Heterogeneous Institutional Investor Attention and Corporate Tax Avoidance Behavior

Ziyi Cui[1]

[1] School of Business, Zhengzhou University, China

Correspondence: Ziyi Cui, School of Business, Zhengzhou University, China.

Abstract

This paper selects A-share listed company stocks in China between 2009 and 2021 as the research object, and from the perspective of investment portfolio, empirically investigates the impact of two types of institutional investor (pressure-resistant and pressure-sensitive) attention on corporate tax avoidance behavior. It is found that institutional investors' willingness to participate in corporate governance is jointly influenced by their own nature and their investment portfolio. Pressure-resistant monitoring institutional investors can effectively inhibit corporate tax avoidance behavior and play a positive governance role, while pressure-sensitive monitoring institutional investors show the opposite governance effect. The influence mechanism test shows that heterogeneous monitoring institutional investors influence corporate tax avoidance behavior by changing the degree of corporate information asymmetry. Heterogeneity tests show that the impact of heterogeneous monitoring institutional investors on corporate tax avoidance behavior is more pronounced in firms with poorer legal environments and in non-state-owned firms. This paper explores the impact of heterogeneous institutional investor attention on corporate tax avoidance behavior from the perspective of portfolio, providing theoretical basis for the Securities and Futures Commission (SFC) to differentially guide institutional investors to actively participate in governance.

Keywords: institutional investor attention, tax avoidance, portfolios, heterogeneity

1. Introduction

In recent years, from the slogan of the Securities and Futures Commission (SFC) of 'giving extraordinary play to institutional investors' to 'actively promoting the development of long-term institutional investors', China's institutional investors in the capital market have been developing rapidly. On 23 September 2020, the State Council executive meeting proposed to improve the mechanism for institutional investors to participate in corporate governance, and encourage institutional investors to participate in corporate decision-making and play more active functions. Therefore, institutional investors, as an external governance mechanism, can play a non-negligible role in the quality of listed companies, which has received extensive attention from the academic community.

Currently, there are three main different views on the governance role played by institutional investors within companies. The first view is based on the assumption of effective monitoring. This view asserts that institutional investors can rely on their capital and information advantages and can further enhance the overall value of the firm at a lower cost regulatory level (Fich et al., 2015). The second view is the strategic collusion hypothesis, which suggests that institutional investors may choose to collude with management or major shareholders in order to maximize their own interests and 'turn a blind eye' to the self-interested behavior of management to the detriment of small and medium-sized shareholders (Salehi et al., 2011). The third view is the ineffective monitoring hypothesis, which argues that institutional investors simply 'vote with their feet' in the company, which has no effect on the effectiveness of corporate governance (Koh, 2003).

Tax avoidance behavior refers to a range of complex and covert non-illegal means used by companies to reduce their tax revenues. Tax avoidance, as an important part of corporate governance, will also be influenced by the involvement of institutional investors in governance. The transfer of economic resources from the government to the enterprise through tax avoidance behavior will bring benefits such as tax savings and increased cash flow to the enterprise in the short term (Koester, 2011). However, when firms implement tax avoidance strategies, it also brings many long-term negative consequences. Not only does tax avoidance lead, to some extent, to a reduction in national tax revenues and an impediment to the allocation of public resources and the construction of public utilities, but also, in order to avoid detection by tax administrations, firms often employ secretive and complex trading activities to conceal their tax avoidance behavior. This practice undoubtedly exacerbates the problem of corporate information asymmetry and makes it a tool for management to pursue personal interests, which may ultimately be detrimental to the interests of shareholders and the value of the enterprise (Desai & Dharmapala, 2006). Therefore, in view of the great risks posed by tax avoidance behavior of enterprises, it is of great significance and value to explore how to reduce the level of tax avoidance of enterprises.

However, the existing literature on whether institutional investors can constrain tax avoidance behavior by enterprises has not reached a consistent conclusion. On the one hand, some scholars have found that institutional investors are able to leverage their own information mining and analysis capabilities, resources and professional advantages to exert a strong supervisory governance effect and increase the cost of tax avoidance by enterprises. They can identify various complex and hidden tax avoidance transactions carried out by management to seize private profits, effectively inhibit management's short-sighted behavior, and thus reduce the extent of corporate tax avoidance (Chen & Lin, 2017). On the other hand, some scholars have shown that institutional investors, in order to maximize their own interests, may be better able to carry out tax planning for enterprises, or even conspire with management and major shareholders, thus increasing the degree of tax aggressiveness of listed companies (Cheng et al., 2012).

Disagreements about the effectiveness of governance of corporate tax avoidance by institutional investors may be caused by differences in the nature of institutional investors themselves. Due to the differences in institutional investors' shareholding purpose, shareholding duration, shareholding stability and relationship with the investee, their motivation and effect of participating in corporate governance will also be different. Based on whether or not there is a business relationship with the investee firm, Liu et al. (2019) found that relatively independent pressure-resistant institutional investors value the long-term development of the firm, have greater supervisory effectiveness on the firm, and play a greater governance role in the firm's tax activities. In contrast, pressure-sensitive institutional investors have a weaker impact on the tax aggressiveness of firms and fail to exert a significant governance effect. Based on the duration of shareholding, Khurana and Moser (2013) classify institutional investors into long-term and short-term institutional investors based on the stock turnover rate, and find that long-term institutional investors actively monitor the management of investee firms and can significantly reduce the degree of tax avoidance of investee firms. Based on the nature of institutional investors' ownership, scholars have found that compared with non-state-owned institutional investors, state-owned institutional investors have government backgrounds and stronger capital and information advantages, which can more effectively reduce the degree of tax avoidance by enterprises (Cao et al., 2023).

However, whether it is from the perspective of homogeneity to measure the governance effect of institutional investors by shareholding ratio, or from the perspective of heterogeneity to differentiate between different types of institutional investors, most of the current literature ignores the portfolio strategy of institutional investors, and defaults to the assumption that institutional investors with the same shareholding ratio have the same willingness to monitor. However, in order to diversify risks, institutional investors often adopt a 'one-to-many' portfolio strategy. Based on the theory of limited attention, the energy and capital of institutional investors are limited. The capital allocation of institutional investors in the portfolio is also the process of rational allocation of their attention and attention, and their attention and motivation and ability to participate in the governance of enterprises with different weights in the portfolio will be different (Fich et al., 2015). Therefore, only by simultaneously considering the issues of institutional investor heterogeneity and portfolio weight can the governance effects of institutional investors on corporate tax avoidance be examined more comprehensively.

