (2.759)	0.101*** (2.834)	0.181 (1.132)	0.764*** (2.620)	1.568*** (4.294)
<i>NumFunds</i>	0.001 (0.141)	-0.000*** (-3.200)	-0.001 (-1.147)	0.000 (0.042)	0.001 (0.683)
<i>DistinctStyle</i>	1.064 (0.447)	-0.086** (-2.048)	0.050 (0.260)	0.169 (0.494)	-0.541 (-1.256)
<i>FamilyManagementFee</i>	3.126 (0.484)	0.391** (2.483)	1.197** (2.347)	1.565 (1.618)	-0.100 (-0.101)
<i>FamilySize</i>	1.988*** (2.774)	0.007 (0.496)	0.139** (2.476)	0.187 (1.622)	-0.044 (-0.281)
Quarter fixed effect	Yes	Yes	Yes	Yes	Yes
Family fixed effect	Yes	Yes	Yes	Yes	Yes
N	2600	2600	2600	2600	2600

**Table 11**

The difference in performance gaps and alternative definitions of high- and low-performing funds.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Columns (1)-(3). The Fama-French three-factor adjusted return is the measure of fund performance in Columns (4) -(6). We estimate the risk factor-adjusted alpha based on data for the past 250 days. In Columns (1) and (4), a high-performing (low-performing) fund is defined as the top (bottom) 25% of cumulative returns within an FMC. In Columns (2) and (5), a high-performing (low-performing) fund is defined as the top (bottom) 20% of cumulative returns within an FMC. In Columns (3) and (6), a high-performing (low-performing) fund is defined as the top (bottom) 10% of cumulative returns within an FMC. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw return			FF3 alpha		
	25%	20%	10%	25%	20%	10%
<i>SameFamily</i>	0.286** (2.447)	0.485*** (3.351)	0.730** (2.230)	0.373*** (3.122)	0.567*** (3.816)	0.804** (2.215)
<i>SizeDiff</i>	-1.346*** (-13.532)	-1.411*** (-10.638)	-1.486*** (-5.235)	-1.118*** (-12.680)	-1.152*** (-9.879)	-1.270*** (-5.912)
<i>AgeDiff</i>	0.076*** (3.473)	0.102*** (3.617)	-0.031 (-0.443)	0.030 (1.579)	0.046* (1.678)	0.098 (1.451)
<i>LowFamilyAge</i>	0.020 (0.758)	0.066* (1.904)	-0.017 (-0.222)	-0.017 (-0.748)	-0.042 (-1.483)	-0.008 (-0.139)
<i>HighFamilySize</i>	-0.602 (-0.800)	-0.911 (-0.991)	-0.427 (-0.177)	-0.101 (-0.143)	0.532 (0.619)	1.316 (0.481)
<i>LowFamilySize</i>	-0.736*** (-7.084)	-0.877*** (-6.795)	-0.898*** (-3.121)	-0.493*** (-5.652)	-0.501*** (-4.782)	-0.511** (-2.191)
Constant	33.450* (1.762)	43.820* (1.880)	33.147 (0.535)	14.134 (0.799)	-1.353 (-0.063)	-21.993 (-0.317)
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Fund fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	2357228	1504433	321841	2241418	1420402	301961
adj. R <sup>2</sup> (%)	1.012	1.169	1.491	0.728	0.832	1.289

**Table 12**

FMC governance and alternative definitions of high- and low-performing funds.

