

Common Institutional Ownership and Auditor Risk Response

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Abstract. Based on the data of China's Shanghai and Shenzhen A-share listed companies from 2010 to 2021, this paper investigates the relationship between a company's common institutional ownership and auditors' risk response behavior. The study shows that common institutional ownership drives auditors to increase audit investment and audit fees, which supports the collusive fraud effect. Further analysis reveals that the effect of common institutional ownership on auditor risk response behavior is more pronounced in firms with a higher degree of industry competition as well as in state-owned enterprises, and that Big Four auditors will be more sensitive to the collusive fraud effect of common institutional ownership and respond to this risk mainly by increasing audit investment. This paper not only enriches the research literature on the factors influencing auditors' risk response behavior and the economic consequences of common institutional ownership but also sheds light on how to improve corporate governance and regulate the market order in practice.

Keywords: common institutional ownership; auditor risk response; audit inputs; audit fees.

1. Introduction

Guided by the strategy of extraordinary development of institutional investors, China's institutional investors have developed rapidly, the scale and number of structural investors have been growing, and the phenomenon of their simultaneously holding equity interests in a number of listed companies in the same industry (common institutional ownership) has become increasingly prevalent in the capital market (Du Yong et al., 2022).

Recently scholars have also launched a lively debate on the economic consequences of common institutional ownership, but the conclusions are not yet uniform. Studies have shown that the impact of joint institutional ownership on microenterprises has two sides. Some scholars believe that common institutional ownership can effectively exert synergistic governance effects and have a positive impact on the development of the firm, such as having an inherent advantage in research technology and information collection, a better chance to use its voting rights to influence the management decisions of the managers of the investing firms, to promote product cooperation and market collaboration among firms (He & Huang, 2017), and to improve the performance of M&As (Brooks et al, 2018), promote technological innovation of enterprises (Gao et al, 2019), reduce corporate surplus management (Du Yong et al, 2022), and increase the willingness to disclose accounting information (Park et al, 2019), etc.; Some scholars believe that common institutional ownership can produce collusive fraud effects, arguing that common institutional ownership pursues the portfolio value maximization goal, will prompt the same industry enterprises to collude and conspire to seize short-term excess profits, causing the interests of small and medium-sized shareholders of enterprises to be harmed (Hou, 2007), and distorting the market price formation mechanism, resulting in the aggravation of monopoly (Azar et al, 2018), as well as reducing the sensitivity of the enterprise to the market reflections, resulting in underinvestment (Pan Yue et al, 2020), and guiding the investment portfolio companies to use accrual earning management to hide collusive gains to reduce potential political costs and monitoring risks (Wu et al, 2022), etc.

Through the existing literature, we can see that the current academic research on the economic consequences of common institutional ownership mainly focuses on product markets corporate governance, and corporate strategy, and few studies have explored the behavior of auditors with

respect to common institutional ownership. A large number of studies have shown that the company's equity governance structure affects the auditor's decision-making behavior, as an important stakeholder in the enterprise, does the auditor think that common institutional ownership can play a synergistic governance effect to reduce the risk, or does the auditor hold a cautious attitude towards the common institutional ownership and believe that it will produce the effect of collusion and fraud to increase the auditor's risk? Therefore, this paper takes auditor risk response behavior as a perspective, puts common institutional investors and auditor behavior in the same research framework, and explores the impact of common institutional investors on auditor risk response behavior.

To explore the above propositions, this paper examines the relationship between common institutional ownership and auditors' risk response behavior by selecting audit inputs and audit fees as proxies for auditors' risk response in a research sample of A-share listed companies in Shanghai and Shenzhen from 2010 to 2021. The results of the study show that auditors are more likely to believe that common institutional ownership will play a collusive fraud effect, and thus take a more cautious attitude, increase audit investment, raise audit fees as compensation for their efforts and risk-taking, and further analysis reveals that this effect is more pronounced in more competitive industries and SOEs, and that auditors from the Big 4 are more cautious in their approach to common institutional ownership. Cautiousness. The findings of this paper provide evidence from the auditing perspective on the collusive fraud effect of common institutional ownership, and to a certain extent enrich the research on the influencing factors of auditors' risk response behavior and the economic consequences of common institutional investors.

2. Literature review

2.1. Economic consequences of common institutional ownership

Institutional investors have evolved into more diversified forms, with common institutional ownership attracting much attention because of its rapid development. Shareholder wealth maximization is the main goal in corporate governance, but with the emergence of common institutional ownership, the shareholders' goal is not to maximize the wealth that a single company can get but to maximize the return on the portfolio of assets, which means that institutions want to hold several companies in the same industry to create the greatest return on the synergy. Along with the change of goals, the economic consequences of common institutional ownership have attracted the attention of scholars, the existing research on the economic consequences of common institutional ownership has produced some differences, some scholars believe that common institutional ownership can play a synergistic governance effect, while some scholars believe that common institutional ownership will produce collusive fraud effect, this paper will be based on the two points of view of the literature to sort out.

2.1.1. Synergistic governance effects.

The existing literature on the synergistic governance effects of common institutional ownership can be categorized into two types: synergistic effects and governance effects. The synergistic effects of common institutional ownership are mainly concentrated in product markets, where common institutional investors reduce competition by coordinating the resources of jointly held firms, thereby internalizing negative externalities in output prices, marketing expenditures, and production capacity (He & Huang, 2017; Panayides & Thomas, 2017); furthermore, Freeman (2016) found that having common institutional ownership among customers and suppliers increases the duration of their supply chain relationships, especially if the common ownership is long-term and customer and supply chain frictions are greater; Brook (2018), on the other hand, found synergistic effects of common institutional ownership with respect to mergers and acquisitions, finding that institutional co-investors not only increase the likelihood of their likelihood of M&A between shareholding firms but also can have a positive effect on firms' post-merger performance. In terms

of governance effects, co-institutional investors are mainly able to play the role of supervisory governance with the help of information advantage and governance experience, for example, Park et al (2019) show that institutional investors gain information advantage and governance experience through holding multiple companies, which is conducive to improving the quality of active corporate disclosure; domestic scholars Xing Fei et al. (2021) find that, compared to ordinary institutional investors, the (2021) found that compared with ordinary institutional investors, the governance-related information and monitoring experience gained from multiple holdings of listed companies reduces monitoring costs and monitoring-related information uncertainty, and that mutual institutional investors have stronger incentives as well as the ability to utilize their own external governance rights to monitor company operations more effectively; Du Yong et al. (2021) pointed out that mutual institutional ownership gives full play to the monitoring and governance ability of institutional investors by appointing the management, and that institutional investors' ability to monitor and control the company can be significantly enhanced based on industry experience and information advantages. Based on industry experience and information advantages, it can significantly reduce the degree of corporate surplus management.

2.1.2. Collusive fraud effects.

Some scholars also believe that common institutional ownership can produce collusive fraud effects, which can bring negative impacts to enterprises or socio-economic development. Azar et al (2018) use data from the U.S. airline industry to explore the relationship between common institutional ownership and firms' product pricing strategies, and the empirical results show that common institutional ownership reduces the competitiveness of the product market, raises the market concentration, increases product pricing, and realizes inter-industry competitive collusion. Neus et al (2018) use an asymmetric triopoly market to show that managers of two firms held by common institutional investors are less aggressive in production than managers of firms held by common institutional investors, suggesting that the presence of common investors motivates firms to collude in designing managerial compensation packages. Pan Yue et al. (2020) from the investment efficiency perspective of research found that common institutional ownership in enterprise investment behavior is manifested in competitive collusion, that is, common institutional ownership contributed to the phenomenon of underinvestment of enterprises in the same industry; Wu Xiaohui et al. (2022) similarly also found that the common institutional investor to produce the effect of collusive fraud, that the common institutional investor will actively guide the portfolio company to take advantage of the Accrual surplus management to hide collusive gains to reduce potential political costs and monitoring risks.

