It's a Small World: The Importance of Social Connections with Auditors to Mutual Fund Managers' Portfolio Decisions

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Abstract

We examine the impact of social connections between mutual fund managers and auditors of public firms on mutual fund stockholdings. We find that mutual funds whose managers are socially connected with firm auditors hold more shares of these firms. In cross-sectional results consistent with expectations, we find that the effect of social connections on mutual fund stockholdings is more pronounced when the social connections are stronger, for small audit firms, and for public firms with greater business opacity, stock price synchronicity, and systematic risk. We further document that mutual funds with socially connected auditors engage more in informed trading and generate superior portfolio returns. In compensation, connected auditors benefit from more audit business and higher audit and non-audit fees from public firms. Our evidence implies information transfer from auditors to mutual fund managers through their social connections, which improves mutual fund portfolio decisions.

Keywords: Social connections; Auditor incentives; Mutual fund stockholding.

JEL classifications: G11, G23, M42.

1. Introduction

As human beings, financial market participants naturally belong to various social networks. Prior research analyzes economic outcomes stemming from social connections between corporate executives and related parties such as board members (Hwang and Kim, 2009; Fracassi and Tate, 2012; Bruynseels and Cardinaels, 2014; Cao et al., 2015; Khanna, Kim, and Lu, 2015), financial analysts (Cohen, Frazzini, and Malloy, 2010), bank officers (Engelberg, Gao, and Parsons, 2012), and auditors (Guan et al., 2016). There are also studies that explore social links between executives and directors of the acquirer and the target (Ishii and Xu, 2014), as well as among CEOs of different firms (Engelberg, Gao, and Parsons, 2013) and among different venture capitalists (Gompers, Mukharlyamov, and Xuan, 2016). In this study, we examine whether mutual fund managers elicit private information about public firms through their social connections with auditors of these firms and exploit this information in making portfolio decisions.

Mutual fund managers have strong incentives to deliver high returns to investors because their compensation and career trajectories are closely related to the performance of the fund. To generate superior returns, fund managers need to secure an informational advantage over other investors. Extensive prior research implies that fund managers tend to invest in local firms since it is easier to access private and sensitive information about these firms (Coval and Moskowitz, 1999, 2001; Lin, Tian, and Wu, 2013). Fund managers also obtain private information from their peer networks (Hong, Kubik, and Stein, 2005; Pool, Stoffman, and Yonker, 2015; Rossi, Blake, Timmermann, Tonks, and Wermers, 2018), and through social connections with corporate board members (Cohen, Frazzini, and Malloy, 2008) and financial analysts (Gu et al., 2019). In monitoring the financial reporting process, auditors accumulate extensive private information about their clients (e.g., Reichelt and Wang, 2010; Dhaliwal, Lamoreaux, Litov, and Neyland, 2016). Auditors also obtain proprietary information through informal discussions with top managers of the client firms. The private information auditors possess is highly

valuable to mutual funds in investing and may flow to fund managers through their social connections, improving their portfolio decisions.

However, injecting tension into our analysis, socially connected auditors eager to protect their valuable reputations and to avoid violating professional standards may be reluctant to share private information on their clients. Indeed, prior research implies that individual auditors in China suffer severe negative consequences when their reputations are tarnished (e.g., He, Pittman, and Rui, 2016). Moreover, similar to other jurisdictions, regulators in China prohibit certified public accountants from divulging confidential client information to third parties. Accordingly, whether mutual fund portfolio decisions are sensitive to fund manager-firm auditor social links distils to an empirical question.

We focus on the Chinese market in this study for several reasons. First, it is well known that "*guanxi*" (i.e., social connections) is prevalent in China. Social connections help forge trust among related parties in the Chinese financial market, which can be exploited to collude against the interests of others or to arrange privileged access to resources, including private information. Given the major role that social connections play in China, this market provides a high-power testing ground for our research question. Second, the mutual fund and auditing industries in China are relatively immature compared to those in developed markets. In China, mutual fund managers face intense competition from their peers, although governance structures there remain relatively poor, implying that fund managers having strong incentives and wide scope to trade on private information stemming from "grey" channels. Additionally, the audit market in China is highly competitive and its legal institutions responsible for disciplining auditors against misbehavior are lax (Chen et al., 2016), which may make auditors more willing to share proprietary information with related parties, including socially connected fund managers. Third, all public firms in China are required to disclose the identities of the signatory auditors, which enables us to pinpoint social connections between fund managers and firm signatory auditors using publicly available data

on their educational histories.[1] Nevertheless, our evidence is relevant to developed markets such as the U.S. because mutual fund managers have similar incentives there. Importantly, prior research implies that auditors in these markets occasionally reveal confidential information about their clients to third parties (e.g., Cai, Kim, Park, and White, 2016; Dhaliwal et al., 2016).[2]

Analyzing a sample of open-end mutual funds in the Chinese market during the period from 2004 to 2017, we begin by documenting that mutual funds whose managers are socially connected with the signatory auditors of public firms hold more shares of these firms. The results persist in a propensity score-matched sample and in a test that exploits mandatory auditor partner rotation as an exogenous shock to social ties between fund managers and firm auditors. We also show that this evidence is neither driven by social connections between fund managers and firm executives nor the "home bias" that mutual funds are known to exhibit. Next, consistent with expectations, we find in cross-sectional analyses that the impact of fund manager-firm auditor social connections on mutual fund stockholdings is more pronounced: when the social connections are stronger (evident in taking the same major, overlapping in their university years, or graduating from a top university); for small audit firms with less valuable reputations to protect and relatively lax quality control structures governing their

[1] Although the identities of engagement partners on public company audits recently became publicly available in the U.S., comprehensive data that we require for our analysis, including on individuals' alma maters, remains unavailable.

[2] Even in the U.S. where strict litigation institutions governing auditors provide ample discipline against disclosing confidential client information, there is evidence that auditors still reveal such information to third parties. For example, the Securities and Exchange Commission (SEC) charged Scott London, a former partner in charge of KPMG's Pacific Southwest audit practice, in 2013 with divulging confidential information about KPMG's audit clients to his friend Brian Shaw, which he exploited to make more than $1.2 million in illicit trading profits. Additionally, there is evidence that when the acquirer and the target engage the same auditor, the shared auditor tends to reveal confidential information of the two parties to each other (Cai et al. 2016; Dhaliwal et al. 2016). In fact, Dhaliwal et al. (2016: 51) attribute their evidence to: "…auditors frequently [violating] their duty to put the interests of their clients ahead of their own in what appears to be a failure to protect confidential client information." Bills, Cobabe, Pittman, and Stein (2019) provide survey results implying that companies routinely avoid appointing their competitors' auditor in order to prevent sensitive information from leaking. This reinforces Aobdia's (2015) evidence from analyzing three quasi-natural experiments that auditor choice reflects that firms focus intently on constraining propriety information loss through this channel.

auditors; and for public firms with greater business opacity, stock price synchronicity, and systematic risk. The last set of results imply that private information acquired from auditors is more valuable for mutual funds when the underlying firms are lesser known in the capital markets.

Further, we explore how fund manager-firm auditor social connections impact mutual fund trading. The results show that mutual fund trading on firms with connected auditors is more closely related to upcoming earnings news and audit opinions, suggesting that these funds have privileged access to information about these firms through connected auditors. We also provide supportive evidence that mutual fund performance improves in the presence of manager-firm auditor social connections. In the other direction, we evaluate whether connected auditors receive any benefit by revealing private information to fund managers. We document that as compensation to connected auditors, mutual funds use their influence over executives of the firms they invest in to help these auditors retain existing clients and attract new ones. They also use their influence to induce firms to pay higher audit and non-audit fees to connected auditors. Collectively, this evidence helps explain why auditors are willing to reveal information about the client firms to their socially connected fund managers.

We make several contributions to extant research. First, we extend prior work on the importance of social connections to the capital markets. Recent studies have explored social connections among related parties, including corporate executives, board members, financial analysts, bank officers, and auditors (e.g., Cohen et al., 2010; Engelberg et al., 2012; Fracassi and Tate, 2012; Bruynseels and Cardinaels, 2014; Cao et al., 2015; Khanna et al., 2015; Guan et al., 2016; He et al., 2017). Nevertheless, there remains hardly any evidence on whether investors utilize their social connections with informed parties to secure informational advantages in making investment decisions. However, in major exceptions, Cohen et al. (2008) and Gu et al. (2019) report that mutual fund managers enjoy an informational advantage in investing by leveraging their social links with corporate board members and financial analysts, respectively. We add to this research stream by

examining the impact of social connections between fund managers and firm signatory auditors on mutual fund equity positions.

Second, we advance research on mutual funds that explores the channels that they exploit to arrange an informational advantage over other investors. Prior studies document that mutual fund managers can acquire private information about firms via local and peer networks as well as social connections with board members and financial analysts (Hong et al., 2005; Cohen et al., 2008; Pool et al., 2015; Rossi et al., 2018; Gu et al., 2019). Our evidence implies that mutual funds could also obtain private information about firms through socially connected auditors, who are supposed to protect client confidentiality. As such, we extend the mutual fund literature by identifying a "grey" channel through which mutual funds acquire proprietary information.

Third, our analysis has policy implications given that information leakage from socially connected auditors to mutual funds undermines the interests of other investors, especially small outside investors. Besides alerting investors to this issue, our research is relevant to regulators of the mutual fund and auditing industries since this behavior threatens to damage the capital markets by compromising the reputations of these two key players. At a practical level, our analysis may benefit audit firms in developing their partner assignment policies (Lennox and Wu, 2018); e.g., modifying their quality control structures to prohibit partners from working on engagements involving social connections to mutual fund managers. Similarly, given their focus on protecting the integrity of the financial reporting process, audit committees may insist that non-connected partners handle the engagement.

The rest of the paper is organized as follows. Section 2 outlines the institutional background and develops the testable hypothesis. Section 3 describes the data and variables. Section 4 provides evidence on the relation between social connections and mutual fund stockholdings, while Section 5 reports cross-sectional results. Section 6 covers the results on the impact of social connections on mutual fund trading and performance. Section 7 provides insight on the reciprocal benefits auditors extract via their social ties with fund managers. Section 8 concludes.

2. Motivation

2.1. Institutional Background

The mutual fund industry in China originated in 2001 when the first open-end mutual fund, Hua An Chuang Xin, was formally established. Afterward, the industry has become one of the fastest growing industries in the Chinese capital market. In 2004, there were only 108 open-end mutual funds. By the end of 2017, there were 4,650 open-end funds, and the total net assets under management amounted to RMB 11,180 billion (approximately US$ 1,718 billion). Given that there are very few close-end mutual funds in China, we focus on open-end mutual funds in our analysis.[3]

Closely resembling their U.S. peers, mutual fund managers in China are under constant pressure to deliver high returns to fund investors due to compensation and career concerns. The management fees that mutual funds charge are usually based on the size of the fund under their management. For open-end funds, investors can contribute to and withdraw from the fund at any time, with their portfolio decisions naturally sensitive to fund performance. Consequently, the amount of management fees mutual funds can collect, and hence the compensation fund managers earn, are closely related to fund investment performance. Additionally, mutual fund managers in China face intense competition from their peers. The performance assessment for fund managers in most fund companies is based on fund managers' annual ranking in the market. Some fund companies even rely on quarterly rankings to evaluate fund managers.[4] As a result, the turnover rate for Chinese mutual fund managers is very high, upwards to 37.5% per year (Huang and Wang, 2015), far higher than the corresponding figure in the U.S., which is only 12.5% (Hu, Hall, and Harvey, 2000). Given the fierce peer pressure and career concerns, Chinese mutual fund managers have strong incentives to boost the performance of the fund under their management.