From the portfolio perspective, this study will examine the potential business linkages that exist between firms and heterogeneous institutional investors, as well as the impact and mechanism of such linkages on corporate tax avoidance. Based on the data of China's A-share listed companies from 2009-2021, this study first calculates the value of institutional investors' shareholding in each enterprise's portfolio. Subsequently, in descending order of the value of shareholdings, the top 10% of enterprises are defined as listed enterprises with higher portfolio weights. Accordingly, the institutional investors corresponding to these firms are identified as monitoring institutions. On this basis, monitoring institutions are further classified into pressure-resistant and pressure-sensitive categories based on the presence or absence of potential business linkages among the firms, thus testing whether the difference in the relative weights of the firms in the portfolios as well as the nature of the institutional

investors themselves may give rise to differentiated governance among the institutional investors.

The possible marginal contributions of this paper are reflected in the following: first, it enriches the literature related to the participation of institutional investors in governance; most of the existing studies on the governance effects of institutional investors' monitoring are analyzed in terms of their attributes and shareholding ratio, neglecting the importance of the choice of weights for institutional portfolios when attention is limited. This paper will combine two perspectives of institutional investors' attention and heterogeneity to study the impact of institutional investors on corporate tax avoidance, which is important for expanding the existing research as well as understanding the governance effects of institutional investors more comprehensively. Second, it reveals the mechanism of heterogeneous institutional investors' role in corporate tax avoidance, showing that pressure-resistant supervisory institutional investors are able to inhibit corporate tax avoidance by mitigating the degree of information asymmetry of firms, while pressure-sensitive supervisory institutional investors show the opposite governance effect, providing empirical evidence on how heterogeneous institutional investors affect corporate tax avoidance. Third, complementing the research on the factors influencing corporate tax avoidance, there is a literature on the impact of institutional investors and their heterogeneity on corporate tax avoidance. However, few scholars have explored the role of institutional investors' attention from a portfolio perspective. This paper starts from two perspectives of institutional portfolios and heterogeneity to explore the impact of institutional investors on tax avoidance behavior of enterprises with large weights in their portfolios and their mechanism of influence, to provide a fresh perspective for the study of factors influencing corporate tax avoidance behavior.

2. Theoretical Analysis and Research Hypothesis

The traditional view of tax planning is considered that tax avoidance behavior can reduce the tax burden of enterprises and bring cash inflows to enterprises in the short term (Duan, 2023). However, the process of tax avoidance behavior of listed companies to bring short-term gains is also accompanied by high costs and risks. On the one hand, once tax avoidance is recognized by the tax authorities, the enterprise will be severely punished by the tax authorities and face direct financial penalties, and the reputation of the enterprise will be seriously damaged. On the other hand, in the process of covering up corporate tax avoidance, enterprises will engage in complex, highly professional and non-transparent transactions. There may be an incentive for management and major shareholders to seek personal gain by exploiting the opacity of tax avoidance transactions. Such behavior may result in incurring non-taxable principal-agent costs to the detriment of other shareholders. Compared with individual investors, institutional investors have a higher level of professionalism and capital scale, so in order to safeguard their own interests, institutional investors are more motivated and capable of supervising and managing the tax avoidance behavior of investee companies.

Firstly, from the perspective of financing constraints, institutional investors can provide a stable source of funds for enterprises by virtue of their own capital scale and other advantages. Moreover, institutional investors' shareholding behavior is regarded as a positive signal of good business conditions, which will attract other potential investors in the market to inject capital into the enterprise, thus alleviating the financing constraints of the enterprise, broadening the financing channels of the enterprise, and reducing the incentive for tax avoidance due to the pressure of insufficient cash flow and financial tension faced by the enterprise (Cao et al., 2023). Secondly, according to the effective monitoring hypothesis, institutional investors can play a positive monitoring effect and curb management's opportunistic behavior. They can rely on their own information processing capabilities, resources and expertise to identify management self-interest in connected transactions and pricing shifts, thereby reducing the degree of information asymmetry and attracting external investors to monitor and pay attention to the enterprise. Under the pressure of investor scrutiny, management's motivation to gain self-interest through tax avoidance will be suppressed for the sake of safeguarding its own reputation and future career development, and thus its tax avoidance behaviors will be curtailed (Ding et al., 2009). However, according to the strategic collusion hypothesis, institutional investors may have potentially close business relationships with management, and in order to maximize their own interests, they may be inclined to collude with other major shareholders or managers. They may reduce the information transparency of the enterprise, which may lead to the adoption of more covert and aggressive tax planning by the enterprise to increase the enterprise's tax avoidance.

In practice, institutional investors usually adopt the 'one-to-many' portfolio strategy for risk diversification, which will have a certain impact on the governance effect of institutional investors. However, existing studies have more often used the proportion of institutional investors' shareholdings to study the impact of institutional investors on corporate tax avoidance, defaulting to the same proportion of shareholdings and the same willingness of institutional investors to participate in corporate governance, while ignoring the importance of institutional portfolio weights. Based on the limited attention hypothesis, the time and effort invested by institutional investors is limited (Li et al., 2021). From the perspective of the limited attention hypothesis and institutional portfolios, Fich et al. (2015) argue that there are differences in institutional investors' willingness to monitor firms with different portfolio weights. Institutional investors are more motivated to engage in monitoring relatively important

firms in their portfolios. Therefore, it is not yet possible to accurately describe the governance effects of institutional investors from the perspective of individual firms only. Significant differences in portfolio weights will lead to differences in institutional investors' attention to firms. For monitoring institutional investors, they will allocate more time and effort to firms with larger portfolio weights, and will be more motivated to participate in the governance of firms with larger weights in their portfolios, thus influencing firms' tax avoidance behavior.

