The Relationship between Earnings Manipulation and Tax Avoidance under the Different Book-Tax Difference

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Abstract: It is inevitable for state-owned enterprises to manipulate profits or avoid taxes in order to maximize their interests. How do managers make strategic choices in different situations? This paper selects the sample data of A-share listed State-Owned SMEs (small and medium-sized enterprises) from 2015 to 2020, uses quantile regression method, and analyses the relationship between earnings manipulation and tax avoidance of State-Owned enterprises under different book-tax difference under the new government accounting standards. The results show that there is a significant positive correlation between the two, which may be strategic complementarity. In the lower quartile of the book-tax difference, the two are significantly negatively correlated and may be strategically substituted. It verifies the impact of book-tax difference on enterprise behaviours, and provides path reference for small and medium-sized state-owned enterprises to choose different ways to complete financial or tax reporting goals.

Keywords: Book-tax difference, Earnings manipulation, Tax avoidance effect, Strategic relationship.

1   Introduction

National administrative institutions will fully implement the new government accounting standards in January 2019. The implementation of the new standard system is conducive to reducing the profit manipulation space of enterprises, but it is inevitable for enterprises to manipulate or avoid taxes in order to maximize their interests. State owned enterprises can increase accounting profits through earnings manipulation and reduce taxable income through tax avoidance. At the same time, using two means will increase the risk of being inspected by the CSRC (China Securities Regulatory Commission) and tax authorities. How do state-owned enterprises choose between earnings manipulation and tax avoidance? Is this choice invariable or affected by what factors?

This paper analyses the strategic relationship between earnings manipulation and tax avoidance of state-owned enterprises under the new government accounting standards system, and tests that book-tax differences have an impact on the relationship between them. It verifies

the applicability of book-tax difference to enterprise behaviours, and provides path reference for small and medium-sized state-owned enterprises to choose different ways to complete financial or tax reporting goals.

2 Literature review

2.1 Relationship Model between Accounting Standard and Tax Law

The accounting standard for business enterprises was issued at the end of 1992 and the Interim Regulations of the People's Republic of China on enterprise income tax (abolished) was issued in 1993. There has since been a clear divergence between accounting profit and tax income, and a divergence in whether the two should be aligned.

Huang and Yang (1996) considered that there is no need to separate tax accounting from financial accounting in China from the objectives, legal basis and whether reasonable estimation is allowed. [5] Tang (1997), after reading Huang and Yang, proposed that achieving separation between financial accounting and tax accounting is conducive to international integration and ensuring the scientific and serious tax law, while the disadvantages of separation between financial accounting and tax accounting can be solved by developing tax agency. [10]

The excessive separation of "tax and accounting" model in the United States has led to a financial credit crisis (Enron financial scandal), so more scholars tend to be moderately separated. Although the separation of accounting and taxation has high cost of tax collection and management, it has strong information effect and prediction function. Enterprises may play a role in tax protection for earnings manipulation of accounting and taxation difference, but not to avoid tax supervision [2].

2.2 Relationship Model between Accounting Standard and Tax Law

From the perspective of the impact of earnings manipulation on book-tax difference, Wan and Zhao (2013) found that earnings management had different effects on book-tax difference under different motives (the regulatory motivation of Improving accounting profits and the tax avoidance motivation of reducing taxable income). [11]

From the impact of book-tax difference on earnings manipulation, book-tax difference can provide management information for earnings management. When conducting earnings manipulation, the management may weigh the cost of income tax, so that the momentum of separation between financial accounting and tax accounting will give enterprises more room for profit manipulation. The book-tax difference can identify the enterprise's earnings manipulation and is also an indicator of earnings quality [6]. Book-tax difference are negatively related to real earnings management and positively related to accrued earnings management, and investors' valuation of enterprises with large book-tax difference is high [4]. In view of the irreversibility of permanent differences, the enterprise management chooses real earnings management behavior to avoid profit decline. When the role of real earnings management is weakened, the management may choose accrued earnings management behavior after weighing operation costs and risks [7].