In summary, the existing literature suggests that common institutional ownership may have positive impacts as well as undesirable economic consequences, similar to competitive collusion, that impede the healthy development of markets. There is no unanimity in the academic community as to whether common institutional investors produce more positive or negative effects. This paper provides new evidence on the economic consequences of common institutional ownership from an audit perspective.

2.2. Auditor risks and responses

2.2.1. Auditor risk.

The risks faced by the auditor that are of concern in this paper are mainly contracting risks (or audit engagement risks), i.e., all the risks faced by the auditor after the auditor has contracted with the client for audit services, including in subsequent audit engagements (Colbert et al., 1996; Krishnan et al., 2013). Contracting risks are present throughout the audit and require the auditor to carefully assess and take effective response decisions. Specifically, the contracting risk faced by the auditor consists of two components: business risk and audit risk. Among them, business risk refers to the risk of being dissatisfied by the audited entity due to its poor financial condition or poor business performance, when the audited entity is more likely to cause dissatisfaction among the

relevant stakeholders, which in turn raises the litigation risk and the risk of suffering the expected loss of reputation and business faced by the external auditor (Zhu, Xiaoping, and Ye, You, 2003; Li, Li-Zhong, et al., 2019). When the audit client's business condition is poor, the economic interests of stakeholders, including investors and shareholders, will be damaged, and at this time, regardless of the auditor's due diligence and audit quality, the auditor is sued as a joint and several third party for economic recovery because the stakeholders are more concerned about whether they can be compensated for their own economic losses (Zhu, Xiaoping, and Ye You, 2003). In this case, if the auditor follows the auditing standards and issues an appropriate audit opinion, the auditor is usually not awarded compensation for investor losses, but the cost of litigation with its resulting reputational loss is also a potential risk for the auditor due to the litigation incurred. Audit risk, on the other hand, refers to the likelihood of a material misstatement or omission in a client's financial report and the possibility that the auditor will issue an inappropriate audit opinion as a result of the audit (Chinese Institute of Certified Public Accountants, 1996). Audit risk emphasizes the risk that the auditor will suffer a loss by not detecting (failing to report) a material misstatement in a client's financial report. For example, management may manipulate surpluses for personal gain, and if the auditor issues a standard unqualified audit opinion without detecting (failing to report) such behavior by management, the auditor may be penalized by the regulator in the event of an audit failure and be sued by the parties that suffered the loss.

It can be seen that there is some consistency and difference between the business risk and the audit risk faced by the auditor. The difference is that business risk does not care whether the auditor has done his or her job or not, even if the auditor has carried out the audit work in strict accordance with the auditing standard audit process and issued an appropriate audit opinion, there will still be business risk. Audit risk, on the other hand, emphasizes the risk arising from the auditor not issuing an appropriate audit opinion on the truthfulness of the client's financial reports in accordance with the standard. The consistency lies in the fact that when the client's business risk is high and its operating conditions are poor, the client may engage in surplus management for cover-up motives or management's self-interested motives, thus increasing the auditor's audit risk. When the auditor faces high audit risk, the auditor will demand a high audit premium to compensate for its own risk, which increases the client's operating costs, affects the client's operating performance, and increases the auditor's business risk (Bell et al, 2001).

2.2.2. Auditor risk response.

When facing potential risks, people will assess the probability of the occurrence of the relevant risks and the size of the expected losses on the one hand, and their ability to cope with the potential risks and the actions they can take on the other. When the external auditor perceives a change in the risk of the relevant audit engagement, in order to effectively reduce the potential adverse impact of the relevant risk on his or her career development, he or she will take appropriate countermeasures on the basis of risk assessment. Existing research suggests that common countermeasures used by auditors in the face of risk include: increasing audit input (Junrui Zhang et al, 2015; Simunic, 1980), charging more audit fees (Bell et al, 2001; Hay et al, 2006), issuing more non- standard unqualified audit opinions (Carson et al, 2013; Chy & Hope, 2016), changing audit teams (Caioli et al, 2015), and resigning clients (Elder et al, 2000). By increasing audit inputs, auditors are able to increase audit procedures and expand the scope of testing, thus making it more likely to detect material errors in financial reporting; by charging more audit fees, auditors can compensate themselves for the costs and risks they bear; by issuing a non-standard, unqualified audit opinion, auditors can enhance their ability to defend themselves in the event of litigation, and reduce their own legal liabilities; and by changing the A more professional audit team can improve the quality of the audit and reduce the auditor's own inspection risk; when the auditor expects to be unable to reduce the risk to an acceptable level will also choose to terminate the contract with the client, so as to avoid the risk.

3. Theory and assumptions

This paper analyzes the mechanism of common institutional shareholding on auditors' risk response behavior from the synergistic governance effect and collusive fraud effect of common institutional investors respectively.

3.1. Synergistic governance effects

In terms of synergies, co-institutional ownership can mitigate peer competition and coordinate information and resources. The goal of co-institutional investors is to maximize the value of the portfolio, so in order to maximize the value within the portfolio, co-institutional investors will collaborate with the firms to reduce the fierce competitive relationship, help the firms to establish strategic alliances by acting as the associated nodes between the firms, coordinate the resources between the firms, promote the coordination of the intangible and tangible resources between the firms (Du Yong et al., 2022), and strengthen the ties and cooperation among them (Zhou, Donghua and Huang, Uxue, 2021; Du, Shanzhong and Ma, Lianfu, 2022), thus promoting the improvement of the operating performance of the firms within the portfolio and reducing the business risks faced by the auditor.

In terms of governance effects, common institutional investors have stronger incentives and capabilities to monitor governance. On the one hand, compared to general institutional investors and other shareholders, co-institutional ownership can generate scale effects through information sharing (Kacperczyk et al., 2005) and better address the "fixed costs" of monitoring (Ramalingegowda et al., 2021). Specifically, since firms in the same industry usually have similar business environments, operating practices, and financial reporting models, co-institutional investors can apply the supervisory governance experience and managerial knowledge gained from one firm to other firms in their portfolios (Pan and Yue et al., 2020), and spend the same marginal supervisory costs to obtain more marginal supervisory benefits. Therefore, at lower monitoring costs, co-institutional investors have stronger incentives to monitor and govern firms. On the other hand, co-institutional investors have industry-specific expertise, which allows them to have a macro grasp of the business management information of each firm in the portfolio from an industry-specific perspective, which improves the governance efficiency of co-institutional investors and makes it more likely to detect self-interested insider behavior; at the same time, co-institutional investors, with the advantage of industry-wide experience, will also have a greater voice within the firm (Edmans et al., 2019), and when it discovers management self-interested behavior, it will game the situation by, for example, voting against the proposal in the general meeting of shareholders (He et al., 2019) or even threatening to withdraw (Hope et al., 2017). This stronger supervisory governance ability of common institutional investors helps to curb management's opportunistic behavior, improve the quality of financial reporting (Park et al., 2019), and reduce the probability of financial fraud and misstatement, which leads to lower audit risk faced by the auditor during the audit process.

Overall, when co-institutional investors exert a synergistic governance effect, they can reduce the business and audit risks faced by the auditor, so the auditor can appropriately narrow the scope of testing and reduce the number of additional audit procedures while maintaining the quality of the audit; the reduction in the audit work input also leads to a reduction in the intrinsic costs included in the audit fee, as well as the lower risks faced by the auditor also leads to the auditor charging a lower risk premium and ultimately charging lower audit fees. In summary, this paper proposes Hypothesis 1:

H1: Other things being equal, common institutional ownership reduces the auditor's work input and charges lower audit fees.