At the same time, due to the differences in the source of funds, the nature of assets, the duration of shareholding and the size of shareholding, etc., the willingness of institutional investors to participate in corporate governance also differs, and the impact on corporate tax avoidance behavior will also be different (Liu et al., 2019). Brickley et al. (1988) categorize institutional investors into pressure-resistant and pressure-sensitive. For pressure-resistant institutional investors, the relationship with the investee is purely an investment relationship, and they are not susceptible to management constraints or pressures. Therefore, this type of investor is able to actively supervise and govern the enterprise in a more objective manner, especially for enterprises with higher weights in the portfolio, and they have greater motivation and ability to participate in corporate governance and constrain tax avoidance behaviors of enterprises (Wang et al., 2019). However, for pressure-sensitive institutional investors, they have certain business ties with investee firms. Due to the consideration of their own interests, these investors are vulnerable to the influence and control of the majority shareholders and managers in the process of fulfilling their supervisory and governance duties, and are more inclined to conspire with them to achieve more benefit capture through tax avoidance behavior (Liu et al., 2019). Moreover, such institutional investors tend to have stronger affiliations with enterprises with larger weights in their portfolios, which will more significantly increase the tax avoidance behavior of enterprises. Based on this, this paper proposes the following hypotheses:

H1: Heterogeneous institutional investors' attention has a significant impact on corporate tax avoidance behavior. Specifically, pressure-resistant institutional investors' attention is negatively related to corporate tax avoidance behavior, and pressure-sensitive institutional investors' attention is positively related to corporate tax avoidance behavior.

3. Research Design

3.1 Sample and Data

In this paper, the listed companies in Shanghai and Shenzhen A-shares from 2009 to 2021 are selected as the initial research sample, and the initial sample is screened as follows, (1) ST and *ST companies are excluded; (2) listed companies in the financial category are excluded; (3) companies with missing data are excluded. Finally, 23,482 firm-year observations were obtained. The data in this paper are mainly from CSMAR database. Additionally, we winsorize all continuous variables at the 1% and 99% levels in order to lessen the influence of outliers on the study.

3.2 Definition of Variables

3.2.1 Corporate Tax Avoidance

According to Desai and Dharmapala (2006), this paper uses the accounting-tax difference after excluding the effect of profit accruals (DDBTD) to measure the extent of tax avoidance by firms. DDBTD is calculated based on the following model:

$$BTD_{i,t} = \alpha TACC_{i,t} + \mu_i + \epsilon_{i,t} \tag{1}$$

$$DDBT_{i,t} = \mu_i + \epsilon_{i,t} \tag{2}$$

Accounting Tax Difference (BTD) = (Accounting Profit Before Tax - Taxable Income) / Total Assets at the end of the period, where Taxable Income = Current Income Tax Expense / Nominal Income Tax Rate. Total Accrued Profit (TACC) = (Net Profit - Net Cash Flow from Operating Activities) / Total Assets. The μ_i denotes the mean of firm i's residuals over the sample range, and $\epsilon_{i,t}$ denotes the extent to which the residuals for year t deviate from the firm's residuals' mean. DDBTD is the sum of μ_i and $\epsilon_{i,t}$, which represents the portion of BTD that is unexplained by the accrued profits. The larger value of DDBTD indicates a higher degree of tax avoidance by the firm.

3.2.2 Heterogeneous Monitoring Institutional Investors

Based on the theory of limited attention of institutional investors, institutional investors have limited time and energy, and there are differences in their motivation to monitor each firm in their portfolio. Drawing on the research method of Fich et al. (2015), this paper adopts the method of calculating the value of institutional investors' holdings of each firm in their portfolios and ranking them in ascending order according to the value of their holdings. The top 10 % of firms are considered as listed firms with high portfolio weights and the corresponding institutional investors are defined as monitoring institutional investors. Due to the heterogeneity of institutional investors, there are differences in their motivation and ability to participate in corporate governance. Therefore, with reference to Brickley et al. (1988), this paper further categorizes monitoring institutional investors as

heterogeneous monitoring institutional investors based on the presence or absence of potential business ties between institutional investors and investee firms. Specifically, the more independent monitoring institutions, such as funds, QFIIs and social security funds, are defined as pressure-resistant monitoring institutional investors, and the non-independent monitoring institutions, such as insurance, banks, trusts and brokerage firms, are defined as pressure-sensitive monitoring institutional investors. Finally, the proportion of pressure-resistant monitoring institutional investors' shareholding (Rin_mmio) and the proportion of pressure-sensitive monitoring institutional investors' shareholding (Sin_mmio) corresponding to each firm are calculated as proxy variables for heterogeneous monitoring institutional investors.

3.2.3 Control Variables

Drawing on existing research, this paper controls for a series of variables that may affect corporate tax avoidance, including: firm size (Size), asset-liability ratio (Lev), corporate growth (Growth), return on net assets (Roe), firm age (Firmage), cash flow from operations (Cf), book-to-market ratio (Bm), enterprise value (Tobinq), duality (Duality), proportion of independent directors (Outratio), and proportion of the first largest shareholder (Top). See Table 1 for specific definitions.

Table 1. Definition of Variables

Variables	Definitions
DDBTD	Accounting tax differences on the effect of the deduction of accrued profits
Rin_mmio	Sum of the shareholdings of pressure-resistant monitoring institutional investors
Sin_mmio	Sum of the shareholdings of pressure-sensitive monitoring institutional investors
Size	Natural logarithm of total assets at the end of the period
Lev	Total liabilities at end of period/total assets at end of period
Growth	Growth rate of revenue
Roe	Net profit/net assets
Firmage	Natural logarithm of the number of years the company has been in existence
Cf	Net cash flows from operating activities/total assets
Bm	Shareholders' equity / market capitalization of the company
Tobinq	Tobin's Q
Duality	If the chairman and general manager of a listed company are held by the same person at the same time, the value is 1, otherwise it is 0
Outratio	Number of independent directors/total number of board members
Top	Number of shares held by the company's largest shareholder/total number of shares

3.3 Model Design

In order to examine the impact of institutional investors' heterogeneity and portfolio weights on corporate tax avoidance, this paper constructs model (3) to test H1.

$$DDBTD_{i,t} = \alpha_0 + \alpha_1 mmio_{i,t} + \alpha_2 Controls_{i,t} + \sum Year + \sum Ind + \varepsilon_1 \tag{3}$$

In model (3), the explanatory variable $DDBTD_{i,t}$ represents the tax avoidance behavior of firm i in year t; the explanatory variable $mmio_{i,t}$ is the heterogeneous monitoring institutional investor, and the sum of the shareholding proportion of pressure-resistant monitoring institutional investor (Rin_mmio) and that of pressure-sensitive monitoring institutional investor (Sin_mmio) are used as the proxy variables; Controls represents a series of control variables; $\sum Year + \sum Ind$ represent year and industry fixed effects, respectively; ε_1 stands for the disturbance term.