[3] By the end of 2017, there are only 40 close-end mutual funds in the Chinese market. For expositional convenience, we refer to open-end mutual funds as simply mutual funds in the rest of the paper.

[4] http://epaper.stcn.com/paper/zqsb/html/2011-04/18/content_262543.htm.

The auditing industry was formally established in China in early 1980s. Initially, almost all audit firms in China were state-owned and affiliated with government agencies. In 1998-1999, the Chinese Institute of Certified Public Accountants (CICPA) implemented a program that fully disaffiliated audit firms from government agencies, after which all audit firms became independent entities with full legal responsibility for their conduct. There were several other major developments in the auditing market afterward. For example, the Chinese Auditing Standards Board (CASB) promulgated new Chinese Independent Auditing Standards in 2006 that became effective in January 2007 to converge with International Standards on Auditing. In 2010, the government also started to push audit firms to switch their organizational form from limited liability company (LLC) to limited liability partnership (LLP) structures to discipline auditors by holding them legally liable for any misconduct. Meanwhile, the Big 4 audit firms were permitted to enter into the Chinese market through joint ventures with local audit firms in the 1990s, which helped to diffuse a high level of professionalism to domestic public accounting practice.

Despite the recent improvements, the Chinese auditing market is still underdeveloped compared with sophisticated markets such as the U.S.'s. Reflecting its poor investor protection and lax legal enforcement, the cost of auditor misbehavior is relatively minimal in China (Chen et al., 2016). Indeed, civil lawsuits remain scarce in China such that litigation risk faced by auditors is negligible (He et al., 2016). Even for severe cases such as audit failures, hardly any penalties are imposed on auditors. In our sample period, the CSRC only levelled sanctions against audit firms in 15 cases; in the most severe penalty, the audit firm was required to forfeit its fee for the year of the audit failure as well as to pay a fine equivalent to that audit fee.

Another characteristic of the Chinese auditing market is its wide dispersion relative to the oligopolistic audit markets prevailing in developed economies (Guan et al., 2016). According to Chan and Wu (2011), the market share of the Big 4 auditors in China is only 6.9% at the end of 2006. Similarly, extant research implies

that only 20-30% of publicly listed firms in China are audited by the top 10 domestic auditors (e.g., Wang, Wong, and Xia, 2008; Gul, Wu, and Yang, 2013; Yang, 2013). The dispersed market structure ensures that the audit market in China is highly competitive, intensifying auditors' incentives to cultivate and sustain good relationships with parties who can affect their market share. Considering that mutual funds are an important institutional investor in public firms and have influence on management decisions such as auditor appointments, auditors are naturally eager to develop relationships with fund managers in order to retain existing clients, attract new clients, and generate higher audit and non-audit fees.

2.2. Hypothesis Development

Mutual fund managers rely on the information they possess in making investment decisions. To earn superior returns from their portfolios, fund managers need to secure an informational advantage over other investors through various channels. Coval and Moskowitz (1999, 2001) document that U.S. fund managers exhibit a strong preference for local firms (i.e., "home bias") and generate substantial abnormal returns in investing in these firms, suggesting that fund managers have easier access to private and sensitive information about local firms. In the same vein, Lin, Tian, and Wu (2013) show that Chinese mutual funds exhibit a strong preference toward investing in more geographically proximate firms.

Mutual fund managers can also exploit their social networks to their advantage. Hong et al. (2005) find that mutual fund managers in the U.S. are more likely to buy or sell a particular stock if other fund managers in the same city are buying or selling the same stock, suggesting that fund managers spread information about stocks to one another by word of mouth. Pool et al. (2015) report that U.S. fund managers who reside in the same neighborhood have more similar holdings and earn higher returns, implying that valuable information is transmitted through these peer networks. In analyzing a sample of U.K. pension funds, Rossi et al. (2018) detect a positive relation between the network centrality

of the fund manager and fund performance, suggesting that these managers exploit investment opportunities through their network connections.

Further, Cohen et al. (2008) examine the connections between mutual fund managers and corporate board members through shared education networks. They find that mutual fund managers invest more in connected firms and perform significantly better in these investments, implying that information flows through these social networks. Gu et al. (2019) show that Chinese mutual fund managers are more likely to hold stocks covered by analysts with whom they are connected via social ties. They also generate higher returns from these holdings. In exchange, fund managers tend to cast star analysts votes in favor of their connected analysts and their fund companies are more likely to allocate trading commissions to the brokerages of connected analysts.

Besides local and peer networks and connections with board members, executives, and financial analysts, mutual fund managers could also obtain private information about the firms in which they invest through social connections with the auditors of these firms. Audit engagements enable auditors to accumulate a considerable amount of information about their clients. They could also obtain proprietary information through informal discussions with top managers of the clients. The private information auditors possess may flow to mutual fund managers through their social connections. Consistent with this intuition, DeFond, Fang, and Luo (2018) find that Chinese financial analysts who are socially connected with firm signatory auditors issue more accurate and less optimistically biased earnings forecasts, suggesting private information dissemination along these social networks.

Given the intense competition in the mutual fund industry in China, fund managers have strong incentives to trade on private information to improve their performance. The presence of social connections with firm signatory auditors provides a potential channel through which fund managers can acquire proprietary information about the firms in which they trade. From the auditors' standpoint, sharing information with connected fund managers helps signatory

auditors build a strong social network, which is quite valuable in this highly dispersed and competitive market. In the meantime, litigation risk for auditors is minimal in China, which results in a low potential cost of such information leakage. All of these factors make the flow of private information from socially connected auditors to fund managers plausible.

Reflecting that fund managers are in a better position to access proprietary information about firms in the presence of socially connected auditors, we expect mutual funds to hold more stocks of firms whose signatory auditors are socially connected with their fund managers. Against the backdrop of the unique information advantage mutual funds possess while holding stocks of firms whose signatory auditors are socially connected with fund managers, these funds are more likely to engage in informed trading and enjoy superior returns. These funds are also expected to exhibit better performance by holding and trading such stocks. Collectively, this motivates our prediction:

Hypothesis: Mutual funds hold more stocks of firms whose signatory auditors are socially connected with their fund managers and these stakes generate higher returns to funds.

Nevertheless, there is considerable tension underlying our analysis in that socially connected auditors may refuse to share their private information with mutual fund managers. The China Code of Ethics for Certified Public Accountants prohibits auditors from disclosing confidential client information to third parties or exploiting this information for their own trading activities. The code also stresses the importance of ensuring that confidential information is not inadvertently revealed to friends or relatives.[5] Additionally, given the importance of auditors in China protecting their valuable reputations (e.g., He et al., 2016), they may refrain from sharing their private information with connected fund managers. Reflecting the competing forces in play, this remains an empirical question.

[5] http://www.cicpa.org.cn/Professional_standards/Professional_ethics/yifabu2/201211/t20121104_ 394 83.html.

3. Data and Variables

3.1. Sample

We retrieve the data used in the analysis from multiple sources. Data on fund managers' educational backgrounds are obtained from their CVs downloaded from the CSMAR (China Stock Market and Accounting Research) and WIND databases. From these profiles, we manually identify details on fund managers' undergraduate and/or postgraduate histories. China Securities Regulatory Commission (CSRC) requires all listed firms in China to disclose the identities of the two signatory auditors in their annual reports. The signatory auditors include the engagement auditor who leads the audit team conducting the fieldwork, and the review auditor who reviews the audit upon its completion. We manually collect data on signatory auditors from firm annual reports. We identify the universities where these auditors did their undergraduate and/or postgraduate studies from the personal profiles provided by the CICPA (http://cmispub.cicpa.org.cn). Further, we obtain data on mutual fund holdings from the CSMAR database, which provides both annual and semi-annual stock holdings of mutual funds. We use annual holdings in our main analysis and semi-annual holdings in a robustness check. We collect firm financial and stock return data from the CSMAR and WIND databases. The data on the other fund information, such as fund size, fund age, fund return volatility, fund management fees and fund manager characteristics, are retrieved from the CSMAR database as well.

Reflecting that there are very few open-end mutual funds in China before 2004, we start our sample period from 2004. We limit our analysis to open-end mutual funds investing in China's A-share market, including equity funds, balanced funds, and bond funds. To mitigate the concern that our findings are driven by differences between firms with and without mutual fund holdings, we follow Cohen et al. (2008) and Gu et al. (2019) by limiting our main analysis to a sample of fund-firm-year observations for which the fund has non-zero holdings of the firm.

Additionally, we remove observations with insufficient data to construct the variables in the baseline regression. To mitigate the effect of outliers, we winsorize all continuous variables at the 1st and 99th percentiles. Our final sample consists of 500,681 fund-firm-year observations covering the period from 2004 to 2017.

Table 1 presents the annual distribution of the sample. The table shows that the number of observations in our sample is 2,542 in 2004, representing 65 unique funds and 406 unique firms. Among them, 79 observations (3.11%) have social connections between fund managers and firm auditors. Predictably, the number of observations rises steeply over time. There are 98,415 fund-firm observations in 2017, relating to 1,788 unique funds and 2,488 unique firms. Among the observations, 1,646 (1.67%) have fund manager-firm auditor social ties. Our full sample consists of 500,681 observations, representing 2,239 unique funds and 2,796 unique firms. 10,365 observations have social connections between fund managers and firm auditors, constituting 2.07% of the sample. It is worth noting that these statistics are based on fund-firm-year observations and a fund usually holds stocks of multiple firms. When we collapse the observations into firm-years, 15.61% of observations have social connections between fund managers and firm auditors. In Appendix A, we report the top 10 education institutions that have the largest number of unique fund manager-firm auditor connections.[6]

[Insert Table 1 about here]

3.2. Variables

The variables used in the main analysis are constructed as follows. The dependent variable is fund stockholding (*Holding*), defined as fund investment in a stock divided by the total net assets of the fund. Fund investment in a stock is the number of shares held by the fund times the year-end closing stock price. For ease of interpretation, we multiple fund stockholding by 100 in the analysis. We measure fund manager-firm auditor social links using the school tie dummy (*Ties*),

[6] Our core results hold when we remove observations with fund manager-firm auditor connections through the top three education institutions listed in this appendix, suggesting that our findings reflect pervasive economic phenomena, rather than stemming from the clustering of social connections in certain education institutions.

which we code one if the fund manager graduated from the same university as one of the signatory auditors of a firm, and zero otherwise.

The selection of the control variables follows prior studies (Cohen et al., 2008; Massa and Rehman, 2008; Lin et al., 2013; Fang, Peres, and Zheng, 2014; Gu et al., 2019). Firm size (*SIZE*) is the natural logarithm of the firm's market value of equity. Book-to-market (*BM*) is specified as the firm's book value of equity scaled by its market value of equity. Leverage (*LEV*) is the ratio of firm's total liabilities to total assets. Stock turnover (*Turnover)* is defined as the firm's annual trading volume divided by total number of shares outstanding. Return volatility (*Volatility*) is the standard deviation of the firm's daily returns in a year. We code analyst coverage (*Analyst*) as the natural logarithm of one plus the number of analysts following the firm during the year. Stock returns (*Return*) is the firm's cumulative stock returns over the year. Fund size (*Fund_size*) is the natural logarithm of total net assets of the fund. Fund management fees (*Fund_fee*) is 100 times the rate of management fee charged by the fund. Fund age (*Fund_age*) is the number of years since the fund was founded. We provide detailed variable definitions in Appendix B.