2.3 Earnings Manipulation and Tax Avoidance Effect

The direction and degree of enterprise earnings management are often weighed between financial reporting cost and tax reporting cost. Financial reporting cost, is such as enterprise value and other losses (management compensation) caused by the reported earnings lower than the expected earnings target. Tax savings often result in financial reporting costs. The existing research on the relationship between earnings manipulation and tax avoidance behavior is mostly based on financial reporting motivation and tax avoidance motivation.

Tan et al. (2017) investigated from the perspective of book-tax difference. When senior managers change, the management has radical earnings management behavior, but does not prefer to use tax avoidance to regulate earnings. [9] Zhang et al. (2018) advocated that under the background of "replacing business tax with value-added tax", enterprises will have strong motivation for earnings management. Companies with reduced turnover tax burden carry out accrued negative earnings management for the purpose of tax avoidance. [14]

3   Hypothesis

The increase of accounting profit earnings manipulation and the decrease of taxable income tax avoidance will lead to book-tax difference due to different objectives. Sun and Gai (2016) noticed that earnings manipulation and tax avoidance strategies complement each other, and the amount of information on book-tax difference is different, the risk of being inspected by CSRC, tax authorities and auditors is different, and the relationship between the two is also different. [8]

There are two phenomena in the relationship between earnings manipulation and tax avoidance when there is large book-tax difference of state-owned enterprises:

(1) The two complement each other strategically. When the enterprise is facing financial difficulties or some financial reporting objectives (loss and refinancing), the management has the motivation to adjust the accounting profit upward. If the enterprise has a shortage of funds and debt service burden at the same time, the management has a strong incentive to avoid tax and reduce cash outflow. At this time, there are both aggressive earnings manipulation and tax avoidance. In addition, whether the two methods are adopted at the same time depends on the risk preference of the management, and whether the two methods can be successfully implemented depends on the ability of the management to avoid inspection risks. Therefore, even if the enterprise's financial situation is good, the management with risk preference and ability may work together to achieve the goal.

(2) The strategic substitution relationship between the two. When there is a large book-tax difference, it faces a greater risk of being inspected by the CSRC and the tax authorities, and a greater risk of being found by auditors. The management of insurance preference will weigh the two behaviors and distinguish their priorities out of consideration of reputation loss.

Hypothesis 1: In the high quantile of book-tax difference of state-owned enterprises, earnings manipulation is significantly related to tax avoidance effect.

When the book-tax difference of state-owned enterprises is small, there are three phenomena in the relationship between earnings manipulation and tax avoidance:

(1) The two complement each other strategically. When the book-tax difference is small, the synchronization of downward earnings manipulation and tax avoidance will not produce greater book-tax difference, and the inspection risk is small. The two can be carried out simultaneously and aggressively.

(2) The two are not related to each other. The management has no motivation for earnings manipulation and tax avoidance, and neither of them is radical.

(3) Both gain and lose, strategic substitution relationship. In order to achieve the financial reporting goal, enterprises do not hesitate to increase taxes for radical earnings management, or to avoid taxes at the expense of shareholders' rights and interests in order to achieve the tax reporting goal. At this time, there is no greater book-tax difference.

Hypothesis 2: In the low quantile of book-tax difference of state-owned enterprises, earnings manipulation is significantly related to tax avoidance effect.

4   Research design

4.1 Sample Selection

This paper selects 175 A-share listed companies of small and medium-sized state-owned enterprises as the research object to explore the correlation between enterprise earnings manipulation and tax avoidance effect. The research time is selected from 2015 to 2020, excluding the following small and medium-sized state-owned enterprises: (1) 44 financial enterprises classified by CSRC; (2) 23 new ones after 2014; (3) For those with uncertain income tax expenses from 2015 to 2020. A total of 648 effective research observation samples are obtained, and the sample data are obtained from Wind database.

4.2 Selection of Research Variables

Earnings Manipulation: In order to ensure the comparability of the experiment, referring to the Jones model [13], the discretionary accruals profit DA is used to measure earnings manipulation, and its standardized absolute value is $|\,Z_{DA}\,|$ indicates the degree of earnings manipulation.