3.2. Collusive fraud effects

Guided by the objective of maximizing overall portfolio value, common institutional ownership has to face not only adverse competition and incomplete contractual conflicts from firms within the portfolio but also from non-commonly held firms (Park et al, 2019). Therefore, in order to maximize the value of their investments, co-institutional investors have strong incentives to promote collusion among shareholding firms (Azar et al, 2018).

On the one hand, this collusive effect can reduce the degree of competition among firms, making them more likely to rest on their laurels, reducing their sensitivity to investment opportunities, resulting in their investment decisions failing to match the potential opportunities in the market, and ultimately reducing the investment efficiency of firms and underinvestment (Pan Yue et al., 2020), which is not conducive to the enhancement of firm value and also increases the business risks of firms (Liang, Rixin, and Li, Ying, 2020), thus exposing auditors to higher business risks. 2020), thus exposing auditors to higher business risks.

On the other hand, a co-institutional investor holding shares in multiple firms in the same industry has more access to internal private information than a single shareholder and can use its shareholding network to dig deeper into private information at the industry level and at the level of the firm's operations. If the benefits of good disclosure are not as great as the benefits of private information obtained by chain shareholders, then institutional co-investors are more likely to maximize the benefits of private information by creating information barriers between portfolio firms and firms outside of the portfolio, which may lead to lower quality disclosure by the portfolio firms. Moreover, co-institutional investors will also intervene in portfolio firms' efforts to hide collusive gains through surplus management and other means to minimize the likelihood of being monitored (Wu et al., 2022). The information barriers created by the collusive effect of co-institutional investors also deepen the information asymmetry between firms and auditors, increasing the audit risk faced by auditors.

Finally, the maximization of portfolio benefits by co-institutional investors often cannot be achieved without the cooperation of management (Shigang Li, 2021). Co-institutional investors may also conspire with corporate management to maximize their own interests by interfering with corporate investment and financing decisions. Management in the process of collusion with the chain of shareholders, not only to achieve their own interests but also to relax the chain of shareholders on their own supervision, due to poor supervision of shareholders induced the management to implement opportunistic behavior, increasing the possibility of financial fraud, resulting in auditors face a higher audit risk, the probability of auditing failures of the auditor to occur increased.

For enterprises with a higher degree of information asymmetry and poorer supervision, auditors need to devote more efforts, including additional audit procedures and collection of more audit evidence, to reduce the audit risk to an acceptable level. Meanwhile, faced with higher business risks, auditors will increase audit fees to compensate for the potential risk of being penalized due to risk compensation considerations. In summary, this paper proposes hypothesis 2:

H2: Other things being equal, common institutional ownership causes auditors to increase audit inputs and audit fees.

4. Research design

4.1. Sample and data

This paper adopts China's A-share listed companies in Shanghai and Shenzhen from 2010 to 2021 as the initial research sample. The quarterly common institutional investors' shareholding data and the rest of the financial data and transaction data of the sample companies in this paper come from the CSMAR database. For the initial data, this paper draws on existing studies to screen and process the data as follows: excluding companies in the financial industry; excluding listed companies with abnormal trading status such as ST and * ST; and excluding samples with missing data on major

variables. Finally, the number of valid samples is 32,582. In order to eliminate the influence of extreme values, the upper and lower 1% of all continuous variables are winsorized.

4.2. Definition of variables

4.2.1. Explained variables.

The explanatory variable of this paper is auditor risk response, and audit inputs and audit fees are mainly selected as indicators reflecting auditor risk response, for audit inputs, this paper draws on the methodology of Su Lizhong et al. (2019), which adopts the interval (in days) between the end of the year and the next year's audit closing date divided by the total assets at the end of the year, and then multiplied by 10 million, which means that the auditing time required for each 10 million end-of-period total assets is used as a proxy variable for audit cast proxy variable. For audit fees, this paper draws on Li, Tuanxi and Wang, Pingxin (2005) and uses the audit fee rate, i.e., the audit fee charged by the accounting firm divided by the total assets at the end of the year and then taking the natural logarithm, as a proxy variable for audit fees (AFEE).

4.2.2. Explanatory variables.

The explanatory variable of this paper is common institutional ownership, referring to the existing literature (Du Yong et al. He and Huang, 2017; Chen et al., 2018), this paper constructs indicators to reflect the common institutional ownership of listed companies from three dimensions: the common institutional ownership dummy variable (Coz1), if there is a common institutional investor holding shares of the listed company in the current year, Coz1 is 1, or else it is 0, in which the common institutional investors refer to institutional investors holding not less than 5% of shares in two or more companies in the same industry; the degree of common institutional ownership linkage (Coz2), which indicates that the listed company is jointly held by several common institutional investors, and add 1 to take the natural logarithm; and the proportion of common institutional ownership (Coz3), which is equal to the total proportion of shares of a listed company owned by all common institutional investors in the same year. investors' shareholdings in the year. Specifically calculated, the independent variables are constructed based on quarterly data, if a company is held by a common institutional investor in any quarter of a year, it is determined that there is a common institutional ownership of the company during the year, and the mean value of the quarterly indicator is taken as the corresponding annual indicator data. For industry classification, this paper adopts the 2012 classification standard of the Securities and Futures Commission (SFC), with the manufacturing industry using the second level of classification and the rest of the industries using the first level of classification. The main test of this paper mainly adopts the dummy variable of common institutional ownership and the degree of linkage, while the proportion of common institutional ownership is used for the robustness test.

4.2.3. Control variables.

The control variables selected in this paper with reference to Du Yong et al. (2021) and Wu Hengguang et al. (2022) are: at the level of firm characteristics, firm size (Size), leverage (Lev), profitability (Roa), liquidity (Liquid), accounts receivable (REC), inventory (INV), loss (Loss), and growth (Growth) are selected to control the impact of operational complexity and operational risk; the size of the board of directors (Board), the independence of the board of directors (Indep), the chairman of the board and general manager of the board of directors whether two positions are combined (Dual), the concentration of shareholding (Top1), the nature of the property rights (SOE) to control the impact of the characteristics of corporate governance; and at the audit level, the audit of the Big Four (BIG4), which represent the characteristics of the audit, and the audit opinion (Opinion) as the control. Opinion) as control variables; year and industry fixed effects are also controlled for, and standard errors are adjusted for clustering at the firm level. All the variables list in Table 1.

Table 1. List of variable definitions

Variable type	variable name	Symbolic representation	Variable Description
Explained variables	Audit inputs	AINVEST	Interval (in days) between year-end and next year's audit completion date divided by year-end total assets and multiplied by 10 million
	Audit fees	AFEE	Audit fee divided by total assets at the end of the year and then take the natural logarithm of it
Explanatory variable	Dummy variable for common institutional ownership	Coz1	Coz1 is 1 if the listed company is held by a common institutional investor during the year, otherwise it is 0
	Degree of common institutional ownership linkages	Coz2	The number of institutions in which the listed company is jointly held by institutional investors plus 1 to take the natural logarithm
	Common institutional ownership shareholding	Coz3	Sum of shareholdings of all common institutional investors owned by the listed company during the year
Control variable	Enterprise size	Size	Natural logarithm of total corporate assets
	Gearing	Lev	Total Liabilities/Total Assets
	return on total assets	ROA	Net Profit/Total Assets
	current ratio	Liquid	Current Assets/Current Liabilities
	Inventory ratio	INV	Ratio of net inventories to total assets at the end of the period
	Accounts receivable ratio	REC	Ratio of net accounts receivable to total assets at the end of the period
	Loss	Loss	Dummy variable, if the current year's net profit is less than 0, then take the value of 1, otherwise take 0
	growth capacity	Growth	Total assets growth rate
	Shareholding concentration	Top1	Shareholding ratio of the first largest shareholder
	Board size	Board	Natural logarithm of the number of board of directors
	Ratio of sole director	Indep	Number of sole directors / number of board of directors
	Dual	Dual	The value of 1 if the chairman of the board and the general manager of the board of directors are concurrently appointed, or 0 otherwise.
	Nature of property rights	SOE	Dummy variable, 1 for state-owned enterprises, 0 otherwise
	BIG4	BIG4	Dummy variable, 1 for Big 4, 0 otherwise
	Audit opinion	Opinion	Dummy variable, 1 for non-standard audit opinion, 0 otherwise
	Industry	Ind	Industry dummy variable
	Year	Year	Time dummy variable

