

Research on the impact of equity incentives on corporate tax avoidance

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Abstract. Based on the principal-agent theory, this paper selects the data of China's A - share listed companies from 2008 to 2021 as the research sample, to empirically explore the impact of equity incentives on corporate tax avoidance. The result shows that equity incentives can promote corporate tax avoidance, agency cost is an important way for equity incentives to influence on corporate tax avoidance, overseas business significantly promotes the tax avoidance effect of equity incentive, and considering the nature of property rights , equity incentives promote tax avoidance of state-owned enterprises, the role is weaker than that of non-state-owned enterprises .Based on the regression results, it is necessary to grasp the focus of tax inspection, improve the tax law and develop mixed ownership economy.

Keywords: Equity incentives, Corporate tax avoidance, Agency costs, Overseas business.

1. Introduction

Taxation is a normative form for the government to raise fiscal revenue. It has the characteristics of mandatory, free and fixed. On the one hand, taxation can increase fiscal revenue, which is conducive to meeting the needs of social members to obtain public goods; on the other hand, tax will also reduce the net profit income of enterprises and the cash flow of enterprises. Therefore, for the purpose of maximizing profits, companies often adopt different degrees of tax avoidance to increase corporate cash flow. Corporate tax avoidance refers to the behavior of enterprises to reduce tax payment. Regarding whether corporate tax avoidance is a legal behavior, Weisbach (2002) believes that in the field of law, "tax avoidance" is a legal behavior, while "tax evasion" is classified as illegal tax planning category. For the category of illegal tax planning, the category discussed in this article belongs to the former, that is, the legal behavior that enables enterprises to reduce taxation. According to the official website of the State Administration of Taxation, there has been an endless stream of news about tax avoidance by Internet celebrities, and the phenomenon of tax avoidance by listed companies is also very serious in recent years. In 2021, there was 623 corporate tax avoidance cases in Beijing. How to prevent corporate tax avoidance is crucial for companies and the country. The research on the influencing factors of corporate tax avoidance has always attracted a lot of attention from the academic community. Some scholars have focused on managerial ability (Zhang Ying and An Jing, 2022) , economic system (Duan Min and Fang Hongxing, 2022) , and negative reputation (Zhan Xinyu et al., 2022), financial pressure (Sun Yupeng, 2021) and other perspectives. However, the influencing factors of corporate tax avoidance are inseparable from the research on corporate governance, but few scholars have discussed the relationship between equity incentives and corporate tax avoidance.

In order to motivate enterprise management talents, improve management's sense of gain, and promote the healthy development of enterprises, equity incentives have become an important way for enterprises to motivate executives. Equity incentives first started in western countries, and Chinese listed companies are also vigorously promoting this measure in recent years. The State-owned Assets Supervision and Administration Commission has successively issued the "Trial Measures for the Implementation of Equity Incentives in State-controlled Listed Companies (Overseas)" (Guo Zi Fa Distribution [2006] No. 8) and the "Trial Measures for the Implementation of Equity Incentives in State-controlled Listed Companies (Domestic)" (Guo Zi Fa Distribution [2006]) No. 175) and the "Notice on Issues Concerning Standardizing the Implementation of Equity Incentive System in State-

controlled Listed Companies" (Guo Zi Fa Distribution [2008] No. 171) , which further improved China's equity incentive policy. As an important business of corporate governance, equity incentives will not only affect the management and operation of enterprises, but also affect the financial behaviors such as corporate tax avoidance. Therefore, it is of practical significance to study the impact of equity incentives on corporate tax avoidance.

This paper takes China's A-share listed companies from 2008 to 2021 as a research sample to study the impact of equity incentives on corporate tax avoidance and the intermediary mechanism. The results show that equity incentives promote corporate tax avoidance, and agency cost is an important intermediate way between equity incentives and corporate tax avoidance. Overseas business increases the impact of equity incentives on corporate tax avoidance. Though the heterogeneity test, it also shows that the promotion of tax avoidance by state-owned enterprises is weaker than that of non-state-owned enterprises.

The significance of this paper is reflected in two aspects. In theoretical aspect, from the perspective of equity incentive, this paper investigates the impact of equity incentive on corporate tax avoidance, which makes up for the shortcomings of existing research at home and abroad from the two aspects of equity incentive and corporate tax avoidance. At the same time, it adds the research on the intermediary variable agency cost and the overseas income of the moderating variable to enrich the research conclusions in this field. In terms of practical enlightenment, it is of great practical significance to tax inspection, tax law perfection and mixed-ownership economy development in China.