(1) Calculate estimated regression parameters.

$$\frac{TAC_t}{A_{i,t-1}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta Sale_{i,t} - \Delta BG_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{A_{i,t-1}}$$

(1)

(2) Calculate the non-discretionary accruals profit (NDA) during the event.

$$NDA = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta Sale_{i,t} - \Delta BG_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{A_{i,t-1}}$$

(2)

(3) Calculate the discretionary accruals.

$$\text{DA} = \frac{TAC_{i,t}}{A_{i,t-1}} - NDA$$

(3)

Total accruals profit TAC = net profit - net operating cash flow, $A_{i,t-1}$ refers to the total assets of state-owned enterprises in period T-1, $\Delta Sale_{i,t}$ refers to the change of main business income of state-owned enterprises in period [T-1, t], ΔBG refers to the change of accounts receivable, and PPE refers to the original value of fixed assets.

Compare the discretionary accruals that should be standardized in different state-owned enterprises, $Z_{DA} = DA/\sigma$. The smaller $|Z_{\text{DA}}|$, the smaller the degree of earnings manipulation.

Tax Avoidance Effect: For tax avoidance effect, the existing literature adopts two alternative variables. (1) Book-tax difference, but the difference may come from earnings management, which is obviously inappropriate [3]. (2) Effective tax rate [1] [12]. Existing studies have confirmed that the change range of nominal income tax rate and effective income tax rate is different, and the change range of effective tax rate is large. This paper uses the effective tax rate to measure the tax avoidance effect, and the smaller the actual tax rate of state-owned enterprises, the more radical the tax avoidance effect of management.

The following control variables were selected: asset size, audit quality, loss, earnings manipulation motivation and management equity incentive, as Table 1.

Table 1: Variable definitions

Variable name		Symbol	Variable definition
test variable	Book-tax difference	BTD	BTD=(Total profit - income tax payable/statutory income tax rate)/Total assets
	Earnings manipulation	DA	Discretionary accruals
	Degree of earnings manipulation	$|Z_{\text{DA}}|$	Absolute value of DA standardization.
	Tax avoidance effect	BS	BS= Total income tax / profit
control variables	Asset scale	lnA	The natural logarithm of total assets at the end of the period.
	Audit quality	big4	If the audit unit is "big four" (PWC, DTT, KPMG, and EY), the value is 1, otherwise it is 0.
	Loss or not	LOSS	If the net profit of the current year is > 0, the value is 1, otherwise it is 0.
	Earnings manipulation motivation	Turnaround motivation	TM	If the net profit is < 0 in T-1 period and the net profit is > 0 in T period, the value is 1, otherwise it is 0.
		Motivation to avoid declining profits	AM	If Δ net profit / total assets is in the range of [0, 0.006] in T-1 period, the value is 1, otherwise it is 0.

	Loss avoidance motivation	LM	If Net profit / total assets is in the range of [0, 0.02] in T-1 period, the value is 1, otherwise it is 0.
Management equity incentive		incent	If the enterprise is in the equity incentive period, the value is 1, otherwise it is 0.

4.3 Model Construction

Learn from the model of Zhang (2020), this paper sets the meeting book-tax difference as the constraint condition and uses the quantile regression method to explore how the management makes the strategic choice of earnings management and tax avoidance when the meeting book-tax difference is in the high and low quantile.

$$BTD = \beta_0 + \beta_1 \mid Z_{DA} \mid + \beta_2 BS + \beta_3 \mid Z_{DA} \mid * BS + \beta_k \sum Control + \alpha$$

(4)

BTD is book-tax difference, $\mid Z_{DA} \mid$ is the degree of earnings manipulation, and BS is the tax avoidance effec. According to the definition of variables, the smaller the BS, the more radical the tax avoidance behavior is. So when the coefficient of the cross term $\beta_3 < 0$, the two behavior strategies complement each other (positive correlation). That is, the management will carry out earnings management and tax avoidance at the same time. Vice versa, if $\beta_3 > 0$, the two activity modes show a strategic substitution relationship, and the enterprise will choose one to operate.