4.3. Modeling

In order to analyze the impact of common institutional holdings on audit inputs and audit fee decisions, this paper constructs an OLS regression model while controlling for year and industry-fixed effects and adjusting for clustering of standard errors at the firm level. The specific model is:

$$AINVEST_{i,t}(AFEE_{i,t}) = \alpha_0 + \alpha_1 Coz_{i,t} + \alpha_2 Control_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t}$$

5. Empirical Results

5.1. Descriptive statistics

Table 2 shows the full-sample descriptive statistics of this paper, through the distribution of the sample and the descriptive statistics results, we can see that the mean value of the audit input is 0.428, that is, every ten million of total assets need to lag about 0.4 days, the audit fee rate is negative after taking the logarithmic value because it is between 0 and 1. Through the standard deviation, the standard deviation of the audit input is 0.456, and the standard deviation of the audit fee is 0.881, i.e., there are large differences in audit fees and audit inputs of the sample firms, indicating that auditors take different risk responses to different firms. In terms of explanatory variables, the mean value of the dummy variable of common institutional ownership Coz1 is 0.103, which is basically consistent with the mean results of the existing literature, i.e., 10.3% of the currently listed companies in China have common institutional shareholding. The maximum value of Coz2, the degree of common institutional ownership linkage, is 1.09, indicating that there are at most three institutions holding enterprises in the same industry in the existence of common institutional shareholding; through the maximum value of Coz3, we can see that the common institutional ownership of the enterprise can reach a maximum of 54.7%, which has been able to have a higher voice in the enterprise, thus affecting the enterprise's operation and governance decisions.

Table 2. Full sample descriptive statistics

Variable	Sample	Ave	Mid	SC	Min	Max
AINVEST	32582	0.428	0.275	0.456	0.00400	2.377
AFEE	32582	-8.358	-8.274	0.881	-10.79	-6.455
Coz1	32582	0.103	0	0.304	0	1
Coz2	32582	0.0770	0	0.231	0	1.099
Coz3	32582	0.0260	0	0.0940	0	0.547
Size	32582	22.16	21.96	1.290	19.88	26.18
Lev	32582	0.418	0.410	0.208	0.0510	0.895
ROA	32582	0.0430	0.0410	0.0650	-0.234	0.223
Liquid	32582	2.615	1.705	2.776	0.323	17.81
INV	32582	0.144	0.111	0.134	0	0.711
REC	32582	0.121	0.0990	0.103	0	0.466
Loss	32582	0.103	0	0.303	0	1
Growth	32582	0.229	0.107	0.440	-0.294	2.789
Top1	32582	0.344	0.322	0.149	0.0860	0.747
Board	32582	2.124	2.197	0.199	1.609	2.708
Indep	32582	0.376	0.364	0.0530	0.333	0.571
Dual	32582	0.289	0	0.453	0	1
SOE	32582	0.353	0	0.478	0	1
BIG4	32582	0.0580	0	0.235	0	1
Opinion	32582	0.970	1	0.170	0	1

5.2. Multiple regression analysis

Table 3 shows the regression results of Model 1 of this paper, through the results in the first two columns it can be seen that the regression coefficients of the dummy variable of common institutional ownership, Coz1, on audit inputs are 0.098, and the regression coefficient of the degree of linkage is 0.141, both of which are significantly positive at the 1% level, i.e., common institutional ownership of firms significantly increases audit inputs by auditors. The results of columns 3 and 4 show that the regression coefficients of Coz1 and Coz2 on audit fees are also significantly positive, i.e., common institutional ownership leads auditors to increase audit pricing. The above regression results support hypothesis 2 proposed in this paper, that is, it verifies the collusion hypothesis of common institutional ownership, common institutional investors will in order to maximize the value of their investment, and actively promote the collusion between shareholding enterprises, on the one hand, reduce the sensitivity of the enterprise to market opportunities, and increase the enterprise's business risk; on the other hand, it will also promote the enterprise to establish information barriers, reduce the quality of information disclosure, and enhance the auditor's ability to increase the price of the audit. Facing the information asymmetry, at the same time, the common institutional investors will also conspire with the management, easy to induce the management of opportunistic behavior, increase the risk of financial fraud, and ultimately make the auditor face a higher business risk and audit risk, so as to increase the audit investment in the process of auditing, to expand the scope of the audit, the implementation of more substantive procedures, etc., and to charge a higher audit fee as a compensation for the work input and higher risk.

Table 3. Common institutional ownership and audit risk response

	AINVEST	AINVEST	AFEE	AFEE
Coz1	0.098***		0.055*	
	(8.162)		(2.440)	
Coz2		0.141***		0.098**
		(8.459)		(2.891)
Size	-0.298***	-0.298***	-0.621***	-0.622***
	(-46.197)	(-46.271)	(-88.158)	(-89.705)
Lev	0.160***	0.160***	-0.021	-0.020
	(5.385)	(5.397)	(-0.509)	(-0.489)
ROA	-0.336***	-0.337***	-0.434***	-0.437***
	(-5.733)	(-5.748)	(-4.880)	(-4.919)
Liquid	0.020***	0.020***	-0.009***	-0.009***
	(10.599)	(10.597)	(-4.706)	(-4.728)
INV	-0.074*	-0.073*	-0.083	-0.082
	(-2.158)	(-2.127)	(-1.599)	(-1.576)
REC	-0.067	-0.067	0.182**	0.183**
	(-1.844)	(-1.834)	(3.070)	(3.083)
Loss	0.002	0.002	0.058***	0.058***
	(0.282)	(0.265)	(4.378)	(4.356)
Growth	-0.014**	-0.013**	-0.003	-0.003
	(-3.190)	(-3.153)	(-0.454)	(-0.420)
Top1	0.099***	0.100***	-0.059	-0.057
	(3.976)	(4.040)	(-1.481)	(-1.424)
Board	0.010	0.008	-0.004	-0.006
	(0.445)	(0.344)	(-0.121)	(-0.178)
Indep	0.384***	0.378***	0.085	0.079
	(5.282)	(5.217)	(0.752)	(0.705)
Dual	0.017*	0.017*	0.020*	0.020*

	(2.523)	(2.494)	(1.977)	(1.962)
SOE	-0.008	-0.008	-0.076***	-0.077***
	(-0.936)	(-0.990)	(-5.091)	(-5.174)
BIG4	0.184***	0.182***	0.598***	0.596***
	(9.166)	(9.150)	(17.533)	(17.438)
Opinion	-0.087***	-0.087***	-0.132***	-0.133***
	(-4.144)	(-4.170)	(-6.794)	(-6.811)
_cons	6.730***	6.751***	5.335***	5.366***
	(44.990)	(45.175)	(31.055)	(31.896)
N	32582	32582	32582	32582
r2	0.641	0.642	0.793	0.793
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.3. Robustness Tests

5.3.1. Replacement of common institutional ownership definition thresholds.

Firstly, this paper re-regresses the model using the shareholding percentage of common institutional investors as an explanatory variable, and the results, as shown in the first two columns of Table 4, show that the regression coefficients of the shareholding percentage of common institutional ownership on the audit inputs and the audit fees are significantly positive at the 1% and 5% levels, respectively, which is in line with the previous results and supports the collusive fraud hypothesis of common institutional ownership.

