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Information Sharing between Mutual Funds and Auditors

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Abstract

This paper examines whether there is information sharing between mutual funds and their auditors about the auditors' other listed firm clients. Using data from the Chinese market, we find that mutual funds earn higher profits from trading in firms that share the same auditors. The effects are more pronounced when firms have a more opaque information environment and when the audit partners for the fund and the partners for the listed firm share school ties. The evidence is consistent with information flowing from auditors to mutual funds, providing mutual funds with an information advantage in firms that share the same auditors. Our findings are robust to the use of audit-firm M&As as exogenous shocks and several other robustness checks. We further find that auditors benefit by charging higher audit fees for mutual fund clients and by improving their audit quality for listed firm clients. Our study provides evidence of bi-directional information sharing between two important market intermediaries.

Keywords: Information Sharing; Mutual Funds; Auditors; China; Trading Profits; Emerging Markets; Guanxi; Audit Quality; Audit Fees

JEL codes: D83, G11, M41, M42

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Information Sharing between Mutual Funds and Auditors

I. INTRODUCTION

Mutual funds and auditors are important stock-market intermediaries. They both demand and collect information about listed firms. Mutual funds rely on information to make investment decisions, while auditors rely on information to issue appropriate audit opinions. In this paper, we investigate whether connected mutual funds and auditors share information about auditors' clients. We refer to a mutual fund and an auditor as "connected" when the auditor audits the mutual fund. With this auditor-client relationship, the auditors and the fund managers have many opportunities to communicate with each other and to share information about firms.

First, the information may flow from the auditor to the mutual fund. Auditors perform a variety of procedures to reach an appropriate audit opinion (Nelson and Tan 2005; Knechel, Rouse, and Schelleman 2009). A significant amount of information about clients is accumulated during the audit process, from examining financial documents, communicating with management, and exchanging knowledge with other parties. Mutual funds are strongly motivated to gain access to such information, as it can be potentially useful for them to make investment decisions. Auditors are also incentivized to share information with mutual funds from the perspective of providing services to retain fund clients or charge a fee premium. Despite regulations restricting auditors from sharing clients' information with others, previous studies provide evidence of information sharing from auditors, even in the U.S. where regulations are among the most stringent (e.g., Aobdia 2015; Cai, Kim, Park, and White 2016; Dhaliwal, Lamoreaux, Litov, and Neyland 2016). Therefore, it is possible that information flows from the auditor to the mutual fund.

Second, the information may also flow from the mutual fund to the auditor. Mutual funds

often have a team of professionals hired to examine current and potential investment targets, and fund managers may also have private communications with target firm executives (Barker, Hendry, Roberts and Sanderson 2012). While the auditor has more information sources about its firm clients, mutual funds have an advantage at collecting and analyzing industry-wide and macroeconomic information, which is important for auditors in assessing clients' risks, designing audit procedures, and reaching appropriate audit opinions (Knechel et al. 2009). Further, auditors may demand evidence and opinions from external parties. Overall, mutual funds may share information that is incrementally useful for auditors.

Using a large sample of data of Chinese mutual funds, auditors, and listed firms during the period 2004 to 2016, we examine whether there is information sharing between connected mutual funds and auditors (at the *audit-office* level). We choose China as the research setting for the following reasons. First, the Chinese market provides a powerful setting for our research, as the institutional environment is less developed, investor protection is weaker, and “*guanxi*” (or the relationships individuals cultivate with other individuals) is more relied upon by various market participants. Second, China is the largest emerging market in the world. Recently, MSCI has expanded the weighting of China-listed shares in its benchmark indexes tracked by global investors, which will induce billions of dollars flow from the globe into Chinese stock markets.¹ There is increasing interest in understanding the investment environment of the Chinese stock market. Further, in China, each individual fund is required to have an auditor, which allows us to better control any fund-level invariant factors.²

¹ See <https://www.bloomberg.com/news/articles/2019-02-28/china-stocks-to-see-fourfold-increase-in-msci-index-weighting>. Goldman Sachs Group Inc. estimates a potential \$70 billion of net buying to A shares, while T. Rowe Price Group Inc. estimates a \$40 billion inflow from active funds.

² In U.S., for example, the auditor is determined at the fund-company level (Adams, Nishikawa, and Rasmussen 2015).

Our empirical analyses employ an extensive set of control variables motivated by extant research. We use levels approaches, and we control for fund-invariant factors by including *fund fixed effects*. We find that mutual funds' investments in firms that share the same auditors are positively associated with future abnormal returns and these effects are more pronounced when the firms' information environment is more opaque. This evidence indicates that mutual funds gain an information advantage in firms with shared auditors, suggesting that auditors share information of their clients with connected mutual funds.³ Our evidence is robust to the use of audit-firm M&As as exogenous shocks to auditor sharing and other robustness checks.

We find that auditors also benefit from information sharing. Specifically, auditors charge higher audit fees from mutual-fund clients when they have more valuable information about their firm clients, and auditors have higher audit quality for firm clients when connected mutual funds have investments in these client firms. Overall, this suggests that mutual funds may provide incremental information to auditors.

We conduct several additional analyses. First, prior studies suggest that mutual funds place more bets in securities that they have information advantage (Cohen, Frazzini, and Malloy 2008; Gu, Li, Yang and Li 2019). Consistent with this, we show that mutual funds invest more heavily in firms that share the same auditors. Second, we find that mutual funds trade more in firms with shared auditors, and their trading directions are informative for firms' future operating and stock performance. The evidence is consistent with mutual funds gaining an information advantage in firms with shared auditors through information sharing from the connected auditors. Third, prior research shows that firms are more likely to withhold bad news. Therefore, information sharing

³ We use the terms auditor sharing, shared auditor, and common auditor interchangeably.

from the auditor is likely to be more valuable for mutual funds when firms have bad news. Consistent with this logic, we find that mutual funds avoid more trading losses from firms with shared auditors when these firms have negative news.⁴

Fourth, prior studies suggest that a common educational background fosters social ties and results in greater information sharing (Cohen et al. 2008; Gu et al. 2019). Consistent with this, we find that the funds' trading gains from shared office are more pronounced when the fund's and the firm's audit partners have a common alma mater. Further, we show that the effects of shared auditor on funds' trading gains are more pronounced when mutual funds and listed firms in funds' portfolios share the same audit partners. Fifth, we conduct additional cross-sectional analyses and find that the effects of shared auditors on funds' trading gains are more pronounced when the legal and institution development is weaker, when the shared auditor has less market power in the mutual fund market, when the shared auditor is an industry expert in the listed firm market. Additionally, our primary definition of auditor is at the *audit-office* level. When we examine the auditor at the audit-firm level, we find that the results are primarily driven by the shared *office* rather than shared audit firm.

Our paper contributes to the literature in several ways. First, we investigate information sharing between two important market intermediaries - mutual funds and auditors. Mutual funds are important market participants, however, the role of auditors in mutual funds has not received much scrutiny. Goldie, Li, and Masli (2018) examine the effect of audit quality on the investors of bond funds. Adams et al. (2015) investigate whether and when a fund-company chooses the same auditor as its parent company. Our research considers the information sharing role between the

⁴ It is very hard, if not impossible, for mutual funds to short individual stocks in China.

auditor and the mutual fund, which adds to our understanding of auditors for the fund industry and sheds light on the interaction between these two important information intermediaries.

Second, previous studies document that auditors can serve as an information channel when two firms share the same auditor. This information channel can mitigate the information asymmetry between the firms and facilitate firms' decisions on important corporate events, such as mergers and acquisitions (Cai et al. 2016; Dhaliwal et al. 2016) or supplier selection (Aobdia 2015). These articles focus on two firms and common auditors as an information channel. Our study is different by focusing on two intermediaries - mutual funds and auditors. Each of them plays a distinctive role in the market and shares its own information about firms. In our setting, the auditor is not just an information provider, but also benefits from the information sharing by collecting higher fees and increasing its audit quality.

Third, our study identifies a channel through which mutual funds can gain their information advantage. Prior research suggests that mutual funds' information advantage may come from a better ability to analyze public information, geographical closeness to firms, site visits, etc. (e.g., Coval and Moskowitz 1999, 2001; Dvorak 2005; Cheng, Du, Wang, and Wang 2019). Our study suggests that mutual funds can gain an information advantage through the auditor-client relationship, which is one type of social network.⁵ However, unlike other parties in social network, such as analysts, managers, etc., who usually have incentive to convey positive information (Akbas, Meschke, and Wintoki 2016), auditors have less incentive to convey positive information and is more valuable to convey negative information.⁶

⁵ Our evidence suggests that mutual funds obtain an information advantage from the connected auditors. One interpretation of our results is that mutual funds obtain valuable nonpublic information about the listed firms from connected auditors. Another interpretation of our results is that the information shared from connected auditors is nonmaterial on its own but becomes valuable once combined with other information that the mutual funds have.

⁶ Further, auditors care more about negative performance because they bear more risk when firms perform badly or manage earnings (Blay, Geiger, and North 2011; Feng and Li 2014). Another special feature is that the auditing

Fourth, our findings indicate that information from funds can be a supplemental source for the auditor. Although auditors have access to their clients' first-hand documents, the information from funds may help auditors understand more about the industry or macroeconomic environment, thus aiding auditors in forming appropriate opinions. We are the first to show that auditors may benefit from information sharing from mutual funds.

Finally, to shed some light on the effects of legal and institutional development, we take advantage of the heterogeneity of regional development in China and investigate whether the information sharing between auditors and funds varies with the legal and institutional development. We find that the information sharing is more significant when the legal and institutional development is weaker. The evidence has implication for emerging markets in general (i.e., our evidence is likely generalizable).

II. INSTITUTIONAL BACKGROUND

Features of the Chinese Audit Market

With the recent growth in the Chinese economy and stock market, the Chinese audit industry has expanded rapidly (Shafer 2008). Total audit-fee revenues earned by the 100 largest audit firms in China were about 58.4 billion RMB in 2015 according to the Chinese Institute of Certified Public Accountants (CICPA), ranking China among the major audit markets in the world (Gul, Wu, and Yang 2013; Gul, Lim, Wang, and Xu 2019).

Unlike the U.S. market where the Big-4 audit firms have an oligopolistic dominance, the

relationship is based on the current business relationship, while other types of social network, such as school ties, are usually built from non-business relations. A contemporary paper investigates the effect of school ties between listed firm's signature auditor and mutual fund managers on mutual fund portfolio decisions (Chen, Huang, Li, and Pittman, 2020). Our results are robust to control the school ties between mutual fund managers and individual partners of listed firms (untabulated), suggesting that the effects of shared auditors are different.

Chinese audit market is much less concentrated (Chen, Sun, and Wu 2010; Wang, Yu, and Zhao 2015; Gul et al. 2019). As a result, fierce competition exists among different audit firms and this in turn creates additional pressure for auditors to acquire and retain clients. Meanwhile, the number of listed firms or other clients - such as mutual funds - in China is small relative to that of qualified audit firms. This implies that a buyer's market is likely to endow clients with more bargaining power and impose pressure on auditors fighting for market share (Chen et al. 2010). Besides regular contractual auditing services, providing more useful information beyond the scope of an audit may be one important way for auditors to retain their clients and charge higher fees (Lim, Shevlin, Wang, and Xu 2018).

China's audit market is characterized by a less-developed institutional environment, weak investor-protection regime, and low litigation risk. Although the Chinese government has taken steps to improve the institutional environment and strengthen regulations in recent years, the regulatory and legal structures still fail to provide the same level of investor protection as that in more developed markets (Chan, Lin, and Mo 2006; Wang et al. 2015). The low litigation risk increases the likelihood of violations of conflict-of-interest rules and highlights the insufficiency in protecting clients' confidential information (providing more credence and power for our empirical tests).⁷

According to the information disclosure regulation for mutual funds issued by China Securities Regulatory Commission (CSRC), the financial statements of mutual funds must be audited by qualified auditors. Since 2004, the mutual fund auditing market has grown very quickly.

⁷ The information sharing from auditors does not necessarily lead to illegal activities. In our study, the shared information could be non-material (therefore not illegal), though fund managers may derive valuable insights from the seemingly nonmaterial information by combining this information with their existing knowledge. This argument is consistent with the mosaic theory as in Solomon and Soltes (2015), and Li, Wong, and Yu (2020).

The aggregate audit fees paid by all mutual funds in our sample are RMB 7.25 million in 2004 and jumped to RMB 154 million in 2016. Mutual fund clients are more attractive to auditor than other clients due to the low audit cost, low audit risk and relatively high audit fee (Zhang 2004).

Brief Overview of the Mutual-Fund Industry in China

To strengthen corporate governance and stabilize the stock market, the Chinese government made the strategic decision to develop mutual funds as institutional investors in the year 2000. Since then, the mutual-fund industry in China has achieved unprecedented growth. During our sample period, the number of fund-management companies increased from 36 in 2004 to 106 in 2016, while the number of mutual funds increased from 141 in 2004 to 2,523 in 2016. The net asset value of the mutual-fund industry increased from 246 billion RMB in 2004 to 2,790 billion RMB in 2016.⁸

The mutual-fund industry in China is very competitive. Fund managers face high pressure from the performance-ranking system and have strong incentives to perform. As professional investors, mutual funds are supposed to make investment decisions by collecting and analyzing public information. However, the information environment in China is characterized by low-quality public information and high information asymmetry. Consequently, much of the information is acquired through private information channels, such as connections through different social networks (Gold, Guthrie, and Wank 2002; Gu et al. 2019). In this study, we investigate the effects of connections caused by professional relationships between auditors and mutual funds.

⁸ Our sample period begins from 2004 because the China Securities Regulatory Commission (CSRC) requires the annual report of mutual fund to be audited since 2004. Note, the data description here is different from that in Table 1 because we impose additional criteria in our sample selection for the specific research questions.

III. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Auditors as an Information Intermediary

By accumulating audit evidence and communicating their findings to information users, auditors provide independent assurance of the credibility of accounting information, which contributes to resource allocation and contracting efficiency. To achieve a sufficient level of assurance for the financial statements, auditors need to perform a variety of tasks and audit procedures, such as risk assessment, analytical procedures, internal-control evaluations, and substantive tests (Nelson and Tan 2005; Knechel et al. 2009). Through these audit procedures and formal/informal communication with senior management, auditors accumulate a considerable amount of client information (Cai et al. 2016; Dhaliwal et al. 2016; Knechel, Thomas, and Driskill 2020). Given that auditors serve multiple clients at the same time, it is conceivable that they would share information about different clients among their portfolios of clients (Lim et al. 2018).

Anecdotal evidence suggests that auditors do share client information even in capital markets characterized by strong investor protection. For example, in 2013, a high-ranking KPMG partner in Los Angeles leaked confidential information about five different clients, and an Ernst & Young partner passed confidential takeover information to a third party (Rapoport 2013).⁹ Recent U.S. research explores whether auditors act as information intermediaries among their clients. Cai et al. (2016) and Dhaliwal et al. (2016) examine the impact of shared auditors on M&A transaction outcomes (i.e., both the acquirer firm and the target firm are audited by the same auditor). Specifically, Cai et al. (2016) show that a common auditor can help reduce uncertainty throughout the acquisition process, resulting in higher-quality M&As in terms of higher announcement returns.

⁹ Even in developed economies, cases of penalties levied for information sharing from auditors are rare. It is likely affected by companies never becoming aware that their proprietary information has been transferred.

Dhaliwal et al. (2016) find that target firms are more likely to receive a bid from firms that share the same auditor and that deals with a shared auditor are associated with significantly lower deal premiums, lower event returns for target firms, higher event returns for acquirer firms, and higher deal completion rates. Both studies argue that shared auditors transfer information, unintentionally or on purpose, obtained from the auditing process.¹⁰ Dhaliwal, Shenoy, and Williams (2017) investigate auditor information sharing between supplier and customer firms. They find that auditors share information with the supplier and customer, and the information sharing reduces the holdup problem and enhances relationship-specific investments.