5   Empirical test

5.1 Descriptive Statistics

As Table 2, it shows that: (1) The average book-tax difference is positive, and the accounting profit is greater than the taxable income; (2) The maximum value of earnings manipulation is 3.01 and the minimum value is -0.7, indicating that the degree of aggressiveness of earnings management in various state-owned SMEs is different; (3) The maximum value of tax avoidance effect is 4.35 and the minimum value is -2.06, indicating that the radical degree of tax avoidance effect of state-owned SMEs is different; (4) The mean value of audit quality is 0.01, indicating that most of the selected audit units of small and medium-sized state-owned SMEs are not the four major accounting firms; (5) The maximum value of equity incentive is 0 and the minimum value is 0, indicating that all samples are not in the equity incentive period.

Table 2: Variables descriptive statistical results

variable	BTD	DA	BS	lnA	big4	LOSS	TM	AM	LM	incent
observations	648	648	648	648	648	648	648	648	648	648
min	-3.32	-0.70	-2.06	18.37	0	0	0	0	0	0
max	7.46	3.01	4.35	24.22	1	1	1	1	1	0
mean	0.02	0.02	0.15	21.67	0.01	0.80	0.15	0.15	0.30	0.00
standard deviation	0.34	0.21	0.25	1.09	0.10	0.40	0.35	0.36	0.46	0.00

5.2 Correlation Analysis

As Table 3, it describes the average values of earnings manipulation, degree of earnings manipulation and tax avoidance effect grouped by decile of book-tax difference. The results show that (1) the degree of earnings manipulation first decreases and then increases with the increase of book-tax difference, indicating that the degree of earnings manipulation at the head and tail of the decile of the book-tax difference is more radical, which shows that earnings manipulation is highly negative in the low decile and highly positive in the high decile. (2) The tax avoidance effect first increases and then decreases with the increase of the book-tax difference. It shows that the tax avoidance effect at the head and tail of the decile of the book-tax difference is more radical. (3) The tax avoidance effect changes in the same direction with the degree of earnings manipulation, and the two initially show a positive correlation.

Table 3: The average value of main variables grouped by decile of book-tax difference is described.

Decile group	$| Z_{DA} |$	DA	BS
Q1	0.810	-0.132	0.000
Q2	0.314	-0.031	0.000
Q3	0.317	0.016	0.249
Q4	0.254	0.009	0.210
Q5	0.459	0.033	0.190
Q6	0.301	0.003	0.228
Q7	0.578	0.048	0.189
Q8	0.330	0.041	0.151
Q9	0.340	0.026	0.155
Q10	0.780	0.137	0.155
observations		648	

5.3 Regression Analysis

Since there are no state-owned SMEs in the equity incentive period in the selected sample, the equity incentive in the model effect is constant and has been removed from the analysis.

As Table 4, it reports the OLS regression and quantile regression results of book-tax difference, earnings manipulation and tax avoidance effects. The regression results show that the goodness of fit of OLS regression model is poor, and R^2 is only 9.3%. The fitting degree of quantile regression simulation is good, and R^2 is basically greater than 20%, which can explain the problem.

(1) In the ninth decile, the cross term coefficient is not significantly negative, which reflects that state-owned SMEs often choose both earnings manipulation and tax avoidance when there is large book-tax difference, and the two strategies complement each other.

Similarly, in the eighth and seventh decile, the cross term coefficient is significantly less than 0 at the 1% level. There is a strategic complementary relationship between earnings manipulation and tax avoidance effect, which supports hypothesis 1.

(2) In the first to sixth decile, the cross term coefficient is significantly positive, which reflects that state-owned SMEs often choose only one of the two strategic alternatives when there is little book-tax difference, which confirms hypothesis 2.

(3) In the first decile, the cross term coefficient is significantly positive, and in the ninth decile, the cross term coefficient is significantly negative. Under the extreme book-tax difference, different state-owned SMEs have different choices of earnings management and tax avoidance.