3.3. Descriptive Statistics

Panel A of Table 2 reports some summary statistics for the variables in the baseline analysis. The panel shows that the average fund stockholding in our sample is 0.912. Among the observations, about 2.1% have social connections between mutual fund managers and their portfolio firms' signatory auditors. The summary statistics for the rest of the regression variables closely resemble those in prior studies (e.g., Gu et al., 2019).

Panel B of Table 2 presents the correlation matrix of the variables. The correlation coefficient between fund stockholding and the school tie dummy is 0.012; it is significant at the 1% level. This provides preliminary empirical support that fund managers invest more in firms audited by auditors with whom they are socially connected. Shifting to the control variables, fund stockholding is positively correlated with firm size, firm leverage, analyst coverage, stock returns, fund size, fund management fees and fund age, while negatively correlated with the

book-to-market ratio, stock turnover, and return volatility. Moreover, the highest variance inflation factor among these variables is 2.18, suggesting that multicollinearity is not a concern in our tests (O'Brien, 2007).

[Insert Table 2 about here]

4. Social Connections and Mutual Fund Stockholdings

4.1. Baseline Analysis

To empirically analyze the impact of fund manager-firm auditor social connections on mutual fund stockholdings, we estimate this regression model:

$$Holding_{j,i,t}=\beta_0+\beta_1 Ties_{j,i,t}+\beta_2 Size_{i,t}+\beta_3 BM_{i,t}+\beta_4 Leverage_{i,t}+\beta_5 Turnover_{i,t}$$
$$+\beta_6 Volatility_{i,t}+\beta_7 Analyst_{i,t}+\beta_8 Return_{i,t-1}+\beta_9 Fund\_size_{j,t}$$
$$+\beta_{10} Fund\_fee_{j,t}+\beta_{11} Fund\_age_{j,t}+\sum Fundtype+\sum Year+\varepsilon_{j,i,t} \quad (1)$$

where j indexes the fund, i indexes the firm, t indexes the year, and ε denotes the error term. *Fundtype* and *Year* reflect fund style and year fixed effects, respectively. In conducting the analysis at the fund-firm-year level, we specify the dependent variable as fund stockholding (*Holding*) and the independent variable of interest as the school tie dummy (*Ties*). The regressions are estimated using ordinary least squares (OLS), with standard errors double clustered at the fund and firm levels.

In Table 3, we report the regression results. Column (1) shows that the coefficient on *Ties* is positive and statistically significant at the 1% level, implying that fund managers hold larger stakes in stocks of firms audited by auditors with whom they have school ties. In terms of economic significance, the coefficient estimate implies that mutual funds hold 0.042 more stocks of firms whose signatory auditors are socially connected with their fund managers. For perspective, given the mean fund stockholding is 0.912, this constitutes an increase of 5% relative to the mean. In short, the impact of these social connections on mutual fund stockholdings is economically material as well.

The results for the control variables suggest that mutual funds prefer to hold the stocks of firms with larger size, lower book-to-market ratio, higher leverage, higher stock liquidity, lower return volatility, more analyst coverage and higher

stock returns. Further, a fund's stake in a particular stock is smaller when the fund has a larger size or is older. Finally, fund stockholding also rises when the fund charges high management fees. The results on the control variables generally corroborate prior research (e.g., Lin et al., 2013; Gu et al., 2019).

To help validate our findings, we undertake two robustness tests at this stage. First, we run the analysis on semi-annual stockholdings of funds, instead of annual stockholdings. In Column (2) of Table 3, we continue to find that the coefficient on *Ties* enters positively at the 1% level. Second, we include all A-share firms (both with and without fund stockholding) in our sample, instead of just those with non-zero fund stockholding as in the baseline analysis. The results are reported in Column (3) of Table 3, which include that the coefficient on *Ties* remains positive and highly statistically significant, implying that our results hold for the full sample as well.[7]

Collectively, this evidence supports that fund managers invest more in firms audited by auditors with whom they have social connections, consistent with funds eliciting an information advantage through connected auditors.

[Insert Table 3 about here]

4.2. Endogeneity Tests

We conclude from the baseline analysis that fund managers tend to invest more in firms whose signatory auditors have social connections with them. Nevertheless, it is plausible that our findings spuriously stem from endogeneity. For example, some firms may have characteristics that make them more attractive to certain mutual funds. At the same time, these characteristics are related to firm auditor choice, which could drive the relation between fund manager-firm auditor social connection and fund stockholdings. We perform two tests to mitigate the endogeneity threats to reliable inference.

[7] The coefficient of *Ties* is much smaller than that in the baseline regression (i.e., Column (1) of Table 3) because the inclusion of A-share firms without any fund stockholding translates into the mean fund stockholdings falling sharply. For economic significance, mutual funds hold 0.002 more stocks of firms whose signatory auditors are socially connected with their fund managers. Given the mean fund stockholdings is only 0.0245 in this sample, this constitutes an increase of 8% relative to the mean, which is comparable to that from the baseline regression.

In the first test, we apply a propensity score matching approach (PSM). We begin by relying on a logit regression to estimate the probability that a firm whose fund stockholder's manager graduated from the same university as one of its signatory auditors. The dependent variable is *Ties* and the independent variables are all the control variables in Equation (1). Afterward, we use nearest-neighbor matching (with replacement) to match each firm in the treatment group (i.e., *Ties*=1) with one and five firms that have the closest propensity score in the control group (i.e., *Ties*=0), respectively.[8] We re-estimate Equation (1) using the two propensity score-matched samples and report the results in Table 4. In both columns, we continue to find a positive and significant coefficient on *Ties*, suggesting that our results hold in propensity score-matched samples.

[Insert Table 4 about here]

In the second test, we rely on the mandatory rotation of signatory auditors as an exogenous shock that potentially disrupts the connectivity between fund managers and firm signatory auditors. In China, the signatory auditor has to be rotated if she/he provides audit services for the same client for five consecutive years (MOF and CSRC, 2003). In this analysis, we examine whether mutual fund stockholdings vary with mandatory auditor rotation that can establish or sever the fund manager-signatory auditor connection.[9] We first identify 1,717 firm-year observations that experience a change in their signatory auditors stemming from the mandatory rotation during our sample period. Next, we specify two dummy variables, *Ties_rise* and *Ties_fall*. *Ties_rise* equals one if a firm switched from an unconnected auditor to an auditor connected with its fund stockholder's manager, and zero otherwise. *Ties_fall* equals one if a firm switched from a connected auditor to an auditor unconnected with its fund stockholder's manager, and zero

[8] We implement 1:5 matching to evaluate whether we continue to find supportive when we exploit the deep pool of available control observations. Additionally, although 1:1 matching generates closer matching, Shipman, Swanquist, and Whited (2017) stress that there is some possibility that the matched observation constitutes an extreme case. In both the 1:1 and the 1:5 matched samples, we reach covariate balance (no differences are statistically significant at the 10% level).

[9] Prior research exploits mandatory partner rotation as an exogenous pairing of auditors and clients (e.g., Firth, Rui, and Wu, 2012; Lennox, Wu, and Zhang, 2014).

otherwise. The default comparison group consists of auditor switches that did not result in a change in the connections between fund managers and firm signatory auditors. We regress the changes in fund stockholdings (*ΔHolding*) on *Ties_rise* and *Ties_fall*, and control for changes in all the control variables in Equation (1). In the regression results reported in Table 5, we find that the coefficient on *Ties_rise* is positive and significant, while the coefficient on *Ties_fall* is negative and marginally significant. This evidence implies that fund stockholding increases when mandatory rotation brings social connections between the fund managers and the firm's signatory auditors. In contrast, fund stockholding falls when mandatory rotation severs social connections between the fund managers and the firm's signatory auditors. Overall, the evidence in both Tables 4 and 5 suggest that our findings are less likely to stem from endogeneity problems.

[Insert Table 5 about here]

4.3. Tests on Competing Explanations

In this section, we confront several potential alternative explanations for the baseline results. Cohen et al. (2008) find that fund managers invest more heavily in firms whose board members are connected with them through education networks. He et al. (2017) show that social ties between engagement auditors and audit committee members undermine auditors' monitoring of the financial reporting process. Client executives may prefer auditors who are socially connected with them to avoid strict monitoring. Meanwhile, fund managers tend to invest in firms whose managers are socially connected with them, translating into a positive relation between fund manager-firm auditor social ties and fund stockholdings.

We perform two tests to help dispel this competing explanation. First, we excludefund-firm-year observations with social connections between fund managers and firm management. The results are reported in Column (1) of Table 6, which includes that the coefficient on *Ties* remains positive and significant for the subsample of firms without any social connections between fund managers and firm management. Second, we control for the fund manager-firm management school ties (*Fundfirm_ties*), specified as a dummy variable equal to one if the fund

manager graduated from the same university as one of the executives or board members of a firm, and zero otherwise. The results are reported in Column (2) of Table 6. Consistent with Cohen et al. (2008), the coefficient on *Fundfirm_ties* is positive and significant, suggesting that mutual funds hold more stocks of firms whose executives are socially connected with fund managers. More relevant for our purposes, the coefficient on *Ties* continues to enter positively at the 1% level after controlling for the fund manager-firm management school links, implying that our earlier evidence does not spuriously reflect social connections between fund managers and firm management.

Moreover, prior studies document that funds exhibit a strong preference for local firms (Coval and Moskowitz, 1999, 2001; Lin, Tian, and Wu, 2013). Similarly, companies may prefer local auditors to facilitate communication and minimize travel costs (e.g., Beck, Gunn, and Hallman, 2019). If fund managers and signatory auditors come from the same geographic area, they are more likely to have social connections stemming from attending local universities. As a result, our findings could be driven by home bias in fund investing instead of social connections between fund managers and firm auditors. We undertake two tests to tackle this concern. First, we exclude fund-firm-year observations for which the mutual fund and the firm are located in the same city. In Table 6, we report the results in Column (3), which include that the coefficient on *Ties* remains positive and highly significant in this restricted sample. Second, we add to the regression a fund-firm same city dummy variable (*Same_city*), which we assign the value one if the firm and the mutual fund are located in the same city, and zero otherwise. In the results reported in Column (4), we find that the coefficient on *Same_city* is positive and significant, corroborating the presence of local bias in mutual fund investing. More important for our research focus, the coefficient on *Ties* continues to enter positively after controlling for *Same_city*. Altogether, these results help dispel the concern that home bias in mutual fund investment is responsible for our core evidence.

[Insert Table 6 about here]

5. Cross-Sectional Analyses

In this section, we perform several cross-sectional analyses to further validate the narrative that fund managers hold more stocks of firms with auditors for which they have social connections that facilitate the transmission of valuable private information.

5.1. The Effect of the Strength of Social Connections

We start by exploring whether the impact of fund manager-firm auditor social connections on fund stockholdings intensifies when the connections are stronger. If the fund manager and the auditor took the same academic program or attended university concurrently, it follows that they likely have more frequent social interactions since they belong to a smaller alumni group (Cohen et al., 2008). Also, top universities usually have more resources and greater incentives to develop strong alumni networks. Accordingly, we expect that fund managers and firm auditors forge stronger social connections when they share the same degree, overlap in their years of study, or graduate from a top university.

We conduct three analyses to test this conjecture. First, we specify two dummy variables to reflect whether the fund manager and the auditor have the same degree.[10] The same degree tie dummy (*Ties_samedegree)* is equal to one if the fund manager graduated from the same university and has the same degree as one of the signatory auditors of a firm, and zero otherwise. The different degree tie dummy (*Ties_diffdegree*) is set to one if the fund manager graduated from the same university but has a different degree than one of the signatory auditors of a firm, and zero otherwise. We re-estimate the regressions after replacing *Ties* with these two variables in Equation (1). In the results reported in Panel A of Table 7, we find in Column (1) that the coefficients on both *Ties_samedegree* and *Ties_diffdegree* are positive and significant. However, the magnitude of the coefficient on

[10] According to the China State Council Academic Degree Committee Subject Categories, there are 110 first-layer academic degrees. We define whether the fund manager and the auditor have the same degree based on whether their degrees are the same first-layer academic degree.