Information Acquisition of Mutual Funds

Another relevant research stream examines how mutual funds gain an information advantage by acquiring private information. A growing literature suggests that institutional investors have an information advantage and make profitable investment decisions. For example, Bushee and Goodman (2007) show that changes in ownership by institutions with large positions in a firm are consistent with informed trading, especially for investment advisors such as mutual funds. Bollen and Busse (2001) and Jiang, Yao, and Yu (2007) show that mutual funds exhibit significant timing ability. Baker, Litov, Wachter, and Wurgler (2010) provide empirical evidence that mutual funds can pick stocks and trade profitably, in part because they can forecast earnings-related fundamentals.¹¹

¹⁰ Although information sharing through auditor could be beneficial for the acquirers, it may be at the expense of target shareholders. Dhaliwal et al. (2016) argue that the auditors may violate the professional duties and fail to protect confidential client information within the audit office to please clients. The AICPA Code of Professional Conduct (Section 301) states that “A member in public practice shall not disclose any confidential client information without the specific consent of the client.” A similar rule exists in China (Section 2 in the CICPA Code of Professional Conduct).

¹¹ Further, studies argue that institutional investors can gain an information advantage by investing in geographically closer firms (Coval and Moskowitz 1999, 2001; Dvorak 2005; Hau and Rey 2008; Ayers, Ramalingegowda, and Yeung 2011; Chhaochharia, Kumar, and Niessen-Ruenzi 2012) or through superior understanding of industry information (Kacperczyk, Sialm, and Zheng 2005).

Another line of research suggests that mutual funds obtain an information advantage through social connections with other mutual-fund managers, firm management, or analysts. The importance of social connections has long been recognized, especially in countries with prevalence of “*guanxi*” and weak legal institutions (e.g., Gu et al. 2019). For example, Hong, Kubik, and Stein (2005) document that the holdings and trades of fund managers who work in the same city are correlated. Analysts also provide information to mutual funds. Using Chinese data, Gu et al. (2019) examine the effects of social connections between financial analysts and mutual-fund managers on funds’ decisions. They show that fund managers are more likely to hold stocks covered by socially-connected analysts and that fund managers make higher profits from such holdings.

Hypotheses

Mutual funds have strong incentives to search for relevant information about stocks. We argue that information sharing from connected auditors can serve as one possible conduit for private information transfer to mutual funds. First, auditors have information that is potentially valuable for mutual funds. The auditors need to perform a variety of audit procedures to accumulate audit evidence. In the process, they gain a deep understanding about the clients’ business through examining first-hand financial documents, reviewing board-meeting minutes, participating in audit-committee meetings, etc. They have frequent confidential communication with senior management and are thus likely to better assess the quality of management team and obtain access to material private information (Dhaliwal et al. 2016; Cai et al. 2016). Furthermore, to evaluate the firm’s ability to continue as a going concern, as required by auditing standards, the auditors conduct an evaluation of the firm’s future cash flows and operations. Such private information is relevant for mutual funds to make investment decisions (Bushee and Goodman 2007; Baker et al. 2010;

Chen, Hope, Li, and Wang 2018).

Second, auditors have incentives to share information with mutual funds. Though the funds' auditors are limited with respect to the auditing services they provide, based on the engagement letter, they have incentives to provide additional value to the fund client beyond the scope of the audit to retain the client or to collect additional fees (Ettredge, Fuerherm, and Li 2014). Social capital from retaining good relationships with clients is very important for making partners in audit firms (Downar, Ernstberger, and Koch 2020). This is especially the case in China, where the audit market is highly competitive. One possible value-added service is to provide relevant information to fund clients. In addition, China is characterized as a relationship-based society with low legal risks, making such information sharing more viable.

There could be several channels through which private information is transferred from the auditor to its mutual-fund clients. First, there could be passive communication. As the auditor of a mutual fund, a major task is to assure that the fund's calculation and reporting of net asset values (NAVs) is reliable (Goldie et al. 2018).¹² The auditor needs to communicate with fund managers about the fair values of securities that significantly influence the calculation of NAVs. It is possible that, to improve the audit quality for the fund, the auditors will communicate their understanding about the value of stocks obtained when they audit these firms and provide confirmation about the value of these stocks.¹³ We consider this type of information transfer as passive as fund auditors are not active initiators of the information transfer.

Second, fund managers can actively acquire private information about the firms in their

¹² In a mutual fund, the NAV (i.e., the value of each share held by the fund) is calculated by dividing the total market value of securities, minus any liabilities, by the number of the fund's shares outstanding (Goldie et al. 2018). The calculation of NAVs significantly influences the financial reporting of mutual funds; thus, it is important for the auditor.

¹³ The auditing standards require that auditors test funds' fair-value measurements and provide assurance about whether NAVs reflect fair-market conditions.

portfolios from the shared auditors. As an investor, it is natural that the mutual funds are concerned about the quality of firms' financial reporting (Chen et al. 2018). An engaged auditor represents a first-hand information source for such concerns. Further, the mutual funds have incentives to search for additional private information to gain abnormal investing returns. Thus, fund managers may actively ask for private information from shared auditors.

Third, as we discussed before, the fund auditors may actively communicate what they know about the firms with fund managers to retain the fund clients in a competitive audit market. Overall, information transfers could arise from either passive or active communications between shared auditors and mutual funds.¹⁴

Based on the above discussion, we argue that private information could be transferred from connected auditors to mutual funds, giving mutual funds an information advantage in firms that share the same auditor. The mutual funds can make use of this information advantage and potentially obtain higher profits from trading those stocks (Cohen et al. 2008; Cao, Dhaliwal, Li, and Yang, 2018). We state our first hypothesis as follows:¹⁵

H1: Mutual funds obtain higher trading gains from firms with shared auditors.

When making decisions related to information transfer to connected funds, auditors will trade off the relevant costs and benefits. The costs are obvious: the auditors need to consider potential

¹⁴ We note that the audit team for the fund and the audit team for the listed firms usually are not the same. We argue that private information is shared within the same *audit office*. This assumption is reasonable because audit firms are knowledge-intensive organizations and they derive competitive advantage through internal information transferring (Argote 1999; DeFond and Zhang 2014). Experimental or field research provides evidence of knowledge sharing across different audit teams within the audit office (Kennedy, Kleinmuntz and Peecher 1997; Kadous, Leiby and Peecher 2013). The audit office is where information about clients is concentrated and the individual network is strongest such that the opportunity to share information about clients is likely highest (Dhaliwal et al. 2016). Although the Chinese walls are set up by audit firms to prevent some confidential information transfer, it is not clear how effective they have been in practice. Using the setting of supply chain or merger and acquisitions, Johnstone et al. (2014) and Dhaliwal et al. (2016) provide evidence consistent with information sharing occurring among auditors within the same audit office.

¹⁵ All hypotheses are stated in the alternative form.

litigation and reputation risks as the auditing standards of professional ethics (set by the CICPA) require auditors in public practice not to disclose any confidential client information without specific consent. Charging higher audit fees could be one of the benefits. DeFond and Zhang (2014) note that an audit-fee premium can be compensation for extra audit effort, extra risks, or non-competitive rents. Auditors who share information may charge a fee premium to compensate for the associated risk. Furthermore, if fund clients obtain more private information from the auditor and are able to gain abnormal profits from informed trading, the fund clients may be willing to pay more for the auditors' services. Formally, we state the above prediction in the following hypothesis:¹⁶

H2a: Auditors benefit from information sharing by charging higher audit fees for fund clients.

During the audit process, the auditors have incentives to seek out relevant independent third-party information to reduce audit risk and increase audit quality (Cheng, Cheng, Dhaliwal, and Kaplan 2015). Consistent with this incentive, prior studies provide evidence that auditor sharing between different clients can benefit auditors in terms of greater information about audit risks and increased audit quality. Johnstone, Li, and Luo (2014) find that audit quality is significantly higher if the auditor performs audits for both the supplier and the customer at the same time. Similarly, Chan, Jiang, and Mo (2017) demonstrate that firms sharing the auditor with their main banks have

¹⁶ Another potential benefit could be to retain the fund client. We do not propose client retention in a formal hypothesis because the events of auditor changes for mutual funds are rare. In our sample, there are 159 auditor change events for mutual funds, or about 2% of the total 7,926 observations. However, we examine the client retention as the potential benefit. We find that, when we include year fixed effects and other control variables, auditors with more connected firms or high values of connected firms are significantly less likely to be changed in the subsequent year. However, we do not find significant results when fund fixed effects are also included. The reason may be the lack of power. (Results are available upon request.)

higher audit quality due to knowledge spillovers from banks to the auditors.

Compared with auditors, mutual funds may not have as detailed information for a specific firm. However, as mutual funds invest in a large portfolio of firms, they possess more macroeconomic and industry-level information, which is useful in assessing the risks in the financial statements (Cici, Gehde-Trapp, Goricke, and Kempf 2018; Knechel et al. 2009). In addition, because fund managers can privately communicate with firm executives, it is also possible that mutual funds obtain some firm-specific information (e.g., management style, strategy-related information, etc.) that is not overlapping with the auditor's information. When communicating with managers, auditors may be influenced by over-confident managers and a less biased (or just a second) opinion from mutual funds may be helpful to reach the appropriate audit opinion. Through obtaining information from mutual funds, the auditors can better assess client-specific risks and design audit procedures. In turn, this can help improve the audit quality. Therefore, we propose the following hypothesis:

H2b: Auditors benefit from information sharing by acquiring more information about the listed firm client, resulting in higher audit quality.

IV DATA AND SAMPLE

To promote the healthy development of the mutual-fund industry, the China Securities Regulatory Commission (CSRC) issued a rule titled "Information Disclosure for Securities Investment Funds." The rule requires that annual reports of all funds need to be audited starting July 1, 2004. To construct our sample, we collect funds' auditor information, including data on the engaged audit office and audit fees, from the funds' annual reports downloaded from the CNINFO

website.¹⁷ We are able to identify the auditor-office information for 10,115 fund-year observations and collect audit-fee information for 10,052 fund-year observations. We obtain information about the auditor from CSMAR. We define a fund and an audit office as connected when the fund is audited by the particular audit office. We define a stock and a fund to have a shared auditor if the stock is audited by the same audit office as the fund during the year.

Our sample period is from 2004 to 2016. We choose this period because the auditor information of mutual funds begins in 2004. In addition, the mutual-fund industry in China began to develop rapidly since 2004. To construct our sample, we impose the following criteria to the fund-stock-year observations. First, we include only diversified equity funds, thus excluding other funds such as index funds, bond funds, etc.¹⁸ Second, we drop observations without auditor information for funds or firms. Further, to increase the power of our test, we require the fund to have invested in at least one stock with a shared audit office and at least one stock without a shared audit office during the year (Cheng et al. 2019).¹⁹ Finally, we drop observations without the necessary information on test and control variables for the subsequent regression analyses.

Table 1 presents descriptive statistics for our sample. The number of fund companies increases from 16 in 2004 to 84 in 2016, and the number of funds increases from 19 to 901. On average, each fund company has 11 funds. Within the fund company, the fund can select its engaged auditor. The average number of unique auditors for each fund company is 1.34. The number of stocks held by funds increased from 264 to 2,309. On average, 4.82% of the fund-stock-year observations can be identified as having a shared audit office.

¹⁷ <http://www.cninfo.com.cn> is an official website where all listed firms and mutual funds disclose their regular (including annual and quarterly) reports. All sample funds are domestic, and all listed firms are domestic.

¹⁸ We exclude index funds from our sample because they replicate common share indices. In untabulated analyses, we use the index funds sample as a falsification test and find no evidence that shared auditors provide information advantage for index funds.

¹⁹ Our inferences stay the same if we include these observations.

V RESEARCH DESIGN AND EMPIRICAL RESULTS

In this section, we discuss our research design and empirical tests. First, we examine the association between auditor sharing and connected funds' information advantage, followed by an investigation into the specific channels for private-information transfer from shared auditor to connected funds. Second, we test funds' audit fees to explore connected auditors' benefits due to such information transfer. Finally, we analyze the audit quality of firms audited by connected auditors.

Auditor Sharing and Funds' Information Advantage

Trading Gains

As discussed, we predict that connected funds can acquire private information from auditor sharing. If a mutual fund has an information advantage in stocks with the shared audit office, we expect to observe higher trading gains from trades in these stocks (e.g., Cohen et al. 2008; Bushee, Gerakos, and Lee 2018; Gu et al. 2019). To test this prediction, we estimate an ordinary least squares regression, as shown below:

$$\begin{aligned} Gain_{i,j,T} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Size_{i,t-1} + \beta_3 Analyst\ Following_{i,t} + \beta_4 BM_{i,t-1} + \beta_5 ROA_{i,t-1} \\ & + \beta_6 Leverage_{i,t-1} + \beta_7 Turnover_{i,t-1} + \beta_8 Return_{i,t-1} + \beta_9 Std\ Dev_{i,t-1} + \beta_{10} SOE_{i,t-1} \\ & + \beta_{11} Top10_{i,t-1} + \beta_{12} CI\ Listed\ Firm_{i,t} + \beta_{13} Fund\ Size_{j,t-1} + \beta_{14} Family\ Size_{j,t-1} \\ & + \beta_{15} Fund\ Performance_{j,t-1} + \beta_{16} CI\ Fund_{j,t} + \beta_{17} Holding\ Size_{i,j,t-1} \\ & + \beta_{18} Fam\ Fund\ Holding_{i,j,t-1} + \beta_{19} Other\ Funds\ Holding\ Size_{i,j,t-1} \\ & + \beta_{20} Same\ Region_{i,j,t-1} + \beta_{21} FM\ Ties_{i,j,t} + \beta_{22} FA\ Ties_{i,j,t} + Fixed\ Effects \\ & + \varepsilon_{i,j,t} \end{aligned} \quad (1)$$

where $Gains_{i,j,T}$ is calculated by multiplying the semi-year changes in fund j 's holding in firm i from semi-year of year t to the end of year t by the firm's buy-and-hold size-adjusted returns over the subsequent six-month period.²⁰ Following prior literature (e.g., Fama and French 1992; Sloan

²⁰ In China data is available for *all* the stock holdings of mutual funds on a semi-annual basis. Here we assume that the mutual funds obtain private information and trade (i.e., buy or sell) at the end of the fiscal year, then the abnormal return will be obtained in the following 6 month period. The assumption makes sense because auditors start and

1996; Cheng et al. 2019), returns are calculated as the buy-and-hold returns in excess of the buy-and-hold returns on a value-weighted portfolio of firms having similar market values. The size portfolios are formed by size deciles of listed firms based on firms' market values at the end of the previous year. This trading gains variable is constructed following Bushee et al. (2018), and is positive (negative) when the fund trades in the correct (opposite) direction of firms' future returns.²¹ The variable of interest is *Shared Office_{i,j,t}*, which equals one if stock *i* and fund *j* share the same audit office during year *t*, and zero otherwise. Following prior literature (e.g., Cohen et al. 2008; Bushee et al. 2018; Gu et al. 2019), we control for a variety of firm characteristics such as stock-market capitalization (*Size*), analyst following (*AnalystFollowing*), book-to-market ratio (*BM*), stock turnover (*Turnover*), accounting performance (*ROA*), and leverage (*Leverage*). We also include the firm's stock returns in the past 12 months (*Return*) and the standard deviation of monthly returns (*Std Dev*). We add an indicator variable to identify state-owned enterprises (*SOE*) due to well-known differences between SOEs and Non-SOEs in China. To capture the audit quality of stocks held by funds, we add an indicator variable *Top10* that equals one if the stock is audited by a Top-10 auditor based on the total audited client assets during the year and zero otherwise. We also add the variable for client importance of listed firms for audit office (*CI Listed Firm*) to control the potential influence of important clients (Chen et al. 2010).