In addition, the previous paper set the threshold for defining common institutional ownership at 5%, considering that a higher shareholding ratio may prompt investors to strengthen their participation in the company's operation and governance decisions, this paper refers to Pan Yue et al. (2020), which stipulates that according to the company law, institutions holding more than 10% of the shares of an enterprise have the right to request for the convening of an extraordinary shareholders' meeting and can exclude the directors or executives from the enterprise being held, so as to be able to directly participate in the day-to-day business decision-making of the enterprise, and progressively play the role of supervision and governance of institutional investors. Then this paper changes the definition of common institutional ownership threshold from 5% to 10%, and the results of the model regression shown in the table, which shows that the effects of common institutional ownership on audit inputs and audit fees are all significant at 1% level, and the coefficients are also more significant, which indicates that when the proportion of shares held by the common institutional investor is higher, its motivation and ability to collude with fraud will be stronger, and the auditors will also take more cautious risk response, which will be more important to the company. and auditors will adopt more prudent risk response behaviors.

5.3.2. Lag phase.

Considering that there may be a certain time lag in the impact of common institutional ownership, and auditors may consider the impact of the previous year's common institutional ownership and take risk response behaviors, therefore, this paper lags one period of the core explanatory variable common institutional ownership and re-regresses Model 1, and the results are shown in the Table 5, and the regression coefficients of the lagged one-period common institutional ownership are still significantly positive, which to some extent indicates that the findings of this paper are robust and reliable.

Table 4. Robustness tests1

	AINVEST	AFEE	AINVEST	AINVEST	AFEE	AFEE
Coz1			0.113***		0.100***	
			(7.381)		(3.306)	
Coz2				0.162***		0.145***
				(7.381)		(3.306)
Coz3	0.278***	0.321**				
	(6.250)	(3.172)				
Size	-0.296***	-0.622***	-0.297***	-0.297***	-0.622***	-0.622***
	(-46.195)	(-89.860)	(-46.256)	(-46.256)	(-88.391)	(-88.391)
Lev	0.159***	-0.020	0.160***	0.160***	-0.019	-0.019
	(5.327)	(-0.478)	(5.380)	(5.380)	(-0.473)	(-0.473)
ROA	-0.313***	-0.418***	-0.311***	-0.311***	-0.418***	-0.418***
	(-5.328)	(-4.736)	(-5.307)	(-5.307)	(-4.715)	(-4.715)
Liquid	0.020***	-0.009***	0.020***	0.020***	-0.009***	-0.009***
	(10.566)	(-4.748)	(10.591)	(10.591)	(-4.727)	(-4.727)
INV	-0.070*	-0.076	-0.072*	-0.072*	-0.080	-0.080
	(-2.039)	(-1.477)	(-2.090)	(-2.090)	(-1.543)	(-1.543)
REC	-0.071	0.181**	-0.066	-0.066	0.185**	0.185**
	(-1.942)	(3.031)	(-1.806)	(-1.806)	(3.110)	(3.110)
Loss	0.004	0.059***	0.004	0.004	0.059***	0.059***
	(0.475)	(4.421)	(0.491)	(0.491)	(4.441)	(4.441)
Growth	-0.014**	-0.003	-0.014**	-0.014**	-0.003	-0.003
	(-3.261)	(-0.421)	(-3.176)	(-3.176)	(-0.402)	(-0.402)
Top1	0.083***	-0.072	0.093***	0.093***	-0.061	-0.061
	(3.353)	(-1.806)	(3.773)	(3.773)	(-1.528)	(-1.528)
Board	0.010	-0.006	0.008	0.008	-0.007	-0.007
	(0.445)	(-0.180)	(0.355)	(0.355)	(-0.203)	(-0.203)
Indep	0.385***	0.077	0.375***	0.375***	0.072	0.072
	(5.299)	(0.690)	(5.199)	(5.199)	(0.648)	(0.648)
Dual	0.017**	0.020*	0.018**	0.018**	0.021*	0.021*
	(2.593)	(2.012)	(2.652)	(2.652)	(2.038)	(2.038)
SOE	-0.007	-0.081***	-0.008	-0.008	-0.079***	-0.079***
	(-0.878)	(-5.391)	(-0.916)	(-0.916)	(-5.263)	(-5.263)
BIG4	0.188***	0.595***	0.183***	0.183***	0.593***	0.593***
	(9.255)	(17.530)	(9.238)	(9.238)	(17.462)	(17.462)
Opinion	-0.087***	-0.133***	-0.087***	-0.087***	-0.133***	-0.133***
	(-4.156)	(-6.839)	(-4.173)	(-4.173)	(-6.837)	(-6.837)
_cons	6.702***	5.380***	6.719***	6.719***	5.368***	5.368***
	(45.082)	(31.951)	(45.218)	(45.218)	(31.544)	(31.544)
N	32582.000	32582.000	32582.000	32582.000	32582.000	32582.000
r2	0.641	0.794	0.641	0.641	0.794	0.794
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Robustness tests2

	AINVEST	AINVEST	AFEE	AFEE
L.Cozy1	0.093***		0.053*	
	(7.878)		(2.178)	
L.Cozy2		0.134***		0.096**
		(8.172)		(2.634)
Size	-0.275***	-0.276***	-0.617***	-0.618***
	(-42.772)	(-42.819)	(-83.468)	(-84.627)
Lev	0.141***	0.141***	-0.030	-0.029
	(4.673)	(4.676)	(-0.673)	(-0.657)
ROA	-0.404***	-0.404***	-0.479***	-0.481***
	(-6.795)	(-6.801)	(-5.049)	(-5.072)
Liquid	0.020***	0.020***	-0.012***	-0.012***
	(8.773)	(8.768)	(-5.424)	(-5.441)
INV	-0.057	-0.056	-0.070	-0.069
	(-1.641)	(-1.614)	(-1.278)	(-1.260)
REC	-0.076*	-0.076*	0.199**	0.200**
	(-2.105)	(-2.100)	(3.126)	(3.139)
Loss	-0.006	-0.006	0.047***	0.047***
	(-0.653)	(-0.660)	(3.365)	(3.354)
Growth	-0.037***	-0.037***	-0.042***	-0.041***
	(-8.122)	(-8.085)	(-4.322)	(-4.274)
Top1	0.097***	0.098***	-0.066	-0.064
	(3.872)	(3.928)	(-1.538)	(-1.492)
Board	0.005	0.003	-0.009	-0.011
	(0.227)	(0.135)	(-0.239)	(-0.289)
Indep	0.379***	0.374***	0.045	0.039
	(5.302)	(5.237)	(0.376)	(0.328)
Dual	0.017*	0.017*	0.022*	0.022*
	(2.533)	(2.512)	(2.058)	(2.048)
SOE	-0.010	-0.010	-0.076***	-0.078***
	(-1.154)	(-1.198)	(-4.911)	(-4.991)
BIG4	0.172***	0.171***	0.586***	0.584***
	(9.000)	(8.990)	(16.608)	(16.535)
Opinion	-0.075***	-0.075***	-0.125***	-0.125***
	(-3.704)	(-3.725)	(-6.205)	(-6.215)
_cons	6.256***	6.275***	5.304***	5.334***
	(41.730)	(41.871)	(29.546)	(30.231)
N	27802.000	27802.000	27802.000	27802.000
r2	0.637	0.638	0.795	0.795
ar2				
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6. Further analysis

The main regression results indicate that auditors perceive the existence of common institutional ownership in firms as exacerbating business risk and audit risk, thus increasing audit investment

and audit fees, supporting the collusive fraud hypothesis of common institutional investors. This paper will next further explore whether there are differences in the impact of common institutional ownership on auditors' risk response behavior at the industry level, firm level, audit level, and heterogeneous common institutional investor level, respectively.