Ties_samedegree is larger than that on *Ties_diffdegree*; the difference is statistically significant. This evidence implies that the role that fund manager-firm auditor social connections play in fund equity positions rises when the fund manager and the auditor hold the same degree.

Next, we specify two dummy variables to identify whether the fund manager and the auditor attended university together. Given that there is no publicly available information about when the fund manager and the auditor start and finish their degrees, we resort to specifying that they overlap in their years of study when their age difference is within three years. The overlapping years tie dummy (*Ties_overlap*) is set to one if the fund manager graduated from the same university and has overlapping study years as one of the signatory auditors of a firm, and zero otherwise. The non-overlap year tie dummy (*Ties_nonoverlap*) is set to one if the fund manager graduated from the same university but does not have overlapping study years as one of the signatory auditors of a firm, and zero otherwise. We re-run the regressions after replacing *Ties* with these two variables in Equation (1). In Panel A of Table 7, we report in Column (2) that the coefficients on both *Ties_overlap* and *Ties_nonoverlap* are positive and significant. However, the magnitude of the coefficient on *Ties_overlap* is larger than that on *Ties_nonoverlap* and the difference is statistically significant, supporting that fund manager-firm auditor social connections play a larger role in shaping fund equity positions when the fund manager and the auditor attended university together.

Finally, we specify two dummy variables to capture whether the fund manager and the auditor graduate from a top university in China. The top university tie dummy (*Ties_topuni)* is equal to one if the fund manager graduated from the same university as one of the signatory auditors of a firm and the university is a top university in China, and zero otherwise. We set the non-top university tie dummy (*Ties_nontopuni*) equal to one if the fund manager graduated from the same university as one of the signatory auditors of a firm and the university is a non-top university in China, and zero otherwise. We define top

universities in China as those that belong to the Project 211.[11] Again, we re-run the regressions after replacing *Ties* with these two variables in Equation (1). In Panel A of Table 7, the results in Column (2) include that the coefficient on *Ties_topuni* enters positively, while the coefficient on *Ties_nontopuni* is statistically indistinguishable from zero. The magnitude of the coefficient on *Ties_topuni* is larger than that on *Ties_nontopuni* and the difference is statistically significant, suggesting that the importance of fund manager-firm auditor social connections to fund stockholdings is concentrated where connections are forged through top universities.

Overall, the evidence in this section lends support to the intuition that the impact of fund manager-firm auditor social connections on fund stockholdings rises when the connections are stronger, evident in sharing the same major, overlapping in their years of study, or graduating from a top university in China.

5.2. The Effect of Audit Firm Size

Extensive prior research implies that large audit firms have more rigorous quality control structures, more standardized audit procedures, larger engagement teams that may dilute the impact of the signatory auditor, and more valuable reputations to protect (e.g., DeAngelo, 1981; Gul et al., 2013; DeFond and Zhang, 2014). It follows that large audit firms are in a better position to prevent the leakage of clients' private information to outside parties. Consequently, we expect to observe that the impact of fund manager-firm auditor connections on fund stockholdings to intensify for clients of small audit firms.

We assign a small auditor dummy variable (*Small_auditfirm*) the value one if the client appoints a small audit firm, and zero otherwise. Small audit firms are those that are not among the Big 4 international audit firms and the top 10 domestic audit firms. We determine the top 10 domestic audit firms each year by their total revenue in that year. We include *Small_auditfirm* and the interaction term *Ties*×*Small_auditfirm* in Equation (1). The results are reported in Panel B of

[11] The Project 211 program reflects the national key universities and colleges according to China's Ministry of Education. There are 116 universities sponsored under this initiative.

Table 7, which show that the coefficient on *Ties*×*Small_auditfirm* is positive and significant, suggesting that the impact of fund manager-firm auditor social links on mutual fund stockholdings is stronger when the firm appoints a small audit firm. This evidence reconciles with our expectation that signatory auditors in small audit firms are more likely to reveal private information about their clients to their socially connected fund managers.

5.3. The Effect of Firm Business Opacity

Prior research documents that it is more difficult for investors to reliably evaluate firms with opaque business operations (e.g., Shleifer and Vishny, 1997). High business opacity widens the information asymmetry between firms and investors, making the private information auditors possess more valuable in this situation (Aobdia, 2015). This motivates mutual funds to acquire private information about the firm from connected auditors. Accordingly, we expect that the importance of fund manager-firm auditor social connections to fund stockholdings to intensify when business opacity is worse.

We gauge business opacity with two measures. First, we follow Cohen and Lou (2012) by coding a business complexity dummy variable (*Complexity*) equal one if the firm operates in multiple industries, and zero otherwise. Firms that operate in several industries usually have more complex operations, elevating their opacity. We include *Complexity* and *Ties*×*Complexity* in Equation (1). In Panel C of Table 7, the evidence in Column (1) includes that the coefficient on *Ties*×*Complexity* enters positively at the 1% level, suggesting that the impact of fund manager-firm auditor social connections on the fund's equity stake is increasing in the firm's operational complexity.

Second, we follow Gu et al. (2019) by coding a related-party transaction dummy (*Related_party*) equal to one if a firm's percentage of related-party transactions, including related-party purchases and sales as a proportion of its revenue, is higher than 90%, and zero otherwise.[12] Related-party transactions

[12] We also use the 75th percentile as the cutoff points for the variable measuring relationship-based transactions to define *Related_party* and obtain similar results.

naturally inject opacity into firms' operations. We include *Related_party* and *Ties*×*Related_party* in Equation (1). In Panel Cof Table 7, we report the results in Column (2), which include that the coefficient on *Ties*×*Related_party* is positive and significant at the 5% level. This evidence implies that the importance of fund manager-firm auditor social connections to mutual fund stockholdings rises when firms participate in more related-party transactions.

Altogether, these results are consistent with our conjecture that fund managers are more eager to obtain private information through connected auditors when investing in firms that suffer from high business opacity.

5.4. The Effect of Stock Price Synchronicity

Stock price synchronicity is the phenomenon of stock price comovement, reflecting the amount of firm-specific information incorporated into stock prices. The higher stock price synchronicity, the lower the amount of firm-specific information impounded into stock prices (Durnev et al., 2003, 2004; Gul, Kim, and Qiu, 2010). For firms with high stock price synchronicity, mutual funds have stronger incentives to acquire firm-specific private information from connected auditors to facilitate more informed trading. Consequently, we expect that the impact of fund manager-firm auditor connections on fund stockholdings is increasing in stock price synchronicity.

We follow Durnev et al. (2003) by specifying stock price synchronicity (*Synch*) as the R-square of the regression of firm stock returns against market and industry returns. We re-estimate Equation (1) after adding *Synch* and the interaction term *Ties*×*Synch* to the regression. In the results reported in Panel D of Table 7, we find that the coefficient on *Ties*×*Synch* enters positively at the 1% level, lending support to the conjecture that mutual funds are more eager to acquire private information from connected auditors when there is less firm-specific information integrated into stock prices.

5.5. The Effect of Systematic Risk

As sophisticated investors, fund managers consider systematic risk when formulating their investment strategy as they can effectively diversify

non-systematic risk. Consistent with prior theoretical research (Brunnermeier and Pedersen, 2009), mutual funds are usually risk-averse because investing in high-risk firms increases the likelihood of fund underperformance and triggers costly withdrawals of fund investors. Given their compensation incentive to "beat the market" as well as their fear of investor exodus, we expect fund managers to be more likely to elicit private information through connected auditors when investing in high-risk firms. To examine this issue, we measure firm risk (*Risk*) as the systematic risk estimated by the CAPM model. We include *Risk* and the interaction term *Ties*×*Risk* in Equation (1). In the results reported in Panel E of Table 7, we find that the coefficient on *Ties*×*Risk* is positive and significant (albeit at only the 10% level), suggesting that the role that fund manager-firm auditor social connections play in mutual fund stockholdings is stronger when the firm exhibits higher risk. This evidence lends support to the narrative that fund managers are more likely to acquire private information through connected auditors when investing in high-risk firms.

[Insert Table 7 about here]

6. Social Connections and Mutual Fund Trading and Performance

So far, we have examined the impact of fund manager-firm auditor social connections on mutual fund stockholdings. Next, we shed light on how connected auditors affect mutual fund stock trading and performance.

6.1. Mutual Fund Stock Trading

If fund managers secure private information from connected auditors, we would expect their trading on firms with connected auditors to be more closely related with upcoming earnings news than on firms without connected auditors. To empirically validate this conjecture, we follow Cheng et al. (2018) by estimating this regression:

$$Trading_{j,i,t}=\beta_0+\beta_1\Delta ROA_{i,t+1}+\beta_2 Ties_{j,i,t}\times\Delta ROA_{i,t+1}+\beta_3 Ties_{j,i,t}+\beta_4\Delta Size_{i,t}$$
$$+\beta_5\Delta BM_{i,t}+\beta_6\Delta EP_{i,t}+\beta_7\Delta DP_{i,t}+\beta_8\Delta Leverage_{i,t}+\beta_9\Delta Growth_{i,t}$$
$$+\beta_{10}\Delta TraShare_{i,t}+\beta_{11}Risk_{i,t-1}+\beta_{12}Return_{i,t-1}+\beta_{13}Volume_{i,t-1}$$

$$+\beta_{14}Stockhold_{j,i,t-1}+\sum Fundtype+\sum Year+\varepsilon_{j,i,t} \quad (2)$$

The dependent variable is fund trading (*Trading*), calculated as the annual change in the amount of the firm's equity held by the fund, divided by the firm's total equity. The independent variable of interest is the interaction term *Ties*×Δ*ROA*, where Δ*ROA* is measured as the change in the return on assets from the previous year to the current year. We use one-year ahead Δ*ROA* to capture firm future performance. We follow Bushee and Noe (2000), Chen, Harford, and Li (2007) and Cheng et al. (2018) in selecting and specifying control variables: the change in firm size (Δ*Size*), the change in book-to-market ratio (Δ*BM*), the change in earnings yield (Δ*EP*), the change in dividend yield (Δ*DP*), the change in leverage (Δ*Leverage*), the change in sales growth (Δ*Growth*), the change in tradable shares (Δ*TraShare*), firm risk (*Risk*), stock returns (*Return*), trading volume (*Volume*), and stocks held by the fund (*Stockhold*). We provide detailed variable definitions in Appendix B.

We report the regression results in Column (1) of Table 8. The coefficient on Δ*ROA* is positive and significant, indicating that mutual funds are generally adept at trading; i.e., they buy (sell) stocks with good (poor) future performance. More importantly, the coefficient on *Ties*×Δ*ROA* is positive and marginally significant, suggesting that mutual funds exhibit even better stock trading on firms with connected auditors. This evidence implies that mutual funds are able to obtain private information from connected auditors, which benefits their stock trading activities.