(4) The coefficient of motivation to avoid losses is significantly greater than 0 at the level of 1%; when there are two extremes of book-tax difference, the coefficient of motivation to turn around losses is significant at the level of 5%, and when the degree of book-tax difference is small, the coefficient of motivation to turn around losses is not significant.

Table 4: Regression results.

dependent variable		book-tax difference					
observations		648					
independent variable		$\mid Z_{DA} \mid * BS$	$\mid Z_{DA} \mid$	BS	TM	AM	LM	R^2
OLS	coefficient	0.102	-0.03	-0.047	**0.091	0.003	***-0.084	0.093
	T value	1.025	-1.532	-0.627	2.302	0.065	-2.717	
0.1	coefficient	***0.127	***-0.079	-0.006	0.003	0.003	***0.029	0.464
	T value	14.371	-45.648	-0.918	0.788	0.847	10.416	
0.2	coefficient	***0.056	***-0.023	0.001	0.002	0.004	***0.03	0.391
	T value	7.581	-16.121	0.130	0.819	1.497	12.896	
0.3	coefficient	*0.013	***-0.009	0.007	8.62E-05	**0.006	***0.03	0.328
	T value	1.759	-6.021	1.258	0.029	2.015	12.576	
0.4	coefficient	***0.029	***-0.008	0.005	-0.001	*0.006	***0.035	0.287
	T value	3.375	-4.804	0.861	-0.377	1.946	13.170	
0.5	coefficient	**0.023	***-0.006	0.006	-0.003	*0.006	***0.04	0.256
	T value	2.464	-3.303	0.931	-0.853	1.676	13.844	
0.6	coefficient	0.011	*-0.004	0.008	-0.001	0.005	***0.044	0.230
	T value	1.014	-1.809	1.008	-0.259	1.097	12.852	
0.7	coefficient	***-0.031	***0.012	***0.026	-0.003	0.005	***0.054	0.215
	T value	-2.705	5.514	3.065	-0.686	1.019	15.182	
0.8	coefficient	***-0.038	***0.016	***0.028	-0.005	0.006	***0.068	0.202
	T value	-2.966	6.355	2.921	-1.071	1.136	16.867	
0.9	coefficient	-0.012	***0.011	0.014	**-0.018	0.007	***0.103	0.192
	T value	-0.667	3.336	1.088	-2.549	1.047	18.751	

6   Conclusions

Under different circumstances, managers of state-owned SMEs will choose different ways (earnings manipulation or tax avoidance) to achieve financial reporting or tax reporting

objectives. What is the strategic relationship between the two ways under the influence of book-tax difference? How do state-owned SMEs make strategic choices? Therefore, this paper selects the A-share listed companies of the small and medium-sized state-owned SMEs as the research sample, takes their sample data from 2015 to 2020, and represents the inspection risk faced by enterprises with the book-tax difference. At the same time, this paper sets the scenario, measures earnings manipulation with the absolute value of standardized discretionary accruals profit, measures the tax avoidance effect with the effective tax rate, and carries out quantile regression and OLS regression on a total of 648 observations.

The results show that the book-tax difference has a great impact on the relationship between earnings manipulation and tax avoidance. Specifically, in the high quantile of book-tax difference, the degree of earnings manipulation and tax avoidance effect are significantly positively correlated, and the strategies complement each other. It reflects that the state-owned SMEs may no longer consider the risk of being subject to the inspection of the CSRC and the tax authorities in order to achieve the financial reporting objectives and tax reporting objectives. The state-owned SMEs choose both radical earnings manipulation and radical tax avoidance, which may be caused by the motivation to turn around losses. At the same time, the quality of accounting information provided by state-owned SMEs is significantly reduced. In the low quantile of accounting and book-tax difference, the degree of earnings manipulation is significantly negatively correlated with tax avoidance effect, and they are strategic substitutes. It reflects that state-owned SMEs choose one of the two to achieve the objectives of financial reporting and tax reporting when facing low inspection risk, which may be caused by the motivation to avoid losses.

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