6.1. Level of competition in the industry

When the degree of competition in the industry in which the enterprise is located is high, enterprises that are evenly matched within the same industry are more likely to suppress each other, or even use price wars, marketing wars and other means of vicious competition, and the enterprise will also face a higher degree of business risk, but if the competing parties are held by the same institutional investor, the fierce business competition will lead to the enterprise losing both (Hansen and Lott, 1996), which is obviously contrary to the portfolio value maximization objective, so the common institutional investor will have stronger incentives to contribute to the reduction of competition and the formation of strategic collusion among the shareholding firms (Azar et al., 2018) to capture excess profits. Through methods such as price wars, distorting market prices and forming leading firms to monopolize the market, or through surplus management, etc., creating information barriers. Therefore, in the case of a higher degree of industry competition, auditors will also be more sensitive to the risks that may arise from the ownership collusion of common institutions, which will lead to increased audit investment and higher audit fees. The degree of industry competition will therefore enhance auditors' risk-responsive behavior towards common ownership.

In order to verify the validity of the above analysis, this study conducts a group regression test using whether the degree of industry competition is higher than the median as the delineation criterion. Referring to Wang, Fang and Shen, Yanjie (2018), the Herfindahl Index (HHI), which is the sum of the squares of the share of operating revenues of listed companies within each industry in the total operating revenues of the industry in each year, is utilized to measure the degree of competition in the industry, and a dummy variable HHI is set according to the median, and the value of HHI will be taken to be 1 if the Herfindahl Index of the industry in which the enterprise is located is higher than the median of all the industries of the current year, which indicates that the degree of competition in the industry is low, and 0 otherwise. Otherwise, it is 0. Through group regression of model 1, it is expected that the regression coefficient of common institutional ownership in the group of HHI=0, i.e., when the industry is more competitive, indicating that when the industry is more competitive, the auditor will make more active risk response behaviors in the face of the risk brought by common institutional ownership. The regression results are shown in the Table 6, and it can be seen that the coefficient of common institutional ownership is more significant when the industry has a high degree of competition than when it has a low degree of competition, which is consistent with the expectation.

Table 6. Common agency ownership, level of industry competition, and auditor risk response

	High competition		Low competition	
	AINVEST	AFEE	AINVEST	AFEE
Coz2	0.155***	0.133**	0.118***	0.091*
	(7.363)	(2.726)	(5.568)	(2.432)
Size	-0.277***	-0.610***	-0.321***	-0.633***
	(-34.403)	(-63.510)	(-37.295)	(-72.662)
Lev	0.151***	-0.014	0.169***	-0.038
	(3.794)	(-0.243)	(4.228)	(-0.704)
ROA	-0.274***	-0.366**	-0.415***	-0.478***
	(-3.405)	(-3.037)	(-5.093)	(-3.805)
Liquid	0.021***	-0.010***	0.019***	-0.009***
	(7.176)	(-3.352)	(8.203)	(-3.767)
INV	-0.092*	-0.077	-0.044	-0.082
	(-2.159)	(-1.156)	(-0.939)	(-1.150)
REC	-0.091	0.251***	-0.037	0.128
	(-1.899)	(3.297)	(-0.733)	(1.648)
Loss	0.006	0.074**	-0.004	0.038*
	(0.526)	(3.990)	(-0.271)	(2.033)
Growth	-0.022***	-0.009	-0.003	0.010
	(-3.442)	(-0.901)	(-0.444)	(0.969)
Top1	0.097**	-0.067	0.089**	-0.056
	(3.027)	(-1.238)	(2.716)	(-1.093)
Board	-0.021	0.004	0.040	-0.017
	(-0.788)	(0.086)	(1.323)	(-0.406)
Indep	0.441***	0.308*	0.316**	-0.180
	(4.764)	(2.007)	(3.265)	(-1.259)
Dual	0.015	0.019	0.017	0.020
	(1.639)	(1.322)	(1.957)	(1.601)
SOE	-0.002	-0.095***	-0.016	-0.052*
	(-0.188)	(-5.015)	(-1.380)	(-2.573)
BIG4	0.173***	0.589***	0.175***	0.590***
	(7.916)	(13.813)	(6.061)	(13.201)
Opinion	-0.081**	-0.119***	-0.101**	-0.132***
	(-2.853)	(-4.580)	(-3.167)	(-4.605)
_cons	6.349***	4.991***	7.139***	5.657***
	(34.089)	(22.485)	(37.504)	(26.193)
N	15380.000	15380.000	15647.000	15647.000
r2	0.636	0.789	0.651	0.797
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.2. Nature of Property Rights

In China, due to the different property rights arrangements, there are big differences between state-owned enterprises and non-state-owned enterprises in terms of business objectives, illegal costs, etc., which leads to different economic consequences of the same economic behavior in state-owned enterprises and non-state-owned enterprises. Based on this point of view, this paper argues that the collusion ability of common institutional investors is different in enterprises with different property

rights, and therefore the impact of common institutional ownership on auditors' risk response behavior is also different between state-owned enterprises and non-state-owned enterprises.

In terms of business objectives, SOEs are not fully performance-oriented but also have a partially social and political mandate. This determines that SOEs need to take more social benefits into account in their business decisions, and they are less likely to pander to co-institutional investors and collude with other firms in their portfolios. Non- state-owned enterprises, on the other hand, are more concerned with maximizing corporate profits and economic interests, and are more likely to engage in product market collusion with the rest of their portfolio companies when induced to do so by the intervention of co-institutional investors and the benefits of collusion. In terms of the cost of violating the law, if collusion is detected and punished, SOEs not only need to bear the economic costs such as fines, but also affect the career and reputation of SOE leaders. Therefore, the differences between SOEs and non-SOEs in terms of business objectives and illegal costs determine that the collusion ability of co-institutional investors is weakened in SOEs (Pan Yue et al., 2020; Wu et al., 2022), which leads to a lower level of risk perception of auditors for co-institutional ownership as well, and greater investment in auditing and higher auditing costs in non-SOEs.

Constructing the cross-multiplier term of the nature of property rights and common institutional ownership is added to model 1 for regression, and the results are shown in Table 7, which shows that the coefficients of the cross-multiplier terms are all significantly positive at the 5% or 1% level, i.e., the auditor will engage in more risky coping behaviors in SOEs, which is not in line with the expectation of the previous article, probably because the insider control problem caused by the one-share monopoly and lack of owner is more serious in SOEs, and the auditor believe that common institutional investors are more likely to conspire with management to maximize portfolio returns and obtain collusive gains, exacerbating the business and audit risks faced by auditors, coupled with the fact that SOEs are subject to more media and public opinion attention, auditors face more pressure when auditing SOEs, and therefore auditors will have a higher level of perceived risk for common institutional ownership in SOEs.