The dependent variable *PerfGap* is the difference between the daily returns of the high- and low-performing fund within a fund pair. *SameFamily* takes the value of one if the two funds within the fund pair belong to the same family and zero otherwise. *Sharehold* is the composite indicator representing ownership type. *Boardset* is the composite indicator representing board structure. *BoardExp* is the composite indicator representing independent director governance ability. *CEOPower* is the composite indicator representing CEO power. *SizeDiff* is the difference in the logarithm of total NAV between the two funds within a fund pair at the end of the prior quarter. *AgeDiff* is the age difference between the two funds within a fund pair. *LowFamilyAge* is the age of the low-performing fund's family. *HighFamilySize* (*LowFamilySize*) is the logarithm of the total size of all equity and hybrid funds at the end of the prior quarter managed by the same family that the high-performing (low-performing) fund belongs to. The raw return is the measure of fund performance in Columns (1)-(3). The Fama-French three-factor adjusted return is the measure of fund performance in Columns (4) -(6). We estimate the risk factor-adjusted alpha based on data for the past 250 days. In Columns (1) and (4), a high-performing (low-performing) fund is defined as the top (bottom) 25% of cumulative returns within an FMC. In Columns (2) and (5), a high-performing (low-performing) fund is defined as the top (bottom) 20% of cumulative returns within an FMC. In Columns (3) and (6), a high-performing (low-performing) fund is defined as the top (bottom) 10% of cumulative returns within an FMC. In addition, we control fund- and month-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw return			FF3 alpha		
	25%	20%	10%	25%	20%	10%
<i>Samefamily</i>	0.176 (1.235)	0.423** (2.400)	0.475 (1.215)	-0.002 (-0.017)	0.139 (0.798)	0.059 (0.132)
<i>Sharehold</i> × <i>SameFamily</i>	-0.320** (-2.448)	-0.434** (-2.529)	-0.739** (-2.071)	-0.396*** (-3.159)	-0.514*** (-3.221)	-0.789** (-2.160)
<i>Boardset</i> × <i>SameFamily</i>	0.096 (0.999)	-0.016 (-0.137)	0.242 (0.968)	0.520*** (5.503)	0.635*** (5.435)	0.797*** (2.954)
<i>BoardExp</i> × <i>SameFamily</i>	-0.126* (-1.881)	-0.215** (-2.511)	-0.058 (-0.310)	0.077 (1.171)	0.024 (0.277)	0.346 (1.610)
<i>CEOPower</i> × <i>SameFamily</i>	0.160*** (2.645)	0.218*** (3.064)	0.254* (1.755)	0.159*** (2.811)	0.157** (2.122)	0.589*** (3.423)
<i>Sharehold</i>	0.903 (0.639)	1.621 (0.886)	-3.044 (-0.478)	1.976 (1.301)	3.869* (1.706)	14.922* (1.963)
<i>Boardset</i>	1.401** (2.302)	1.399* (1.873)	-0.168 (-0.104)	0.353 (0.651)	-0.597 (-0.905)	-4.306** (-2.529)
<i>BoardExp</i>	-0.101 (-0.302)	-0.259 (-0.631)	-0.701 (-0.778)	-0.734** (-2.182)	-0.581 (-1.430)	-1.649* (-1.658)
<i>CEOPower</i>	-0.297 (-1.527)	-0.418* (-1.787)	-0.514 (-0.982)	-0.125 (-0.699)	-0.512** (-2.213)	-0.545 (-0.980)
<i>SizeDiff</i>	-1.348*** (-13.455)	-1.420*** (-10.674)	-1.531*** (-5.271)	-1.112*** (-12.491)	-1.165*** (-10.196)	-1.347*** (-6.283)
<i>AgeDiff</i>	0.076*** (3.469)	0.104*** (3.662)	-0.023 (-0.326)	0.027 (1.397)	0.045* (1.657)	0.099 (1.475)
<i>LowFamilyAge</i>	0.028 (1.019)	0.087** (2.404)	0.008 (0.094)	-0.030 (-1.302)	-0.055* (-1.921)	-0.033 (-0.533)
<i>HighFamilySize</i>	-0.515 (-0.671)	-0.777 (-0.827)	-0.111 (-0.044)	0.133 (0.188)	0.628 (0.719)	1.915 (0.686)
<i>LowFamilySize</i>	-0.789*** (-7.469)	-0.975*** (-7.380)	-1.013*** (-3.358)	-0.512*** (-5.891)	-0.532*** (-5.094)	-0.598** (-2.562)
Constant	31.472 (1.622)	41.481* (1.740)	28.484 (0.441)	8.309 (0.469)	-2.804 (-0.128)	-33.717 (-0.474)
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Fund fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	2347680	1498256	321017	2232202	1414512	301138
adj. R <sup>2</sup> (%)	1.019	1.176	1.494	0.732	0.838	1.297

