

Research on the Impact of Institutional Investors' Shareholding on Corporate Tax Avoidance—An Empirical Analysis Based on STATA

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Abstract. The relevant data of A-shares of listed companies from 2011 to 2020 were selected to study the relationship between institutional investors' shareholding, financing constraints and corporate tax avoidance. The empirical results show that institutional investors' shareholding has a significant negative effect on corporate tax avoidance, and financing constraints play a regulating role in it, which can alleviate the negative relationship between them. The study adds factors of financing constraints, enriches the relevant literature on the relationship between institutional investors' shareholding and corporate tax avoidance, and is of great significance for the smooth operation of China's capital market and the development of enterprises.

1 INTRODUCTION

In recent years, the concept of institutional investors has gradually become well-known, they generally refer to some legal entities, will raise funds from the hands of the decentralized public or use their own funds for various investments, such investment is generally a huge amount of funds, and institutional investors themselves have strong professional capabilities, resulting in their investment activities on the capital market has a great impact. They have the resources and expertise to effectively monitor management's behavior and influence company decisions. The existence of institutional investors makes corporate information more transparent than ever, and institutional investors participate in the management of enterprises, so that those who try to seek rent do not dare to do something harmful to the interests of enterprises for their own selfish interests, effectively inhibit corporate tax avoidance, thereby enhancing corporate value².

Khan M⁴ uses the breakpoint regression method to study the relationship between institutional ownership and corporate tax avoidance, and believes that there is a significant positive correlation between institutional investors and corporate tax avoidance. H B Cai³ selected the data of listed companies from 2004 to 2012, focused on the endogenous problem between investor shareholding and corporate tax avoidance in key research institutions and solved it by using instrumental variables, and proposed the effects of institutional investors and tax collection and management on corporate governance from both internal and external aspects, which had an impact on the value of enterprises by inhibiting the transmission mechanism of corporate tax avoidance. On the other hand, the investment of institutional investors can generally

better alleviate the financing pressure faced by enterprises, because the shareholding of institutional investors can effectively reduce the information asymmetry between investors and companies, and optimize the external financing environment of enterprises. More studies have shown that institutional investor shareholding can significantly reduce the financing constraints of private enterprises and improve their financing ability, but it is not obvious in state-owned enterprises⁷.

The main reason for the tax avoidance situation of enterprises is generally that enterprises have strong financing constraints, enterprises need funds for turnover operations, and the investment funds of institutional investors just relieve this pressure, so that the degree of tax avoidance of enterprises can also be effectively suppressed. In view of the impact of financing constraints on corporate tax avoidance, when enterprises have financing constraints, they will be more inclined to reduce the internal expenses of enterprises, at this time, reducing the tax burden of enterprises is a choice that most enterprises will make, for enterprises with strong financing constraints, the degree of tax avoidance is greater, so what is the impact of institutional investor shareholding on corporate tax avoidance? What role do the financing constraints that exist in the enterprise play in this? Based on these problems, a bidirectional fixed-effect model is constructed to verify the proposed research hypothesis.

The contribution of this paper is as follows: First, it further explores the impact of institutional investor shareholding on corporate tax avoidance. Previous studies have started from external factors such as tax collection and management³, surplus management⁵, etc., and rarely considered the regulating role of financing constraints between the two, but this paper considers from this

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perspective, discusses and empirically tests the role of financing constraints in both, and enriches the relevant literature. Second, it broadens the scope of research on the factors affecting corporate tax avoidance. In the past, the literature related to corporate tax avoidance was analyzed from the level of tax enforcement⁸ and corporate management⁵, but this paper brings new ideas to corporate governance and development and supervision by regulators from the perspective of institutional investor shareholding.