In addition, we control for several characteristics of fund families and mutual funds, including total net assets of the fund (*Fund Size*) and the fund family (*Family Size*), and the performance of

complete preliminary auditing before the fiscal year end and obtain 80%-90% of private information about listed firm clients according to interviews with partners from Big-4 and local audit firms in China. However, we admit that the measurement of trading gains has noise, because we can only observe funds' shareholding every six months and there are trades within two observed time points.

²¹ There are two advantages of calculating trading gains following Bushee et al. (2018). First, it is more precise because we have detailed information about funds' shareholdings. Second, it captures the trading gains both for buying stocks and selling stocks. The results are similar (and no inferences are affected) if we use six-month BHAR as the proxy for trading gains following Gu et al. (2019).

the mutual fund (*Fund Performance*). We also control the client importance of mutual fund for the audit office (*CI Fund*). We include *Holding Size* to control for the market value of stocks held by the particular fund, and we control for the market value of stocks held by other funds in the same fund family (*Family Fund Holding*) to control for information sharing within the same fund family.

Prior literature suggests that valuable information can be transmitted among fund managers and between fund managers and corporate board members when they have social connections (Cohen et al. 2008; Pool, Stoffman, and Yonker 2015). Therefore, we control for the market value of stocks held by other funds located in the same city (*Other Funds' Holding Size*) and the existence of school ties between mutual fund managers and CEO, CFO or the chairman of listed firm (*FM Ties*). In addition, Chen, Huang, Li, and Pittman (2021) find that mutual funds whose fund managers share school ties with auditor partners engage more in informed trading and generate superior portfolio returns. We add a control variable *FA Ties* that equals one if the fund managers have school ties with signature auditor of listed firm, and zero otherwise. We include an indicator *Same Region* to control for a local information advantage of a mutual fund.²² Finally, we include year, industry, and fund fixed effects and we cluster standard errors by fund. We also use different combinations of fixed effects, such as firm fixed effects, fund fixed effects, auditor fixed effects, and industry-year fixed effects (untabulated). The conclusions are robust. All variable definitions are provided in the Appendix.

The observations are limited to fund-stock pairs in which the fund holds the stock either at the end of year t or at the end of the semi-annual period of year t . As a result, we can capture the trading gains for both buying stocks and selling stocks. We have a sample with 560,697 fund-stock pairs

²² It is possible that the effects of shared audit office are driven by the fact that the two partners are in the same city, which creates information advantages for both mutual funds and auditors even if these two partners are not working for the same audit firm. In untabulated analyses, we control such local information advantage and the inferences remain.

over the sample period. Panel A of Table 2 reports descriptive statistics.²³ Among the 560,697 fund-stock pairs across all years, 4.5% have a shared audit office.²⁴ Panel B of Table 2 presents the regression results. Column (1) shows the result without fund fixed effects, while Column (2) includes fund fixed effects. We find that the coefficients on *Shared Office* are positive and significant at the 1% levels in both specifications.²⁵ The findings indicate that mutual funds make higher profits by trading on the stocks with the shared audit office, suggesting that mutual funds have an information advantage in these stocks, which is consistent with H1.

Potential Residual Endogeneity

The results so far are based on associations and could be sensitive to endogeneity issues, in particular, potential omitted factors that simultaneously cause the auditor sharing and funds' trading gains. The regressions include numerous control variables that are motivated by prior research and a variety of fixed effects (most importantly *fund fixed effects*). In this section, we employ a quasi-natural experiment stemming from audit-firm mergers to examine whether plausible exogenous shifts in auditor sharing affect the mutual fund's trading gains. In China, mergers and acquisitions have been considered as an important way of enhancing the competitiveness of audit firms since 2000 (Chan and Wu 2011). For example, in March 2005, Deloitte announced the acquisition of Beijing Tianjian, which was a member of the biggest domestic audit alliance, the Tianjian Alliance. This deal aimed to help Deloitte promote its competency and win more audit business (Gong et al. 2016). The Chinese government also

²³ We winsorize all the continuous variables at 1% and 99% in all specifications. No inferences are affected by winsorization.

²⁴ The percentage of fund-stock pairs with shared audit office is slightly different from that in Table 1 (4.82%) due to slightly different data requirements (i.e., we keep fund-firm pairs in which the fund holds the stock either at the end of year t or at the end of the semi-annual period of year t to calculate the trading gains).

²⁵ After controlling for fund fixed effects, the fund realizes a trading gain that is 10.8 basis points higher over the following six months if it shares the same audit office with the invested stock.

explicitly and implicitly supports mergers among domestic audit firms. Several prior studies use the setting of mergers of audit firms to address endogeneity (e.g., Chan and Wu 2011; Gong et al. 2016; Jiang, Wang, and Wang 2019).

Accordingly, we collect information on the merger events of audit firms from the website of the Chinese Institute of Certified Public Accountants (CICPA) and the website of audit firms. We identify 39 audit firm merger events where both the acquirer firm and the target firm are qualified to audit listed firms or mutual funds during our sample period 2004-2016. These merger events are *staggered*, which helps dispel potential confounding effects from concurrent regulatory changes and unrelated economic shocks.

We execute empirical analyses as follows. First, we identify a fund as a treatment fund if the fund's auditor merged with other audit firms during the sample period. The mergers exogenously brought a shared auditor to the treatment fund and some of their held stocks if the stocks are audited by the other audit firms involved in the mergers, and we identify these as treatment fund-firm pairs ($Treat=1$). We use two different control groups ($Treat=0$). The first control group includes all the listed firms that are held by treatment funds but have no shared audit office. The second control group is a matched sample. For each treatment fund-firm pair, we identify the fund-firm pair where the firm is held by the same fund and is audited by an auditor with similar size as the merged auditor in the year before the merger. We include an indicator $Post$ that equals to one for post-treatment period and zero otherwise.²⁶ Our variable of interest is the interaction term between the $Treat$ and $Post$, which captures the difference-in-differences effect.

The results are reported in Table 3. The standalone variable $Treat$ is dropped, as we include

²⁶ Our inferences are robust to one-to-five control group with the closest size as the treatment and restriction of the same length of window (i.e., five years) for pre-merger and post-merger periods.

fund-firm fixed effects.²⁷ In both full sample and matched sample, we find that the coefficients of the interaction term ($Treat*Post$) are positive and statistically significant at 5% levels. The evidence implies that, relative to control pairs, treatment fund-stock pairs obtain higher trading gains after an exogenous shift in shared audit office. We also investigate the parallel trend assumption in this setting by introducing several year indicator variables: $Before (t=-3)$, $Before (t=-2)$, etc., where $Before (t=-i)$ takes a value of one for the observation that i years before the event and $Post (t=j)$ takes a value of one for the observation that j years after the event. The results in the online Appendix show that the coefficients of $Treat \times Before (t=-i)$ are not significantly different from zero in either columns, suggesting that there are no pre-existing differential trends in trading gains between treatment and control fund-year pairs. Further, the differential trends only exist after the event. Because audit-firm M&As are arguably exogenous, the evidence suggests that shared auditor can lead to information sharing and more trading gains and our results are not driven by endogeneity problems.²⁸

The Effects of Information Opacity

We next examine factors that affect the information transfer. The auditors have access to a wide range of proprietary client information, and this information is more valuable when firms

²⁷ *Same Region* also drops out because the location of listed firms and mutual funds are constant during the sample period and it is absorbed by fund-firm fixed effects.

²⁸ We also conduct change analyses and propensity-score matched sample analyses (untabulated). In the change analyses, we replace the variables in Equation (1) with the changed versions between the current and the lagged periods. The coefficients on Δ Shared Office are positive but are not significant. However, when we separate Δ Shared Office into Shared to Non-Shared and Non-Shared to Shared, we find the coefficient on Non-Shared to Shared is positive and significant at the 5% level in both specifications, suggesting that the funds' trading gains increase significantly when the fund-stock pair changes from non-shared audit to shared audit. In contrast, the funds' trading gains are not affected when the fund-stock pair changes from shared audit to non-shared audit. In the propensity-score matched sample analyses, we estimate the conditional odds of having shared office using a Probit regression model where Shared Office is the dependent variable and all the controls variable in Equation (1) are the independent variables in the first-stage regression. Subsequently, we match each fund-stock-year observation with shared office to one observation with the same mutual fund that has the closest odds of having shared office. We require matches to have a maximum caliper difference of 0.01, without replacement. We still find positive and statistically significant coefficients on Shared Office. The results are shown in the online Appendix.

have more opaque information environment (Aobdia 2015). Therefore, we expect the effects of information sharing to be more pronounced when the firms are more opaque. To test this prediction, we adapt Equation (1) to include an indicator for firms' information opacity, and an interaction of information opacity with auditor sharing (*Shared Office*×*Opacity*). We predict that the coefficient on the interaction is positive. Because opacity is inherently difficult to measure, we use four measures to proxy for client companies' information opacity following prior studies: analyst following, earnings volatility, non-business related-party transactions, intangible assets.²⁹ We also use a *composite* measure that combines the above four measures.

Table 4 presents the results from estimating the effects of financial reporting opacity, where the results are based on using *Fewer Analysts*, *Higher Earnings Volatility*, *Existence of Non-Business RPTs*, *More Intangible Assets*, and *Composite Index* as proxies for opacity in Columns (1) - (5), respectively. We find that the coefficient estimates for *Shared Office*×*Opacity* are positive and statistically significant at the 5% level or better across all specifications. The evidence suggests that auditor sharing has a greater impact on funds' trading gains when the invested companies have more opaque information. These findings also further help address potential endogeneity. That is, we find that the effects are stronger in subsamples in which we have clear *ex-ante* reasons to expect

²⁹ Lang, Lins, and Miller (2004) find that analysts play an important oversight and information-processing role and thus a lower analyst following indicates greater opacity. Survey evidence indicates that earnings volatility is negatively related to earnings predictability and that this view is widely held by management. Consistent with such beliefs, Dichev and Tang (2009) provide empirical evidence that earnings volatility can reduce earnings predictability. Therefore, higher earnings volatility is indicative of greater opacity. RPTs are a convenient tool used by management to manipulate earnings. RPTs can further be employed as a tunneling mechanism by controlling shareholders to expropriate minority interests. Therefore, the existence of RPTs can measure the extent of reliance on relationship-based transactions, which likely lead to financial reporting opacity (Gu et al. 2019). But not all RPTs are problematic, therefore we follow Kohlbeck and Mayhew (2010, 2017) to define the existence of non-business RPTs to proxy for information opacity. Specifically, we consider who the related counterparty is in the RPTs and the nature of the transaction. And non-business RPTs are defined as DOS (director, officer and significant shareholders) loans, DOS borrowings, DOS guarantees, DOS and Investee legal and investment services, DOS and Investee unrelated business activities, and DOS stock transactions. Gu and Lev (2017) show that the gains from predicting corporate earnings have been shrinking over the past 30 years due to the increased prevalence of intangible assets. Furthermore, intangible assets can capture the complexity of firms' information and reduce institutional investors' informed trading (Bushee et al. 2018). Please refer to the Appendix for the detailed definitions of opacity.

more pronounced effects.

Connected Auditors' Benefits: Audit-Fee Analyses

So far, we have provided evidence that auditor sharing relates to information transfer and that connected funds can acquire private information from a shared audit office and obtain higher trading gains. In this section, we examine one of benefits that the connected auditors can receive, audit fees. We conduct audit-fee analyses at the fund level using this model:

$$\begin{aligned} LnFee_{j,t} = & \beta_0 + \beta_1 Connected\ Firms_{j,t}(Connected\ Firm\ Value_{j,t}) + \beta_2 Fund\ Size_{j,t} \\ & + \beta_3 Fund\ Performance_{j,t} + \beta_4 Family\ Size_{j,t} + \beta_5 Family\ Performance_{j,t} \\ & + \beta_6 Auditor\ Tenure_{j,t} + \beta_7 Fund\ Top\ 10_{j,t} + Fixed\ Effects + \varepsilon_{j,t} \quad (2) \end{aligned}$$

where $LnFee_{j,t}$ is the natural logarithm of audit fees of fund client j in year t . For each fund-year observation, we calculate the number or the market value of firms that share the same auditor with the fund during the year. When a connected auditor audits more firm clients, or larger firm clients, the information shared by the auditor would be more valuable. Therefore, we expect these auditors to receive higher audit fees from the fund client.

We include a number of variables to capture other factors that may contribute to the fund's audit fees, such as fund size, fund performance, family size, and family performance. In addition, we control the auditor's tenure for fund auditing (*Auditor Tenure*) and whether the auditor is Top 10 or not (*Fund Top10*) based on the ranking of total audited client assets during the year. Finally, we include year (and fund) fixed effects in the model. The results are reported in Panel A, Table 5. The coefficients on *Connected Firms* and *Connected Firm Value* are positive and statistically significant at the 10% level or better in all specifications, suggesting that the fund auditor can charge higher audit fees as a benefit to transfer private information. The results suggest an

economic reason why shared auditors are willing to transfer information to their fund clients.³⁰

We also employ the audit firm M&As' setting to investigate whether the connected auditors' higher audit fees still hold. Specifically, we identify a fund as a treatment fund ($Treat_{fund}=1$) if the auditors of the fund and any listed companies in fund's holding portfolios merged during the year, which exogenously brought a shared auditor to them. Consistent with design in DID analysis for H1, we identify the fund that is audited by an auditor with the closest size as the treatment fund's auditor before the merger as control fund ($Treat_{fund}=0$). We include an indicator $Post_{fund}$ that equals to one for post-treatment period and zero otherwise.³¹ The results are reported in Panel B, Table 5. Consistent with our expectation, we find that the coefficients on $Treat_{fund} \times Post_{fund}$ are positive and statistically significant across both specifications. The evidence implies that, relative to control funds, treatment funds charge higher audit fees after an exogenous shift in shared audit office. Further, the results in the online Appendix show that there are no pre-existing differential trends in audit fees between treatment and control funds and the differential trends only exist after the event.

We further analyze whether the auditor-sharing effects on funds' trading gains vary with the funds' audit-fee level. We add interactions between *Shared Office* and proxies for high audit fees by funds in the regression model. *High Fee* equals one if the funds' audit fees are greater than the sample median value during the year and zero otherwise. Because audit fees are a rough measure that includes compensation for extra audit effort and residual audit risk (DeFond and Zhang 2014), we further employ abnormal audit fees. Here, abnormal fees are calculated using the model in Table 5 (excluding *Connected Firms* and *Connected Firm Value*), and the abnormal fees are the residuals from the regression. *High Abnormal Fee* equals one if it is greater than the sample median

³⁰ Based on the coefficient estimates in Column (2), moving from the 25th to the 75th percentile of *Connected Firm Value* is associated with an increase of 1.678 in $LnFee$ ($0.002 \times (8.64 - 0.25) \times 100$), or 14.93 percent of its sample mean.

³¹ Our conclusions are robust to restriction of the same length of window (i.e., five years) for pre-merger and post-merger periods.

during the year and zero otherwise.