## Appendix

### A1. The calculation of the family pumping indicator

Following the approach in Wang (2017), we use the holdings of high-performing funds within the family in the previous quarter as weights, and add up the net increase in stock holdings of non-high-performing funds within the family in the current quarter to calculate the family pumping indicators. Specially, the weight is obtained from Equations (A1):

$$\omega_{f,s,t}^{High} = \frac{Holding_{f,s,t}}{\sum_{m \in M_{f,t}} Holding_{f,m,t}} \# (A1)$$

$Holding_{f,s,t}$  represents the value of stock  $s$  held by all high-performing funds in family  $f$  at time  $t$ , and  $M_{f,t}$  is the set of stocks held by high-performing funds in family  $f$ . The net increase in stock holdings of non-high-performing funds is calculated from Equations (A2):

$$Increase_{f,s,t}^{Non-High} = \sum_{i \in I_{f,t}} \max \left( \frac{Holding_{f,i,s,t}}{MV_{s,t}} - \frac{Holding_{f,i,s,t-1}}{MV_{s,t-1}}, 0 \right) \# (A2)$$

$MV_{s,t}$  is the market value in circulation of stock  $s$  at time  $t$ .  $I_{f,t}$  is the set of non-high-performing funds managed by family  $f$  at time  $t$ . We get the indicator of family pumping from Equations (A3):

$$FamilyPumping_{f,t} = \sum_{m \in M_{f,t}} Increase_{f,m,t}^{Non-High} \times \omega_{f,m,t-1}^{High} \# (A3)$$

### A2. FMC's governance and fund portfolio pumping.

Prior research indicates that fund managers excessively buy stocks they own to push the fund's net asset value at the end of the reporting period, known as portfolio pumping. This short-term boost induces a decline in fund returns the following day and adversely affects funds' long-term performance (Carhart et al., 2002; Ben-David et al., 2013; Bhattacharyya and Nanda, 2013).

On the one hand, fund managers who pull up funds' period-end performance are motivated by factors comparable to those that push families to adopt cross-fund subsidization. Both result from the positive and convex relationship between cash flows and a fund's past performance. On the other hand, fund portfolio pumping is largely driven by families' cross-fund subsidization strategies (Wang, 2017; Yu et al., 2018). Thus, if the feature of FMC effectively changes its cross-fund subsidization, we speculate that this influence could be extended to portfolio pumping. To examine our hypothesis, following the methodology of Ben-David et al. (2013) and Li and Wu (2019), we construct Equation (A4) as follows:

$$\begin{aligned} Blip_{i,t} = & \alpha + \beta_1 \times Sharehold_{i,t} + \beta_2 \times Boardset_{i,t} + \beta_3 \times BoardExp_{i,t} + \beta_4 \times CEOPower_{i,t} \\ & + \beta_5 \times FundReturn_{i,t}^{-1,-3} + \beta_6 \times FundAge_{i,t} + \beta_7 \times FundSize_{i,t} + \gamma \times YearFE_t \\ & + \lambda \times FundFE_i + \varepsilon_{i,t} \# (A4) \end{aligned}$$

Where the dependent variable  $Blip$  is a proxy for portfolio pumping for fund  $i$  in quarter  $t$ , calculated as follows:

$$Blip_{i,t} = (ExcReturn_{i,t}^{day\_last} - ExcReturn_{i,t+1}^{day\_first})/2 \# (A5)$$

$day\_last$  is the last trading day in quarter  $t$ , and  $day\_first$  is the first trading day in quarter  $t+1$ . When raw returns are used as the metric of fund performance, the daily abnormal return  $ExcReturn$  is calculated as follows:

$$ExcReturn_{i,t}^{day,j} = Return_{i,t}^{day,j} - MarketR_t^{day,j} \# (A6)$$

Where  $MarketR$  represents the value-weighted return of the main board market, second board market, and sci-tech innovation board market on date  $j$ . When we use the Fama-French three-factor adjusted return, the daily abnormal return  $ExcReturn$  is the Fama-French three-factor adjusted return itself. Our model incorporates fund and year fixed

effects and control variables, such as fund past return ( $FundReturn^{-1,-3}$ ), fund age ( $FundAge$ ), and fund size ( $FundSize$ ).