This paper's contributions may lie in the following three aspects: (1) The academic circle pays little attention to the influence of equity incentive on corporate tax avoidance. This paper expands the research on corporate governance mechanism and enriches the influence of equity incentive on corporate financial management. At the same time, as a means of corporate governance, equity incentive has only started to develop in China in recent years, and relevant research needs to be improved. Therefore, this paper provides a new perspective for the study of corporate tax avoidance. (2) Different from the existing literature, this paper will conduct a mechanism test on the impact of executive incentives on corporate tax avoidance, to test whether executive incentives can promote the synergy of interests between managers and shareholders by solving the agency problem, thus promoting corporate tax avoidance, and providing a path-level explanation for the impact of executive incentives on tax avoidance. (3) Through further tests, this paper adds the test of overseas income, which is a moderating variable, and also takes into account the influence of property rights, thus enriching the research content in this field.

The rest of the paper is structured as follows: the second part is the literature review and research hypothesis; the third part is the sample selection and research design; the fourth part is the empirical test and result analysis; the fifth part is the further test and analysis; and the sixth part is the research summary and inspiration.

2. Literature Review and Research Hypotheses

2.1 Literature review

By combing domestic and foreign literature, we find that there is no unified conclusion on the relationship between equity incentives and corporate tax avoidance.

Erickson and others (2003) studied companies with financial fraud and found that there was a significant positive correlation between corporate equity incentives and corporate tax avoidance. Rego and Wilson (2012) used the financial data of US listed companies as a sample and found that the higher the management incentive compensation, the higher the degree of corporate tax avoidance. DeFusco (1990) etc., and Rajgopal (2002) all pointed out that the asymmetry of equity incentives would make managers more inclined to engage in high-risk projects, that is, equity incentives would encourage managers to accept or even pursue the risks brought by tax avoidance, thereby promoting corporate tax avoidance. Liu Hua (2010), Liu Yijuan (2016), Li Chunling (2019) believed that the

higher the management level of equity incentives, the lower the current effective tax rate of enterprises, and the more obvious corporate tax avoidance behavior. Peng Shuyu (2017) considered the changes in the tax rate itself, and believed that the greater the equity incentives beyond a certain range, the greater the degree of corporate tax avoidance, and the “U”-shaped relationship between equity incentives and corporate tax avoidance. Wang Yishu et al. (2020) combined with the different property rights of Chinese enterprises and confirmed that equity incentives have an inhibitory effect on tax avoidance of state-owned enterprises, while promoting non-state-owned enterprises.

However, some scholars also have different views, believing that there is a negative correlation between equity incentives and corporate tax avoidance. Desai and Dharmapala (2005) found that because equity incentives reduce executives' rent-seeking motives, they reduce the degree of corporate tax avoidance. Chen Xudong and Wang Xue (2011), Chen Dong and Tang Jianxin (2012), and Zhong Xueyuan (2021) conducted empirical research respectively, and found that corporate tax avoidance did not increase the value of the enterprise, instead damaged the interests of the company, so equity incentives would inhibit corporate tax avoidance. Hu Suhua et al. (2022) studied the impact of executive equity incentives on corporate tax avoidance from the perspective of corporate control rights allocation, and found that management is more inclined to reduce tax avoidance due to the decline in performance, reputation damage, and increased risk brought about by tax avoidance, that is, the increase of executive equity incentives will weaken the level of corporate tax avoidance.

Reviewing the existing literature, this paper will combine the actual situation of high equity incentives and corporate tax avoidance in China, and verify the relationship between them through empirical analysis methods.

2.2 Theoretical Analysis and Assumptions

Based on existing theories, the effect of executive incentives on corporate tax avoidance needs further empirical testing. This paper will discuss the tax avoidance effect of executive incentives. American economists Berle and Means put forward the principal-agent theory in 1932. This theory holds that the ownership and management rights of enterprises are separated, and there is a conflict of interest between owners and managers. At the same time, due to information asymmetry, managers may damage the value of enterprises in order to realize their personal interests, resulting in high agency costs. Therefore, companies will take a series of measures to alleviate the agency problem, and equity incentives are an important means. There is a risk deviation between the principal and the agent, and the agent's risk business level is higher, so the management itself has a higher tax audit risk, but under the equity incentive, this risk will be weakened, and the management's risk appetite is reduced, willing to take on greater tax avoidance risk. At the same time, through the way of management's shareholding, the personal interests of managers are linked with the common interests of the enterprise, which is conducive to reducing the behavior of managers that damage the interests of the company out of their own interests. When executives hold stock, the incentives for tax avoidance will be changed. In this case, the management will pay more attention to increasing the value of the enterprise, and tax avoidance can save the cash outflow and keep the profits in the enterprise. The executives can profit from the enterprise by holding the stock, and then obtain personal interests. Therefore, the management will take more tax avoidance. Based on this, this paper proposes the following hypothesis H1a.