The results are presented in Table 6. The dependent variables are trading gains. The coefficients on the interactions between *Shared Office* and proxies for high fund audit fees are positive and significant at the 5% level or better, suggesting the funds' high audit fees can amplify the auditor-sharing effects on funds' trading gains. In other words, high audit fees may be one of the economic incentives for shared auditors to transfer private information about firms to connected funds. Overall, the results are consistent with the notion that high audit fees are an important reason for shared auditors' information transferring to mutual-fund clients.³²

Connected Auditors' Benefit: Audit-Quality Analyses

Another possible benefit for the connected auditors to transfer information is that they can obtain private information from funds that help them reduce audit risks and improve the audit quality. We examine the auditor-sharing effects on firms' audit quality in this section. Specifically, we construct a sample of firm-year observations for firms that are held by at least one mutual fund and run the following regression:

$$\begin{aligned} \text{Audit Quality}_{i,t} = & \beta_0 + \beta_1 \text{Fund Office}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{ROA}_{i,t} + \beta_4 \text{Leverage}_{i,t} + \beta_5 \text{Loss}_{i,t} \\ & + \beta_6 \text{Sales Turnover}_{i,t} + \beta_7 \text{BM}_{i,t} + \beta_8 \text{RECINV}_{i,t} + \beta_9 \text{CFO}_{i,t} + \beta_{10} \text{Growth}_{i,t} + \beta_{11} \text{Return}_{i,t} \\ & + \beta_{12} \text{Age}_{i,t} + \beta_{13} \text{Top 10}_{i,t} + \beta_{14} \text{Fund Share}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (3) \end{aligned}$$

The dependent variable is audit quality. We use three common measures for audit quality that are commonly used in prior studies (DeFond and Zhang, 2014; He et al. 2017; Aobdia 2019).

AbsDA_DD is the absolute value of abnormal accruals following Dechow and Dichev (2002),

³² We also investigate whether the effects are more pronounced when mutual funds are larger. Specifically, we construct an indicator variable *Large Fund* that equals to one if the mutual fund size is greater than the median value during the year and zero otherwise. We add interactions between *Shared Office* and *Large Fund* in the regression model. Untabulated analyses show that the coefficients on the interactions between *Shared Office* and *Large Fund* are positive and significant at the 5% level, suggesting the mutual fund size can amplify the auditor-sharing effects on funds' trading gains. The results are consistent with our expectation that auditors have higher incentive to retain larger fund clients.

AbsDA_KWL is the absolute value of abnormal accruals following Kothari, Leone, and Wasley (2005), and *Irregularity* is the existence of financial reporting irregularities.³³ Our variable of interest is *Fund Office*, an indicator that equals one if firms share a common audit office with at least one of the mutual funds that hold the stocks of the firm and zero otherwise. We include several control variables based on prior research (Gul et al. 2013; Li, Qi, Tian, and Zhang 2017).³⁴

We report the results in Table 7. Panel A reports descriptive statistics. 11.5% of sample firms display financial reporting irregularities during our sample period. 12.3% of firms have at least one common audit office with the mutual funds that hold the stocks of companies. The distribution of other variables is comparable to prior literature (e.g., Gul et al. 2013; Li et al. 2017). Panel B reports the OLS regression results. We find that the coefficients on *Fund Office* are negative and statistically significant at the 5% level or better across all specifications, suggesting that the auditors can improve the audit quality of the firms if the firms and the mutual funds that hold their stock share a common audit office. As before, we also conduct DID analysis for listed firms' audit quality using the audit firm M&As setting. Specifically, we identify a listed firm as a treatment firm ($Treat_{firm}=1$) if the auditors of the listed firm and any of mutual fund investors merged during the year, which exogenously brought a shared auditor to them. Consistent with design in DID analysis for H1 and H2a, we identify the listed firm that is audited by an auditor with the closest size as the treatment firm's auditor before the merger as control firm ($Treat_{firm}=0$). We include an

³³ Specifically, *Irregularity* is an indicator variable that equals one if the firm conducted financial reporting fraud sanctioned by regulators (i.e., the CSRC, MOF, or stock exchanges in China) in the subsequent periods, and zero otherwise (source: CSMAR). These cases are similar to the Accounting and Auditing Enforcement Releases in the U.S.

³⁴ Earnings quality is affected by financial characteristics such as operating performance, debt, growth, and size; therefore, we control for the following time-varying firm characteristics: the log value of total assets (*LnAsset*), return on assets (*ROA*), the leverage ratio (*Leverage*), the presence of loss (*Loss*), the ratio of sales to assets (*Sales Turnover*), the book-to-market ratio (*BM*), the ratio of receivables and inventory to assets (*RECINV*). Following Li et al. (2017), we include operating cash flows (*CFO*), sales growth (*Growth*), and stock returns during the year (*Return*). We add listing age (*Age*) based on Gul et al. (2013). Finally, we control the Top-10 audit-firm effect (*Top10*) and the percentage of shares held by mutual funds (*Fund Share*). As before, we include year and industry fixed effects in this firm-year model.

indicator $Post_{firm}$ that equals to one for post-treatment period and zero otherwise. As shown in Panel C, Table 7, the coefficients on $Treat_{firm} \times Post_{firm}$ are positive and statistically significant in two of three specifications. The results provide some evidence that, relative to control listed firms, treatment firms' audit quality is improved after an exogenous shift in shared audit office with mutual funds that hold the stocks of treatment firms. Further, the results in the online Appendix show that there are no pre-existing differential trends in audit quality between treatment and control listed firms and the differential trends only exist after the event.³⁵

VI ADDITIONAL ANALYSES AND ROBUSTNESS CHECKS

Quarterly Data Design

We conduct our analyses based on semi-year data for mutual fund due to the data limitation. As a robustness check, we replicate our trading gains results using the quarterly data. Specifically, we estimate trading gains in the quarterly data by multiplying the quarterly changes in fund j 's holding in firm i from third quarter of year t to fourth quarter of year t by the firm's buy-and-hold size-adjusted returns over the subsequent six-month period. Because only the top-10 stock holdings are available for mutual fund in quarterly data, the sample is reduced to 30,595 observations. In untabulated analyses we observe that the coefficients on *Shared Office* are positive and significant at the 1% levels. The coefficients are larger than that in Table 2 because using quarterly data we can only observe top-10 stock holding for each mutual fund, and the shareholding of top-10 firms is much larger than the average of all the stockholdings.³⁶

³⁵ An alternative explanation for our information sharing story is that it is caused by common auditors' biased audit opinions or compromised audit independence for clients whose stocks are held by these common auditors' mutual fund clients under pressure from these mutual funds, which benefits mutual funds' stock trading. However, our results in Table 7 are inconsistent with this explanation because we find that the audit quality of listed firms audited by connected audit office is higher than that of others. Further, in untabulated analyses, we also investigate the effects of *Fund Office* on listed firms' audit opinions. The coefficient on *Fund Office* is negative but insignificant, suggesting that the trading gains of information sharing is not driven by a biased audit opinion explanation.

³⁶ When employing quarterly data, we have only top-10 stock holdings for each fund. If the stock is in the top-10

Auditor Sharing and Funds' Holding Decision

In this section, we examine whether auditor sharing affect mutual funds' holding decision. Prior literature suggests that funds will invest more in securities that they have information advantage (e.g., Cohen et al. 2008; Bushee et al. 2018; Gu et al. 2019). When funds have information advantage in some securities, the future expected returns from trading those securities will be higher. In our setting, this suggests that mutual funds will put more weight on firms that share the same auditors. We estimate the following regression model:

$$\begin{aligned}
 Proportion_{i,j,t} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Size_{i,t-1} + \beta_3 Analyst\ Following_{i,t} + \beta_4 BM_{i,t-1} + \beta_5 ROA_{i,t-1} \\
 & + \beta_6 Leverage_{i,t-1} + \beta_7 Turnover_{i,t-1} + \beta_8 Return_{i,t-1} + \beta_9 Std\ Dev_{i,t-1} + \beta_{10} SOE_{i,t-1} \\
 & + \beta_{11} Top10_{i,t-1} + \beta_{12} CI\ Listed\ Firm_{i,t} + \beta_{13} Fund\ Size_{j,t-1} + \beta_{14} Family\ Size_{j,t-1} \\
 & + \beta_{15} Fund\ Performance_{j,t-1} + \beta_{16} CI\ Fund_{j,t} + \beta_{17} Holding\ Size_{i,j,t-1} \\
 & + \beta_{18} Fam\ Fund\ Holding_{i,j,t-1} + \beta_{19} Other\ Funds\ Holding\ Size_{i,j,t-1} \\
 & + \beta_{20} Same\ Region_{i,j,t-1} + \beta_{21} FM\ Ties_{i,j,t} + \beta_{22} FA\ Ties_{i,j,t} + Fixed\ Effects \\
 & + \varepsilon_{i,j,t}
 \end{aligned}
 \tag{4}$$

in which, subscripts i, j, t denote stock i , fund j , and year t , respectively. $Proportion_{i,j,t}$ is the percentage of fund j 's holding amount for stock i as a fraction of the fund's NAV during year t . The sample contains stocks that are held by any fund at the end of the year. $Shared\ Office_{i,j,t}$ equals one if stock i and fund j share the same audit office during year t , and zero otherwise. The definitions of control variables are similar to those in Equation (1).

Table 8, Panel A reports the regression results for Equation (4). Column (1) provides results without controlling for fund fixed effects. The coefficient on *Shared Office* is positive and significant at the 1% level (0.210, t-value=9.829), suggesting that the fund holds more stocks with a shared audit office. This conclusion holds after including fund fixed effects in Column (2) (0.072, t-value=4.578). Overall, the evidence is consistent with the notion that funds acquire more private

holdings for consecutive quarters, there is no error for calculating the trading percentage. However, if the stock is in the top-10 holdings for only one quarter, this may result in overestimate for trading percentage. For example, if firm A is the top-10 stock for a fund in quarter q , but the top 11 stock in quarter $q+1$, because we cannot observe the percentage for quarter $q+1$, therefore we will assume the fund has sold all the shares and the trading percentage will be overestimated. (A similar issue applies to the situation when firm A is the top-11 stocks in quarter q and top-10 stocks in quarter 10.)

information of firms that share the same auditor and, for this reason, they hold more stocks in these firms *ex ante*.

Auditor Sharing and Funds' Trading Behavior

How will mutual funds make use of their information advantage in firms with shared auditors? First, mutual funds may trade more actively in these firms. Bushee et al. (2018) find that local institutional investors have larger trading activities at the time when they have information advantage from the management. Second, mutual funds can shift their portfolio weights in advance of the public disclosure of information. Previous studies assess the extent of institutional investors' information advantage by examining whether the change in stock holdings is predictive of the upcoming earnings (e.g., Gompers and Metrick, 2001; Chen, Harford, and Li 2007; Cheng et al. 2019). In this section, we conduct analyses to shed light on how mutual funds utilize the information advantage from auditor sharing. Specifically, we examine whether funds' stock-holding changes relate to auditor sharing and to future performance.³⁷ The regression models are:

$$\begin{aligned} \Delta Holding_{i,j,t} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Size_{i,t-1} + \beta_3 Analyst\ Following_{i,t} + \beta_4 BM_{i,t-1} + \beta_5 ROA_{i,t-1} \\ & + \beta_6 Leverage_{i,t-1} + \beta_7 Turnover_{i,t-1} + \beta_8 Return_{i,t-1} + \beta_9 Std\ Dev_{i,t-1} + \beta_{10} SOE_{i,t-1} \\ & + \beta_{11} Top10_{i,t-1} + \beta_{12} CI\ Listed\ Firm_{i,t} + \beta_{13} Fund\ Size_{j,t-1} + \beta_{14} Family\ Size_{j,t-1} \\ & + \beta_{15} Fund\ Performance_{j,t-1} + \beta_{16} CI\ Fund_{j,t} + \beta_{17} Holding\ Size_{i,j,t-1} \\ & + \beta_{18} Fam\ Fund\ Holding_{i,j,t-1} + \beta_{19} Other\ Funds\ Holding\ Size_{i,j,t-1} \\ & + \beta_{20} Same\ Region_{i,j,t-1} + \beta_{21} FM\ Ties_{i,j,t} + \beta_{22} FA\ Ties_{i,j,t} + Fixed\ Effects \\ & + \varepsilon_{i,j,t} \end{aligned} \quad (5)$$

$$\begin{aligned} \Delta Holding_{i,j,t} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Performance_{i,t} + \beta_3 Share\ Office_{i,t} * Performance_{i,t} \\ & + \beta_4 Size_{i,t-1} + \beta_5 Analyst\ Following_{i,t} + \beta_6 BM_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 Leverage_{i,t-1} \\ & + \beta_9 Turnover_{i,t-1} + \beta_{10} Return_{i,t-1} + \beta_{11} Std\ Dev_{i,t-1} + \beta_{12} SOE_{i,t-1} + \beta_{13} Top10_{i,t-1} \\ & + \beta_{14} CI\ Listed\ Firm_{i,t} + \beta_{15} Fund\ Size_{j,t-1} + \beta_{16} Family\ Size_{j,t-1} \\ & + \beta_{17} Fund\ Performance_{j,t-1} + \beta_{18} CI\ Fund_{j,t} + \beta_{19} Holding\ Size_{i,j,t-1} \\ & + \beta_{20} Fam\ Fund\ Holding_{i,j,t-1} + \beta_{21} Other\ Funds\ Holding\ Size_{i,j,t-1} \\ & + \beta_{22} Same\ Region_{i,j,t-1} + \beta_{23} FM\ Ties_{i,j,t} + \beta_{24} FA\ Ties_{i,j,t} + Fixed\ Effects \\ & + \varepsilon_{i,j,t} \end{aligned} \quad (6)$$

where $\Delta Holding_{i,j,t}$ is defined as the fund j ' stock-holding changes in firm i from semi-year t to year

³⁷ The change of stock holding is defined in a 6-month period, that is, we compare the shareholding in the current period with that from 6 months ago. We do this because the funds disclose detailed holding information in semi-annual and annual reports.

t. *Shared Office* is as previously defined. Following prior studies, we use three measures to proxy for future performance announcements (Chen et al. 2007; Cheng et al. 2019): the change in ROA (ΔROA), unexpected earnings (*UE*), and subsequent six-month buy-and-hold size-adjusted stock returns (*BHAR*). We interact the performance measures and *Shared Office* in Equation (6), and the coefficients on the interactions capture the auditor-sharing effects on the funds' informed trading.

Panel B of Table 8 reports the results for Equation (5). In Column (1), we estimate the auditor-sharing effects on the absolute magnitude of funds' stock trading. The coefficient on *Shared Office* is positive and statistically significant at the 1% level, suggesting that the funds trade more if they share the same audit office with the invested stocks. In Columns (2) and (3), we separate the trading into net buying stocks and net selling stocks, respectively. The significant coefficients on *Shared Office* indicate that the funds both buy more stocks and sell more stocks if they share the same audit office with the concerned stocks.

Panel C of Table 8 reports the results for Equation (6). The coefficient estimates for the interaction of *Shared Office* and future performance (i.e., β_3) are positive and statistically significant at the 1% level in Columns (1) and (2) and at the 10% level in Column (3). The results suggest that the changes in connected funds' holding of the stocks with the shared audit office are more predictive of the invested firms' future performance than those of non-connected funds. This is consistent with the notion that connected funds acquire private information about firms' operating performance from the connected auditor, and then trade the stocks based on the information.

Negative Information and Auditor-Sharing Effects

There are reasons to believe that the effects of information sharing will be more pronounced

when firms have negative information. On the one hand, managers have strong incentives to withhold bad news due to career and/or compensation concerns (e.g., Berger and Hann 2007; Kothari, Shu, and Wysocki 2009). Therefore, information asymmetry between firms and outsiders, such as mutual funds, is likely more severe when firms have bad news. On the other hand, unlike other partners in social network (such as analysts, managers, etc.) who usually have incentive to convey positive information (Akbas et al. 2016), auditors have less incentive to convey positive news. Therefore, auditor information sharing may be more valuable when firms have negative news.