Table A1 presents the results of the regression analysis. When we use raw returns as the metric for fund performance in Column (1), the coefficients of *Sharehold* and *BoardExp* are significantly positive, whereas the coefficients of *Boardset* and *CEOPower* are notably negative. These findings indicate that FMC's governance structure can significantly influence fund behavior. Specifically, shareholders with fewer violation incentives and greater support resources lower *Blip* by approximately 10.526 bp. Independent directors with strong governance abilities reduce the *Blip* by 3.094 bp, whereas ineffective boards and powerful top managers contribute to a 5.544 bp and 3.032 bp increase, respectively.

Column (2) presents the results utilizing the Fama-French three-factor adjusted return to control for funds' investment styles. Most coefficients of governance indicators remain significant, indicating that the FMC's governance structure extends its impact to fund behaviors like portfolio pumping. Additionally, to mitigate potential endogeneity effects, we lag the internal corporate governance variable by one period in Columns (3) and (4). These results still support our hypotheses.

**Table A1**

FMC's governance and fund portfolio pumping.

The dependent variable  $Blip$  is the proxy of portfolio pumping, which is calculated as  $Blip_{i,t} = (ExcReturn_{i,t}^{day\_last} - ExcReturn_{i,t+1}^{day\_first})/2$ , where  $day\_last$  is the last trading day in quarter  $t$ , and  $day\_first$  is the first trading day in quarter  $t+1$ . When we use the raw return as the measure of fund performance, the  $ExcReturn$  is calculated as  $ExcReturn_{i,t}^{day,j} = Return_{i,t}^{day,j} - MarketR_t^{day,j}$ , where  $MarketR$  represents the value-weighted return of the main board market, second board market, and sci-tech innovation board market on date  $j$ . When we use the Fama-French three-factor adjusted return, the  $ExcReturn$  is the Fama-French three-factor adjusted return itself.  $Sharehold$  is the composite indicator representing ownership type.  $Boardset$  is the composite indicator representing board structure.  $BoardExp$  is the composite indicator representing independent director governance ability.  $CEOPower$  is the composite indicator representing CEO power. The internal corporate governance variables are current in Columns (1) and (2) and lagged by one period in Columns (3) and (4). The control variables include: fund past return  $FundReturn^{-1,-3}$  is the TNA-weighted cumulative return of all records of the same fund over the last three quarters;  $FundAge$  is the oldest record for the same fund; fund size  $FundSize$  is the sum of the TNA of all records in the same fund. The raw return is the measure of fund performance in Columns (1) and (3). The Fama-French three-factor adjusted return is the measure of fund performance in Columns (2) and (4) and is estimated using the data for the past 250 days. In addition, we control fund- and year-fixed effects. T-statistics are shown in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) Raw return	(2) FF3 alpha	(3) Raw return	(4) FF3 alpha
<i>Sharehold</i>	-12.326*** (-2.650)	-7.569* (-1.723)	-10.701** (-2.227)	-7.378* (-1.920)
<i>Boardset</i>	4.365** (1.979)	-1.581 (-0.845)	2.561 (1.122)	1.820 (0.990)
<i>BoardExp</i>	-3.423** (-2.373)	-2.079* (-1.659)	-3.000** (-1.994)	-0.803 (-0.611)
<i>CEOPower</i>	2.134*** (2.706)	1.821*** (2.630)	3.543*** (4.256)	3.023*** (4.339)
<i>FundReturn</i> <sup>-1,-3</sup>	-95.535*** (-13.540)	99.892*** (9.140)	-85.971*** (-12.384)	101.866*** (9.374)
<i>FundAge</i>	47.962*** (17.083)	18.569*** (7.675)	49.852*** (17.237)	16.749*** (6.772)
<i>FundSize</i>	0.162 (0.099)	-1.790 (-1.314)	-0.439 (-0.269)	-2.268 (-1.630)
Constant	-277.800*** (-7.339)	-66.466** (-2.019)	-278.774*** (-7.376)	-48.720 (-1.473)
Year fixed effects	Yes	Yes	Yes	Yes
Fund fixed effects	Yes	Yes	Yes	Yes
N	21324	20848	20282	19619
adj. R <sup>2</sup> (%)	10.501	12.786	11.512	12.470

### A3. Variable definitions

Table A2 presents the definition of variables in this paper.