4. Empirical Results and Analysis

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics of the main variables. As can be seen from Table 2, the median value of the explanatory variable tax avoidance by listed companies (DDBTD) is 0, which indicates that half of the firms in the sample have tax avoidance behaviors after removing the effect of accrued profits. The minimum value of the proportion of shares held by monitoring institutional investors (mmio) is 0, which indicates that some firms in the sample do not have monitoring institutional investors. The mean value of monitoring institutional investor

shareholding (mmio) is 2.8%, where the mean value of Rin_mmio is 1.67% and the mean value of Sin_mmio is 1%. This indicates that among the monitoring institutional investors in the country, pressure -sensitive monitoring institutional investor holdings are smaller than pressure-resistant monitoring institutional investor holdings.

Table 2. Descriptive Statistics

Variables	N	Mean	SD	Min	Median	Max
DDBTD	23023	0.0015	0.027	-0.08	0.00	0.09
mmio	23023	0.0280	0.048	0.00	0.01	0.68
Rin_mmio	23023	0.0167	0.033	0.00	0.00	0.18
Sin_mmio	23023	0.0100	0.023	0.00	0.00	0.14
Size	23023	22.1862	1.283	20.00	21.99	26.19
Lev	23023	0.3953	0.198	0.05	0.38	0.85
Growth	23023	0.2093	0.397	-0.44	0.14	2.62
Roe	23023	0.0919	0.062	0.00	0.08	0.33
Firmage	23023	2.8798	0.332	1.79	2.94	3.50
Cf	23023	0.0534	0.067	-0.14	0.05	0.25
Bm	23023	2.0415	1.287	0.85	1.62	8.38
Tobinq	23023	0.6180	0.247	0.12	0.62	1.17
Duality	23023	0.2979	0.457	0.00	0.00	1.00
Outratio	23023	0.3753	0.053	0.33	0.33	0.57
Top	23023	0.3454	0.145	0.09	0.33	0.74

4.2 Baseline Regression Results

Table 3 presents the regression results of heterogeneous monitoring institutional investors and tax avoidance by listed companies. Column (1) presents the regression results of pressure-resistant monitoring institutional investors and tax avoidance, and column (2) presents the regression results of pressure-sensitive monitoring institutional investors and tax avoidance. The results show that the coefficients of pressure-resistant monitoring institutional investors' shareholding (Rin_mmio) is significantly negative at the 1% level, while the coefficient of pressure-sensitive monitoring institutional investors' shareholding (Sin_mmio) is significantly positive at the 1% level.

This suggests that the nature of institutional investors themselves and their portfolios will jointly have an impact on the degree of corporate tax avoidance. Pressure-resistant institutional investors that do not have potential ties with firms and are relatively independent exert a positive monitoring effect on firms with a large portfolio weight, significantly reducing the degree of corporate tax avoidance. On the contrary, pressure-sensitive monitoring institutional investors with potential business ties to firms may increase the degree of tax avoidance of firms out of self-interest. Therefore, the result supports hypothesis H1.

Table 3. Heterogeneous Monitoring Institutional Investors and Tax Avoidance

	(1)	(2)
	DDBTD	DDBTD
Rin_mmio	-0.0282***	
	(-4.9452)	
Sin_mmio		0.0205***
		(2.7841)
Size	0.0010***	0.0006***
	(4.9675)	(3.0624)
Lev	-0.0169***	-0.0168***
	(-15.2074)	(-15.0385)

Growth	-0.0018***	-0.0019***
	(-4.2052)	(-4.4448)
Roe	0.0834***	0.0821***
	(25.8598)	(25.5528)
Firmage	0.0033***	0.0034***
	(5.5549)	(5.7139)
Cf	0.0176***	0.0181***
	(6.1016)	(6.2782)
Bm	0.0005*	0.0004
	(1.9224)	(1.5163)
Tobinq	0.0001	0.0013
	(0.0654)	(0.8942)
Duality	-0.0003	-0.0003
	(-0.6631)	(-0.8728)
Outratio	0.0012	0.0012
	(0.3643)	(0.3670)
Top	-0.0041***	-0.0031**
	(-3.4331)	(-2.5417)
Cons	-0.0078	-0.0009
	(-1.4284)	(-0.1595)
Year	Yes	Yes
Ind	Yes	Yes
N	23023	23023
R^2_a	0.1109	0.1102

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4.3 Robustness Tests

To guarantee precision and dependability of the hypothesis in this study, this section concentrates on four key aspects to assess the robustness of the research hypotheses stated in this paper.

4.3.1 Propensity Score Matching

Considering that institutional investors may tend to choose listed companies with less tax avoidance in their shareholdings, in order to alleviate the possible endogeneity problem between heterogeneous monitoring institutional investors and corporate tax avoidance caused by sample selection bias, this paper uses the propensity score matching (PSM) method to conduct robustness tests. This is done as follows, firstly, the median of Rin_mmio and Sin_mmio(M1 and M2) of each year in the same industry are chosen as the basis of PSM grouping in this paper. If the firm's Rin_mmio> M1 (Sin_mmio>M2), the firm is categorised as 'experimental group', and if the firm's Rin_mmio ≦ M1 (Sin_mmio ≦ M2), the firm is categorised as 'control group'. Secondly, this study adopts the one-to-one nearest neighbour matching method, taking the control variables in the previous section as covariates, and searching for samples with similar characteristics to the control group in the control group for pairing. After the balance test, the results show that there is no significant difference between the values of covariates taken by the control group and the control group. On this basis, we performed regression tests on the paired samples.

The results are shown in columns (1) and (2) of Table 4. The coefficient of Rin_mmio is significantly negative, which shows that pressure-resistant monitoring institutional investors inhibit corporate tax avoidance. The coefficient of Sin_mmio is significantly positive, which suggests that pressure-sensitive monitoring institutional investors promote corporate tax avoidance, proving that the results of the paper's baseline regressions are robust.