To examine our prediction, we adjust Equation (1) to include a proxy for firms' negative information and interact it with the auditor-sharing indicator. *Negative* is an indicator that equals one if the firm's operating performance (measured using ROA) declines in the upcoming earnings announcement and zero otherwise. The results are reported in Table 9. The results for auditor-sharing effects on funds' trading gains in the subsample of negative information and positive information are presented in Columns (1) and (2), respectively. In both specifications, the auditor sharing significantly increases the connected funds' trading gains. However, the positive and significant coefficient on *Shared Office* \times *Negative* in Column (3) is consistent with our prediction that the effects are stronger when firms report negative information. This empirical evidence also helps differentiate auditor-sharing effects from other social-network effects documented in prior studies because information sharing from managers is more significant when firms have good news (e.g., Cohen et al. 2008; Gu et al. 2019).

Further Analyses at the Audit-Partner Level

Effects of Social Ties between the Fund's Audit Partners and the Firm's Audit Partners

We argue that private information is shared within the same audit office. Experimental and

field research provide evidence of knowledge sharing across different audit teams within the audit office (Kennedy et al. 1997; Kadous et al. 2013; Cai et al. 2016). However, the audit team for the fund and the audit team for the listed firms may not be the same. This fact could limit the information sharing among audit partners within the same office. In this section, we explore whether the potential information sharing varies with the additional social ties among the partners auditing the fund and the firm within the same office. Social ties are important across the globe and considered critical in China (e.g., Cheng and Rosett 1991; Bian 1997).

Following Cohen, Frazzini, and Malloy (2010) and Guan, Su, Wu, and Yang (2016), we focus on school ties arising from sharing an educational link. Individuals who attended the same schools are likely to have the same background and similar interests (McPherson, Smith-Lovin, and Cook 2001).³⁸ Therefore, we expect that partners within the same office are more likely to share information when they also have school ties. As a result, we expect the information sharing between mutual funds and connected auditors to be more pronounced when the audit partners have school ties.

To test our prediction, we collect school information for individual audit partners. Then we partition *Shared Office* into two variables: *Shared Office_{ties}*, which equals one if partners auditing the fund and the firm within the same office have a common alma mater and zero otherwise; *Shared Office_{no ties}*, which equals one if the partners do not have a common alma mater and zero otherwise. The results are reported in Panel A, Table 10. In Columns (1) and (2), we find that both coefficients

³⁸ Connections forged through school ties enjoy enhanced interaction via in-jokes, shared traditions, and a sense of group belonging, as evidenced by alumni networks, newsletters, donations, and college sports events. Prior studies suggest that a common educational background fosters social ties and result in greater information sharing. Socially connected people tend to follow communal norms that promote mutual caring and trust (Silver 1990; Cohen et al. 2010; Guan et al. 2016). Moreover, all relationships depend to some extent on trust (Tomkins 2001) and interactions and greater comfort between individuals allow connected agents to better communicate subtle and sensitive information that would otherwise not be shared (Granovetter 2005).

on *Shared Office*_{ties} and *Shared Office*_{no ties} are positive and significant at the 5% level or better.³⁹

An F-test shows that the difference between the estimated coefficients of *Shared Office*_{ties} and *Shared Office*_{no ties} is significant in both columns (two-sided p-value=0.015 and 0.009, respectively). The results suggest that the additional social ties among partners can amplify the information sharing between mutual funds and connected auditors.

Effects of Shared Partners on Funds' Trading Gains

In the analysis so far, we evaluate the importance of shared auditors to mutual funds' information advantage by focusing on the audit office level. In this section, we investigate the information sharing at the audit partner level. Specifically, based on the disclosed name in the audit reports of mutual funds and listed firms, we separate our variable interest (*Shared Office*) into two variables *Shared Office*_{same partner} and *Shared Office*_{diff partner}, where *Shared Office*_{same partner} (*Shared Office*_{diff partner}) equals to one if the fund shares the same audit office and same audit partner (but different audit partner) with the firm in its stock holdings, and zero otherwise.

The results are reported in Panel B, Table 10. In Columns (1) and (2), we find that both coefficients on *Shared Office*_{same partner} and *Shared Office*_{diff partner} are positive and significant at the 10% level or better. An F-test shows that the difference between the estimated coefficients of *Shared Office*_{same partner} and *Shared Office*_{diff partner} is significant in both columns (two-sided p-value=0.092 and 0.095, respectively). The results suggest that shared same audit partner can amplify the information sharing between mutual funds and connected auditors. However, we should interpret the results cautiously because we only have 0.36% of observations within the shared office group that share the same partner.

³⁹ The sample size is smaller here because we need the school information for the fund's and firm's partners.

Additional Cross-Sectional Analyses

Effects of Institutional Environments

We take advantage of the heterogeneity of regional development in China and investigate whether legal and institutional development of auditor's location has a moderating effect on the information sharing between auditors and funds. Specifically, we follow the literature (e.g., Jian and Wong, 2010; He et al. 2017) and use the marketization index compiled by Fan et al. (2018) to measure the legal and institutional development for shared audit office's location in different regions. We divide the regions into four groups according to the quartile value of marketization index in the shared audit office sample, and replace our main variable of interest *Shared Office* with four variables based on the degree of legal and institutional development. For example, *Shared Office_{m1}* (*Shared Office_{m4}*) indicates that there is shared audit office and the shared audit office is located in regions with the least (most) developed legal and institutional environment. The results are reported in Panel A of Table 11. We find that *Shared Office_{m1}* and *Shared Office_{m2}* are both significant, while *Shared Office_{m3}* and *Shared Office_{m4}* are not. An F-test shows that the difference between the estimated coefficients of *Shared Office_{m1}* and *Shared Office_{m4}* is significant in both columns (two-sided p-value=0.008 and 0.008, respectively). The results indicate that the information sharing is more significant when the legal and institution development is weaker.

Effects of Auditor's Market Power in the Mutual Fund Industry

In the hypothesis development, we argue that the auditors may actively communicate with their fund clients for the retention purpose. In this section, we investigate the effects of auditor's incentives to retain fund clients on the information sharing. Specifically, we define the market power of an auditor office using its market share in the fund industry to proxy for auditor's

incentives for client retention, that is, the fund value audited by the audit office divided by the sum of all fund values in the market during the year. Then we separate our variable of interest (*Shared Office*) into two variables *Shared Office less power* versus *Shared Office more power* based on whether the market share is greater than the median value in the shared office sample. The results are presented in Panel B of Table 11. The coefficients on *Shared Office less power* are positive and significant at 5% or 1% levels, while the coefficients on *Shared Office more power* are positive but insignificant. An F-test shows that the difference between the estimated coefficients of *Shared Office less power* and *Shared Office more power* is significant in both columns (two-sided p-value=0.056 and 0.059, respectively). In sum, our results are driven by the shared office with less market power in the fund market, consistent with our argument in the hypothesis development part.

Effects of the Auditor's Industry Expertise

Prior studies suggest that the information sharing is also influenced by the quality of information provider (Dhaliwal et al. 2016). Industry experts have deeper understanding of their client firms and provide higher quality audits (e.g., Aobdia 2019). Therefore, we predict that information sharing between the mutual fund and auditor may also be affected by the industry expertise of the shared auditor. Following prior literature (Chen, Sun, and Wu 2010), we define the audit office as an industry expert if the market share of the audit office in specific industry is greater than 10%. We separate *Shared Office* into two variables (*Shared Office expert* versus *Shared Office non-expert*) based on whether the shared audit office is an industry expert or not. The results are reported in Panel C of Table 11. The coefficients on *Shared Office expert* are positive and significant at the 1% levels, while the coefficients on *Shared Office non-expert* are positive but insignificant. An F-test shows that the difference between the estimated coefficients of *Shared Office expert* and

Shared Office *non-expert* is significant in both columns (two-sided p-value=0.067 and 0.082, respectively). We conclude that the information-sharing effects are more pronounced when the auditor is an industry expert. The results are consistent with the idea that industry-expert auditors can share more valuable information.

Indirect Auditor Sharing

In our setting, there are some observations for which the fund managers manage two or more funds and the funds have different audit offices.⁴⁰ Therefore, the setting also provides an opportunity to examine potential cross-sharing. We define *Indirect Shared Office* equal to one if mutual fund and the listed firm do not share the same audit office, but the listed firm and another mutual fund managed by the same fund manager share the same audit office, zero otherwise. The results are reported in Panel D of Table 11. Consistent with the expectation, we find that the coefficients on *Indirect Shared Office* are significant at the 10% or 5% levels (using two-sided tests). The results suggest that indirect auditor sharing can also help the information transfer between auditor and mutual funds. However, we note that only 1.6% of observations indirectly share an audit office.

Effects of Social Ties between Fund Managers and Top Executives

Prior studies document that the social ties between fund managers and top executives of listed firms can influence the fund's trading gains (Cohen et al. 2008). Although we have controlled social ties in our main analyses (*FM Ties*), in this section we further investigate whether the shared auditor can affect fund's trading gains independently from such social ties. Specifically, we separate *Shared Office* into two variables: *Shared Office* *fm ties* indicates that firm and fund share the

⁴⁰ During our sample period, 52% of the fund managers only manage one fund. For those fund managers who manage more than one fund, we observe that 20% of these fund managers select different audit offices for their funds.

auditor, and at the same time firm manager and fund manager have school ties; *Shared Office_{no fm ties}* indicates that firm and fund share the auditor, but firm manager and fund manager have no school ties. The results are reported in Panel E, Table 11. The coefficient of *Shared Office_{fm ties}* is insignificant, while the coefficient of *Shared Office_{no fm ties}* is significant. The results suggest that auditor information sharing has an effect beyond and above other social ties between fund manager and firm managers. In addition, when firm managers and fund managers have school ties, fund managers may directly receive information from firms, while there are no school ties, information sharing from auditor is more valuable.⁴¹

Shared Audit Firm versus Shared Audit Office

We use a common audit office between the mutual fund and firm to proxy for auditor sharing. The underlying argument is that the audit office is where the client information is concentrated (e.g., Dhaliwal et al. 2016). As a robustness check, we investigate whether audit-*firm* sharing can cause information transfer in our setting. *Shared Audit Firm* indicates whether the mutual fund and the firm share the same audit firm during the year. Further, we separate the shared audit firm into two variables: *Shared Office* (as defined before) and *Shared Audit Firm Not Office* (that equals one if the fund and the firm share the same audit firm but not the same audit office and zero otherwise). We conduct the analyses for H1, H2a and H2b. Overall, the results indicate that *audit-office* sharing is especially important and relates to information transfer from auditors to mutual funds. The results are reported in the online Appendix.

Potential Confounding Effects of Fund Family

Prior research suggests that the information used in investment decisions is shared among funds

⁴¹ It should be noted that only 0.24% of observations have *Shared Office_{fm ties}* = 1, which may also contribute to the insignificant coefficients.

within a fund family (Elton, Gruber, and Green 2007). To exclude the possibility that our results are driven by information sharing within the same fund-management company, we first exclude the fund-stock pairwise observations where all the funds within the fund family are audited by the same auditor and rerun the regressions. Untabulated results show that the coefficient on *Shared Office* is still positive and significant (at the 1% level), indicating that our results are not driven by information sharing within the fund family. Second, we include *fund company-year fixed effects* to control for the potential effects of unobservable time-varying fund-company characteristics and our results still hold. We conclude that our inferences are robust to considering potential information sharing within the fund company.

Potential Effects on the Listed Firms

In this article we focus on the possibility of information sharing between the mutual fund and its auditor. We control for numerous factors related to the listed client firms but do not emphasize on these client firms. We conjecture that in most cases the client firms are unaware of any information sharing that might happen between the mutual fund and the auditor. For completeness, we also investigate the effects of shared auditor from the perspective of listed firms. Specifically, we investigate the listed firms' auditor decisions. If the listed firm's managers are aware of information sharing of the auditor, they may try to obtain an audit-fee discount or change the auditor. To test this possibility, we use the logarithm of audit fees in year t and the likelihood of audit-office change in the subsequent year as our dependent variables, and regress on a variable indicating that the firm shares auditor with mutual funds. We do not find any significant results, consistent the listed firms not being aware of information sharing between mutual funds and

auditors.⁴²

VII CONCLUSIONS

We examine whether mutual funds and their auditors share information about the auditors' clients. Although regulators put restrictions on auditors' ability to share clients' information, such information sharing can potentially benefit both mutual funds and auditors. Using a large and hand-collected Chinese sample, we find that mutual funds' trading in the stocks that share the same auditors with them earns greater profits and that these effects are more pronounced when the firms are more opaque. We further find that mutual funds invest more in these stocks and trade more in these firms, and that their trading is associated with the future operating performance of these firms. The evidence suggests that information about firms with shared auditors flows from connected auditors to mutual funds, which enhances funds' informational advantage in these firms.

We also find evidence that connected auditors receive higher audit fees from mutual funds when the information sharing is more likely, suggesting that the auditor benefits from the information sharing. Similarly, we show that connected auditors increase their audit quality, which is consistent with the mutual funds providing relevant information to the auditor. Overall, our study provides evidence of bi-directional information sharing between two important market intermediaries.

⁴² We also examine the possible effects of auditor information sharing on institutional holdings, liquidity, trading volume, and corporate governance. We do not find significant evidence of such effects on the listed firms.

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Table 1: Sample Descriptive Statistics

Year	# of Fund Companies	# of Funds	# of unique funds for each fund company	# of unique auditors for each fund company	Stocks held by funds	Fund-Stock Observations	Fund-Stock with Shared Auditor	Percent of Fund-Stock with Shared Auditor
2004	16	19	1.32	1.12	264	802	72	8.98%
2005	18	28	1.71	1.20	370	1393	103	7.39%
2006	29	50	2.32	1.19	496	2413	159	6.59%
2007	40	92	3.11	1.30	609	5048	286	5.67%
2008	54	192	5.19	1.29	679	10936	613	5.61%
2009	54	228	5.61	1.34	957	15420	737	4.78%
2010	56	264	6.91	1.35	1,122	18625	1,004	5.39%
2011	56	313	7.72	1.40	1,178	21329	1,234	5.79%
2012	61	412	9.40	1.35	1,622	33023	1,697	5.14%
2013	62	469	10.14	1.35	1,811	40104	1,719	4.29%
2014	65	497	11.39	1.38	2,077	46986	2,010	4.28%
2015	67	419	10.60	1.26	2,134	40193	2,069	5.15%
2016	84	901	18.96	1.44	2,309	74506	3,262	4.38%
Total	662	3884	11.02	1.34	15,628	310,778	14,965	4.82%

This table describes the yearly distribution of the sample after dropping fund-stock observations without necessary variables for the subsequent regressions of holding decisions.