**Table A2**

#### Variable definitions

Variable	Definitions
<b>Panel A. Fund family</b>	
<i>FamilySize</i>	The logarithm of total size of actively managed equity funds and hybrid funds of the family at the end of the prior quarter
<i>HighFamilySize</i>	The logarithm of the total size of all equity and hybrid funds managed by a high-performing fund's family at the end of the prior quarter
<i>LowFamilySize</i>	The logarithm of the total size of all equity and hybrid funds managed by a low-performing fund's family at the end of the prior quarter
<i>HighFamilyAge</i>	The age of the family that high-performing fund belongs to
<i>LowFamilyAge</i>	The age of the family that low-performing fund belongs to
<i>Family pumping</i>	Use the holdings of high-performing funds within the family in the previous quarter as weights and add up the net increase in stock holdings of non-high-performing funds within the family in the current quarter, where the net increase in stock holdings is the net increase in the value of the stock divided by the market value of the stock in circulation.
<i>HighFamilyPumping</i>	Takes a value of one if family pumping surpasses the sample median for the same period, and zero otherwise
<i>Family co-holding</i>	Firstly, we identify the stocks simultaneously held by low- (non-high-) and high-performing funds within the family. Subsequently, we aggregate the number of co-holding stocks held by each low-performing fund and divide it by the total number of low-performing funds managed by the family
<i>HighCoHolding</i>	Takes a value of one if family co-holding exceeds the sample median for the corresponding period, zero otherwise
<i>FamilyReturn</i> <sup>-1,-3</sup>	The size-weighted cumulative return of all funds in the family over the last three quarters
<i>NumFunds</i>	The number of funds managed by the family, excluding money funds
<i>DistinctStyle</i>	The ratio of the number of fund types divided by <i>NumFunds</i>
<i>FamilyManagementFee</i>	The size-weighted average of management fees charged by funds within the family
<b>Ownership type</b>	
<i>Sharehold</i>	The composite indicator representing ownership type. We employ principal component analysis to consolidate <i>StateShare</i> , <i>PrivateShare</i> , and <i>BrokerShare</i> , take the first principal component resulting from this orthogonal linear transformation as a composite proxy for the ownership type
<i>StateShare</i>	The shareholding rate owned by state firms, whose ultimate controllers are the central government, local government, or state asset management bureaus.
<i>PrivateShare</i>	The shareholding rate owned by private firms
<i>BrokerShare</i>	The shareholding rate owned by brokers
<i>Broker</i>	The percentage of broker in the controlling shareholder's industry category
<b>Board structure</b>	
<i>Boardset</i>	The composite indicator representing board structure. We employ principal component analysis to consolidate <i>BoardSize</i> , <i>RationIndep</i> , and <i>IndepTenure</i> , take the first principal component resulting from this orthogonal linear transformation as a composite proxy for the board structure
<i>BoardSize</i>	The total number of directors on the board
<i>RationIndep</i>	The proportion of independent directors
<i>IndepTenure</i>	The average tenure of independent directors on the board. The tenure of independent directors is the number of months since they take office
<b>Independent directors</b>	
<i>BoardExp</i>	The composite indicator representing the governance ability of independent directors. We employ principal component analysis to consolidate <i>RegulatorExp</i> , <i>NoFinanceExp</i> , <i>GoverRel</i> , and <i>FinanceEdu</i> , take the first principal component