In addition to future earnings news, we investigate mutual fund trading prior to the issuance of audit opinions, which is under auditors' direct control. Since the release of an unfavorable audit opinion typically engenders a highly negative stock market reaction (Chen, Su, and Zhao, 2000), we expect mutual funds to be better able to trade on the upcoming release of audit opinions for firms with connected auditors than firms without connected auditors. The regression model for the test is as follows:

$$Trading_{j,i,t}=\beta_0+\beta_1 Opinion_{i,t}+\beta_2 Ties_{j,i,t}\times Opinion_{i,t}+\beta_3 Ties_{j,i,t}+\beta_4 \Delta Size_{i,t}$$
$$+\beta_5 \Delta BM_{i,t}+\beta_6 \Delta EP_{i,t}+\beta_7 \Delta DP_{i,t}+\beta_8 \Delta Leverage_{i,t}+\beta_9 \Delta Growth_{i,t}$$

$$+\beta_{10}\Delta TraShare_{i,t}+\beta_{11}Risk_{i,t-1}+\beta_{12}Return_{i,t-1}+\beta_{13}Volume_{i,t-1}$$
$$+\beta_{14}Stockhold_{j,i,t-1}+\sum Fundtype+\sum Year+\varepsilon_{j,i,t} \quad (3)$$

The dependent variable is fund trading (*Trading*), calculated in the same way as in Equation (2). The independent variable of interest is the interaction term *Ties*×*Opinion*. In China, available audit opinions include an unqualified opinion, an unqualified opinion with explanatory notes, a qualified opinion, a disclaimed opinion, and an adverse opinion. Consistent with prior research (DeFond, Wong, and Li, 2000; Chen, Su, and Zhao., 2000; Wang, Wong, and Xia, 2008; Gul et al., 2013), we classify audit opinions that are unqualified with explanatory notes, qualified, disclaimed, and adverse, as unfavorable opinions. We define *Opinion* as a dummy variable equal to one if the firm receives an unfavorable opinion, and zero otherwise. Given that audit opinions are released after the end of the fiscal year and mutual fund trading is measured as the annual change in fund stockholdings from the beginning to the end of the fiscal year, the regression model captures fund trading before the issuance of the audit opinions.[13] The control variables are the same as Equation (2).

The regression results are reported in Column (2) of Table 8. The coefficient on *Opinion* enters negatively, suggesting that mutual funds sell stocks of firms on the verge of receiving unfavorable audit opinions. Moreover, the coefficient on *Ties*×*Opinion* is also negative and highly significant, implying that fund managers are even better able to identify firms that are going to receive unfavorable opinions when they are socially connected to firm auditors.[14] The findings indicate that mutual funds are able to obtain private information about audit opinions from connected auditors, which enables them to sell stocks of firms that will soon experience unfavorable opinions. Collectively, these results imply that fund

[13] All Chinese listed firms have the same fiscal year from 1st January to 31st December.

[14] The results are materially insensitive to re-specifying *Opinion* as a dummy variable equal to one if the firm receives an unfavorable opinion for the first time during our sample period, and zero otherwise, or re-specifying *Opinion* as an ordinal variable equal to zero if the firm receives an unqualified opinion, one if the firm receives an unqualified opinion with explanatory notes, two if the firm receives a qualified opinion, and three if the firm receives an adverse or disclaimed opinion.

managers who are socially connected with firm auditors exploit privileged information about the firms, which benefit their trading activities.

[Insert Table 8 about here]

6.2. Mutual Fund Performance

We document in the previous section evidence implying that fund managers trade on the private information obtained from connected auditors. When this information is eventually incorporated into stock prices, mutual funds elicit excessive returns by trading on these stocks, which results in higher fund performance. In this section, we examine whether social connections between fund managers and firm auditors lead to mutual funds enjoying superior performance. First, we compare abnormal returns around earnings announcements for firms with and without fund manager-firm auditor social connections by estimating this regression model:

$$\begin{aligned} Portfolio\_CAR_{j,t} = {} & \beta_0 + \beta_1 Portfolio\_ties_{j,t} + \beta_2 Fund\_size_{j,t} + \beta_3 Fund\_fee_{j,t} \\ & + \beta_4 Fund\_age_{j,t} + \beta_5 Fundcomp\_size_{j,t} + \beta_6 Fundmgr\_career_{j,t} \\ & + \beta_7 Fundmgr\_tnr_{j,t} + \beta_8 Fundmgr\_gender_{j,t} \\ & + \beta_9 Fundmgr\_edu_{j,t} + \sum Fundtype + \sum Year + \varepsilon_{j,t} \end{aligned} \quad (4)$$

The dependent variable *Portfolio_CAR* reflects the average cumulative daily abnormal return around the earnings announcement window (i.e., [-1, 1] and [-2, 2]) for firms in the mutual funds' portfolios.[15] The independent variable of interest is *Portfolio_ties*, a dummy variable equal to one for the portfolio of firms with fund manager-firm auditor school ties, and zero for the portfolio of firms without fund manager-firm auditor school ties. The control variables are fund size (*Fundsize*), fund management fees (*Fundfee*), fund age (*Fundage*), fund company size (*Fundcomp_size*), fund manager experience (*Fundmgr_career*), fund manager tenure (*Fundmgr_tnr*), fund manager gender (*Fundmgr_gender*), and fund manager

[15] We set the earnings announcement date as event day 0 and estimate the parameters of the market model using stock returns over the 120 trading day period [-150, -30]. Afterward, we calculate the daily abnormal return as the difference between the firm's raw daily return and the predicted daily return based on the market model.

education (*Fundmgr_edu*). Detailed variable definitions are available in Appendix B.

The regression results are reported in Table 9. Column (1) presents the results for the window [-1, 1] and Column (2) presents the results for the window [-2, 2]. In both columns, the coefficient on *Portfolio_ties* is positive and statistically significant, suggesting that compared to the portfolios of firms without fund manager-firm auditor social connections, the portfolios of firms with such connections generate higher earnings announcement returns to mutual funds.

[Insert Table 9 about here]

Next, we explore whether mutual funds earn higher returns through holding firms audited by auditors with whom they are socially connected with this regression model:

$$\begin{aligned} Fund\ returns_{j,t} = {} & \beta_0 + \beta_1 Fund\_tieshold_{j,t} + \beta_2 Fund\ returns_{j,t-1} + \beta_3 Fund\_size_{j,t-1} \\ & + \beta_4 Fund\_fee_{j,t-1} + \beta_5 Fund\_age_{j,t-1} + \beta_6 Fund\_flow_{j,t-1} \\ & + \beta_7 Fundcomp\_size_{j,t} + \beta_8 Fundmgr\_career_{j,t} \\ & + \beta_9 Fundmgr\_tnr_{j,t} + \beta_{10} Fundmgr\_gender_{j,t} \\ & + \beta_{11} Fundmgr\_edu_{j,t} + \sum Fundtype + \sum Year + \varepsilon_{j,t} \end{aligned} \quad (5)$$

The dependent variable is fund returns, specified as fund raw returns (*Fund_raw*) and the Jensen index (*Fund_jensen*) in successive regressions. *Fund_raw* is the annualized rate of return of the fund during the year. *Fund_jensen* is calculated as the difference between the actual and predicted fund returns during the year.[16] The independent variable of interest is fund school tie holdings (*Fund_tieshold*), calculated as the proportion of the fund's net assets invested in firms for which at least one of the signing auditors graduated from the same university as the fund manager. We control for lagged value of fund returns and fund flow (*Fund_flow*), as well as the other control variables in Equation (4).

[16] We follow Jensen (1968) by computing the Jensen index in each year using the equation $(R_i\text{-}R_f)\text{-}[\beta\times(R_m\text{-}R_f)]$, where R_i is a fund portfolio return, R_f is the risk-free rate, R_m is the market portfolio return, and β is the measure of systematic risk, equaling $\text{cov}(R_i, R_m)/\sigma^2(R_m)$.

Table 10 presents the regression results. Column (1) reports the results on the determinants of fund raw returns. The coefficient on *Fund_tieshold* is positive and significant, implying that mutual funds earn higher raw returns when they hold stocks of firms whose signatory auditors are socially connected with fund managers. The evidence in Column (2) is similar, evident in mutual funds generating a higher Jensen index by holding stocks of firms with auditors who are socially connected with fund managers. Altogether, these results suggest that having social links with firm auditors helps fund managers acquire private information about their portfolio firms, which translates into funds exhibiting excessive portfolio returns and better fund performance.

[Insert Table 10 about here]

7. Social Connections and Benefits to Connected Auditors

Divulging client firms' private information to fund managers is costly for signatory auditors since violating client confidentiality may undermine their reputations and contravene professional standards. It follows that auditors would insist on some form of compensation in return for breaching confidentiality by transferring their private information to fund managers. Extensive prior research implies that mutual funds in China can influence firm decision making (e.g., Firth, Lin, and Zou, 2010; Chen, Ke, and Yang, 2013). Accordingly, we examine in this section whether connected auditors are compensated via more audit business as well as higher audit and non-audit fees from firms held by mutual funds.

7.1. Audit Business

Initially, we gauge whether mutual funds use their influence over firm management to help auditors retain existing clients and attract new clients. We expect that connected auditors are less likely to lose client firms in which they have social connections with managers of the firms' fund stockholders. We also expect that these auditors are more likely to attract new client firms that are held by fund managers with whom auditors are socially connected. To analyze whether connected auditors are more likely to retain existing clients, we follow prior

studies (Stice, 1991; Carcello and Palmrose, 1994; Krishnan and Krishnan, 1997; DeFond, Lim, and Zang, 2016) by estimating this regression model:

$$\begin{aligned} Auditor\_retain_{i,t+1} = {} & \beta_0+\beta_1 Ties\_hold_{i,t} +\beta_2 Assets_{i,t}+\beta_3 ROA_{i,t}+\beta_4 Leverage_{i,t} \\ & +\beta_5 Growth_{i,t}+\beta_6 Receivable_{i,t}+\beta_7 Inventory_{i,t}+\beta_8 Liquidity_{i,t} \\ & +\beta_9 Loss_{i,t}+\beta_{10} BM_{i,t}+\beta_{11} Firsthold_{i,t}+\beta_{12} SOE_{i,t}+\beta_{13} Opinion_{i,t} \\ & +\beta_{14} Big4_{i,t}+\sum Industry+\sum Year+\varepsilon_{i,t} \end{aligned} \quad (6)$$

The dependent variable is a dummy variable (*Auditor_retain*) set to one if a firm retains its auditor in the next year, and zero otherwise. We assign the independent variable of interest (*Ties_hold*) the value one if at least one of fund managers that hold the firm's stock have school ties with the firm's signing auditors, and zero otherwise. The control variables include firm total assets (*Assets*), the return on assets (*ROA*), sales growth (*Growth*), accounts receivable (*Receivable*), inventory (*Inventory*), asset liquidity (*Liquidity*), a loss dummy (*Loss*), top shareholding (*Firsthold*), a state-ownership dummy (*SOE*), and a Big 4 dummy (*Big4*). *Industry* and *Year* reflect is industry and year fixed effects, respectively. Detailed variable definitions are available in Appendix B.

In Table 11, we report the regression results in Column (1) where the coefficient on *Ties_hold* is positive and marginally significant, implying that auditors are more likely to retain clients whose stocks are held by fund managers with whom these auditors are socially connected.

Further, we examine whether connected auditors are more likely to attract new clients by estimating this model:

$$\begin{aligned} Auditor\_hire_{i,t+1} = {} & \beta_0+\beta_1 Ties\_auditcomp_{i,t} +\beta_2 Assets_{i,t}+\beta_3 ROA_{i,t}+\beta_4 Leverage_{i,t} \\ & +\beta_5 Growth_{i,t}+\beta_6 Receivable_{i,t}+\beta_7 Inventory_{i,t}+\beta_8 Liquidity_{i,t} \\ & +\beta_9 Loss_{i,t}+\beta_{10} BM_{i,t}+\beta_{11} Firsthold_{i,t}+\beta_{12} SOE_{i,t}+\beta_{13} Opinion_{i,t} \\ & +\beta_{14} Big4_{i,t}+\sum Industry+\sum Year+\varepsilon_{i,t} \end{aligned} \quad (7)$$

The dependent variable, *Auditor_hire*, is coded one if a firm engages a particular audit firm in the next year, and zero otherwise. The independent variable of interest, *Ties_auditcomp*, is set to one if the fund manager graduated from the same university as one of the signatory auditors in an audit firm, and zero otherwise.