2 THEORETICAL ANALYSIS AND RESEARCH HYPOTHESES

2.1 Institutional investor shareholding and corporate tax avoidance

An enterprise needs to continue to develop, then its financing ability is particularly important, especially in the early stage of enterprise development, a good investor can often determine the development of the enterprise. As representatives of investors, institutional investors have shown the characteristics of diversification of shareholding composition, expansion of shareholding ratio and expansion of shareholding scope in recent years. Since institutional investors have a certain degree of professionalism and standardization, they also play a certain role in participating in the company's governance and supervising the company's operation, so as to effectively reduce the company's governance risk to a certain extent². Due to some information asymmetric factors in corporate taxation, shareholders and executives of some enterprises will act on corporate taxation in order to obtain private interests, resulting in corporate tax avoidance is very common. However, because institutional investors have a wealth of information, once there is a rent-seeking behavior of management, they can detect it in time and check their behavior through internal governance to protect the company and their interests. In addition, institutional investors have more external resources and information, which can improve the ability of enterprises to cope with risks and bear the consequences of risks, help enterprise management better achieve performance goals, make their willingness to seek rent less strongly, and to a certain extent, inhibit the tax avoidance situation of enterprises. Based on this, this paper puts forward the first hypothesis: institutional investor shareholding can significantly inhibit corporate tax avoidance.

2.2 Institutional investor shareholding, financing constraints and corporate tax avoidance

In order to alleviate this problem, many enterprises will choose to make a fuss about the corporate tax burden, try to reduce the tax burden of the enterprise, and achieve the purpose of reducing the financing constraint. For enterprises subject to financing constraints, the impact of institutional investors' shareholdings on corporate tax avoidance will be weakened. This is because the internal

management of enterprises affected by financing constraints is more inclined to whether they can minimize the expenditure of enterprises, at this time the tax avoidance of enterprises will be more aggressive, although institutional investor shareholding can have a restraining effect on the tax avoidance of enterprises to a certain extent, but for enterprises with strong financing constraints, this inhibition effect will be weakened. Based on this, the second hypothesis is proposed: financing constraints can weaken the inhibitory effect of institutional investors' shareholding on corporate tax avoidance.

3 EMPIRICAL STUDY DESIGN

3.1 Sample selection and data sources

The financial data of Shanghai and Shenzhen listed companies from 2011 to 2020 were selected as the full sample of empirical analysis, and the corresponding data of institutional investors' shareholdings were matched with them to study the impact of corporate tax avoidance on institutional investors' shareholding. This paper screens the data of A-share listed companies in the 10 years from 2011 to 2020: (1) Eliminate enterprises that lack financial data. (2) Eliminate companies that are in a bad financial situation and companies that have suffered losses in business for three consecutive years. (3) Eliminate related enterprises that do not contain institutional investor shareholding. The data required for the evidence collected in this paper were obtained from the CSMAR database, and 7130 data samples were obtained after shrinking processing, and the financial data processing software used was STATA 16.0.

3.2 Empirical research models

To test the first hypothesis of this paper, the following model is constructed:

$$BTD_{i,t} = \alpha_0 + \alpha_1 GOV_{i,t} + \alpha_2 LEV_{i,t} + \alpha_3 PPE_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 ROA_{i,t} + \alpha_6 OCF_{i,t} + \sum YEAR + \sum INDUSTRY + \xi_{it,t} \quad (1)$$

The variable BTD on the left side of the equal sign of model (1) is the variable to be explained: the difference in tax meetings, and the degree of tax avoidance of enterprises is measured by this variable. The accounting basis "total pre-tax profit" is subtracted from the calculation basis "taxable income" in the tax law, and then divided by the total assets at the end of the calculation. The GOV on the right side of the equal sign of model (1) is the core explanatory variable in this paper, which is used to measure the proportion of institutional investors' holdings in all shares of the enterprise, calculated by dividing the number of institutional investors to the total number of shares divided by 100. After the previous theoretical analysis, the smaller the GOV value, the higher the BTD should be, and the two show an opposite relationship. Therefore, we expect α_1 in model (1) to be significantly less than 0.