H1a: Under the condition that other conditions remain unchanged, equity incentives can promote corporate tax avoidance.

Corporate tax avoidance will increase corporate cash flow, tax avoidance itself will bring great costs to the company. For example, corporate tax avoidance has great concealment and complexity, which will exacerbate the information asymmetry of internal and external information users, thereby increasing the audit cost. The illegal tax avoidance behavior of the enterprise will also damage the reputation of the enterprise, enhance the degree of financing constraints of the enterprise, and increase the financing cost of the enterprise. At the same time, tax avoidance will also bring tax risks to the enterprise. Once the enterprise is found to have illegal tax avoidance behavior, the tax department

will issue a huge fine to it, which will have a negative impact on the enterprise. As an effective means to alleviate the agency conflict between owners and managers, equity incentives have been widely adopted by Chinese enterprises in recent years. When executives can obtain benefits from corporate equity incentives to satisfy their individual pursuit of excess interests, executives are reluctant to take excessive risks to avoid tax and rent-seeking, thereby reducing tax avoidance. Based on this, this paper proposes the following hypothesis H1b.

H1b: When other conditions remain unchanged, equity incentives have an inhibitory effect on corporate tax avoidance.

According to the principle of incentive compatibility in the principal-agent theory, in order to make the management and their own interests synergize, the owner of the enterprise often takes certain incentive measures for the management to closely link the interests of the managers with the interests of the enterprise. Equity incentives is one of the important means that the management will pay more attention to the company's value, because its own interests are consistent with the company's business goals. Equity incentive system is to solve the principal-agent problem of enterprises, alleviate agency conflicts, reduce moral hazard, and increase the supervision of managers, thereby reducing agency costs. The level of agency costs can reflect whether the interests of management and shareholders are consistent. A company with low agency costs indicates that the principal-agent relationship between management and shareholders is more harmonious (Ke Fang, 2022), and management is more willing to increase corporate value to achieve self-interest, it will promote the management of tax avoidance. In other words, the stronger the executive incentive is, the more consistent the executive's personal interests are with the enterprise's interests, and the stronger the enterprise's avoidance motivation is. Therefore, the stronger the equity incentive, the lower the agency cost of the enterprise, and the greater the degree of tax avoidance of the enterprise. Based on this, this paper proposes the hypothesis H2.

H2: Equity incentives will promote the tax avoidance behavior of enterprises by affecting the agency cost of the intermediary variable.

3. Sample selection and research design

3.1 Sample selection and data sources

This paper takes Shanghai and Shenzhen A-share listed companies as research samples. Due to the reform of China's income tax policy in 2008, the new corporate income tax law has adjusted in terms of tax rate and taxable income and other aspects. In order to avoid the impact of income tax reform on corporate tax avoidance, so the sample period of this paper is from 2008 to 2021. In order to ensure the accuracy of the research conclusions, this paper organizes the initial samples as follows: (1) Get rid of finance; (2) Eliminate the trading status of ST or * ST samples at that year; (3) The samples are excluded abnormal samples with negative income tax expenses and actual tax rates less than 0 and greater than 1; (4) Eliminate samples with missing relevant data; (5) To avoid extreme value interference, perform winsorize processing on all continuous variables at the upper and lower 1% level. In the end, a total of 26098 observational data were obtained in this paper.

The data in this paper comes from the CSMAR database, and the data sorting and data analysis work is realized by software such as Stata 16 and Excel2019 .

3.2 Variable Definition and Model Design

3.2.1 Variable Definition

This paper defines the explained variables, explanatory variables and control variables in the model as follows:

(1) Explained variables:

The explained variable in the model is the degree of corporate tax avoidance. There are two main methods to measure this indicator: the first one is the effective tax rate (ETR) method. The lower the

ETR, the higher the degree of corporate tax avoidance (Wu Liansheng, 2009). Regarding the calculation method of ETR, due to the new accounting standards for enterprises promulgated in China in 2006, corporate income tax expenses need to be adjusted by deferred income tax expenses. Therefore, this paper draws on the measurement method of Ge Changfu (2018) and selects $ETR = (\text{income tax expenses} - \text{deferred income tax expenses}) / \text{Earnings before interest to calculate}$, where, $\text{deferred income tax expense} = (\text{deferred income tax liabilities at the end of the period} - \text{deferred income tax liabilities at the beginning of the period}) - (\text{deferred income tax assets at the end of the period} - \text{deferred income tax assets at the beginning of the period})$; the second method is the tax rate difference (TME) method. The larger the TME, the greater the degree of tax avoidance. $TME = \text{corporate nominal income tax rate (RATE)} - \text{corporate current effective tax rate (ETR)}$. This paper will use method 1 to empirical analysis.