Table 2: Shared Auditors and Funds' Trading Gains

This table presents the regression results of funds' trading gains on shared auditor between fund and listed firms held by the fund based on the following regression:

$$\begin{aligned}
Gain_{i,j,T} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Size_{i,t-1} + \beta_3 Analyst\ Following_{i,t} + \beta_4 BM_{i,t-1} \\
& + \beta_5 ROA_{i,t-1} + \beta_6 Leverage_{i,t-1} + \beta_7 Turnover_{i,t-1} + \beta_8 Return_{i,t-1} \\
& + \beta_9 Std\ Dev_{i,t-1} + \beta_{10} SOE_{i,t-1} + \beta_{11} Top10_{i,t-1} + \beta_{12} CI\ Listed\ Firm_{i,t} \\
& + \beta_{13} Fund\ Size_{j,t-1} + \beta_{14} Family\ Size_{j,t-1} + \beta_{15} Fund\ Performance_{j,t-1} \\
& + \beta_{16} CI\ Fund_{i,t} + \beta_{17} Holding\ Size_{i,j,t-1} + \beta_{18} Fam\ Fund\ Holding_{i,j,t-1} \\
& + \beta_{19} Other\ Funds\ Holding\ Size_{i,j,t-1} + \beta_{20} Same\ Region_{i,j,t-1} + \beta_{21} FM\ Ties_{i,t} \\
& + \beta_{22} FA\ Ties_{i,t} + Fixed\ Effects + \varepsilon_{i,j,t}
\end{aligned}$$

The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. The units of analysis are fund-stock-years. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The sample contains 560,697 fund-stock pairs across all the years in the sample period after dropping observations without necessary variables used in the regression analysis. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

Panel A: Descriptive Statistics

VARIABLES	N	Mean	Std Dev	P25	P50	P75
<i>Gains</i>	560,697	0.015	5.605	-0.112	0.000	0.117
<i>Shared Office</i>	560,697	0.045	0.206	0.000	0.000	0.000
<i>Size</i>	560,697	16.500	1.029	15.780	16.430	17.140
<i>Analyst Following</i>	560,697	2.628	0.983	2.197	2.890	3.367
<i>BM</i>	560,697	0.525	0.267	0.307	0.486	0.730
<i>ROA</i>	560,697	0.068	0.065	0.026	0.057	0.098
<i>Leverage</i>	560,697	0.469	0.201	0.314	0.476	0.629
<i>Turnover</i>	560,697	4.294	3.237	1.914	3.414	5.768
<i>Return</i>	560,697	0.282	0.713	-0.181	0.089	0.528
<i>Std Dev</i>	560,697	0.137	0.060	0.098	0.125	0.161
<i>SOE</i>	560,697	0.533	0.499	0.000	1.000	1.000
<i>Top10</i>	560,697	0.615	0.487	0.000	1.000	1.000
<i>CI Listed Firm</i>	560,697	0.071	0.171	0.003	0.012	0.050
<i>Fund Size</i>	560,697	20.600	1.849	19.230	20.760	22.040
<i>Family Size</i>	560,697	24.270	1.181	23.600	24.380	25.080
<i>Fund Performance</i>	560,697	0.099	0.331	-0.097	0.034	0.230
<i>CI Fund</i>	560,697	0.018	0.072	0.000	0.002	0.008
<i>Holding Size</i>	560,697	10.730	6.854	0.000	13.490	16.010
<i>Family Fund Holding</i>	560,697	19.910	3.203	19.180	20.470	21.530
<i>Other Funds' Holding Size</i>	560,697	18.184	4.047	17.529	19.117	20.305
<i>Same Region</i>	560,697	0.120	0.325	0.000	0.000	0.000
<i>FM Ties</i>	560,697	0.032	0.176	0.000	0.000	0.000
<i>FA Ties</i>	560,697	0.013	0.115	0.000	0.000	0.000

Panel B: Regression Results

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i>	0.113*** (2.746)	0.106*** (2.590)
<i>Size</i>	0.053*** (2.680)	0.064*** (2.926)
<i>Analyst Following</i>	0.026** (2.505)	0.022** (2.147)
<i>BM</i>	0.132** (2.218)	0.172*** (2.872)
<i>ROA</i>	0.456* (1.921)	0.444* (1.839)
<i>Leverage</i>	-0.166*** (-2.888)	-0.180*** (-3.109)
<i>Turnover</i>	0.015*** (4.788)	0.016*** (4.883)
<i>Return</i>	-0.027 (-1.078)	-0.037 (-1.455)
<i>Std Dev</i>	0.094 (0.477)	0.101 (0.508)
<i>SOE</i>	-0.001 (-0.070)	-0.001 (-0.047)
<i>Top10</i>	0.013 (0.822)	0.014 (0.870)
<i>CI Listed Firm</i>	-0.155*** (-3.166)	-0.158*** (-3.248)
<i>Fund Size</i>	0.017** (2.510)	0.058** (2.127)
<i>Family Size</i>	0.003 (0.398)	0.040 (0.825)
<i>Fund Performance</i>	-0.006 (-0.051)	-0.061 (-0.405)
<i>CI Fund</i>	-0.352 (-1.281)	0.111 (0.225)
<i>Holding Size</i>	-0.018*** (-8.140)	-0.017*** (-7.024)
<i>Family Fund Holding</i>	0.002 (0.459)	0.001 (0.214)
<i>Other Funds' Holding Size</i>	0.000 (0.129)	-0.003 (-0.829)
<i>Same Region</i>	0.000 (0.007)	-0.002 (-0.095)
<i>FM Ties</i>	0.169*** (2.867)	0.157*** (2.621)
<i>FA Ties</i>	0.153* (1.753)	0.144* (1.647)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009

Table 3: DID Analysis Using Audit Firm M&As

This table presents the regression results of funds' trading gains on shared auditor between fund and listed firms held by the fund using the audit firm mergers setting in China. *Treat* is an indicator variable that equals to one if the fund and listed firms shared audit office during the sample period due to the audit firm merger and zero otherwise. *Post* is an indicator variable that equals to one for the year after the audit firm merger and zero otherwise. The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. The units of analysis are fund-stock-years. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The sample contains 40,318 (10,028) fund-stock pairs across all the years in the sample period after dropping observations without necessary variables used in the regression analysis. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

	(1)	(2)
	Dependent Variable=Trading Gains	
	Full Sample	Matched Sample
<i>Treat×Post</i>	5.888** (2.105)	5.817** (2.397)
<i>Post</i>	-2.493** (-2.308)	-1.401 (-0.883)
<i>Size</i>	-3.537*** (-6.713)	-5.551*** (-4.866)
<i>Analyst Following</i>	0.575** (2.333)	0.345 (0.683)
<i>BM</i>	-3.640 (-1.597)	-5.471 (-1.585)
<i>ROA</i>	-5.649 (-1.317)	-8.075 (-1.122)
<i>Leverage</i>	-1.272 (-1.071)	-1.769 (-0.576)
<i>Turnover</i>	0.076 (1.503)	0.296** (2.467)
<i>Return</i>	0.394 (1.457)	0.347 (0.751)
<i>Std Dev</i>	-5.574** (-2.319)	-1.351 (-0.289)
<i>SOE</i>	1.805** (2.147)	4.446 (1.578)
<i>Top10</i>	0.127 (0.344)	-0.252 (-0.363)
<i>CI Listed Firm</i>	-0.237 (-0.176)	13.560*** (5.295)
<i>Fund Size</i>	1.413*** (3.239)	2.228*** (3.682)
<i>Family Size</i>	-0.375 (-0.664)	-1.021 (-1.194)
<i>Fund Performance</i>	-0.943 (-0.706)	-2.710 (-1.316)
<i>CI Fund</i>	1.592 (0.837)	-1.765 (-0.441)
<i> Holding Size</i>	0.016 (0.845)	-0.042 (-1.181)
<i>Family Fund Holding</i>	-0.121* (-1.825)	-0.114 (-0.701)
<i>Other Funds' Holding Size</i>	-0.023 (-0.480)	-0.033 (-0.370)
<i>FM Ties</i>	1.734* (1.938)	-0.135 (-0.085)
<i>FA Ties</i>	0.738 (0.655)	0.828 (0.557)
Year Fixed Effects	Yes	Yes
Fund×Firm Fixed Effects	Yes	Yes
Observations	40,318	10,028
Adjusted R-squared	0.445	0.428

Table 4: The Effect of Firms' Opacity on Fund's Trading Gains (Channel Test)

This table presents the regression results of effects of listed firms' opacity on association between funds' trading gains and shared auditor between fund and listed firms held by the fund based on the following regression:

$$\begin{aligned} Gain_{i,j,T} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Opacity_{i,t} + \beta_3 Share\ Office_{i,j,t} * Opacity_{i,t} \\ & + \beta_4 Size_{i,t-1} + \beta_5 Analyst\ Following_{i,t} + \beta_6 BM_{i,t-1} + \beta_7 ROA_{i,t-1} \\ & + \beta_8 Leverage_{i,t-1} + \beta_9 Turnover_{i,t-1} + \beta_{10} Return_{i,t-1} + \beta_{11} Std\ Dev_{i,t-1} \\ & + \beta_{12} SOE_{i,t-1} + \beta_{13} Top10_{i,t-1} + \beta_{14} CI\ Listed\ Firm_{i,t} + \beta_{15} Fund\ Size_{j,t-1} \\ & + \beta_{16} Family\ Size_{j,t-1} + \beta_{17} Fund\ Performance_{j,t-1} + \beta_{18} CI\ Fund_{i,t} \\ & + \beta_{19} Holding\ Size_{i,j,t-1} + \beta_{20} Fam\ Fund\ Holding_{i,j,t-1} \\ & + \beta_{21} Other\ Funds\ Holding\ Size_{i,j,t-1} + \beta_{22} Same\ Region_{i,j,t-1} + \beta_{23} FM\ Ties_{i,t} \\ & + \beta_{24} FM\ Ties_{i,t} + Fixed\ Effects + \varepsilon_{i,j,t} \end{aligned}$$

The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. We use four alternative measures, that is, analyst following, earnings volatility, non-business related party transactions and intangible assets to proxy for firms' opacity in Column (1), Column (2), Column (3), and Column (4), respectively. *Fewer Analysts* is an indicator variable which equals one if the firm's number of analyst following is less than the sample lower tertile during the year and zero otherwise; *High Volatility* is an indicator variable which equals one if the firm's earnings volatility is higher than the sample upper tertile during the year and zero otherwise. Earnings volatility is measured as the standard deviation of ROA over the past three years; Existence of Non-business *RPT* is an indicator variable which equals one if the firm has non-business related party transactions during the year, and zero otherwise; *More Intangible* is an indicator variable which equals one if the firm's intangible asset is greater than the sample upper tertile during the year and zero otherwise. In Column (5), we use a composite index to proxy for opacity. *Composite Index* is an indicator variable that equals one if the sum of indicator variables for five opaque measures including *Fewer analysts*, *Higher Earnings Volatility*, *Existence of Non-Business RPTs*, and *More Intangible Assets* is higher than the sample upper tertile during the year and zero otherwise. The units of analysis are fund-stock-years. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. We use the maximum number of observations for each dependent variable after dropping observations without necessary variables used in the regression analysis. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Dependent Variable = Trading Gains				
	Fewer Analysts	Higher Earnings Volatility	Existence of Non-Business RPTs	More Intangible Assets	Composite Index
<i>Shared Office</i> × <i>Opacity</i>	0.238** (2.380)	0.242** (2.057)	0.166** (2.014)	0.321*** (3.560)	0.328*** (3.598)
<i>Opacity</i>	-0.021 (-0.777)	-0.012 (-0.621)	-0.009 (-0.571)	-0.055*** (-2.976)	-0.048*** (-2.813)
<i>Shared Office</i>	0.056 (1.180)	-0.009 (-0.182)	-0.001 (-0.023)	-0.007 (-0.139)	-0.075 (-1.471)
<i>Size</i>	0.065*** (2.961)	0.047** (2.053)	0.065*** (3.027)	0.062*** (2.846)	0.065*** (2.997)
<i>Analyst Following</i>	0.017 (1.176)	0.022** (2.135)	0.027*** (2.590)	0.023** (2.216)	0.018* (1.664)
<i>BM</i>	0.172*** (2.874)	0.116* (1.822)	0.177*** (2.895)	0.168*** (2.803)	0.163*** (2.623)
<i>ROA</i>	0.437* (1.808)	0.378 (1.566)	0.459* (1.896)	0.420* (1.731)	0.394 (1.625)
<i>Leverage</i>	-0.179*** (-3.092)	-0.182*** (-3.018)	-0.154*** (-2.669)	-0.179*** (-3.084)	-0.187*** (-3.143)
<i>Turnover</i>	0.016*** (4.926)	0.016*** (4.648)	0.016*** (4.803)	0.016*** (4.884)	0.017*** (4.815)
<i>Return</i>	-0.037 (-1.462)	-0.050** (-1.969)	-0.052** (-2.042)	-0.037 (-1.469)	-0.054** (-2.122)
<i>Std Dev</i>	0.099 (0.497)	0.216 (1.074)	0.207 (1.049)	0.108 (0.544)	0.236 (1.188)
<i>SOE</i>	-0.001 (-0.084)	0.001 (0.051)	-0.010 (-0.588)	-0.001 (-0.055)	-0.013 (-0.723)

<i>Top10</i>	0.014 (0.828)	0.029* (1.714)	0.019 (1.154)	0.015 (0.908)	0.035** (2.148)
<i>CI Listed Firm</i>	-0.159*** (-3.273)	-0.062 (-1.256)	-0.172*** (-3.508)	-0.156*** (-3.209)	-0.096* (-1.926)
<i>Fund Size</i>	0.058** (2.121)	0.061** (2.162)	0.055** (2.004)	0.058** (2.119)	0.059** (2.113)
<i>Family Size</i>	0.040 (0.823)	0.033 (0.670)	0.019 (0.385)	0.039 (0.814)	0.014 (0.271)
<i>Fund Performance</i>	-0.061 (-0.404)	-0.094 (-0.661)	-0.065 (-0.427)	-0.061 (-0.402)	-0.101 (-0.703)
<i>CI Fund</i>	0.110 (0.224)	0.155 (0.286)	0.156 (0.320)	0.116 (0.235)	0.215 (0.390)
<i> Holding Size</i>	-0.017*** (-7.019)	-0.016*** (-6.694)	-0.016*** (-6.844)	-0.017*** (-7.021)	-0.015*** (-6.456)
<i>Family Fund Holding</i>	0.001 (0.207)	0.004 (0.792)	-0.002 (-0.450)	0.001 (0.214)	-0.000 (-0.096)
<i>Other Funds' Holding Size</i>	-0.003 (-0.843)	-0.003 (-0.701)	-0.002 (-0.447)	-0.003 (-0.812)	-0.002 (-0.617)
<i>Same Region</i>	-0.002 (-0.091)	-0.003 (-0.101)	0.004 (0.161)	-0.002 (-0.062)	0.010 (0.373)
<i>FM Ties</i>	0.158*** (2.634)	0.163*** (2.627)	0.162*** (2.734)	0.158*** (2.633)	0.168*** (2.739)
<i>FA Ties</i>	0.143 (1.644)	0.145* (1.725)	0.118 (1.323)	0.143 (1.645)	0.113 (1.332)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	560,697	541,369	557,760	560,697	538,642
Adjusted R-squared	0.009	0.008	0.009	0.009	0.009

Table 5: Auditors' Benefits: Audit Fees

This table presents the results for auditor's benefits in terms of audit fees. Panel A presents the regression results of effects of funds' auditor's number (value) of listed firms audited on fund's audit fees based on the following regression:

$$\begin{aligned} \ln Fee_{j,t} = & \beta_0 + \beta_1 \text{Connected Firms}_{j,t} (\text{Connected Firm Value}_{j,t}) + \beta_2 \text{Fund Size}_{j,t} \\ & + \beta_3 \text{Fund Performance}_{j,t} + \beta_4 \text{Family Size}_{j,t} + \beta_5 \text{Family Performance}_{j,t} \\ & + \beta_6 \text{Auditor Tenure}_{j,t} + \beta_7 \text{Fund Top 10}_{j,t} + \text{Fixed Effects} + \varepsilon_{j,t} \end{aligned}$$