The control variables are the same as in Equation (6).

One empirical challenge besetting this analysis is that although we can observe auditor choice by client firms, we are unable to determine the pool of auditors from which the clients can choose. Consequently, we design this analysis under the assumption that clients can choose any of the audit firms in our sample.[17] We perform the test on a sample of fund-firm-year observations in which the firm changes its auditor.[18] We then pair each firm-fund-year with every available audit firm during the same year, which generates a large sample of 2,387,824 firm-audit firm-year observations. The regression results are reported in Column (2) of Table 11. The results show that the coefficient on *Ties_auditcomp* is positive and significant, suggesting that when switching auditors, firms are likely to appoint audit firms whose signatory auditors are socially connected with the managers of their fund stockholders.

7.2. Fees to Auditors

Besides avoiding client defections and attracting new clients, connected auditors could also elicit benefits from the fees that firms pay them. We explore this issue by examining whether auditors who are socially connected with fund managers receive higher audit and non-audit fees from the mutual funds' portfolio firms. The regression model is as follows:

$$\begin{aligned} Fee_{i,t+1} = {} & \beta_0+\beta_1 Ties\_hold_{i,t} +\beta_2 Assets_{i,t}+\beta_3 ROA_{i,t}+\beta_4 Leverage_{i,t} \\ & +\beta_5 Growth_{i,t}+\beta_6 Receivable_{i,t}+\beta_7 Inventory_{i,t}+\beta_8 Liquidity_{i,t} \\ & +\beta_9 Loss_{i,t}+\beta_{10} BM_{i,t}+\beta_{11} Firsthold_{i,t}+\beta_{12} SOE_{i,t}+\beta_{13} Opinion_{i,t} \\ & +\beta_{14} Big4_{i,t}+\sum Industry+\sum Year+\varepsilon_{i,t} \end{aligned} \quad (8)$$

[17] It is important to concede that this assumption may be unrealistic in some ways given that, for example, companies may be reluctant to appoint their competitors' audit firm to constrain the loss of propriety information (e.g., Aobdia, 2015; Bills et al., 2019). In the U.S. market dominated by the Big Four, public companies that are considering replacing their audit firm have few options. However, relative to more developed economies, the audit market in China is far less concentrated (DeFond et al., 2000; Wang et al., 2008; He et al., 2017), implying that our assumption is more valid there.

[18] Since most firms are held by more than one fund, a given firm can appear multiple times in our analysis.

In successive estimations, the dependent variable *Fee* is audit fees (*Audit_fee*) and non-audit fees (*Nonaudit_fee*), calculated as the natural logarithm of audit fees and non-audit fees that a firm pays its auditor, respectively.[19] The independent variable of interest is fund holding school ties dummy (*Ties_hold*). The control variables are the same as in Equation (6). In the results reported in Columns (3) and (4) of Table 11, we find that the coefficient on *Ties_hold* is positive and significant at the 1% level in both regressions, consistent with firms paying more audit and non-audit fees to their auditors when the signatory auditors have school ties with managers of the firms' fund stockholders.

[Insert Table 11 about here]

Overall, the findings suggest that as compensation for connected auditors revealing private information, mutual funds use their influence over management of the firms they invest in to help these auditors retain existing clients and attract new clients. They also leverage their influence to induce firms to pay higher audit and non-audit fees to connected auditors. This evidence helps explains why auditors are willing to disclose information about the client firms to their socially connected fund managers.

8. Conclusion

We examine how social connections between mutual fund managers and auditors of public firms affect mutual fund stockholdings in the Chinese market. We find that mutual funds whose managers are socially connected with firm auditors hold larger stakes in these firms. Our evidence implies that the impact of fund manager-firm auditor social connections on mutual fund stockholdings is more pronounced when the social connections are stronger, involve small audit firms, and involve public firms with greater business opacity, stock price synchronicity, and systematic risk. We further show that mutual funds with socially connected auditors engage in more informed trading and such trading

[19] Our sample for the non-audit fee analysis shrinks to 4,680 observations since many firms do not disclose the non-audit fees paid to their auditors.

generates superior returns to the funds. Finally, we find evidence that as compensation to connected auditors, mutual funds use their influence over executives of the firms they invest in to help these auditors retain existing clients and attract new ones. They also induce these firms to pay higher audit and non-audit fees to connected auditors. Collectively, our results suggest that mutual funds acquire private information about public firms through their social connections with auditors of these firms, which benefits their portfolio decisions.

Our research extends prior work on the importance of social connections to the capital markets by examining the role that social connections between fund managers and firm signatory auditors play in mutual fund equity positions. We also extend the mutual fund literature by documenting that mutual funds try to secure an informational advantage over other investors through their social links to auditors. Since auditors are supposed to keep client information confidential, our study documents a "grey" channel through which mutual funds acquire proprietary information. Our findings have policy implications by suggesting to small investors that they are vulnerable to such information leakage and alerting regulators of the mutual fund and auditing industries to an issue that could potentially undermine confidence in the capital markets. At a practical level, our research may relevant to audit firms eager to improve their partner assignment policies (Lennox and Wu, 2018); e.g., modifying their quality control structures to prevent partners from working on engagements when they have social connections to mutual fund managers. Similarly, audit committees responsible for protecting the integrity of the financial reporting process may insist that non-connected partners work on the engagement.

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Appendix A. Distribution of Top 10 Universities with Fund Manager-Firm Auditor Connection

Rank	University Name	Location	No. of unique connections
1	Shanghai University of Finance and Economics	Shanghai	3,164
2	Fudan University	Shanghai	1,845
3	Renmin University of China	Beijing	1,033
4	Xiamen University	Xiamen	620
5	Shanghai Jiao Tong University	Shanghai	611
6	Peking University	Beijing	411
7	Central University of Finance and Economics	Beijing	378
8	Tsinghua University	Beijing	374
9	Nankai University	Tianjin	300
10	Sun Yat-Sen University	Guangzhou	237

Appendix B. Variable Definition

Variable	Definition
Variables in the baseline analysis in Table 3	
Holding	Fund stockholding, defined as fund investment in a stock divided by the total net assets of the fund then multiply by 100. Fund investment in a stock is to the number of shares held by the fund times the year-end closing stock price.
Ties	School tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university as one of the signatory auditors of a firm, and zero otherwise.
Size	Firm size, defined as the natural logarithm of the firm's market value of equity.
BM	Book-to-market ratio, defined as the firm's book value of equity divided by its market value of equity.
Leverage	Leverage ratio, defined as the ratio of firm's total liabilities to total assets.
Turnover	Stock turnover, defined as the annual trading volume divided by total number of shares outstanding.
Volatility	Return volatility, defined as the standard deviation of the firm's daily stock returns in a year.
Analyst	Analyst coverage, defined as the natural logarithm of one plus the number of analysts following the firm during the year.
Return	Stock returns, defined as cumulative stock returns over the year.
Fund_size	Fund size, defined as the natural logarithm of total net assets of the fund.
Fund_fee	Fund management fees, defined as 100 times the rate of the management fees charged by the fund.
Fund_age	Fund age, defined as the number of years since the fund is founded.
Additional variables in Table 5	
Δ*Holding*	Change in fund stockholding (*Holding*) from the previous year to the current year.
Ties_rise	School tie rise dummy, defined as a dummy variable equal to one if a firm switches from an auditor without school ties with the fund manager to an auditor with such ties, and zero otherwise.
Ties_fall	School tie fall dummy, defined as a dummy variable equal to one if a firm switches from an auditor with school ties with the fund manager to an auditor without such ties, and zero otherwise.
Δ*Size*	Change in firm size (*Size*) from the previous year to the current year.
Δ*BM*	Change in book-to-market ratio (*BM*) from the previous year to the current year.
Δ*Leverage*	Change in leverage ratio (*Leverage*) from the previous year to the current year.
Δ*Turnover*	Change in stock turnover (*Turnover*) from the previous year to the current year.
Δ*Volatility*	Change in idiosyncratic volatility (*Volatility*) from the previous year to the current year.
Δ*Analyst*	Change in analyst coverage (*Analyst*) from the previous year to the current year.
Δ*Return*	Change in stock returns (*Return*) from the previous year to the current year.
Δ*Fund_size*	Change in fund size (*Fundsize*) from the previous year to the current year.
Δ*Fund_fee*	Change in fund management fee (*Fundfee*) from the previous year to the current year.
Additional variables in Table 6	
Fundfirm_ties	Fund manager-firm management school tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university as one of executives or board members of a firm, and zero

	otherwise.
Same_city	Fund-firm same city dummy, defined as a dummy variable equal to one if the firm and the mutual fund are in the same city, and zero otherwise.
Additional variables in Table 7	
Ties_samedegree	Same major tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university and has the same degree as one of the signatory auditors of a firm, and zero otherwise.
Ties_diffdegree	Different major tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university but has a different degree as one of the signatory auditors of a firm, and zero otherwise.
Ties_overlap	Overlap year tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university and has overlap study years as one of the signatory auditors of a firm, and zero otherwise.
Ties_nonoverlap	Non-overlap year tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university but does not have overlap study years as one of the signatory auditors of a firm, and zero otherwise.
Ties_topuni	Top university tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university as one of the signatory auditors of a firm and the university is a top university in China, and zero otherwise.
Ties_nontopuni	Non-top university tie dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university as one of the signatory auditors of a firm and the university is a non-top university in China, and zero otherwise.
Small_auditfirm	Small audit firm dummy, defined as a dummy variable equal to one if the firm is audited by one of the non-top 4 international audit firms and non-top 10 local audit firms, and zero otherwise.
Complexity	Business complexity dummy, defined as a dummy variable equal to one if the firm operates in more than one industry, and zero otherwise.
Related_party	Related-party transaction dummy, defined as a dummy variable equal to one if a firm's percentage of related-party transactions, including related-party purchase and sales as a proportion of its revenue, is higher than 90%, and zero otherwise.
Synch	Stock return synchronicity, calculated as the R-square of the regression on firm stock returns against market and industry returns.
Risk	Stock beta, defined as the firm systematic risk estimated by the CAPM model.
Additional variables in Table 8	
Trading	Fund trading, calculated as the annual change in the number of the firm's stocks held by the fund, divided by the firm's total number of tradable shares.
Δ*ROA*	Change in return on assets (*ROA*) from the previous year to the current year.
Opinion	Audit opinion dummy, defined as a dummy variable equal to one if the firm receives an unfavorable opinion, and zero otherwise. Unfavorable opinions include unqualified opinion with explanatory notes, qualified opinion, adverse opinion, and disclaimed opinion.
Δ*EP*	Change in earnings yield (*EP*) from the previous year to the current year. Earnings yield (*EP*) is calculated as the firm's earnings per share divided by its share price at the end of the year.
Δ*DP*	Change in dividend yield (*DP*) from the previous year to the current year. Dividend yield (*DP*) is calculated as the firm's dividend per share divided by its share price at the end of the year.
Δ*Growth*	Change in sales growth (*Growth*) from the previous year to the current year.
Δ*TraShare*	Change in tradable shares, calculated as the natural logarithm of the