The variable definitions and calculation methods used in this paper are shown in Table 1:

Table 1. Variable Definition Table

variable type	variable name	variable symbol	Variable meaning or calculation method
Explained variable	Degree of corporate tax avoidance	<i>ETR</i>	$(\text{income tax expense} - \text{deferred income tax expense}) / \text{earnings before interest and tax}$
Explanatory variables	Equity incentive degree	<i>MRS</i>	Number of shares held by senior executives/total number of shares of the company
		<i>Board</i>	Number of shares held by the board of directors/total number of shares of the company
Control variable	Assets and liabilities	<i>Lev</i>	Year-end total liabilities/year-end total assets
	Enterprise size	<i>Size</i>	Natural logarithm of total assets
	executive size	<i>TMT</i>	The natural logarithm of the number of executives
	operating income growth rate	<i>GROWT</i>	$(\text{This year 's operating income} - \text{last year 's operating income}) / \text{last year's operating income}$
	Inventory Intensity	<i>INVINT</i>	Net inventory/ total assets for the year
	Fixed Asset Intensity	<i>GAPINT</i>	fixed assets / total assets for the year
	Intangible Asset Intensity	<i>INTINT</i>	intangible assets / total assets for the year
	return on total assets	<i>ROA</i>	Net profit/Average total assets at the beginning and end of the year
	Roe	<i>ROE</i>	Net profit/Average net assets at the beginning and end of the year
	property rights	<i>Soe</i>	Dummy variable, when the enterprise is a state-owned enterprise, it takes 1, otherwise it takes 0
	Proportion of independent directors	<i>Inde</i>	Number of Independent Directors/Number of Directors
	Audit quality	<i>AUD</i>	Dummy variable, which belongs to the " Big Four " accounting firm , takes 1, otherwise takes 0
	year	<i>Year</i>	If the sample belongs to a certain year, take 1, otherwise take 0
industry	<i>Industry</i>	The sample belongs to a certain industry, take 1, otherwise take 0	

(2) Explanatory variables:

The explanatory variable in the model is the degree of equity incentives. At present, the academic circle mainly uses the shareholding ratio of management to measure, that is, $MRS = \text{total number of shares held by senior executives} / \text{total enterprise shares}$. Some scholars also expressed it through the shareholding ratio of the board of directors, that is, $Board = \text{the total number of shares held by the board of directors} / \text{the total number of shares of the company}$. This paper will use these two measures respectively to test the basic regression.

(3) Control variables:

Based on the existing research literature, this paper selects the following variables as control variables for this study: asset-liability ratio (Lev), enterprise size (Size), executive size (TMT), operating income growth rate (GROWTH), Inventory Intensity (INVINT), Fixed Assets Intensity (GAPINT), Intangible Assets Intensity (INTINT), Return on Assets (ROA), Return on Equity (ROE), Nature of Property Rights (Soe), Proportion of Independent Directors (Inde), Audit quality (AUD), etc., and considering the impact of institutional differences on taxation, this paper also controls the fixed effects of variables such as year and industry.

3.2.2 Model Design

In order to explore the relationship between equity incentives and corporate tax avoidance, this paper uses the OLS method to construct the following multiple regression models:

$$\begin{aligned} ETR_{i,t} = & \beta_0 + \beta_1 MRS_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Size_{i,t} + \beta_4 TMT_{i,t} + \beta_5 GROWTH_{i,t} + \beta_6 INVINT_{i,t} \\ & + \beta_7 GAPINT_{i,t} + \beta_8 INTINT_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} ROE_{i,t} + \beta_{11} Soe_{i,t} + \beta_{12} Inde_{i,t} \quad (1) \\ & + \beta_{13} AUD_{i,t} + Year + Industry + \varepsilon_{i,t} \end{aligned}$$

In model (1), it β_1 reflects the relationship between equity incentives and corporate tax avoidance in general. When β_1 the p value obtained by the regression test is less than 0.01, it indicates that they have a significant correlation. When it $\widehat{\beta}_1$ is greater than 0, it means that there is a positive correlation between equity incentives and corporate tax avoidance, and when it $\widehat{\beta}_1$ is less than 0, it means that equity incentives have a negative correlation with corporate tax avoidance.

β_k ($k=2 \sim 13$) reflects the effect of the selected control variables on corporate tax avoidance. In the obtained regression results, $\widehat{\beta}_k$ greater than 0 indicates that the control variable is positively correlated with the degree of corporate tax avoidance, while $\widehat{\beta}_k$ less than 0 indicates that the control variable is negatively correlated with the $\varepsilon_{i,t}$ degree of corporate tax avoidance is a random interference term, where i is the company and t is the year.