In order to further explore the role of financing constraints, the model is set up (2):

$$BTD_{i,t} = \beta_0 + \beta_1 GOV + \beta_2 KZ_{i,t} * GOV_{i,t} + \beta_3 LEV_{i,t} + \beta_4 PPE_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 ROA_{i,t} + \beta_7 OCF_{i,t} + \sum YEAR + \sum INDUSTRY + \xi_{2i,t} \quad (2)$$

Different from model (1), model (2) adds the multiplier of KZ and GOV, drawing on B. Li's approach¹, the degree of financing constraints of enterprises is measured by the KZ index, we expect that when corporate financing constraints exist, the reaction of institutional investors'

shareholding on corporate tax avoidance will be alleviated by financing constraints, and when the financing constraints of enterprises are not so obvious, institutional investors' holdings may have a stronger effect on corporate tax avoidance. Therefore, we expect both β_1 and β_2 to be significantly less than 0.

The selection of control variables in the model refers to the practice of previous literature⁶, as shown in Table 1

Table 1 Definitions and descriptions of control variables

The variable type	Variable name	Variable symbol	Calculation instructions
Control variables	Gearing ratio	LEV	Total liabilities / Total assets
	Physical asset intensity	PPE	Net fixed assets at the end of the year / Total assets
	Enterprise size	SIZE	The total assets at the end of the period are taken as the natural logarithm
	Profitability	ROA	Year-end net profit / Total assets
	Net cash flow from operations	OCF	The company's annual net operating cash flow / Total assets

3.3 Descriptive statistics

As shown in Table 2, the maximum value of BTD (tax difference) in the second row is 0.231, the minimum value is -0.075, and the average value is 0.018, which shows that most enterprises have tax differences, and also show that most of these listed companies have tax avoidance. From the third line, it can be concluded that the KZ (financing constraint) has a minimum of 0.001, a maximum of

10.555, and an average of 1.727, indicating that the companies studied are facing financing constraints and that the differences are very large. The minimum GOV is 0.008, the maximum is 0.920, and the average value is 0.519, which can be seen that the proportion of corporate institutional investors' shareholdings in this study sample varies greatly, and a good estimate can be obtained. The influence of control variables on explanatory variables is mainly reflected in LEV, SIZE, etc., and there are large differences.

Table 2 Descriptive statistics of the main variables

Variables	N	Mean	P50	Sd	Min	Max
BTD	7130	0.018	0.012	0.038	-0.075	0.231
KZ	7130	1.727	1.397	1.443	0.001	10.555
GOV	7130	0.519	0.549	0.225	0.008	0.920
LEV	7130	0.442	0.440	0.200	0.060	0.856
PPE	7130	0.223	0.186	0.172	0.002	0.727
SIZE	7130	22.829	22.615	1.400	20.390	27.035
ROA	7130	0.053	0.043	0.042	-0.015	0.198
OCF	7130	0.060	0.058	0.066	-0.133	0.246

4 ANALYSES OF EMPIRICAL RESULTS

4.1 Basic regression analysis

The model (1) was regressed with benchmark regression using OLS, RE, and FE, and the regression results were listed in Table 3. Since the core explanatory variable GOV has no individual effects, the use of OLS for regression is abandoned. The choice of random and fixed effects was processed using Hausman's test, which significantly rejected the null hypothesis and indicated that the model was suitable for fixed effects. Since the data used in this paper varies according to time, the further use of the two-way fixed effects model is more in line with the research hypothesis of this paper. As can be seen from Table 3, the regression coefficient of GOV in model (1) is -0.019, which is significantly negative at the 1% confidence level.

This result strongly confirms the first hypothesis in this paper: institutional investor ownership can significantly discourage corporate tax avoidance. The regression results of the control variables in the table are also very significant, and the positive and negative relationships are consistent with the theory. Table 3 also adds the multiplication term KZ*GOV of KZ and GOV, and also uses a two-way fixed-effect model for regression, and it is found that the goodness of fit of the model regression exceeds 20%, indicating that the selected sample regression can better reflect the overall regression. It can be seen from the fifth row of the table that the regression coefficient of the multiplier KZ*GOV is -0.0049, which is significantly negative, which more strongly indicates that financing constraints can alleviate the negative effect of institutional investors' shareholding on corporate tax avoidance, and when the stronger the financing constraints of enterprises, the weaker the inhibitory effect of institutional investors' shareholding on corporate tax