	number of tradable shares in the current year minus the natural logarithm of the number of tradable shares in the previous year.
Volume	Trading volume, calculated as the monthly trading volume of the firm's stocks divided by its number of tradable shares.
Stockhold	Stocks held by the fund, calculated as the number of the firm's shares (in millions) held by the fund.
Additional variables in Tables 9 and 10	
Portfolio_CAR	Portfolio CAR, calculated as the average cumulative abnormal return around the annual report announcement window (i.e., [-1, 1] and [-2, 2]) for firms in the portfolio.
Portfolio_ties	Portfolio school tie dummy, defined as a dummy variable equal to one for the portfolio of firms with fund manager-firm auditor school ties, and zero for the portfolio of firms without such ties.
Fund_raw	Fund raw returns, calculated as the annualized rate of return of the fund during the year.
Fund_jensen	Fund Jensen index, calculated as the difference between the actual and predicted fund returns during the year.
Fund_tieshold	Fund school tie holding, defined as the proportion of the fund's net assets invested in firms for which at least one of the signing auditors graduated from the same university as the fund manager.
Fundcomp_size	Fund company size, calculated as the natural logarithm of the total assets of the fund company.
Fundmgr_career	Fund manager career, defined as the number of years since the fund manager is first in charge of a fund.
Fundmgr_tnr	Fund manager tenure, defined as the number of years since the fund manager works in the current fund.
Fundmgr_gender	Fund manager gender, defined as a dummy variable equal to one if the fund manager is male, and zero otherwise.
Fundmgr_edu	Fund manager education, defined as a dummy variable equal to one if the fund manager has a master degree or above, and zero otherwise.
Fund_flow	Fund flow, calculated as $(TNA_t - TNA_{t-1}*(1+Fundraw_t))/TNA_{t-1}$, where *TNA* is the fund's total net assets.
Additional variables in Table 11	
Auditor_retain	Firm auditor retain dummy, defined as a dummy variable equal to one if a firm retains its auditor in the next year, and zero otherwise.
Auditor_hire	Firm auditor hire dummy, defined as a dummy variable equal to one if a firm employs a particular auditor in the next year, and zero otherwise.
Audit_fee	Firm audit fees, calculated as the natural logarithm of audit fees that a firm pays its auditors.
Nonaudit_fee	Firm non-audit fees, calculated as the natural logarithm of non-audit fees that a firm pays its auditors.
Ties_hold	Fund holding school tie dummy, defined as a dummy variable equal to one if at least one of fund managers that hold the firm's stock have school ties with the firm's signing auditors, and zero otherwise.
Ties_auditcomp	Audit company school ties dummy, defined as a dummy variable equal to one if the fund manager graduated from the same university as one of the signatory auditors in an audit company, and zero otherwise.
Assets	Firm total assets, defined as the natural logarithm of the firm's total assets.
ROA	Return on assets, defined as the firm's net income divided by its total assets.
Growth	Sales growth, defined as the annual growth rate of the firm's sales.
Receivable	Accounts receivable, defined as the firm's total accounts receivable divided by its total assets.
Inventory	Inventory, defined as the firm's total inventory divided by its total assets.
Liquidity	Asset liquidity, defined as the firm's current assets divided by its current liabilities.
Loss	Loss dummy, defined as a dummy variable equal to one if the firm's net

	income is negative, and zero otherwise.
Firsthold	Top shareholding, defined as the proportion of shares held by the firm's largest shareholder.
SOE	State-ownership dummy, defined as a dummy variable equal to one if the firm is state-owned, and zero otherwise.
Big4	Big 4 dummy, defined as a dummy variable equal to one if the firm is audited by a Big 4 auditor, and zero otherwise.

Table 1. Sample Distribution

The table presents the annual distribution of sample in the analysis.

Year	No. of obs.	No. of unique funds	No. of unique firms	No. of obs. with social connections	% of obs. with social connections
	(1)	(2)	(3)	(4)	(5)
2004	2,542	65	406	79	3.11%
2005	3,840	96	490	112	2.92%
2006	5,286	138	554	159	3.01%
2007	9,514	195	658	374	3.93%
2008	10,376	225	665	332	3.20%
2009	18,437	314	1,003	414	2.25%
2010	21,958	397	1,172	417	1.90%
2011	25,649	478	1,311	461	1.80%
2012	38,385	553	1,633	680	1.77%
2013	46,447	652	1,897	1,122	2.42%
2014	60,013	815	2,181	1,591	2.65%
2015	73,990	1,214	2,318	1,462	1.98%
2016	85,829	1,490	2,399	1,516	1.775
2017	98,415	1,788	2,488	1,646	1.67%
Total	500,681	2,239	2,796	10,365	2.07%

Table 2. Descriptive Statistics

The table presents the summary statistics and correlation matrix of the variables in the analysis. Variable definitions are available in Appendix B. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A. Summary Statistics

Variable	Obs.	Mean	Median	S.D.	P25	P75
Holding	500,681	0.912	0.390	1.248	0.130	1.150
Ties	500,681	0.021	0.000	0.142	0.000	0.000
Size	500,681	16.499	16.439	1.131	15.698	17.305
BM	500,681	0.557	0.526	0.275	0.327	0.789
Leverage	500,681	0.493	0.502	0.202	0.334	0.669
Turnover	500,681	4.329	3.333	3.376	1.920	5.799
Volatility	500,681	0.028	0.026	0.010	0.021	0.033
Analyst	500,681	2.513	2.708	0.972	1.946	3.258
Return	500,681	0.318	0.127	0.719	-0.149	0.573
Fund_size	500,681	20.157	20.203	1.966	18.793	21.658
Fund_fee	500,681	1.106	1.200	0.421	0.700	1.500
Fund_age	500,681	4.402	4.000	3.096	2.000	6.000

Panel B. Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)*Holding*	1.000											
(2)*Ties*	0.012***	1.000										
(3)*Size*	0.187***	0.032***	1.000									
(4)*BM*	-0.063***	0.031***	0.227***	1.000								
(5)*Leverage*	0.031***	0.027***	0.276***	0.601***	1.000							
(6)*Turnover*	-0.054***	-0.022***	-0.361***	-0.331***	-0.144***	1.000						
(7)*Volatility*	-0.010***	-0.011***	-0.217***	-0.367***	-0.096***	0.673***	1.000					
(8)*Analyst*	0.219***	0.017***	0.478***	-0.002*	0.052***	-0.268***	-0.217***	1.000				
(9)*Return*	0.035***	0.004***	-0.063***	-0.242***	-0.055***	0.200***	0.367***	-0.012***	1.000			
(10)*Fund_size*	0.019***	0.008***	-0.083***	-0.065***	0.010***	0.035***	0.092***	0.072***	0.112***	1.000		
(11)*Fund_fee*	0.286***	0.000	-0.144***	-0.154***	-0.055***	0.065***	0.106***	0.087***	0.089***	0.239***	1.000	
(12)*Fund_age*	0.033***	0.005***	0.094***	-0.025***	-0.001	-0.010***	-0.002	0.065***	-0.009***	0.242***	0.169***	1.000

Table 3. Social Connections and Mutual Fund Stockholdings

The table presents the regression results of the relation between fund manager-firm auditor social connections and mutual fund stockholdings. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund and firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	$Holding_t$		
	Baseline analysis	Analysis on semi-annual stockholdings	Adding observations with zero fund stockholdings
	(1)	(2)	(3)
$Ties_t$	0.042***	0.047***	0.002***
	(0.014)	(0.013)	(0.001)
$Size_t$	0.262***	0.251***	0.036***
	(0.003)	(0.003)	(0.001)
BM_t	-0.445***	-0.450***	-0.039***
	(0.011)	(0.010)	(0.002)
$Leverage_t$	0.251***	0.222***	0.011***
	(0.013)	(0.011)	(0.000)
$Turnover_t$	0.010***	0.009***	0.001***
	(0.001)	(0.001)	(0.000)
$Volatility_t$	-1.672***	-1.661***	-0.663***
	(0.434)	(0.391)	(0.044)
$Analyst_t$	0.109***	0.117***	0.010***
	(0.002)	(0.002)	(0.000)
$Return_{t-1}$	0.027***	0.049***	0.002***
	(0.003)	(0.003)	(0.000)
$Fund\_size_t$	-0.053***	-0.061***	0.000
	(0.001)	(0.001)	(0.000)
$Fund\_fee_t$	0.791***	0.776***	0.017***
	(0.006)	(0.005)	(0.001)
$Fund\_age_t$	-0.004***	0.001	0.000***
	(0.001)	(0.001)	(0.000)
Constant	-3.080***	-2.773***	-0.552***
	(0.052)	(0.048)	(0.011)
Fund type fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Obs.	500,681	956,405	18,380,270
Adj. R^2	0.171	0.170	0.026

Table 4. Propensity Score Matched Sample

The table presents the regression results of the relation between fund manager-firm auditor social connections and mutual fund stockholdings based on the propensity score matched sample. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund and firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	$Holding_t$	
	1:1 matching	1:5 matching
	(1)	(3)
$Ties_t$	0.038**	0.030**
	(0.018)	(0.015)
$Size_t$	0.279***	0.277***
	(0.011)	(0.007)
BM_t	-0.451***	-0.440***
	(0.048)	(0.029)
$Leverage_t$	0.396***	0.336***
	(0.056)	(0.034)
$Turnover_t$	0.015***	0.015***
	(0.004)	(0.002)
$Volatility_t$	-5.657***	-5.474***
	(2.024)	(1.237)
$Analyst_t$	0.124***	0.133***
	(0.010)	(0.006)
$Return_{t-1}$	0.029*	0.028***
	(0.016)	(0.010)
$Fund\_size_t$	-0.057***	-0.058***
	(0.005)	(0.003)
$Fund\_fee_t$	0.746***	0.753***
	(0.025)	(0.014)
$Fund\_age_t$	-0.004	-0.002
	(0.003)	(0.002)
Constant	-3.243***	-3.114***
	(0.230)	(0.141)
Fund type fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
Obs.	20,730	62,190
Adj. R^2	0.176	0.172

Table 5. Mandatory Auditor Partner Rotation

The table presents the regression results of the changes in mutual fund stockholdings around mandatory rotations of signatory auditors. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund and firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	$\Delta Holding_t$
	(1)
$Ties\_rise_t$	0.070**
	(2.39)
$Ties\_fall_t$	-0.104*
	(-1.88)
$\Delta Size_t$	0.488***
	(8.65)
ΔBM_t	-0.523**
	(-2.80)
$\Delta Leverage_t$	-0.137
	(-1.09)
$\Delta Turnover_t$	-0.007
	(-1.11)
$\Delta Volatility_t$	1.412
	(0.77)
$\Delta Analyst_t$	0.085**
	(2.86)
$\Delta Return_{t-1}$	0.009
	(0.33)
$\Delta Fund\_size_t$	-0.034***
	(-3.09)
$\Delta Fund\_fee_t$	0.509***
	(3.71)
Constant	0.208**
	(2.86)
Fund type fixed effect	Yes
Year fixed effect	Yes
Obs.	40,976
Adj. R^2	0.105