Table 4. Propensity Score Matching

	(1)	(2)
	DDBTD	DDBTD
Rin_mmio	-0.0200**	
	(-2.1356)	
Sin_mmio		0.0320***
		(2.8262)
Size	0.0009***	0.0012***
	(2.9641)	(3.9869)
Lev	-0.0133***	-0.0166***
	(-8.5495)	(-10.0620)
Growth	-0.0030***	-0.0021***
	(-4.9866)	(-3.2444)
Roe	0.0960***	0.0779***
	(20.3045)	(16.2916)
Firmage	0.0028***	0.0034***
	(3.2904)	(3.8152)
Cf	0.0188***	0.0167***
	(4.6255)	(3.9148)
Bm	0.0002	0.0005
	(0.5480)	(1.4560)
Tobinq	-0.0026	-0.0007
	(-1.2030)	(-0.3164)
Duality	-0.0003	-0.0007
	(-0.5304)	(-1.3277)
Outratio	-0.0027	0.0006
	(-0.6083)	(0.1213)
Top	-0.0025	-0.0027
	(-1.4578)	(-1.3503)
Cons	0.0017	-0.0083
	(0.2089)	(-1.0391)
Year	Yes	Yes
Ind	Yes	Yes
N	11081	10533
R^2_a	0.1056	0.1055

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4.3.2 Other Robustness Tests

First, lagged explanatory variables. Considering the possible lagged impact of institutional investors' shareholdings on their portfolios' corporate tax avoidance, we regress the shareholdings of heterogeneous monitoring institutional investors in the lagged period (L.Rin_mmio /L.Sin_mmio) as proxy variables for Rin_mmio and Sin_mmio. The results are consistent with the preceding. Second, using alternative measure of dependent variable. The above regressions are re-run using accounting-tax differences before deducting accrued profits (BTD) and the difference between nominal and effective tax rates (RATE) as alternative measures of the dependent variable DDBTD, respectively. The results still hold. Third, using alternative measure of independent

variable. Use the number of pressure-resistant monitoring institutional investors (Rin_num), the number of pressure-sensitive monitoring institutional investors (Sin_num), the number of pressure-resistant monitoring institutional investors as a proportion of the number of monitoring institutional investors (R_num), and the number of pressure-sensitive monitoring institutional investors as a proportion of the number of monitoring institutional investors (S_num) as the independent variables re-baseline regression. The regression results remain consistent with the findings of this paper.

5. Mechanism Tests

The previous empirical study shows that pressure-resistant monitoring institutional investors are more able to reduce tax avoidance behavior of firms with larger portfolio weights, and pressure-sensitive monitoring institutional investors are able to promote tax avoidance by firms with larger portfolio weights. However, the mechanism by which monitoring institutional investors influence firms' tax avoidance behavior is unclear.

The information asymmetry of enterprises provides a favourable environment for tax avoidance activities. Management's use of tax avoidance strategies to cleverly mask on-the-job spending and overinvestment, as well as the use of tax avoidance by major shareholders who also engage in connected transactions to hide the transfer of benefits in complex tax planning, require the use of information ambiguity. Pressure-resistant watchdog institutional investors will be more motivated to gather information on companies with a large weighting in their portfolios, and they can reduce corporate information asymmetry by taking advantage of their own information-gathering and processing capabilities to unearth relevant information on management's tax avoidance, and by reducing the incentives for management to be selective in disclosure of information and to engage in opportunistic behavior. The reduction of information asymmetry of enterprises can help internal and external stakeholders to effectively identify the opaque and hidden tax avoidance behaviors of the management for private interests, which increases the possibility of being exposed by the media and being detected by the tax authorities, and raises the tax avoidance costs of enterprises. Considering the high cost of tax avoidance, managers will reduce tax avoidance behaviors. However, pressure-sensitive institutional investors tend to pay attention to the business relationship with their investee companies and carefully weigh the losses from deteriorating the relationship against the gains from maintaining a compromise. Therefore, in order to maintain their business relationship with listed companies, these institutional investors usually do not make sharp comments or criticisms on the quality of disclosure of listed companies. Out of self-interest, pressure-sensitive monitoring institutional investors are more inclined to collude with other major shareholders and management, thus exacerbating the degree of information asymmetry of the firm.

Therefore, this study further tests the mediating effect of the degree of information asymmetry by constructing a regression model on the basis of model (3), the specific models are as follows:

$$DA_{i,t} = \delta_0 + \delta_1 mmio_{i,t} + \delta_2 Controls_{i,t} + \sum Year + \sum Ind + \omega_{i,t} \qquad (4)$$

$$DDBTD_{i,t} = \mu_0 + \mu_1 mmio_{i,t} + \mu_2 DA_{i,t} + \mu_3 Controls_{i,t+} \sum Year + \sum Ind + \varphi_{i,t} \qquad (5)$$

In models (4) and (5), according to Cao (2023), DA represents the degree of information asymmetry, which is measured by the manipulated accrued profit (DA) calculated by the modified Jones cross-sectional model, and the larger DA represents the higher degree of information asymmetry of the firm. The specific calculation method is shown in model (6).

$$TA = \rho_1 \left(\frac{1}{asset} \right) + \rho_2 \left(\frac{\Delta rev - \Delta rec}{asset} \right) + \rho_3 \left(\frac{fa}{asset} \right) + \tau \qquad (6)$$

In model (6), TA is the total operating accruals, which is calculated by using the difference between current operating profit and cash flow from operating activities, asset represents the total assets at the beginning of the period, Δrev denotes the increase in current operating income, Δrec denotes the increase in current accounts receivable, and fa denotes the original value of fixed assets at the end of the period. The residual obtained from the model estimation is the manipulated accrued profit (DA).

The first and last three columns of Table 5 report the results of the tests of the mediating effect of information asymmetry on the impact of pressure-resistant and pressure-sensitive monitoring institutional investors on corporate tax avoidance, respectively. In column (2) of Table 5, the coefficient of Rin_mmio is -0.0541, which is significant at the 5% level, indicating that pressure-resistant monitoring institutional investors are able to reduce the degree of information asymmetry of firms; in column (3), the coefficient of DA is significantly positive at the 10% level, which suggests that the higher the degree of information asymmetry of firms, the greater the degree of tax avoidance of firms. Meanwhile, the coefficient of Rin_mmio is significantly negative at the 10% level, indicating that the degree of information asymmetry plays a partially mediating effect in the impact of pressure-resistant monitoring institutional investors on corporate tax avoidance. In column (5), the coefficient of Sin_mmio

is significantly positive at the 5% level, and in column (6), the coefficients of both Sin_mmio and DA are also significantly positive. The results suggest that pressure -sensitive monitoring institutional investors exacerbate the degree of information asymmetry of firms, thus creating a favourable environment for firms to engage in tax avoidance activities and promoting tax avoidance behavior.