avoidance, and the second research hypothesis in this paper is verified

Judging from the return results in Table 3, institutional investor shareholding can significantly inhibit corporate tax avoidance. However, in the presence of financing constraints, its inhibition effect will be weakened, and the weaker the financing constraints, the inhibitory effect of institutional investors' shareholding on corporate tax avoidance will be strengthened. On the one hand, institutional investors' shareholding can bring a large amount of capital to the enterprise, effectively alleviate the financing constraints existing in the enterprise, and there is no financial pressure, which in turn leads to the fact that the enterprise will not evade its tax expenditure, and the lower the degree of tax avoidance. In addition, institutional investors can bring information and

professional knowledge that ordinary investors do not have, help enterprises better manage, effectively reduce the problem of enterprise information asymmetry, reduce tax avoidance and rent seeking by enterprise management, and inhibit tax avoidance of enterprises to a certain extent. On the other hand, there are financing constraints in enterprises, institutional investors' shareholding can alleviate financing constraints to a certain extent, but financing constraints in turn can also have an impact on institutional investors' shareholding, the stronger the financing constraints, the weaker the company's capital operation ability, at this time, relatively aggressive corporate tax avoidance will emerge, in the case of strong financing constraints, institutional investors' shareholding on corporate tax avoidance will be eased.

Table 3 Baseline regression

Variables	(1)	(2)	(3)	(4)
BTD	OLS	RE	FE	FE-TW
GOV	-0.0079** (-2.58)	-0.0074*** (-2.63)	-0.0074 (-1.58)	-0.0190*** (-4.01)
KZ				-0.0010*** (-2.90)
GOV*KZ				-0.0049*** (-3.70)
LEV	-0.0131*** (-3.20)	-0.0070** (-2.03)	-0.0015 (-0.30)	-0.0121** (-2.43)
PPE	0.0066* (1.86)	0.0046 (1.35)	-0.0043 (-0.72)	0.0010 (0.17)
SIZE	-0.0012* (-1.85)	-0.0021*** (-4.13)	-0.0041*** (-5.29)	0.0026** (2.14)
ROA	0.4449*** (17.61)	0.4677*** (34.43)	0.4882*** (31.39)	0.4598*** (29.25)
OCF	-0.0537*** (-5.28)	-0.0439*** (-6.19)	-0.0357*** (-4.81)	-0.0217*** (-2.93)
_cons	0.0327** (2.51)	0.0490*** (4.68)	0.0934*** (5.40)	-0.0258 (-0.99)
industry	YES	YES	YES	YES
year	YES	YES	YES	YES
n	7130	7130	7130	7130
R ²	0.2448	0.2437	0.1588	0.2079

Note: *, **, *** indicate significant at the levels of 0.1, 0.05, 0.01, respectively, the t value is shown in parentheses, the following table treatment is same.

4.2 Further analysis

The above empirical evidence shows that institutional investor shareholding can significantly inhibit corporate tax avoidance. Due to China's unique market background and the relatively late emergence of institutional investors in the capital market, there may be different impact results due to the nature of enterprise property rights and different regions. In order to eliminate this impact, which may bias the results obtained above, further analysis of the research content is carried out from the perspective of the nature of enterprise property rights and the different regions in which they are located.

According to the nature of property rights, the data were divided into two sub-samples of state-owned enterprises and non-state-owned enterprises for regression, and Table 4 shows the results of grouping regression. From the results, it can be seen that in the subsample of state-owned enterprises, the regression

coefficient of the core explanatory variable GOV is -0.0052, although it is not significant, but the sign is negative, which is in line with the expected assumption. And the regression coefficient of KZ*GOV is also significant, and its value is -0.0191, which is consistent with theoretical expectations. The regression results of the non-SOE subsample showed that the coefficients of GOV and the coefficients of the interaction term were -0.0205 and -0.0033, respectively, both of which were significant at the level of 1%, which was also very consistent with the expected assumptions. The empirical results of grouping show that the negative impact of institutional investors' shareholding on corporate tax avoidance is not much related to the nature of enterprise property rights, but the inhibitory effect of institutional investor shareholding on corporate tax avoidance in state-owned enterprises is not significant in non-state-owned enterprises. The reason is that state-owned enterprises have control or ownership of them by the state, and have a strong color of administrative intervention, and institutional investors, as an emerging force in the capital market, this nature of state-owned

enterprises will limit the management behavior of institutional investors to the enterprise to a certain extent, weaken their management role on the company, resulting in institutional investors on the tax avoidance impact of enterprises is relatively small. On the contrary, for non-state-owned enterprises, the government's control over them is very small, and the behavior of institutional investors is not too restricted, which is more conducive to institutional investors to play a management role in the enterprise, and has a significant impact on the daily operation of the enterprise, so the role of corporate tax avoidance is more obvious.