Table 6. Tests on Alternative Explanations

The table presents the regression results of tests on alternative explanations. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund and firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	$Holding_t$			
	Exclude obs. with fund manager-firm management social connections	Control for fund manager-firm management social connections	Exclude obs. with same location between fund and firm	Control for same location between fund and firm
	(1)	(2)	(3)	(4)
$Ties_t$	0.037**	0.040***	0.053***	0.037***
	(0.014)	(0.014)	(0.016)	(0.014)
$Fundfirm\_ties_t$		0.054***		
		(0.012)		
$Same\_city_t$				0.045***
				(0.008)
$Size_t$	0.261***	0.262***	0.257***	0.261***
	(0.003)	(0.003)	(0.003)	(0.003)
BM_t	-0.458***	-0.447***	-0.464***	-0.448***
	(0.011)	(0.011)	(0.012)	(0.011)
$Leverage_t$	0.249***	0.249***	0.232***	0.252***
	(0.013)	(0.013)	(0.013)	(0.013)
$Turnover_t$	0.010***	0.010***	0.008***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
$Volatility_t$	-1.497***	-1.686***	-0.944**	-1.720***
	(0.439)	(0.434)	(0.453)	(0.434)
$Analyst_t$	0.107***	0.109***	0.103***	0.109***
	(0.002)	(0.002)	(0.002)	(0.002)
$Return_{t-1}$	0.027***	0.027***	0.022***	0.027***
	(0.003)	(0.003)	(0.003)	(0.003)
$Fund\_size_t$	-0.053***	-0.053***	-0.054***	-0.053***
	(0.001)	(0.001)	(0.001)	(0.001)
$Fund\_fee_t$	0.788***	0.791***	0.788***	0.791***
	(0.006)	(0.006)	(0.006)	(0.006)
$Fund\_age_t$	-0.004***	-0.004***	-0.003***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-3.044***	-3.067***	-2.982***	-3.066***
	(0.053)	(0.052)	(0.055)	(0.052)
Fund type fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Obs.	481,931	500,681	453,851	500,681
Adj. R^2	0.171	0.171	0.171	0.171

Table 7. Cross-Sectional Analysis

The table presents the regression results of the cross-sectional analysis. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund and firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Panel A. The Effect of the Strength of Social Connections

Variable	$Holding_t$		
	(1)	(2)	(3)
$Ties\_samedegree_t$	0.150**		
	(0.064)		
$Ties\_diffdegree_t$	0.036**		
	(0.014)		
$Ties\_overlap_t$		0.125**	
		(0.053)	
$Ties\_nonoverlap_t$		0.035**	
		(0.014)	
$Ties\_topuni_t$			0.045***
			(0.014)
$Ties\_nontopuni_t$			-0.099
			(0.072)
Controls	Yes	Yes	Yes
Fund type fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Obs.	500,681	500,681	500,681
Adj. R^2	0.171	0.171	0.171
t-test of difference in coefficients	*Prob>F=0.079*	*Prob>F=0.099*	*Prob>F=0.048*

Panel B. The Effect of Audit Firm Size

Variable	$Holding_t$
	(1)
$Ties_t$	0.003
	(0.020)
$Ties_t \times Small\_auditfirm_t$	0.058**
	(0.026)
$Small\_auditfirm_t$	0.030***
	(0.004)
Controls	Yes
Fund type fixed effect	Yes
Year fixed effect	Yes
Obs.	500,681
Adj. R^2	0.171
F-test of Ties+interaction term	*Prob>F=0.001*

Panel C. The Effect of Firm Business Opacity

Variable	$Holding_t$	
	(1)	(2)
$Ties_t$	-0.015	0.038***
	(0.016)	(0.014)
$Ties_t \times Complexity_t$	0.133***	
	(0.028)	
$Complexity_t$	0.019***	
	(0.004)	
$Ties_t \times Related\_party_t$		0.259**
		(0.105)
$Related\_party_t$		-0.042***
		(0.014)
Controls	Yes	Yes
Fund type fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
Obs.	499,237	500,681
Adj. R^2	0.172	0.171
F-test of Ties+interaction term	*Prob>F=0.000*	*Prob>F=0.000*

Panel D. The Effect of Stock Price Synchronicity

Variable	$Holding_t$
	(1)
$Ties_t$	0.051***
	(0.015)
$Ties_t \times Synch_t$	0.035***
	(0.014)
$Synch_t$	0.038***
	(0.002)
Controls	Yes
Fund type fixed effect	Yes
Year fixed effect	Yes
Obs.	500,681
Adj. R^2	0.172
F-test of Ties+ Ties×interaction term	*Prob>F=0.000*

Panel E. The Effect of Systematic Risk

Variable	$Holding_t$
	(1)
$Ties_t$	-0.038
	(0.050)
$Ties_t \times Risk_t$	0.078*
	(0.045)
$Risk_t$	-0.162***
	(0.008)
Controls	Yes
Fund type fixed effect	Yes
Year fixed effect	Yes
Obs.	500,681
Adj. R^2	0.172
F-test of Ties+ Ties×interaction term	*Prob>F=0.000*

Table 8. Social Connections and Mutual Fund Trading

The table presents the regression results of the relation between fund manager-firm auditor social connections and stock trading by mutual funds. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund and firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

	$Trading_t$	
Variable	(1)	(2)
ΔROA_{t+1}	0.131***	
	(0.014)	
$Ties_t \times \Delta ROA_{t+1}$	0.141*	
	(0.085)	
$Opinion_t$		-0.008**
		(0.004)
$Ties_t \times Opinion_t$		-0.089***
		(0.024)
$Ties_t$	0.005	0.005*
	(0.003)	(0.003)
$\Delta Size_t$	0.068***	0.068***
	(0.002)	(0.002)
ΔBM_t	-0.074***	-0.081***
	(0.007)	(0.007)
ΔEP_t	0.109***	0.088***
	(0.012)	(0.012)
ΔDP_t	0.323***	0.378***
	(0.060)	(0.059)
$\Delta Leverage_t$	0.025***	0.031***
	(0.007)	(0.007)
$\Delta Growth_t$	0.002*	0.002**
	(0.001)	(0.001)
$\Delta TraShare_t$	-0.003	-0.004**
	(0.002)	(0.002)
$Risk_{t-1}$	-0.008***	-0.009***
	(0.002)	(0.002)
$Return_{t-1}$	-0.006***	-0.007***
	(0.001)	(0.001)
$Volume_{t-1}$	-0.011***	-0.009***
	(0.002)	(0.002)
$Stockhold_{t-1}$	-0.175***	-0.174***
	(0.001)	(0.001)
Constant	0.508***	0.508***
	(0.014)	(0.014)
Fund type fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
Obs.	624,760	625,946
Adj. R^2	0.208	0.207

Table 9. Social Connections and Earnings Announcement Returns

The table presents the regression results of the relation between fund manager-firm auditor social connections and earnings announcement returns. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	*Portfolio_CAR*$_t$	
	Window [-1, 1]	Window [-2, 2]
	(1)	(2)
Portfolio_ties$_t$	0.190**	0.161*
	(0.078)	(0.084)
Fund_size$_t$	-0.002	0.005
	(0.015)	(0.017)
Fund_fee$_t$	0.055	0.062
	(0.068)	(0.075)
Fund_age$_t$	0.014	0.011
	(0.010)	(0.011)
Fundcomp_size$_t$	0.049*	0.068**
	(0.029)	(0.031)
Fundmgr_career$_t$	-0.010	-0.009
	(0.007)	(0.008)
Fundmgr_tnr$_t$	-0.027	-0.031
	(0.019)	(0.021)
Fundmgr_gender$_t$	-0.013	0.032
	(0.089)	(0.097)
Fundmgr_edu$_t$	0.463***	0.398**
	(0.155)	(0.176)
Constant	-1.613**	-1.930**
	(0.752)	(0.801)
Fund type fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
Obs.	11,660	11,660
Adj. R^2	0.036	0.051

Table 10. Social Connections and Fund Returns

The table presents the regression results of the relation between fund manager-firm auditor social connections and fund returns. The regressions are performed using ordinary least squares (OLS), with standard errors (in parentheses) clustered at the fund level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	$Fund\_raw_t$	$Fund\_jensen_t$
	(1)	(2)
$Fund\_tieshold_t$	0.472***	0.120**
	(0.100)	(0.057)
$Fund\_raw_{t-1}$	-0.107***	
	(0.012)	
$Fund\_jensen_{t-1}$		-0.018
		(0.013)
$Fund\_size_{t-1}$	-0.918***	-0.642***
	(0.154)	(0.101)
$Fund\_fee_{t-1}$	7.679***	4.052***
	(0.708)	(0.418)
$Fund\_age_{t-1}$	-0.435***	-0.221***
	(0.079)	(0.053)
$Fund\_flow_{t-1}$	0.020	-0.027
	(0.077)	(0.050)
$Fundcomp\_size_t$	0.192	0.181
	(0.257)	(0.159)
$Fundmgr\_career_t$	-0.095	-0.018
	(0.066)	(0.041)
$Fundmgr\_tnr_t$	1.786***	0.729***
	(0.161)	(0.089)
$Fundmgr\_gender_t$	1.850**	0.604
	(0.915)	(0.535)
$Fundmgr\_edu_t$	0.660	0.339
	(1.403)	(1.036)
Constant	7.057	13.740***
	(5.921)	(3.830)
Fund type fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
Obs.	7,625	7,625
Adj. R^2	0.658	0.300

Table 11. Social Connections and Benefits to Connected Auditors

The table presents the regression results of the relation between fund manager-firm auditor social connections and the benefits to connected auditors. The regressions are performed using the logit model in Columns (1) and (2), and the ordinary least squares (OLS) in Columns (3) and (4). Standard errors (in parentheses) are clustered at the firm and year levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in Appendix B.

Variable	$Auditor\_retain_{t+1}$	$Auditor\_hire_{t+1}$	$Audit\_fee_t$	$Nonaudit\_fee_t$
	(1)	(2)	(3)	(4)
$Ties\_hold_t$	0.122*		0.091***	0.089***
	(0.071)		(0.012)	(0.022)
$Ties\_auditcomp_t$		0.879***		
		(0.036)		
$Assets_t$	0.101***	0.030	0.463***	0.383***
	(0.035)	(0.026)	(0.007)	(0.012)
ROA_t	1.540**	-0.693	-0.489***	-0.811***
	(0.610)	(0.510)	(0.106)	(0.221)
$Leverage_t$	-0.495***	0.082	-0.192***	-0.042
	(0.186)	(0.132)	(0.032)	(0.063)
$Growth_t$	-0.068*	-0.000	-0.016**	0.011
	(0.041)	(0.029)	(0.007)	(0.013)
$Receivable_t$	-0.103	-0.024	0.140***	0.020
	(0.287)	(0.173)	(0.043)	(0.093)
$Inventory_t$	-0.138	-0.070	-0.102***	-0.212***
	(0.189)	(0.161)	(0.029)	(0.053)
$Liquidity_t$	-0.036***	-0.002	-0.023***	-0.019**
	(0.013)	(0.010)	(0.002)	(0.008)
$Loss_t$	-0.115	-0.065	0.039**	0.026
	(0.106)	(0.066)	(0.018)	(0.031)
BM_t	0.100	-0.340***	-0.184***	-0.288***
	(0.157)	(0.123)	(0.028)	(0.056)
$Firsthold_t$	-0.157	0.409***	-0.082***	0.110*
	(0.165)	(0.124)	(0.027)	(0.058)
SOE_t	-0.212***	0.066	-0.026***	-0.003
	(0.053)	(0.042)	(0.008)	(0.018)
$Opinion_t$	-0.698***	0.114**	0.087***	-0.007
	(0.139)	(0.058)	(0.025)	(0.048)
$Big4_t$	0.129**	0.143***	0.222***	0.173***
	(0.056)	(0.036)	(0.009)	(0.017)
Constant	-0.119	-5.624***	3.528***	3.212***
	(0.687)	(0.537)	(0.128)	(0.306)
Industry fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Obs.	16,010	2,387,824	16,025	4,680
Pseudo/Adj. R^2	0.074	0.043	0.560	0.466