Table 5. Mechanism Test

	(1)	(2)	(3)	(4)	(5)	(6)
	DDBTD	DA	DDBTD	DDBTD	DA	DDBTD
Rin_mmio	-0.0287***	-0.0541**	-0.0088*			
	(-5.0488)	(-2.0062)	(-1.6990)			
Sin_mmio				0.0191**	0.0657**	0.0164**
				(2.5146)	(2.0805)	(2.2054)
DA			0.0026*			0.0027**
			(1.7430)			(1.9996)
Size	0.0010***	0.0066***	0.0010***	0.0006***	0.0055***	0.0015***
	(4.9922)	(6.7348)	(4.9100)	(2.8473)	(6.4501)	(7.8311)
Lev	-0.0174***	-0.1217***	-0.0171***	-0.0167***	-0.1145***	0.0006***
	(-15.3754)	(-22.6660)	(-14.9065)	(-14.6398)	(-24.0931)	(2.9732)
Growth	-0.0018***	0.0094***	-0.0019***	-0.0019***	-0.0106***	-0.0167***
	(-4.1083)	(4.4784)	(-4.1512)	(-4.2674)	(-5.7262)	(-14.5111)
Roe	0.0863***	0.7530***	0.0844***	0.0833***	0.7348***	-0.0019***
	(26.2081)	(48.4902)	(24.2387)	(25.2305)	(53.5093)	(-4.3171)
Firmage	0.0040***	0.0007	0.0040***	0.0041***	-0.0026	0.0827***
	(6.4494)	(0.2386)	(6.4412)	(6.5694)	(-1.0076)	(24.1977)
Cf	0.0171***	-1.1528***	0.0201***	0.0189***	-1.1254***	0.0040***
	(5.7959)	(-82.7792)	(5.8861)	(6.3604)	(-91.2060)	(6.5230)
Bm	0.0005**	-0.0007	0.0005**	0.0004*	-0.0020**	0.0212***
	(1.9923)	(-0.6614)	(1.9945)	(1.8586)	(-2.0223)	(6.3894)
Tobinq	-0.0000	-0.0025	-0.0000	0.0015	-0.0097	0.0004
	(-0.0092)	(-0.3510)	(-0.0115)	(1.0209)	(-1.5914)	(1.5488)
Duality	-0.0004	-0.0031*	-0.0003	-0.0005	-0.0030*	0.0011
	(-0.9195)	(-1.7063)	(-0.8963)	(-1.2677)	(-1.8557)	(0.7647)
Outratio	0.0026	0.0117	0.0026	0.0027	0.0269**	-0.0005
	(0.8068)	(0.7654)	(0.7950)	(0.8229)	(1.9834)	(-1.2279)
Top	-0.0040***	-0.0130**	-0.0040***	-0.0030**	-0.0043	0.0021
	(-3.2623)	(-2.2336)	(-3.2302)	(-2.4709)	(-0.8322)	(0.6341)
Cons	-0.0121**	-0.0823***	-0.0119**	-0.0042	-0.0299	-0.0042
	(-2.1779)	(-3.1313)	(-2.1399)	(-0.7659)	(-1.3028)	(-0.7557)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Ind	Yes	Yes	Yes	Yes	Yes	Yes
N	21503	21503	21503	21503	21503	21503
R^2_a	0.1183	0.2925	0.1184	0.115	0.3340	0.1170

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

6. Heterogeneity Tests

The above results of this paper suggest that heterogeneous monitoring institutional investors have different impacts on the degree of corporate tax avoidance. Differences in the external legal environment and the nature of property rights of firms will likely lead to significant differences in firms' tax avoidance strategies. Therefore, this paper will further analyze the heterogeneous impact of institutional investors on firms' tax avoidance in terms of both the external rule of law environment and the nature of property rights.

6.1 Based on Different External Legal Environment

The external legal environment is an important factor that affects the governance effect of institutional investors on tax avoidance by listed companies. Referring to the research of Ding et al. (2019), the legal institutional environment of the province where the enterprise is located is measured based on the 'Development of Market Intermediary Organizations and Legal Institutional Environment Index' in the 'Report on the Marketisation Index of Chinese Provinces and Cities (2016)'.

We divide the sample into two groups based on the median legal environment index, treating groups greater than or equal to the median legal environment as better legal environment, and groups smaller than the median legal system environment as worse legal environment. Table 6 reports the results of the group regression based on the legal environment. It can be seen that the coefficient of Rin_mmio remains positive while the coefficient of Sin_mmio remains negative under different rule of law environments, which is consistent with the previous findings. Moreover, the coefficient of Rin_mmio is -0.0184 when the legal environment is better and -0.0379 when the legal environment is worse, which indicates that the pressure-resistant monitoring institutional investors have a more obvious inhibiting effect on corporate tax avoidance behavior when the legal environment is worse. Comparing columns (3) and (4) of Table 6, it can be found that the promotion effect of Sin_mmio on corporate tax avoidance behavior is likewise more significant when the legal environment is poor.

Table 6. Heterogeneity Tests Based on Different External Legal Environment

	(1) Better Environment	Legal	(2) Worse Environment	Legal	(3) Better Environment	Legal	(4) Worse Environment	Legal
Rin_mmio	-0.0184**		-0.0379***					
	(-2.3038)		(-4.6525)					
Sin_mmio					0.0076		0.0306***	
					(0.6755)		(3.1493)	
Size	0.0004		0.0015***		0.0011***		0.0001	
	(1.4085)		(5.3633)		(3.9319)		(0.1867)	
Lev	-0.0153***		-0.0189***		-0.0188***		-0.0151***	
	(-10.1025)		(-11.4870)		(-11.4081)		(-9.9527)	
Growth	-0.0010*		-0.0028***		-0.0030***		-0.0011*	
	(-1.7177)		(-4.2373)		(-4.4736)		(-1.8444)	
Roe	0.0897***		0.0764***		0.0740***		0.0890***	
	(20.4785)		(16.0097)		(15.5825)		(20.4135)	
Firmage	0.0035***		0.0031***		0.0033***		0.0035***	
	(4.2164)		(3.6689)		(3.8968)		(4.2418)	
Cf	0.0215***		0.0149***		0.0153***		0.0223***	
	(5.3310)		(3.6348)		(3.7101)		(5.5185)	
Bm	-0.0001		0.0009***		0.0008**		-0.0002	
	(-0.3012)		(2.6440)		(2.2368)		(-0.4765)	
Tobinq	0.0005		-0.0008		0.0007		0.0014	
	(0.2727)		(-0.3869)		(0.3289)		(0.7057)	
Duality	-0.0010*		0.0005		0.0004		-0.0011**	
	(-1.8828)		(0.9857)		(0.7808)		(-1.9852)	