Table 7. Common institutional ownership, nature of property rights and auditor risk

	AINVEST	AINVEST	AFEE	AFEE
Coz1	0.025		-0.022	
	(1.546)		(-0.963)	
SOE*Coz1	0.112***		0.119**	
	(5.071)		(3.025)	
Coz2		0.034		-0.026
		(1.573)		(-0.802)
SOE*Coz2		0.157***		0.181**
		(5.224)		(3.245)
Size	-0.298***	-0.299***	-0.621***	-0.622***
	(-46.253)	(-46.287)	(-88.614)	(-90.155)
Lev	0.162***	0.162***	-0.019	-0.018
	(5.473)	(5.478)	(-0.453)	(-0.433)
ROA	-0.319***	-0.319***	-0.416***	-0.416***
	(-5.471)	(-5.474)	(-4.705)	(-4.716)
Liquid	0.020***	0.020***	-0.009***	-0.009***
	(10.571)	(10.562)	(-4.750)	(-4.786)
INV	-0.073*	-0.071*	-0.082	-0.080
	(-2.132)	(-2.091)	(-1.573)	(-1.541)
REC	-0.070	-0.070	0.179**	0.179**
	(-1.919)	(-1.920)	(3.017)	(3.019)
Loss	0.004	0.003	0.059***	0.059***
	(0.405)	(0.396)	(4.468)	(4.459)

Growth	-0.014**	-0.014**	-0.004	-0.004
	(-3.277)	(-3.248)	(-0.509)	(-0.485)
Top1	0.095***	0.096***	-0.063	-0.062
	(3.831)	(3.890)	(-1.579)	(-1.534)
Board	0.011	0.009	-0.003	-0.005
	(0.514)	(0.395)	(-0.078)	(-0.143)
Indep	0.381***	0.375***	0.082	0.075
	(5.270)	(5.195)	(0.731)	(0.674)
Dual	0.017**	0.017*	0.021*	0.020*
	(2.612)	(2.576)	(2.038)	(2.024)
SOE	-0.018*	-0.018*	-0.087***	-0.089***
	(-2.097)	(-2.129)	(-5.667)	(-5.763)
BIG4	0.183***	0.182***	0.598***	0.595***
	(9.191)	(9.191)	(17.584)	(17.517)
Opinion	-0.086***	-0.087***	-0.132***	-0.133***
	(-4.142)	(-4.170)	(-6.769)	(-6.790)
N	32582.000	32582.000	32582.000	32582.000
r2	0.643	0.643	0.794	0.794
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.3. Big 4

Existing studies have found that there are significant differences between international Big 4 accounting firms and non-international Big 4 accounting firms. Based on the brand effect theory, the Big Four accounting firms are considered to be the symbol of high-quality auditing, have a good reputation, and have formed a certain brand effect, so the Big Four accounting firms will charge a certain premium when pricing their audits; on the other hand, based on the deep-pocketed theory, relative to the non-international Big Four accounting firms, when the stakeholders suffer a loss, they are more inclined to file a lawsuit against the international Big Four accounting firms to file lawsuits and claim for compensation, which seriously affects the reputation of the firms. Therefore, Big 4 firms have stronger incentives to avoid audit failures and maintain a good reputation (Francis and Wang, 2008), and thus will be more sensitive to the risks associated with the collusive effect of co-investors, and will be more cautious in the audit process, increase audit investment, and charge a certain risk premium as compensation.

By constructing the cross-multiplier term between Big 4 auditing and common institutional ownership to be added to Model 1, the regression results are shown in Table 8. The results of the first two columns show that the coefficient of the cross-multiplier term on audit input is significantly positive at the 1% level, i.e., Big 4 auditors will be more cautious about the phenomenon of common institutional ownership of firms and invest more time and effort in reducing the risk to an acceptable level compared to non-Big 4 audits. The third and fourth columns show that the effect of the cross-multiplier term on audit fees is still positive but not significant, probably because the Big 4 audits themselves are already charging audit fees at a high level and therefore are not raising them significantly further.

Table 8. Common institutional ownership, Big 4 and auditor risk response

	(1)	(2)	(3)	(4)
	AINVEST	AINVEST	AFEE	AFEE
Coz1	0.068***		0.045	
	(5.753)		(1.873)	
BIG4*Coz1	0.196***		0.071	
	(5.160)		(1.012)	
Coz2		0.101***		0.079*
		(5.970)		(2.176)
BIG4*Coz2		0.245***		0.115
		(5.294)		(1.233)
Size	-0.299***	-0.299***	-0.621***	-0.623***
	(-46.035)	(-46.124)	(-87.464)	(-88.956)
Lev	0.164***	0.164***	-0.020	-0.018
	(5.518)	(5.535)	(-0.477)	(-0.446)
ROA	-0.331***	-0.331***	-0.432***	-0.434***
	(-5.661)	(-5.663)	(-4.859)	(-4.888)
Liquid	0.020***	0.020***	-0.009***	-0.009***
	(10.596)	(10.597)	(-4.720)	(-4.744)
INV	-0.081*	-0.080*	-0.086	-0.085
	(-2.396)	(-2.346)	(-1.654)	(-1.643)
REC	-0.071	-0.071	0.181**	0.181**
	(-1.945)	(-1.942)	(3.037)	(3.042)
Loss	0.003	0.003	0.058**	0.058***
	(0.366)	(0.356)	(4.403)	(4.390)
Growth	-0.014**	-0.013**	-0.003	-0.003
	(-3.178)	(-3.147)	(-0.452)	(-0.418)
Top1	0.101***	0.103***	-0.058	-0.056
	(4.105)	(4.162)	(-1.457)	(-1.394)
Board	0.009	0.008	-0.005	-0.006
	(0.418)	(0.344)	(-0.128)	(-0.179)
Indep	0.365***	0.362***	0.078	0.071
	(5.026)	(5.001)	(0.688)	(0.635)
Dual	0.016*	0.016*	0.020	0.019
	(2.443)	(2.397)	(1.959)	(1.936)
SOE	-0.006	-0.007	-0.075***	-0.077***
	(-0.769)	(-0.830)	(-5.046)	(-5.118)
BIG4	0.124***	0.126***	0.577***	0.569***
	(5.834)	(5.944)	(16.257)	(15.948)
Opinion	-0.086***	-0.087***	-0.132***	-0.133***
	(-4.155)	(-4.176)	(-6.807)	(-6.825)
_cons	6.762***	6.779***	5.347***	5.380***
	(44.916)	(45.095)	(30.667)	(31.494)
N	32582.000	32582.000	32582.000	32582.000
r2	0.643	0.644	0.793	0.794
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7. Summary

Based on the data of China's A-share listed companies in Shanghai and Shenzhen from 2010 to 2021, this paper finds that common institutional ownership will prompt auditors to increase audit

investment and raise audit fees, which to a certain extent supports the collusive fraud effect of common institutional ownership, i.e., common institutional investors will promote collusion among firms in the portfolio, establish information barriers between firms inside and outside the portfolio, reduce information disclosure quality, and easily induces management's opportunistic behavior, increasing the probability of financial fraud, exposing auditors to higher business and audit risks, and thus increasing audit investment and audit fees as compensation for effort and risk-taking. Further analysis reveals that the effect of common institutional ownership on auditors' risk response behavior is more pronounced in firms with a higher degree of industry competition and in state-owned enterprises and that Big Four auditors will be more sensitive to the collusive fraud effect of common institutional ownership and will increase audit investment to cope with this risk.

Through the above research findings, this paper puts forward some suggestions from the government level, company level and auditor level respectively. For the government, since common institutional investors may form an industry monopoly by means of collusion, hindering the normal and orderly development of the capital market and impeding the efficiency of market allocation, the government should focus on the common phenomenon of common institutional investors, actively guide the development of enterprises, and accelerate the formulation of corresponding laws and regulations to transform disadvantages into advantages and realize the orderly development of the capital market. Enterprises should strengthen the supervision and management of their daily operation to prevent co-institutional investors from manipulating and colluding to harm the interests of enterprises and create a monopoly in the industry market. Enterprises should also improve internal and external governance mechanisms to guide co-institutional investors to take advantage of their resources, information, and expertise to actively participate in corporate governance and help enterprises establish long-term competitive advantages and achieve healthy and sustainable development. Thirdly, for auditors, the existence of common institutional investors increases the operational risks of enterprises and the complexity of auditing, therefore, auditors should fully recognize the risks and purposes behind the collusion of common institutional investors, and take prudent and effective countermeasures to reduce the risks to an acceptable level and improve the quality of auditing.