Table 4 Further analysis (Classification by nature of property rights)

Variables	BTD	
	State-owned enterprises	Non-state-owned enterprises
GOV	-0.0052 (-0.62)	-0.0205*** (-3.63)
KZ*GOV	-0.0191** (-2.13)	-0.0033*** (-4.27)
CONTROLS	yes	yes
_cons	-0.0017 (-0.04)	-0.0497 (-1.56)
YEAR	YES	YES
INDUSTRY	YES	YES
N	3860	3270
R ²	0.148	0.294

Further analysis by regional regression shows that the impact of institutional investor shareholding on corporate tax avoidance in different regions will be different, and the regression results are shown in Table 5.

In general, institutional investor shareholding in the eastern, central and western regions has a restraining effect on corporate tax avoidance, which also confirms the research hypothesis of this paper and increases its robustness. Separately, institutional investor shareholding in the eastern region significantly inhibits corporate tax avoidance, and its financing constraints play a very obvious regulating role, while institutional investor shareholding in the central and western regions has a less obvious inhibitory effect on corporate tax avoidance. The reason is that the eastern region is more developed than the central and western regions, institutional investors are more active in the capital market, and the listed companies in the eastern region are denser, and institutional investors have higher participation in enterprises and more extensive information, so the impact on corporate tax avoidance behavior is more significant.

Table 5 Further analysis (Classified by region)

Variables	BTD		
	Eastern	Central	Westward
GOV	-0.0169*** (-3.01)	-0.0056 (-0.48)	-0.0190 (-1.24)
KZ*GOV	-0.0018*** (-2.58)	-0.0050*** (-3.78)	-0.0020 (-1.12)
CONTROLS	yes	yes	yes
_cons	-0.0007 (-0.02)	-0.078 (-1.44)	-0.0750 (-1.05)
YEAR	YES	YES	YES

INDUSTRY	YES	YES	YES
N	4930	1280	920
R ²	0.218	0.181	0.211

5 CONCLUSIONS

Institutional investors have an innate professional advantage over ordinary investors, which also makes it play a very important role in corporate governance and development. Based on the relevant data of listed companies from 2011 to 2020, this paper empirically tests the impact mechanism of institutional investor shareholding on corporate tax avoidance, and further combines the financing constraints of enterprises to investigate its regulating effect on institutional investor shareholding and corporate tax avoidance. The empirical test results show that after controlling some factors affecting corporate tax avoidance, institutional investors' shareholding can significantly inhibit corporate tax avoidance, and after solving its endogeneity through the propensity score matching model, this conclusion is still valid. At the same time, this paper combines financing constraints to comprehensively explore the relationship between these three, and the financing constraints of enterprises can alleviate the inhibitory effect of institutional investors' shareholding on corporate tax avoidance, and the more obvious this alleviation effect is in enterprises with stronger financing constraints.

According to the above research, several enlightenments are obtained: First, institutional investors can continuously improve their professional capabilities and realize their value in the capital market and enterprises with their own advantages. In addition, institutional investors should pay attention to long-term investment in enterprises, participate in the management of enterprises, and help enterprises achieve information flow between enterprises. Second, enterprises should widely accept investment from institutional investors, so that they can avoid the trouble of financing constraints as much as possible, in addition, they should actively obtain high-quality institutional investor shareholding, which has a good effect on improving the enterprise management mechanism, avoiding rent-seeking by enterprise management, and pushing enterprises into a virtuous circle of development. Third, the state should appropriately reduce the corporate tax burden, vigorously develop high-quality and active investors in the capital market, and create a good environment for investors and enterprises.

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