Outratio	-0.0035	0.0059	0.0058	-0.0035
	(-0.7912)	(1.2943)	(1.2754)	(-0.7987)
Top	-0.0015	-0.0069***	-0.0058***	-0.0004
	(-0.8657)	(-4.0146)	(-3.4057)	(-0.2329)
Cons	0.0062	-0.0183**	-0.0109	0.0124*
	(0.8186)	(-2.2286)	(-1.3379)	(1.6571)
Year	Yes	Yes	Yes	Yes
Ind	Yes	Yes	Yes	Yes
N	11491	11531	11491	11531
R^2_a	0.1061	0.1211	0.1045	0.1214

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The possible reasons for this result are: in regions with a better legal environment, a high degree of government regulation can effectively restrain opportunistic behavior, and strong law enforcement increases the cost and risk of tax avoidance, so that enterprises have less incentive to avoid taxes. In regions with worse legal environment, enterprises face less tax avoidance risk and tax avoidance cost, and managers have more incentives to take advantage of tax avoidance behavior to seize private profits, thus harming investors' interests. In this case, pressure-resistant monitoring institutional investors will devote more time and energy to monitoring managers' self-interested behaviors and reducing corporate tax avoidance. In regions with worse legal environments, where corporate information opacity is often higher, pressure-sensitive monitoring institutional investors will have more incentives to conspire with managers to engage in complex and covert tax avoidance activities to enhance their own interests. Therefore, the inhibitory effect of pressure-resistant monitoring institutional investors on tax avoidance and the facilitating effect of pressure-sensitive monitoring institutional investors on tax avoidance are more significant in worse legal environments.

6.2 Based on Different Nature of Ownership

The difference in the nature of ownership of enterprises affects their tax avoidance motivation and ability to a certain extent. In order to analyse the impact of the nature of ownership factors on the above findings, this paper divides listed companies into two categories, state-owned enterprises and non-state-owned enterprises, and conducts group regression.

The results are shown in Table 7. The results in columns (1) and (2) show that the regression coefficients of Rin_mmio are significantly negative at the 1% level in both the samples of state-owned enterprises and non-state-owned enterprises, but the absolute value of their coefficients is larger in the samples of non-state-owned enterprises, which suggests that the inhibitory effect of pressure-resistant monitoring institutional investors on corporate tax avoidance is more pronounced in non-state-owned enterprises. In columns (3) and (4), the regression coefficients of Sin_mmio are positive but significant only in the sample of non-state-owned enterprises. The results indicate that the facilitating effect of pressure-sensitive monitoring institutional investors on corporate tax avoidance is more pronounced in non-state-owned enterprises.

A possible reason for this result is that state-owned enterprises have a natural political connection with the government and shoulder more social responsibilities. In order to achieve the government's objectives, they will actively fulfil their tax obligations, and managers themselves have less incentive to avoid taxes. Therefore, the governance role played by pressure-resistant monitoring institutional investors is less obvious in SOEs. Moreover, most executives in SOEs are appointed from the government. They have a certain political background, and are less likely to collude with pressure-sensitive monitoring institutional investors.

However, non-state-owned enterprises face a more hostile market environment. In order to meet the financial needs of enterprises, the managers will have more incentives to engage in complex and hidden tax avoidance behaviors. In this case, when pressure-resistant monitoring institutional investors are present in the firm, they will allocate more energy to non-state-owned firms, thus exerting a more significant monitoring effect, increasing the information transparency of the firms, and suppressing tax avoidance behavior of the firms. The high information asymmetry of non-state firms will facilitate the participation of pressure-sensitive monitoring institutional investors in collusion and increase the degree of tax aggressiveness of firms. Therefore, the inhibitory effect of pressure-resistant monitoring institutional investors on tax avoidance and the facilitating effect of pressure-sensitive monitoring institutional investors on tax avoidance are more significant in non-state-owned firms.

Table 7. Heterogeneity Tests Based on Different Nature of Ownership

	(1)	(2)	(3)	(4)
	State-owned Enterprises	Non-state-owned Enterprises	State-owned Enterprises	Non-state-owned Enterprises
Rin_mmio	-0.0211***	-0.0411***		
	(-2.9904)	(-4.3215)		
Sin_mmio			0.0070	0.0549***
			(0.7491)	(4.6598)
Size	0.0015***	-0.0003	0.0012***	-0.0010***
	(5.5641)	(-0.9716)	(4.6257)	(-3.2297)
Lev	-0.0189***	-0.0175***	-0.0188***	-0.0170***
	(-13.0190)	(-9.9741)	(-12.9575)	(-9.6828)
Growth	-0.0017***	-0.0020***	-0.0018***	-0.0021***
	(-3.0034)	(-2.9936)	(-3.1685)	(-3.1127)
Roe	0.0851***	0.0857***	0.0842***	0.0832***
	(20.3703)	(17.0735)	(20.2029)	(16.7479)
Firmage	0.0023***	0.0026**	0.0024***	0.0029**
	(3.2733)	(2.2204)	(3.3172)	(2.4489)
Cf	0.0237***	0.0042	0.0240***	0.0049
	(6.4670)	(0.9238)	(6.5466)	(1.0781)
Bm	0.0007**	-0.0004	0.0006**	-0.0005
	(2.3477)	(-0.9139)	(2.0822)	(-1.2809)
Tobinq	0.0016	-0.0006	0.0024	0.0010
	(0.8012)	(-0.2446)	(1.2688)	(0.4648)
Duality	0.0007	-0.0017*	0.0006	-0.0018**
	(1.5441)	(-1.8697)	(1.4896)	(-1.9876)
Outratio	-0.0023	0.0147***	-0.0024	0.0151***
	(-0.5750)	(2.9109)	(-0.6035)	(2.9941)
Top	-0.0048***	-0.0062***	-0.0043***	-0.0039**
	(-3.1017)	(-3.1500)	(-2.7811)	(-1.9947)
Cons	-0.0074	0.0199**	-0.0022	0.0311***
	(-0.8148)	(2.5346)	(-0.2385)	(3.9851)
Year	Yes	Yes	Yes	Yes
Ind	Yes	Yes	Yes	Yes
N	7442	15581	7442	15581
R^2_a	0.1443	0.1096	0.1446	0.1091