4. Empirical Results and Analysis**4.1 Descriptive statistics and analysis**

Descriptive statistics are performed on the main variables in this paper, and the results are shown in Table 2:

Table 2. Descriptive Statistics for Primary Variables

variable	N	mean	median	minimum	maximum value	standard deviation
MRS	26098	0.068	0.001	0.000	0.612	0.135
ETR	26098	0.180	0.158	0.000	0.870	0.128
Lev	26098	0.422	0.416	0.049	0.893	0.203
Size	26098	8.424	8.240	5.829	12.320	1.307
TMT	26098	1.801	1.792	0.693	2.639	0.362
GROWTH	26098	0.207	0.128	-0.562	2.909	0.427
INVINT	26098	0.149	0.115	0.000	0.712	0.140
GAPINT	26098	0.216	0.182	0.002	0.707	0.162
INTINT	26098	0.046	0.033	0.000	0.322	0.050
ROA	26098	0.056	0.046	-0.070	0.232	0.045
ROE	26098	0.098	0.085	-0.619	0.398	0.075
Soe	26098	0.394	0.000	0	1	0.489
Inde	26098	0.375	0.333	0.333	0.571	0.053
AUD	26098	0.064	0.000	0	1	0.244

The explained variable corporate tax avoidance degree (ETR) had a mean value of 0.180, a standard deviation of 0.128, a maximum value of 0.870, and a median of 0.158, indicating that the sample enterprises generally exist tax avoidance behavior, and the degree of tax avoidance varies

greatly. Explanatory variable enterprise equity incentive degree (MRS) has a mean value of 0.068, a standard deviation of 0.135, a maximum value of 0.612, and a median of 0.001, indicating that the degree of equity incentive between sample enterprises is quite different.

4.2 Multiple regression results and analysis

The regression results of equity incentive and corporate tax avoidance are shown in Table 3. The specific results are shown in Table 3 . It can be seen from the regression results that the coefficient between the degree of corporate equity incentives (MRS) and the corporate effective tax rate (ETR) is -0.015 , and it is significant at the 1% level, indicating that with the degree of equity incentives increases , the actual tax rate will decrease, that is, the degree of corporate tax avoidance will increase, and the result of using the board shareholding ratio (Board) to measure the degree of equity incentives is the same as the above. This is because the implementation of equity incentives by companies can directly or indirectly make executives' pay more attention to the value of the company, and in order to obtain more free cash flow, companies often take greater tax avoidance measures. Therefore, it can be proved that the hypothesis put forward in this paper is established.

Table 3. The regression results of equity incentives on corporate tax avoidance

VARIABLES	ETR	
	(1)	(2)
MRS	-0.015*** (-2.78)	- -
Board	- -	-0.013*** (-2.93)
Lev	-0.101*** (-9.79)	-0.106*** (-14.07)
Size	0.003*** (3.87)	0.003*** (3.92)
TMT	-0.008*** (-3.52)	-0.008*** (-3.67)
GROWTH	0.008*** (3.58)	0.009*** (3.94)
INVINT	0.035*** (3.96)	0.037*** (4.22)
GAPINT	-0.095*** (-16.42)	-0.092*** (-16.01)
INTINT	0.008 (0.50)	0.012 (0.70)
ROA	-0.472*** (-6.72)	-0.520*** (-11.04)
ROE	-0.063 (-1.55)	-0.033 (-1.12)
Soe	0.004* (1.95)	0.003 (1.49)
Inde	-0.010 (-0.70)	-0.011 (-0.81)
AUD	0.008*** (2.76)	0.008*** (2.70)
Constant	0.158*** (12.95)	0.159*** (13.00)
Observations	26,098	26,266
R-squared	0.128	0.130
A adjust_R ²	0.126	0.128
F	74.35	76.96

Note: * , ** , *** are significant at the 10 % , 5% , and 1% levels, respectively.

4.3 Robustness test

In order to ensure the robustness and reliability of the research results in this paper, four methods are adopted to test the robustness of the results. The specific results are shown in Table 4. In Table 4, (1) -- (4) are the test of missing variables, the test of subsamples, the test of eliminating the influence of extreme events, and the test of endogenous influence. (1) Test of omitted variables: The increase of auditing efforts can limit the tax avoidance of enterprises to a certain extent. This paper increases the control variable—the audit fee of the enterprise (auditfee), and uses the logarithm of the audit fee to represent the audit fee of the enterprise. The results are consistent with the above results and will not be repeated here; (2) Subsample tests: Excluding other industries and retaining only manufacturing samples, the results verify Hypothesis H1a; (3) Eliminate extreme event effect test: Considering the impact of the 2008 financial crisis on Chinese enterprises Shock and the impact of the new crown epidemic, the sample range was narrowed to 2011-2020, and the results were consistent with the above regression results; (4) Endogenous effect test: In order to reduce the impact of endogeneity on the test results, the explanatory variables were lagged the first-stage treatment can alleviate the endogeneity problem, and the regression results are consistent with Hypothesis H1a. To sum up, through the robustness test, it is again proved that there is a positive correlation between equity incentives and the degree of corporate tax avoidance.