The dependent variable is the fund's audit fees, measured as the natural logarithm of audit fees for fund j in year t . The units of analysis are fund-years. The sample contains 8,279 fund-years across our sample period after dropping observations without necessary variables used in the regression analysis. Panel B presents the regression results using the audit firm mergers setting in China. $Treat_{fund}$ is an indicator variable that equals to one if the fund holds the stocks of listed firms shared the same audit office during the sample period due to the audit firm merger and zero otherwise. $Post_{fund}$ is an indicator variable that equals to one for the year after the audit firm merger and zero otherwise. The definitions of the other variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

Panel A: OLS Regression Results

VARIABLES	(1)	(2)	(3)	(4)
	Dependent Variable= $\ln Fee$			
<i>Connected Firms</i>	0.002** (2.179)		0.002** (2.006)	
<i>Connected Firm Value</i>		0.002*** (3.013)		0.001* (1.863)
<i>Fund Size</i>	0.144*** (39.442)	0.145*** (39.396)	0.071*** (8.917)	0.072*** (9.024)
<i>Fund Performance</i>	-0.000** (-2.081)	-0.000** (-2.068)	-0.000 (-0.292)	-0.000 (-0.287)
<i>Family Size</i>	-0.016*** (-4.258)	-0.016*** (-4.225)	0.012 (0.960)	0.012 (0.984)
<i>Family Performance</i>	0.000 (0.034)	0.000 (0.100)	-0.000 (-1.440)	-0.000 (-1.430)
<i>Auditor Tenure</i>	0.027*** (15.956)	0.026*** (15.722)	0.009** (2.074)	0.009** (2.118)
<i>Fund Top10</i>	0.151*** (5.041)	0.148*** (4.912)	-0.019 (-0.510)	-0.018 (-0.473)
Fund Fixed Effects	No	No	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,279	8,279	8,279	8,279
Adjusted R-squared	0.522	0.522	0.800	0.800

Panel B: DID Analysis

VARIABLES	(1)	(2)
	Dependent Variable= <i>LnFee</i>	
<i>Treat_{fund} × Post_{fund}</i>	0.138*** (2.795)	0.122** (2.554)
<i>Treat_{fund}</i>	-0.092 (-1.361)	
<i>Post_{fund}</i>	-0.094 (-1.661)	-0.038 (-0.830)
<i>Fund Size</i>	0.124*** (6.164)	0.147*** (5.767)
<i>Fund Performance</i>	-0.000 (-0.064)	0.001 (1.006)
<i>Family Size</i>	0.008 (0.254)	-0.109*** (-2.828)
<i>Family Performance</i>	0.001 (1.235)	0.000 (0.323)
<i>Auditor Tenure</i>	0.008 (1.168)	-0.006 (-0.560)
<i>Fund Top10</i>	0.038 (0.651)	0.004 (0.060)
Fund Fixed Effects	No	Yes
Year Fixed Effects	Yes	Yes
Observations	830	830
Adjusted R-squared	0.414	0.720

Table 6: The Effect of Audit Fees on the Role of Shared Auditor

This table presents the regression results of effects of funds' audit fees on association between funds' trading gains and shared auditor based on the following regression:

$$\begin{aligned}
 Gain_{i,j,T} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 High\ Fee_{j,t} (High\ Abnormal\ Fee_{j,t}) \\
 & + \beta_3 Share\ Office_{i,j,t} * High\ Fee_{j,t} (High\ Abnormal\ Fee_{j,t}) + \beta_4 Size_{i,t-1} \\
 & + \beta_5 Analyst\ Following_{i,t} + \beta_6 BM_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 Leverage_{i,t-1} \\
 & + \beta_9 Turnover_{i,t-1} + \beta_{10} Return_{i,t-1} + \beta_{11} Std\ Dev_{i,t-1} + \beta_{12} SOE_{i,t-1} \\
 & + \beta_{13} Top10_{i,t-1} + \beta_{14} CI\ Listed\ Firm_{i,t} + \beta_{15} Fund\ Size_{j,t-1} \\
 & + \beta_{16} Family\ Size_{j,t-1} + \beta_{17} Fund\ Performance_{j,t-1} + \beta_{18} CI\ Fund_{i,t} \\
 & + \beta_{19} Holding\ Size_{i,j,t-1} + \beta_{20} Fam\ Fund\ Holding_{i,j,t-1} \\
 & + \beta_{21} Other\ Funds\ Holding\ Size_{i,j,t-1} + \beta_{22} Same\ Region_{i,j,t-1} + \beta_{23} FM\ Ties_{i,t} \\
 & + \beta_{24} FA\ Ties_{i,t} + Fixed\ Effects + \varepsilon_{i,j,t}
 \end{aligned}$$

The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The sample size is 558,201 across all the years in the sample period after dropping observations without necessary variables used in the regression analysis. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i> × <i>High Fee</i>	0.227*** (2.898)	
<i>High Fee</i>	-0.026 (-0.463)	
<i>Shared Office</i> × <i>High Abnormal Fee</i>		0.160** (1.983)
<i>High Abnormal Fee</i>		-0.065* (-1.652)
<i>Shared Office</i>	-0.027 (-0.501)	0.021 (0.332)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	Yes	Yes
Observations	558,201	558,201
Adjusted R-squared	0.009	0.009

Table 7: Shared Auditors and Audit Quality

The table presents the results of association between shared auditors and audit quality. Panel A reports the descriptive statistics. Panel B reports the OLS regression results of association between shared auditors and audit quality based on the following regression:

$$\begin{aligned}
 \text{Audit Quality}_{i,t} = & \beta_0 + \beta_1 \text{Fund Office}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{ROA}_{i,t} + \beta_4 \text{Leverage}_{i,t} + \beta_5 \text{Loss}_{i,t} \\
 & + \beta_6 \text{Sales Turnover}_{i,t} + \beta_7 \text{BM}_{i,t} + \beta_8 \text{RECINV}_{i,t} + \beta_9 \text{CFO}_{i,t} + \beta_{10} \text{Growth}_{i,t} \\
 & + \beta_{11} \text{Return}_{i,t} + \beta_{12} \text{Age}_{i,t} + \beta_{13} \text{Top 10}_{i,t} + \beta_{14} \text{Fund Share}_{i,t} + \text{Fixed Effects} \\
 & + \varepsilon_{i,t}
 \end{aligned}$$

The dependent variable is audit quality, which is measured as absolute value of abnormal accruals and likelihood of financial reporting irregularity for firm i in year t . The units of analysis are firm-years. The sample contains 14,627 firm-years across our sample period after dropping observations without necessary variables used in the regression analysis. Panel C presents the regression results using the audit firm mergers setting in China. $Treat_{firm}$ is an indicator variable that equals to one if the auditors of the listed firm and any of mutual fund investors merged during the year and zero otherwise. $Post_{fund}$ is an indicator variable that equals to one for the year after the audit firm merger and zero otherwise. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for firm-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

Panel A: Descriptive statistics for firm-year in audit-quality model

	N	Mean	Std	P25	Median	P75
<i>AbsDA_KWL</i>	14,627	0.055	0.053	0.018	0.039	0.073
<i>AbsDA_DD</i>	14,627	0.039	0.041	0.013	0.028	0.052
<i>Irregularity</i>	14,627	0.115	0.318	0.000	0.000	0.000
<i>Fund Office</i>	14,627	0.123	0.328	0.000	0.000	0.000
<i>LnAsset</i>	14,627	22.880	1.039	22.150	22.750	23.470
<i>ROA</i>	14,627	0.042	0.051	0.015	0.037	0.066
<i>Leverage</i>	14,627	0.468	0.204	0.312	0.475	0.626
<i>Loss</i>	14,627	0.082	0.274	0.000	0.000	0.000
<i>Sales Turnover</i>	14,627	0.669	0.470	0.352	0.555	0.836
<i>BM</i>	14,627	0.546	0.254	0.342	0.522	0.739
<i>RECINV</i>	14,627	0.268	0.176	0.133	0.242	0.370
<i>CFO</i>	14,627	0.050	0.076	0.007	0.048	0.094
<i>Growth</i>	14,627	0.199	0.444	-0.014	0.125	0.295
<i>Return</i>	14,627	0.400	0.796	-0.144	0.194	0.717
<i>Age</i>	14,627	2.230	0.630	1.792	2.398	2.773
<i>Top10</i>	14,627	0.508	0.500	0.000	1.000	1.000
<i>Fund Share</i>	14,627	0.077	0.106	0.007	0.031	0.101

Panel B: OLS Regression Results

	(1)	(2)	(3)
	<i>AbsDA DD</i>	<i>AbsDA KWL</i>	<i>Irregularity</i>
<i>Fund Office</i>	-0.002** (-2.239)	-0.003** (-2.337)	-0.417*** (-4.664)
<i>LnAsset</i>	0.002*** (3.045)	-0.002** (-2.276)	-0.200*** (-3.656)
<i>ROA</i>	0.171*** (4.400)	0.112*** (7.252)	-2.199*** (-2.746)
<i>Leverage</i>	0.008*** (3.525)	0.034*** (10.570)	1.653*** (6.121)
<i>Loss</i>	0.048*** (9.849)	0.013*** (5.282)	0.439*** (4.184)
<i>Sales Turnover</i>	0.004** (2.479)	0.004*** (3.203)	-0.011 (-0.107)
<i>BM</i>	-0.028*** (-8.103)	-0.016*** (-6.311)	-0.437* (-1.706)
<i>RECINV</i>	-0.004 (-1.584)	0.012** (2.385)	-0.391 (-1.383)
<i>CFO</i>	-0.048*** (-5.927)	-0.034*** (-3.919)	-1.163** (-2.340)
<i>Growth</i>	0.016*** (9.785)	0.019*** (9.978)	0.229*** (4.027)
<i>Return</i>	0.001 (0.457)	0.003** (2.249)	0.064* (1.933)
<i>Age</i>	0.003*** (4.639)	0.000 (0.432)	-0.090 (-0.981)
<i>Top10</i>	-0.001 (-1.426)	-0.002** (-2.392)	-0.058 (-0.896)
<i>Fund Share</i>	-0.011** (-2.495)	0.003 (0.549)	-1.201** (-2.444)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Observations	14,627	14,627	14,627
Adjusted/Pseudo R-squared	0.157	0.102	0.065

Panel C: DID Analysis

	(1)	(2)	(3)
	<i>AbsDA DD</i>	<i>AbsDA KWL</i>	<i>Irregularity</i>
<i>Treat_{firm} × Post_{firm}</i>	-0.015 (-1.593)	-0.053*** (-3.291)	-0.200* (-1.984)
<i>Post_{firm}</i>	0.018* (1.973)	0.047*** (2.851)	0.106 (0.874)
<i>LnAsset</i>	0.001 (0.232)	-0.004 (-0.417)	0.128** (2.189)
<i>ROA</i>	0.290*** (2.694)	0.306** (2.335)	-1.774*** (-3.783)
<i>Leverage</i>	-0.012 (-0.363)	-0.085** (-2.281)	-0.084 (-0.365)
<i>Loss</i>	0.050*** (3.860)	0.031** (2.486)	-0.134** (-2.373)
<i>Sales Turnover</i>	-0.013 (-1.653)	-0.022 (-1.244)	-0.122 (-1.215)
<i>BM</i>	0.006 (0.257)	0.041 (1.338)	-0.300** (-2.099)
<i>RECINV</i>	-0.013 (-0.439)	-0.051 (-0.840)	-0.374 (-1.500)
<i>CFO</i>	-0.009 (-0.274)	-0.116 (-1.130)	0.247 (1.116)
<i>Growth</i>	0.012 (1.126)	0.009 (0.951)	0.077 (1.468)
<i>Return</i>	0.007* (1.715)	0.011** (2.071)	-0.025 (-1.182)
<i>Age</i>	-0.005 (-0.271)	-0.031 (-1.385)	0.150 (0.813)
<i>Top10</i>	0.001 (0.168)	0.004 (0.527)	0.003 (0.059)
<i>Fund Share</i>	-0.006 (-0.220)	-0.007 (-0.197)	0.030 (0.228)
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	619	619	619
Adjusted/Pseudo R-squared	0.464	0.416	0.664

Table 8: Shared Auditors and Funds' Holding Decisions and Trading Behaviors

This table presents the regression results of funds' holding decisions and trading behaviors. Panel A reports the regression results on Equation (4), where the dependent variable is the percentage of fund's holding amount for listed firm as a fraction of the fund's NAV. The sample contains 310,778 fund-stock pairs across all the years in the sample period after dropping observations without necessary variables used in the regression analysis. Panel B reports the regression results on Equation (5), where The dependent variables are absolute value of trading magnitude in Column (1), trading magnitude of net buy in Column (2), and trading magnitude of net sell in Column (3). Panel C reports the regression results on Equation (6), where the dependent variables are trading magnitude based on the holding shares change. The units of analysis are fund-stock-years. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The sample contains 456,240 fund-stock pairs across all the years in the sample period after dropping observations without necessary variables used in the regression analysis. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

Panel A: Shared Auditors and Funds' Holding Decisions

VARIABLES	(1)	(2)
	Dependent Variable = Proportion	
<i>Shared Office</i>	0.210*** (9.829)	0.072*** (4.578)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	310,778	310,778
Adjusted R-squared	0.094	0.377

Panel B: Shared Auditor and Funds' Trading Magnitude

VARIABLES	(1)	(2)	(3)
	<i>Abs(ΔHolding)</i>	<i>ΔHolding>0</i>	<i>ΔHolding<0</i>
<i>Shared Office</i>	0.013*** (5.284)	0.008*** (3.279)	-0.010*** (-4.267)
Controls	Yes	Yes	Controls
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes
Observations	456,240	215,766	240,474
Adjusted R-squared	0.357	0.376	0.415

Panel C: Shared Auditor and Funds' Informed Trading

VARIABLES	Dependent Variable=ΔHolding		
	<i>Perf=ΔROA</i>	<i>Perf=UE</i>	<i>Perf=BHAR</i>
<i>Performance</i>	0.139*** (7.960)	0.053*** (2.868)	0.000 (0.224)
<i>Shared Office</i> × <i>Performance</i>	0.219*** (2.745)	0.325*** (3.641)	0.012* (1.845)
<i>Shared Office</i>	-0.005* (-1.687)	-0.009*** (-2.951)	0.001 (0.355)
Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes
Observations	456,240	456,240	456,240
Adjusted R-squared	0.039	0.038	0.038

Table 9: The Effect of Firms' Negative Information on Fund's Trading Gains

This table presents the regression results of effects of listed firms' negative information on association between funds' trading gains and shared auditor based on the following regression:

$$\begin{aligned}
 Gain_{i,j,T} = & \beta_0 + \beta_1 Shared\ Office_{i,j,t} + \beta_2 Negative_{i,t} + \beta_3 Share\ Office_{i,j,t} * Negative_{i,t} \\
 & + \beta_4 Size_{i,t-1} + \beta_5 Analyst\ Following_{i,t} + \beta_6 BM_{i,t-1} + \beta_7 ROA_{i,t-1} \\
 & + \beta_8 Leverage_{i,t-1} + \beta_9 Turnover_{i,t-1} + \beta_{10} Return_{i,t-1} + \beta_{11} Std\ Dev_{i,t-1} \\
 & + \beta_{12} SOE_{i,t-1} + \beta_{13} Top10_{i,t-1} + \beta_{14} CI\ Listed\ Firm_{i,t} + \beta_{15} Fund\ Size_{j,t-1} \\
 & + \beta_{16} Family\ Size_{j,t-1} + \beta_{17} Fund\ Performance_{j,t-1} + \beta_{18} CI\ Fund_{i,t} \\
 & + \beta_{19} Holding\ Size_{i,j,t-1} + \beta_{20} Fam\ Fund\ Holding_{i,j,t-1} \\
 & + \beta_{21} Other\ Funds\ Holding\ Size_{i,j,t-1} + \beta_{22} Same\ Region_{i,j,t-1} + \beta_{23} FM\ Ties_{i,t} \\
 & + \beta_{24} FA\ Ties_{i,t} + Fixed\ Effects + \varepsilon_{i,j,t}
 \end{aligned}$$