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

7. Conclusion

Based on the panel data of China's A-share listed companies from 2009-2021, from the perspective of institutional investors' portfolios, this paper empirically investigates the joint impact of institutional investors' own nature and the allocation of attention in their portfolios on corporate tax avoidance behaviors by distinguishing between two types of monitoring institutional investors, pressure-resistant and pressure-sensitive. The findings suggest that, first, the willingness of institutional investors to participate in governance is influenced by the nature of the institutional investors themselves and the weight of the investee firms in their portfolios. More independent

pressure-resistant monitoring institutional investors inhibit firms' tax avoidance behavior, while pressure-sensitive monitoring institutional investors with potential business ties with firms promote firms to engage in tax avoidance behavior. Second, the impact mechanism analysis finds that heterogeneous monitoring institutional investors can have an effect on firms' tax avoidance behavior by influencing the degree of firms' information asymmetry. Finally, the heterogeneity tests show that the inhibitory effect of pressure-resistant monitoring institutional investors on tax avoidance behavior and the promotional effect of pressure-sensitive monitoring institutional investors on tax avoidance behavior are stronger in firms with poorer legal environments as well as in non-state-owned firms.

Based on the above conclusions, the insights and recommendations of this study are as follows:

First, for listed companies, they should optimise their shareholder structure and actively fulfil their tax responsibilities in accordance with the law. As the willingness of institutional investors to participate in governance is affected by their own nature and investment portfolio. Listed companies should actively introduce centrally invested and relatively independent pressure-resistant institutional investors, with the help of their willingness and ability to actively participate in governance, they can effectively supervise the management and major shareholders. Therefore, high-risk tax avoidance behaviors will be reduced and high-quality business development will be achieved.

Second, for institutional investors, especially those under pressure to resist, active and effective monitoring should be achieved through appropriate concentration of investments. On the one hand, differences in the nature of institutional investors themselves will lead to differences in their willingness and ability to participate in governance. On the other hand, based on the theory of limited attention, institutional investors will allocate more attention to listed companies with larger portfolio weights and actively participate in governance. Therefore, in order to ensure their attention and supervision of corporate governance and achieve the effect of maximizing their own interests, institutional investors should avoid over-diversification of their investments.

Third, for the regulator, it should continue to improve and adjust the market structure, and it needs to consider the impact of institutional investor heterogeneity and portfolio weighting while encouraging institutional investors to actively participate in corporate governance. For different types of institutional investors, the SFC should formulate differentiated policies to provide for the healthy and stable development of China's capital market by fostering more relatively independent pressure-resistant institutional investors and encouraging them to play an active governance role by adopting concentrated investment and actively participating in field research of enterprises.

References

Badertscher B A, Katz S P, Rego S O., (2013). The separation of ownership and control and corporate tax avoidance. *Journal of accounting and economics, 56*(2-3), 228-250.

Cao Y, Zhu Y X, Du J., (2023). The influence and mechanism of state-owned institutional investors on the degree of tax avoidance. *Journal of Hunan University (Social Science Edition), 37*(04), 77-87.

Chen T, Lin C., (2017). Does information asymmetry affect corporate tax aggressiveness? *Journal of Financial and Quantitative Analysis, 52*(5), 2053-2081.

Chen X, Harford J, Li K., (2007). Monitoring: which institutions matter? *Journal of Financial Economics, 86*, 279-305.

Cheng C S A, Huang H H, Li Y, et al., (2012). The effect of hedge fund activism on corporate tax avoidance. *The accounting review, 87*(5), 1493-1526.

Desai M A, Dharmapala D., (2006). Corporate tax avoidance and high-powered incentives. *Journal of financial Economics, 79*(1), 145-179.

Ding F F, Fan S Y, Chen, R Y., (2019). Can field research by institutional investors curb corporate tax avoidance? — Evidence based on textual analysis. *Financial Theory and Practice, 40*(06), 98-105.

Ding F F, Liu M, Qiao Z W., (2019). Firm Size, Institutional environment and corporate tax aggressiveness. *Auditing and Economic Research, 34*(01), 14-23.

Duan Q., (2023). Research on the Impact of Institutional Investors' Shareholding on Corporate Tax Avoidance — An Empirical Analysis Based on STATA[C]//SHS Web of Conferences. *EDP Sciences*, 154, 02022.

Fich E M, Harford J, Tran A L., (2015). Motivated monitors: The importance of institutional investors' portfolio weights. *Journal of Financial Economics, 118*(1), 21-48.

Khurana I K, Moser W J., (2013). Institutional shareholders' investment horizons and tax avoidance. *The Journal of the American Taxation Association, 35*(1), 111-134.

Koester A., (2011). Investor valuation of tax avoidance through uncertain tax positions. American Accounting

Association Annual Meeting-Tax Concurrent Sessions.

Koh P S., (2003). On the association between institutional ownership and aggressive corporate earnings management in Australia. *The British accounting review, 35*(2), 105-128.

Li B, Liu Z, Wang R., (2021). When dedicated investors are distracted: The effect of institutional monitoring on corporate tax avoidance. *Journal of Accounting and Public Policy, 40*(6), 106873.

Liu A M, Zhang J B., (2019). Institutional investors, heterogeneity and tax aggressiveness of listed companies. *Finance and Economy*, (01), 69-74.

Maydew E, Shackelford D., (2005). The changing role of auditors in corporate tax planning. *NBER Working Papers, 21*(1), 307-344.

Salehi M, Hematfar M, Heydari A., (2011). A study of the relationship between institutional investors and corporate value: empirical evidence of Iran. *Middle-East Journal of Scientific Research, 8*(1), 72-76.

Slemrod J., (2004). The economics of corporate tax selfishness. *National Tax Journal, 57*(4), 877-899.

Wang B, Qu J, Liu X M., (2019). Heterogeneous institutional investors' portfolios, environmental information disclosure and corporate value. *Management Science, 32*(04), 31-47.