Table 4. Robustness Test Results

VARIABLES	ETR			
	(1)	(2)	(3)	(4)
<i>MRS</i>	-0.012** (-2.33)	-0.011* (-1.91)	-0.010* (-1.80)	-0.019*** (-3.15)
<i>Lev</i>	-0.106*** (-13.89)	-0.117*** (-12.73)	-0.113*** (-11.53)	-0.098*** (-11.11)
<i>Size</i>	-0.002 (-1.59)	0.008*** (7.17)	0.003*** (3.22)	0.001 (0.75)
<i>TMT</i>	-0.008*** (-3.44)	-0.007*** (-2.65)	-0.006*** (-2.60)	-0.008*** (-3.49)
<i>GROWTH</i>	0.009*** (4.13)	0.009*** (2.99)	0.009*** (3.45)	-0.005** (-2.23)
<i>INVINT</i>	0.039*** (4.41)	0.021* (1.71)	0.036*** (3.65)	0.039*** (4.22)
<i>GAPINT</i>	-0.092*** (-15.87)	-0.117*** (-16.36)	-0.096*** (-14.12)	-0.073*** (-11.59)
<i>INTINT</i>	0.005 (0.30)	0.166*** (5.31)	0.009 (0.46)	0.037** (2.02)
<i>ROA</i>	-0.508*** (-10.57)	-0.478*** (-8.14)	-0.549*** (-8.05)	-0.449*** (-7.54)
<i>ROE</i>	-0.042 (-1.40)	0.005 (0.14)	-0.057 (-1.36)	0.136*** (3.99)
<i>Soe</i>	0.005** (2.32)	0.004 (1.61)	0.004* (1.92)	0.006*** (2.92)
<i>Inde</i>	-0.012 (-0.80)	0.007 (0.45)	-0.012 (-0.75)	0.022 (1.51)
<i>AUD</i>	-0.001 (-0.22)	0.012*** (2.88)	0.010*** (2.86)	0.008** (2.47)
<i>auditfee</i>	0.014*** (7.30)	-	-	-
<i>Constant</i>	0.207*** (14.59)	0.201*** (16.60)	0.175*** (12.67)	0.159*** (11.06)
<i>Observations</i>	25,764	16,837	20,241	20,452
<i>R-squared</i>	0.132	0.072	0.128	0.116
<i>A adjust_R²</i>	0.131	0.0709	0.126	0.114
<i>F</i>	75.22	40.96	.	55.50

Note: *, **, *** are significant at the 10 %, 5%, and 1% levels, respectively.

5. Further inspection

5.1 Test of intermediary effect based on agency cost

Jensen and Meckling proposed in 1976 that agency cost refers to the principal in order to prevent the agents from damaging their own interests by restricting the agents' behaviors through strict contractual relations and strict supervision of the agents, which pay the corresponding cost. In order to alleviate the principal-agent problem, companies often take equity incentives to reduce agency costs. The reduction in agency costs further reflects the synergistic effect of the management and the owner's interests, which in turn prompts the management to pay more attention to the long-term business of the company in daily operations goals and reduce self-interested rent-seeking behavior. Driven by the goal of synergy of interests, in order to improve the company's financial efficiency and maximize the interests of the company and itself, the management will also take more tax avoidance behaviors. It can be seen that the stronger the equity incentive, the lower the agency cost of the enterprise, and the greater the degree of corporate tax avoidance. Therefore, this paper selects the agency cost as the mediating variable.