References

- [1] Azar J, Schmalz M C, and Tecu I. Anti-competitive Effects of Common Ownership [J]. *The Journal of Finance*, 2018, 73 (4): 1513 - 1565.
- [2] Bell T B, Landsman W R, and Shackelford D A. Auditors' Perceived Business Risk and Audit Fees: Analysis and Evidence [J]. *Journal of Accounting Research*, 2001, 39 (1): 35 - 43.
- [3] Brooks C, Chen Z, Zeng Y. Institutional cross-ownership and corporate strategy: the case of mergers and acquisitions [J]. *Journal of Corporate Finance*, 2018, 48: 187 - 216.
- [4] Colbert J L, Luehlfling M S and Alderman C W. Engagement Risk [J]. *The CPA Journal*, 1996, 66 (3): 54 - 56.
- [5] Edmans A, Levit D, and Reilly D. Governance Under Common Ownership [J]. *Review of Financial Studies*, 2019, 32 (7): 2673 - 2719.
- [6] Elder R, Zhang Y, Zhou J, et al. Internal control weaknesses and client risk management [J]. *Journal of Accounting, Auditing & Finance*, 2009, 24 (4): 543 - 579.
- [7] Francis J R, and Wang D. The Joint Effect of Investor Protection and Big4 Audits on Earnings Quality around the World [J]. *Contemporary Accounting Research*, 2008, 25: 157 - 191.
- [8] Gao K, Shen H, Gao X, Chan K C. The power of sharing: evidence from institutional investor cross-ownership and corporate innovation [J]. *International Review of Economics and Finance*, 2019, 63: 284 - 296.
- [9] Hansen R G, Lott J R. Externalities and Corporate Objectives in a World with Diversified Shareholder Consumers [J]. *Journal of Financial and Quantitative Analysis*, 1996, 31 (1): 43 - 68.
- [10] Hay D C, Knechel W R, and Wong N. Audit fees: A meta-analysis of the effect of supply and demand attributes [J]. *Contemporary Accounting Research*, 2006, 23 (1): 141 - 191.
- [11] He J, Huang J K, and Zhao S. Internalizing Governance Externalities: The Role of Institutional Cross ownership [J]. *Journal of Financial Economics*, 2019, 134 (2): 400 - 418.
- [12] Hope O K, Wu H, and Zhao W. Blockholder Exit Threats in the Presence of Private Benefits of Control [J]. *Review of Accounting Studies*, 2017, 22 (2): 873 - 902.

- [13] Kacperczyk K M, Sialm C, and Zheng L. On the Industry Concentration of Actively Managed Equity Mutual Funds [J]. *Journal of Finance*, 2005, 60 (4): 1983 - 2011.
- [14] Krishnan G V, Sun L, Wang Q, et al. Client Risk Management: A Pecking Order Analysis of Auditor Response to Upward Earnings Management Risk [J]. *Auditing: A Journal of Practice and Theory*, 2013, 32 (2): 147 - 169.
- [15] Neus W, Stadler M. Common holdings and strategic manager compensation: The case of an asymmetric triopoly [J]. *Managerial and Decision Economics*, 2018, 39 (7): 814 - 820.
- [16] Park J, Sani J, Shroff N, and White H. Disclosure Incentives When Competing Firms Have Common Ownership [J]. *Journal of Accounting and Economics*, 2019, 67 (2-3): 387 - 415.
- [17] Ramalingegowda S, Utke S, Yu Y. Common institutional ownership and earnings management [J]. *Contemporary Accounting Research*, 2021, 38 (1): 208 - 241.
- [18] Simunic D A. The pricing of audit services: Theory and evidence [J]. *Journal of Accounting Research*, 1980, 18 (1): 161 - 190.
- [19] Li C, Mingyue B, Chun C. Real earning management and auditor reception [J]. *Accounting Research*, 2015 (11): 83 - 89+97.
- [20] Li C, Yiling Z. Financial and non-financial information asymmetry, fraud risk and auditor response behavior[J]. *Accounting Research*, 2022 (06): 178 - 192.
- [21] Zhenglin C. Audit Risk, Auditor Risk and Institutional Risk [J]. *Auditing Research*, 2006 (03): 88 - 92.
- [22] Shanzhong D, Lianfu M. Research on the impact of chain shareholders on corporate risk-taking [J]. *Journal of Management*, 2022, 19 (1): 7 - 35.
- [23] Yong D, Hongyan H. Institutional common ownership and corporate financial restatement [J]. *Securities Market Herald*, 2022 (02): 67 - 79.
- [24] Yong D, Fan S, Xu D. Common institutional ownership and corporate surplus management [J]. *China Industrial Economy*, 2021 (06): 155 - 173.
- [25] Yong D, Fan S, Hongyan H. Common Institutional Ownership and Firm Capacity Utilization [J]. *Financial Research*, 2022, 48 (10): 49 - 63+168.
- [26] Fenling G, Yixian M, Chenxi X. Information-driven or competitive collusion: chain shareholders and the risk of corporate stock price collapse [J]. *Accounting Research*, 2022 (07): 141 - 153.
- [27] Li S G. Chain shareholders and the effectiveness of executive compensation contract [J]. *Contemporary Finance and Economics*, 2021 (11): 89 - 100.
- [28] [28]. Liang, R X, Li, Y. Do chain shareholders affect auditors' pricing decisions [J]. *Accounting Research*, 2022, (6): 165 - 177.
- [29] Yue P, Xudong T, et al. Chain shareholders and corporate investment efficiency: governance synergy or competitive collusion[J]. *China Industrial Economy*, 2020 (2): 136 - 164.
- [30] Lizhong S, Runda Z, Rui R. Equity incentives and external auditor risk response [J]. *Auditing Research*, 2019 (03): 120 - 128.
- [31] Baiqiang W, Yaning Y, Changling L. Does Corporate Core Competitiveness Influence Auditors' Decisions? --an empirical study based on A-share listed companies [J]. *Auditing Research*, 2021 (02): 68 - 79.
- [32] Wang F, Shen Y. How product market competition affects auditor risk response [J]. *Auditing Research*, 2018 (06): 81 - 89.
- [33] Xiaohui W, Yumin L, Yanrong K. Can common institutional investors improve the quality of surplus information [J]. *Accounting Research*, 2022 (06): 56 - 74.
- [34] Fei X, Taiyun Z, Genli L. Can institutional cross-shareholding curb corporate tax avoidance [J]. *Economic Management*, 2021, 43 (05): 125 - 141.
- [35] Junrui Z, Sijia Y, Zijian C. Do Major Shareholder Equity Pledges Affect Auditors' Decisions? --Evidence based on audit fees and audit opinions [J]. *Auditing Research*, 2017 (03): 65 - 73.
- [36] Min Z, Liansheng W, Yaping W. State-owned Equity, Firm Performance and Investment Behavior [J]. *Financial Research*, 2010 (12).
- [37] Donghua Z, Qinxue H. Joint Ownership and Comparability of Accounting Information-Empirical Evidence from Chinese Capital Market [J]. *Accounting and Economic Research*, 2021, 35 (4): 3 - 22.
- [38] Xiaoping Z, You Y. Audit Risk, Business Risk, Business Relationship Risk, Operational Failure and Audit Failure [J]. *Auditing Research*, 2003 (03): 8 - 13.
- [39] Shengbao Z, Haoran X, Yaosong L, Wei T. Controlling shareholders' equity pledge and auditor risk response [J]. *Management World*, 2017 (10): 51 - 65.