	resulting from this orthogonal linear transformation as a composite proxy for the governance ability of independent directors
<i>RegulatorExp</i>	The proportion of independent directors with regulation working experience. The regulatory experience means the independent director serves as previous or current Securities Regulatory Commission (CSRC), the China Banking and Insurance Regulatory Commission (CBIRC), the People's Bank of China (PBC), and other financial regulators officials
<i>NoFinanceExp</i>	The proportion of independent directors without working experience in finance-related industries. Finance-related working experience means the independent director once worked in securities, funds, banks, and trusts (excluding cases where they only served as independent directors, consultants, or just took some work unrelated to finance)
<i>GoverRel</i>	The proportion of independent directors who have previously or are currently serving in government positions. The government positions include serving as various levels of People's Congress representatives, Political Consultative Conference members, military officials, and leadership positions in government departments, public security, and judicial systems.
<i>FinanceEdu</i>	The proportion of independent directors with a financial education background
<i>CEO power</i>	
<i>CEOPower</i>	The composite indicator representing the CEO power. We employ principal component analysis to consolidate <i>CEODuality</i> , <i>CEOTenure</i> , <i>LongTenure</i> , <i>CEORegulatorExp</i> , <i>CEOGoverRel</i> , <i>CEOEduLevel</i> , <i>BetterEdu</i> , and <i>Co_option</i> , take the first principal component resulting from this orthogonal linear transformation as a composite proxy for the CEO power
<i>CEODuality</i>	The board positions held by the CEO
<i>CEOTenure</i>	It takes the value of 0 when the CEO does not hold a director's position, 1 when the CEO serves as a director, 2 when the CEO holds the position of Vice Chairman of the Board, and 4 when the CEO serves as the Chairman of the Board
<i>LongTenure</i>	The number of months since the CEO takes office
<i>CEORegulatorExp</i>	A dummy variable that equals one if the CEO has regulatory work experience, and zero otherwise. The regulatory experience means the independent director serves as previous or current Securities Regulatory Commission (CSRC), the China Banking and Insurance Regulatory Commission (CBIRC), the People's Bank of China (PBC), and other financial regulators officials
<i>CEOPower</i>	A dummy variable that equals one if the CEO has political connections or plays a key role in industry associations, and zero otherwise. The government positions include serving as various levels of People's Congress representatives, Political Consultative Conference members, military officials, and leadership positions in government departments, public security, and judicial systems. Industry associations refers to individuals serving as chairman or significant member within an industry association. The CEO's level of education. It takes the value of 1 when the highest degree of the independent director is a bachelor's degree, 2 when it is a master's degree or an equivalent, 3 when it is a doctoral degree, and zero otherwise.
<i>CEOGoverRel</i>	A dummy variable that equals one if the CEO's education level surpasses the average education level of independent directors, and zero otherwise
<i>CEOEduLevel</i>	The percentage of independent directors appointed during the current CEO's tenure. We consider an independent director's formal appointment occurring 12 months after the CEO takes office as falling within the current CEO's tenure

#### Panel B. Individual fund

<i>HighReturn</i>	The daily return of the high-performing fund
<i>LowReturn</i>	The daily return of the low-performing fund
<i>PerfGap</i>	The difference between the daily returns of the high- and low-performing fund within a fund pair
<i>ExcReturn</i>	<p>1) When we use the raw return as the measure of fund performance, the <i>ExcReturn</i> is calculated as <math>ExcReturn_{i,t}^{day,j} = Return_{i,t}^{day,j} - MarketR_t^{day,j}</math>. Where <i>MarketR</i> represents the value-weighted return of the main board market, second board market, and sci-tech innovation board market on date <i>j</i>.</p> <p>2) When we use the Fama-French three-factor adjusted return, the <i>ExcReturn</i> is the Fama-French three-factor adjusted return itself.</p> <p>The proxy of portfolio pumping, which is calculated as:</p> $Blip_{i,t} = (ExcReturn_{i,t}^{day\_last} - ExcReturn_{i,t+1}^{day\_first})/2$ , where <i>day_last</i> is the last trading day in quarter <i>t</i> , and <i>day_first</i> is the first trading day in quarter <i>t+1</i> .
<i>Blip</i>	

$FundReturn^{-1,-3}$	Fund past return, which is the TNA-weighted cumulative return of all records of the same fund over the last three quarters
$FundSize$	The sum of the TNA of all records in the same fund
$FundAge$	The oldest record for the same fund
Panel C. Other variables	
$OverLap$	The manager overlap rate between the two funds in a fund pair
$SameManager$	A dummy variable that equals one if the two funds in a pair share the same manager and zero otherwise
$QuartLast$	A dummy variable that equals one on the quarter's last trading day (excluding the fourth quarter) and zero otherwise
$YearLast$	A dummy variable that equals one on the year's last trading day and zero otherwise
$MarketR$	The daily value-weighted return of the Main-Board Market, the Second-Board Market, and the STAR Market