Table 5. Mediation test results

<i>VARIABLES</i>	<i>ATO</i>	<i>ETR</i>
<i>MRS</i>	-0.116*** (-7.21)	-0.014*** (-2.62)
<i>ATO</i>		0.009*** (4.63)
<i>Lev</i>	0.500*** (22.57)	-0.105*** (-10.21)
<i>Size</i>	-0.018*** (-6.20)	0.003*** (3.98)
<i>TMT</i>	-0.000 (-0.02)	-0.008*** (-3.61)
<i>GROWTH</i>	0.059*** (8.29)	0.008*** (3.31)
<i>INVINT</i>	0.269*** (8.85)	0.032*** (3.62)
<i>GAPINT</i>	0.019 (0.96)	-0.096*** (-16.56)
<i>INTINT</i>	-0.469*** (-9.26)	0.013 (0.75)
<i>ROA</i>	0.813*** (4.62)	-0.481*** (-6.86)
<i>ROE</i>	0.944*** (8.85)	-0.071* (-1.73)
<i>Soe</i>	0.037*** (5.87)	0.004* (1.79)
<i>Inde</i>	-0.061 (-1.36)	-0.009 (-0.64)
<i>AUD</i>	0.055*** (5.06)	0.008*** (2.63)
<i>Constant</i>	0.365*** (9.78)	0.156*** (12.77)
<i>Observations</i>	26,092	26,092
<i>R-squared</i>	0.289	0.129
<i>A adjust_R²</i>	0.288	0.127
<i>F</i>	235.7	73.85

Note: *, **, *** are significant at the 10 %, 5%, and 1% levels, respectively.

Li Shouxi (2007) used the total asset turnover rate to measure the agency cost of the enterprise. The smaller the total asset turnover rate, the higher the agency cost of the enterprise. Therefore, this

paper will choose this method to measure the intermediary variable, and design model (2), model (3) to check:

$$\begin{aligned} ATO_{i,t} = & \beta_0 + \beta_1 MRS_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Size_{i,t} + \beta_4 TMT_{i,t} + \beta_5 GROWTH_{i,t} + \beta_6 INVINT_{i,t} \\ & + \beta_7 GAPINT_{i,t} + \beta_8 INTINT_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} ROE_{i,t} + \beta_{11} Soe_{i,t} + \beta_{12} Inde_{i,t} \\ & + \beta_{13} AUD_{i,t} + Year + Industry + \varepsilon_{i,t} \end{aligned} \quad (2)$$

$$\begin{aligned} ETR_{i,t} = & \beta_0 + \beta_1 MRS_{i,t} + \beta_2 ATO_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Size_{i,t} + \beta_5 TMT_{i,t} + \beta_6 GROWTH_{i,t} \\ & + \beta_7 INVINT_{i,t} + \beta_8 GAPINT_{i,t} + \beta_9 INTINT_{i,t} + \beta_{10} ROA_{i,t} + \beta_{11} ROE_{i,t} + \beta_{12} Soe_{i,t} \\ & + \beta_{13} Inde_{i,t} + \beta_{14} AUD_{i,t} + Year + Industry + \varepsilon_{i,t} \end{aligned} \quad (3)$$

The test results are shown in Table 5. (1) and (2) are respectively the agency cost and the regression results of equity incentive, and the impact of equity incentive on corporate tax avoidance when agency cost is considered. When the intermediary variable asset turnover (ATO) is added, both the explanatory variable and the intermediary variable are significant at the 1% level, and the coefficient of the explanatory variable is smaller than the basic regression part, which also proves that the agency cost is the intermediary variables of equity incentives and corporate tax avoidance are partial intermediaries.

5.2 Inspection based on overseas business

With the continuous deepening of the "One Belt, One Road" strategy, the scale of overseas business of Chinese listed companies continues to expand. Xu Zhiqian (2020) found that multinational companies often take measures such as overseas mergers and acquisitions and "tax havens" to improve their tax avoidance capabilities. At the same time, due to the difficulty and complexity of overseas tax audits, overseas business can bring more tax avoidance opportunities for enterprises. Therefore, considering that the increase in overseas income may promote the tax avoidance behavior of enterprises, we select the proportion of overseas income (overseas) as a moderator variable, and design regression model (4) to test:

$$\begin{aligned} ETR_{i,t} = & \beta_0 + \beta_1 mean_overseas_{i,t} + \beta_2 mean_MRS_{i,t} + \beta_3 mean_overseasmean_MRS_{i,t} \\ & + \beta_4 Lev_{i,t} + \beta_5 Size_{i,t} + \beta_6 TMT_{i,t} + \beta_7 GROWTH_{i,t} + \beta_8 INVINT_{i,t} + \beta_9 GAPINT_{i,t} \\ & + \beta_{10} INTINT_{i,t} + \beta_{11} ROA_{i,t} + \beta_{12} ROE_{i,t} + \beta_{13} Soe_{i,t} + \beta_{14} Inde_{i,t} + \beta_{15} AUD_{i,t} \\ & + Year + Industry + \varepsilon_{i,t} \end{aligned} \quad (4)$$

This paper centralizes the explanatory variables and moderator variables. It can be seen from Table 6 that the multiplication term of the two centralization results is significant at the 1% level, indicating that the proportion of overseas income is a moderating variable for the impact of equity incentives on corporate tax avoidance. The coefficient of the mean value of equity incentives (mean_MRS) is Negative, indicating that the moderator variable increases the impact of equity incentives on corporate tax avoidance.