The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. We define the firm has negative information if its ROA at the end of the year is less than that at the end of semi-year. The units of analysis are fund-stock-years. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The sample contains 560,697 fund-stock pairs across all the years in the sample period after dropping observations without necessary variables used in the regression analysis. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

VARIABLES	(1)	(2)	(3)
	Negative=1	Negative =0	Full Sample
<i>Shared Office</i> × <i>Negative</i>			0.362** (2.045)
<i>Negative</i>			0.013 (0.424)
<i>Shared Office</i>	0.450** (2.450)	0.072* (1.714)	0.066 (1.548)
Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes
Observations	65,928	494,769	560,697
Adjusted R-squared	0.043	0.008	0.009

Table 10: Further Analyses at the Audit Partner Level

This table presents the regression results for further analyses at the audit partner level. Panel A reports the results of effects of social ties between fund's partners and firm's partners in the shared office on mutual fund's trading gains. Panel B reports the results of effects of shared partner on mutual fund's trading gains. The units of analysis are fund-stock-years. The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

Panel A: Effects of Social Ties between Fund's Audit Partners and Firm's Audit Partners		
VARIABLES	(1)	(2)
	Dependent Variable=Trading Gains	
<i>Shared Office ties</i>	0.610*** (2.967)	0.634*** (3.074)
<i>Shared Office no ties</i>	0.098** (2.327)	0.091** (2.157)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	559,935	559,935
Adjusted R-squared	0.005	0.009
F-test:		
<i>Shared Office ties</i> = <i>Shared Office no ties</i>	p-value=0.015	p-value=0.010

Panel B: The Effects of Shared Audit Partner on Funds' Trading Gains		
VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office same partner</i>	2.263* (1.764)	2.253* (1.740)
<i>Shared Office diff partner</i>	0.096** (2.351)	0.089** (2.189)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009
F-test:		
<i>Shared Office same partner</i> = <i>Shared Office diff partner</i>	p-value=0.092	p-value=0.095

Table 11: Additional Cross-Sectional Analyses

This table presents the regression results for additional cross-sectional analyses. Panel A reports the results of effects of institutional development on mutual fund's trading gains. Panel B reports the results of effects of auditor's market power in the mutual fund market on mutual fund's trading gains. Panel C reports the results of effects of auditor's industry expertise in the listed firms on mutual fund's trading gains. Panel D reports the results of effects of indirect auditor sharing on mutual fund's trading gains. Panel E reports the results of effects of social ties between fund managers and top executives of listed firms on mutual fund's trading gains. The units of analysis are fund-stock-years. The dependent variable is trading gains, which is measured as the semi-year change in percentage of shares outstanding held by fund multiplied by the buy-and-hold size-adjusted returns over the subsequent semi-year period. Only stocks that are held by fund at the end of the semi-year or at the end of the year are included in this sample. The definitions of the variables are shown in the Appendix. The t-values in parentheses are based on standard errors adjusted for fund-level clustering. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests.

Panel A: Effects of Institutional Development

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i> _{m1}	0.324** (2.300)	0.323** (2.231)
<i>Shared Office</i> _{m2}	0.160** (2.045)	0.169** (2.168)
<i>Shared Office</i> _{m3}	0.177 (1.489)	0.155 (1.301)
<i>Shared Office</i> _{m4}	-0.074 (-1.355)	-0.088 (-1.612)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009
F-Test:		
<i>Shared Office</i> _{m1} = <i>Shared Office</i> _{m4}	p-value=0.008	p-value=0.008

Panel B: Effects of Auditor's Market Power in the Mutual Fund Market

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i> _{less power}	0.205*** (2.645)	0.200** (2.546)
<i>Shared Office</i> _{more power}	0.023 (0.511)	0.015 (0.320)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009
F-Test:		
<i>Shared Office</i> _{less power} = <i>Shared Office</i> _{more power}	p-value=0.056	p-value=0.059

Panel C: Effects of Auditor's Industry Expertise in the Listed Firm

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i> <i>expert</i>	0.214*** (2.737)	0.203*** (2.594)
<i>Shared Office</i> <i>non-expert</i>	0.045 (0.962)	0.041 (0.884)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009
F-Test:		
<i>Shared Office</i> <i>expert</i> = <i>Shared Office</i> <i>non-expert</i>	p-value=0.067	p-value=0.082

Panel D: Effects of Indirect Auditor Sharing

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i>	0.116*** (2.805)	0.110*** (2.657)
<i>Indirect Shared Office</i>	0.071* (1.753)	0.082* (1.946)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009
F-Test:		
<i>Shared Office</i> = <i>Indirect Shared Office</i>	p-value=0.397	p-value=0.608

Panel E: Effects of Social Ties between Fund Managers and Top Executives

VARIABLES	(1)	(2)
	Dependent Variable = Trading Gains	
<i>Shared Office</i> <i>fm ties</i>	0.216 (0.873)	0.222 (0.895)
<i>Shared Office</i> <i>no fm ties</i>	0.107** (2.532)	0.100** (2.361)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Fund Fixed Effects	No	Yes
Observations	560,697	560,697
Adjusted R-squared	0.005	0.009
F-Test:		
<i>Shared Office</i> <i>fm ties</i> = <i>Shared Office</i> <i>no fm ties</i>	p-value=0.669	p-value=0.631

Appendix: Variable Definitions

Variable	Definition
Fund Behavior Variables	
Dependent Variables	
<i>Trading Gains</i>	Change in percentage of shares outstanding held by fund (times 100) multiplied by the buy-and-hold size-adjusted returns (times 100) over the subsequent semi-annual period.
<i>Proportion</i>	The percentage of fund's holding amount for listed firm as a fraction of the fund's NAV
Δ Holding	Change in percentage of shares outstanding held by the fund, compared with last semi-annual period, times 100
<i>Abs</i> (Δ Holding)	Absolute value of change in percentage of shares outstanding held by the fund, compared with last semi-annual period, times 100
Test Variables	
<i>Shared Office</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and zero otherwise
<i>Treat</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding due to the audit firms' mergers during the sample period and zero otherwise.
<i>Post</i>	An indicator variable that equals one for the periods after the audit firm mergers and zero otherwise.
<i>Shared Office</i> <i>ties</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the fund's partners and firm's partners have common alma mater, and zero otherwise.
<i>Shared Office</i> <i>no ties</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the fund's partners and firm's partners do not have common alma mater, and zero otherwise.
<i>Shared Office</i> <i>same partner</i>	An indicator variable that equals one if the fund shares the same audit partner with the firm in its stock holding, and zero otherwise.
<i>Shared Office</i> <i>diff partner</i>	An indicator variable that equals one if the fund shares the same audit office but different audit partners with the firm in its stock holding, and zero otherwise.
<i>Shared Office</i> <i>m1(m2, m3, m4)</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the shared audit office located in the least (second, third and most) developed regions and zero otherwise. The regions are classified as least, second, third and most developed regions based on the marketization index compiled by Fan et al. (2018).
<i>Shared Office</i> <i>less power</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the shared office's market share in the mutual fund market is less than the median value of sample, and zero otherwise.
<i>Shared Office</i> <i>more power</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the shared office's market share in the mutual fund market is greater than the median value of sample, and zero otherwise.
<i>Shared Office</i> <i>expert</i>	An indicator variable that equals one if the fund shares the

<i>Shared Office_{non expert}</i>	same audit office with the firm in its stock holding and the shared office is an industry expert (the market share in the specific industry is greater than 10%), and zero otherwise. An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding but the shared office is not an industry expert (the market share in the specific industry is less than 10%), and zero otherwise.
<i>Indirect Shared Office</i>	An indicator variable that equals one if mutual fund and the listed firm do not share the same audit office, but the listed firm and another mutual fund managed by the same fund manager share the same audit office, and zero otherwise.
<i>Shared Office_{fm ties}</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the fund manager and top executives of listed firms including CEO, CFO and chairman have common alma mater, and zero otherwise.
<i>Shared Office_{no fm ties}</i>	An indicator variable that equals one if the fund shares the same audit office with the firm in its stock holding and the fund manager and top executives of listed firms including CEO, CFO and chairman have no common alma mater, and zero otherwise.
<hr/> Opaqueness Variables <hr/>	
<i>Fewer Analysts</i>	An indicator variable which equals one if the firm's number of analyst following is less than the sample lower tertile during the year and zero otherwise
<i>Higher Earnings Volatility</i>	An indicator variable which equals one if the firm's earnings volatility is higher than the sample upper tertile during the year and zero otherwise. Earnings volatility is measured as the standard deviation of ROA over the past three years.
<i>Existence of Non-Business RPTs</i>	An indicator variable which equals one if the firm has non-business RPTs during the year, and zero otherwise. We define DOS (director, officer and significant shareholders) loans, DOS borrowings, DOS guarantees, DOS and Investee legal and investment services, DOS and Investee unrelated business activities, and DOS stock transactions as non-business RPTs following Kohlbeck and Mayhew (2010, 2017).
<i>More Intangible Assets</i>	An indicator variable which equals one if the firm's intangible asset is greater than the sample upper tertile during the year and zero otherwise.
<i>Composite Index</i>	An indicator variable that equals one if the sum of indicator variables for five opaque measures including <i>Fewer analysts</i> , <i>Higher Earnings Volatility</i> , <i>Existence of Non-Business RPTs</i> , and <i>More Intangible Assets</i> is higher than the sample upper tertile during the year and zero otherwise.
<hr/> Control Variables <hr/>	
<i>UE</i>	unexpected earnings, the difference between actual earnings per share (EPS) minus EPS in lagged semi-annual period, scaled by closing stock price at the end of the year
<i>ΔROA</i>	The change in ROA in the forthcoming earnings announcement, compared with ROA in lagged semi-annual period.
<i>BHAR</i>	The buy-and-hold size-adjusted abnormal return in the subsequent semi-annual period
<i>Negative</i>	An indicator variable that equals one if the firm's operating performance declines in the forthcoming earnings

	announcement, compared with the operating performance in the last semi-annual period, and zero otherwise
<i>Size</i>	The natural logarithm of the equity's market value during the year
<i>Analyst Following</i>	The natural logarithm of one plus the number of analysts following the stock during the year
<i>BM</i>	The ratio of book value to market value of the firm during the year
<i>ROA</i>	Operating net income scaled by total assets during the year
<i>Leverage</i>	Total liabilities scaled by total assets during the year
<i>Turnover</i>	Trading volume scaled by the total outstanding shares of the firm during the year.
<i>Return</i>	Cumulative raw return in the 12 months ending during the year
<i>Std Dev</i>	Standard deviation of monthly returns during the year.
<i>Top10</i>	An indicator variable that equals one if the firm is audited by a Top 10 auditor based on total client assets during the year, and zero otherwise.
<i>CI Listed Firm</i>	Client importance for listed firm, calculated as total assets of listed firm scaled by the sum of total assets of all the clients audited by the same audit office during the year.
<i>Fund Size</i>	The natural logarithm of total market value of <i>all</i> stocks held by the fund during the year
<i>Family Size</i>	The natural logarithm of total market value of <i>all</i> stocks held by the fund family during the year
<i>Fund Performance</i>	The growth rate of its unit net value during the year
<i>CI Fund</i>	Client importance for mutual fund, calculated as total net assets of mutual fund scaled by the sum of total net assets of all the mutual funds audited by the same audit office during the year.
<i>Holding Size</i>	Natural logarithm of the market value of stock <i>i</i> held by the fund during the year
<i>Family Fund Holding</i>	The percentage of shares outstanding held by the funds in the same family during the year
<i>Other Funds' Holding Size</i>	Natural logarithm of the market value of stock <i>i</i> held by the other funds which located in the same city as the mutual fund during the year.
<i>Same Region</i>	An indicator variable that equals one if the fund is located in the same province as the firm and zero otherwise
<i>FM Ties</i>	An indicator variable that equals one if the fund manager has school ties with CEO, CFO or the Chairman of listed firm, and zero otherwise.
<i>FA Ties</i>	An indicator variable that equals one if the fund managers have school ties with signature auditor of listed firms and zero otherwise.
ΔX	The change in control variables used in regression analysis from year t-1 to year t
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<i>Fund Audit-Fees Model</i>	
<i>LnFee</i>	Natural logarithm of the fund's audit fees during the year.
<i>Connected Firms</i>	Natural logarithm of one plus the number of firms that share the same auditor with the fund during the year
<i>Connected Firm Value</i>	Total holding proportion based on net asset value of the stocks that share the same audit office with the mutual funds during the year, times 100.

<i>Treat_{fund}</i>	An indicator variable that equals one if the auditors of the fund and any listed companies in fund's holding portfolios merged during the year and zero otherwise.
<i>Post_{fund}</i>	An indicator variable that equals one for the periods after the audit firm mergers and zero otherwise.
<i>Family Performance</i>	The performance of the mutual fund family, which is estimated as the asset-weighted average performance of all mutual funds affiliated to the mutual fund family.
<i>Auditor Tenure</i>	The number of years that the auditor audited the fund
<i>Fund Top10</i>	An indicator variable that equals one if the fund is audited by one of top10 auditors and zero otherwise
<i>High Fee</i>	An indicator variable which equals one if audit fee paid by fund is greater than the sample median value during the year and zero otherwise.
<i>High Abnormal Fee</i>	An indicator variable which equals one if abnormal audit fee paid by fund is greater than the sample median value during the year and zero otherwise. Abnormal fee is estimated residuals based on model in Table 6 excluding interested variables (i.e., <i>Connected Firms or Connected Firm value</i>).
<hr/>	
Audit-Quality Model	
<i>AbsDA_DD</i>	Absolute value of abnormal accruals following Dechow and Dichev (2002). It is the absolute value of the residual from the following regression for each year and each industry that has at least 20 observations: $TA_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 \Delta Sales_{i,t} + \alpha_5 PPE_{i,t} + \varepsilon_{i,t}$
<i>AbsDA_KWL</i>	Absolute value of abnormal accruals following Kothari et al. (2005). It is the absolute value of the residual from the following regression for each year and each industry that has at least 20 observations: $TA_{i,t} = \alpha_0 + \alpha_1 I/ASSET_{i,t-1} + \alpha_2 \Delta SALES_{i,t-1} + \alpha_3 PPE_{i,t-1} + \alpha_4 ROA_{i,t-1} + \varepsilon_{i,t}$
<i>Irregularity</i>	An indicator variable that equals one if firm conducted financial reporting irregularity sanctioned by regulators in the subsequent periods, and zero otherwise
<i>Fund Office</i>	An indicator variable that equals one if the firm's audit office also audits any of funds that holds the stocks of the firm and zero otherwise
<i>Treat_{firm}</i>	An indicator variable that equals one if the auditors of the listed firm and any of mutual fund investors merged during the year and zero otherwise.
<i>Post_{firm}</i>	An indicator variable that equals one for the periods after the audit firm mergers and zero otherwise.
<i>LnAsset</i>	The natural logarithm of the total asset of firm during the year
<i>Loss</i>	An indicator variable that equals one if the firm reports a negative net income and zero otherwise
<i>Sales Turnover</i>	Sales scaled by total assets
<i>RECINV</i>	Accounts receivable and inventory scaled by total assets during the year
<i>CFO</i>	Operating cash flows scaled by total assets during the year
<i>Growth</i>	Sales growth, measured as the change in sales scaled by sales last year
<i>Age</i>	The natural logarithm of one plus the number of years that the firm is listed on the stock exchange
<i>Fund Share</i>	The percentage of shares outstanding held by all the mutual fund during the year