5.3 Tests based on the nature of property rights

Considering that the goal of maximizing profits is different from that of non-state-owned enterprises, state-owned enterprises have assumed more social responsibilities and have more diverse assessment standards for managers. Therefore, the promotion effect of equity incentives on tax avoidance of state-owned enterprises may be weak. In this paper, the samples of state-owned enterprises and non-state-owned enterprises are respectively subjected to multiple regression analysis and heterogeneity test. The specific results are shown in Table 6. The results show that the degree of equity incentives and the corporate effective tax rate of non-state-owned enterprises are significantly negative at the level of 10%, indicating that in non-state-owned enterprises, the greater the equity incentive for managers, the higher the degree of tax avoidance. This result supports the hypothesis of

this paper. However, the regression coefficient of the state-owned enterprises is no longer significant, indicating that equity incentives have little effect on the tax avoidance behavior of state-owned enterprise managers, which also confirms our conjecture.

Table 6. Sample group regression results

VARIABLES	ETR		
	State-owned	non-state	overseas overseas
	(1)	(2)	(3)
<i>MRS</i>	-0.083 (-1.16)	-0.012* (-1.92)	- -
<i>mean_overseas</i>	-	-	-0.031 (-0.58)
<i>mean_MRS</i>	-	-	0.091 (1.16)
<i>mean_overseasmean_MRS</i>	-	-	-0.089*** (-3.17)
<i>Lev</i>	-0.098*** (-8.93)	-0.095*** (-11.11)	-0.100*** (-9.77)
<i>Size</i>	0.003** (2.52)	0.003*** (2.99)	0.004*** (4.11)
<i>TMT</i>	-0.004 (-0.89)	-0.010*** (-4.08)	-0.008*** (-3.84)
<i>GROWTH</i>	0.013*** (4.27)	0.006** (2.53)	0.008*** (3.48)
<i>INVINT</i>	0.038*** (2.98)	0.030*** (3.14)	0.035*** (3.97)
<i>GAPINT</i>	-0.088*** (-9.98)	-0.106*** (-13.55)	-0.094*** (-16.41)
<i>INTINT</i>	-0.012 (-0.53)	0.037 (1.57)	0.009 (0.54)
<i>ROA</i>	-0.347*** (-4.16)	-0.517*** (-8.26)	-0.480*** (-6.83)
<i>ROE</i>	-0.106*** (-2.66)	-0.043 (-1.15)	-0.060 (-1.47)
<i>Inde</i>	-0.005 (-0.22)	-0.017 (-0.96)	0.005*** (2.68)
<i>AUD</i>	0.004 (0.81)	0.016*** (3.20)	-0.013 (-0.90)
<i>Constant</i>	0.144*** (7.80)	0.173*** (11.42)	0.157*** (12.80)
<i>Observations</i>	10,272	15,826	26,092
<i>R-squared</i>	0.141	0.123	0.128
<i>A adjust_R²</i>	0.138	0.121	0.126
<i>F</i>	42.13	54.01	71.52

Note: *, **, *** are significant at the 10 %, 5%, and 1% levels, respectively.

6. Conclusions and Implications

This paper selects the data of China's A - share listed companies from 2008 to 2021 as the research sample, and explores the impact of equity incentives on corporate tax avoidance with the empirical. The results of this paper show that: (1) Equity incentives are positively correlated with the degree of tax avoidance of enterprises; (2) Agency cost is part of the intermediary effect of equity incentives on corporate tax avoidance; (3) The proportion of overseas income increases the impact of equity incentives on corporate tax avoidance (4) Compared with non-state-owned enterprises, equity incentives have a weaker role in promoting tax avoidance in state-owned enterprises .

The results of this paper show that equity incentives can promote corporate tax avoidance. Through the heterogeneity test, this paper also finds that non-state-owned enterprises have a greater degree of tax avoidance than state-owned enterprises. This means that governments at all levels can appropriately strengthen the inspection of non-state-owned enterprises when conducting tax audits on enterprises to prevent illegal tax avoidance by non-state-owned enterprises. Through the test of the adjustment effect, we also found that overseas business also affects the impact of equity incentives on corporate tax avoidance. Therefore, relevant departments should improve the tax regulations for international transactions and strengthen the tax audit of overseas business, so as to reduce the international tax avoidance behavior of enterprises. In addition, the research conclusions of this paper also have certain enlightenment for the national economic development. We should vigorously develop the mixed-ownership economy, continuously improve the basic economic system, and promote the effective operation of the basic economic system.

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