Effect of Corporate Tax Avoidance on the Investment-cash Flow Sensitivity

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Abstract: This paper aims to disclose the comprehensive effect of corporate tax avoidance on investment cash flow sensitivity. For this purpose, a number of enterprises listed on Shanghai and Shenzhen stock exchanges (A-share enterprises) during 2009–2015 were selected to explore the effect of corporate tax avoidance on the free cash flow of enterprises. In light of the previous studies, an investment cash flow sensitivity model was created based on book-tax difference (btd), and the descriptive statistics were subjected to regression analysis. The research reveals that enterprises with a high level of tax avoidance have a high investment cash flow sensitivity; tax avoidance of an enterprise can directly increase the cash flow, and suppress the cash flow by raising the deferred financing cost. The research findings shed new light on the decision-making of corporate tax avoidance.

1. Introduction
Tax burden is one of the driving factors for firm decision-making behaviour. With the increasingly fierce competition in the Chinese market, firms have gradually reduced their profit margins due to their own scale, financing environment, and competitive advantages. Tax avoidance, as an important factor affecting corporate investment and financing activities and one means of modern firm earnings management, can reduce tax burdens so as to increase corporate entity cash flow and enhance firm value.

The research on the issue of tax avoidance agency originated from the study of American scholar Weisbach (2002). In his research on business behaviour, he found that under the existing US taxation and expropriation laws, there are more tax avoidance measures with the lower probability of being punished, but even in this situation, most American companies are still reluctant to choose tax avoidance (Liu and Ye, 2015). Desai and Dharmapala (2006) stated that if the scale of tax avoidance is large, the information quality will be reduced, which in turn will increase the risk of corporate information disclosure. This is mainly because the managers of tax avoidance firm would inevitably conceal from the shareholders about the tax avoidance facts and related transaction behaviours, in order to minimize the inspection risk, and avoid clues to tax agency investigations, so corporate tax avoidance activities are often complex and covert.

In addition, other foreign studies also have showed that corporate tax avoidance is not conducive to long-term profits (Hanlon, 2005), but it is beneficial to manipulatable accruals (Frank et al., 2009; Mu, 2013). Also, Balakrishnan et al., (2012) and Hope et al., (2015) adopted different empirical indicators to define the corporate information quality and found that the corporate tax avoidance behaviour reduce the transparency of corporate information environments (Liu, 2013; Wen, 2012). Therefore, the foreign scholars believe that in addition to the positive effect of reducing tax costs, tax avoidance also has some negative effects, and this effect can cause the firm to abandon the tax avoidance. Crocker
and Slemrod (2005) thought that the reason that tax avoidance does not necessarily enhance the firm value is: the traditional tax avoidance theory ignores the fact that the separation of ownership and management rights is a matter of “two rights separations”; the tax avoidance will increase the cost of entrusted agency and reduce the firm value (Cao et al., 2013).

The literatures mentioned above have discussed the relationship between corporate tax avoidance activities and financing cost, corporate cash flow and firm value from different points of view. But from the perspective of corporate financial strategy, the investment and financing activities of an enterprise form a complete chain. Foresaid analyses are generally limited due to their focus on only one section. For example, when the impact of tax avoidance on firm value is analyzed, the use of cash flow is not taken into consideration, neglecting the fact that efficient investment can greatly enhance firm value. This study is a starting point for the subsequent extensive research on company’s cash flow and investment efficiency. In an attempt to investigate these issues from a new perspective, this paper examines how an enterprise’s tax avoidance activities affect its cash flow.

Modigliani and Miller (1958) first analyzed the impact of financial market factors on an enterprise's investment decision. They believed that under perfect capital market conditions, the financial structure of an enterprise has nothing to do with its investment decision. Fazzari, Hubbard and Petersen (FHP, 1988) carried out a groundbreaking empirical study on the relationship between financing constraints and the sensitivity of corporate investment-cash flow. They found that enterprises with stronger financing constraints were more sensitive to investment-cash flow, and most of the subsequent empirical studies were based on the FHP model. However, Kaplan and Zingales (KZ, 1997) come to a different conclusion in their study. They believe that higher sensitivity between investment and cash flow does not prove that enterprises are subject to tighter financing constraints. Around the paper published by Kaplan and Zingales (1997), scholars have carried out a fierce discussion (Chirinko, 1997; FHP, 2000; Kaplan and Zingales, 2001, et al.). Along the above lines, Chinese scholars have conducted empirical research on the correlation between financing constraints and investment of domestic listed companies. Feng Wei (1999) used FHP model to test the relationship between internal cash flow and investment expenditure of listed companies in China, and drew the conclusion that there were financing constraints. Shen Hongbo et al. (2010) analyzed the impact of financial development on financing constraints and investment of listed companies. Zhang Guiqiao and Chen Zhibin (2013) examined the impact of macroeconomic policies on enterprise financing constraints and investment expenditure. Based on a sample of companies listed on the Shanghai & Shenzen Stock Exchanges (A-share companies) during 2009-2015, this paper explores the impact of an enterprise’s tax avoidance on the enterprise’s free cash flow.

2. Study design

Active tax avoidance can pose great external risk to an enterprise, and it has been suggested that corporate tax avoidance is significantly and positively correlated with the cost of debt financing (Shevlin, Urcan, and Vasvari, 2013). So tax avoidance may increase corporate financing constraints and then curb corporate cash flow. In summary, corporate tax avoidance can increase an enterprise’s free cash flow on the one hand; and constrain its financing on the other hand. Based on these findings, we make our hypothesis:

Hypothesis 1 (H1): Compared with those with a low level of tax avoidance, companies with a high level of tax avoidance have higher investment-cash flow sensitivity.

2.1. Measures of tax avoidance

At present, there are mainly two categories of measures of corporate tax avoidance:

The first category concerns the difference between the nominal and actual tax rates. Considering the prevalence of tax incentives for listed companies in China (including both tax breaks and pre-tax deductions) as well as the complexity of the tax incentive policies in many regions, the simple difference between the nominal and actual tax rates may cause great errors or even wrong conclusions. This kind of indicators is not recommended.
The second category concerns book-tax difference (BTD) and is used here to accurately measure the effect of corporate tax avoidance based on previous studies (Desai and Dharmapala, 2005; and Liu Xing, 2013). Specifically, 

\[ \text{BTD} = \frac{\text{Profit before tax} - \text{Taxable income}}{\text{Total assets at the end of the period}} \]

where, 

\[ \text{Taxable income} = \frac{\text{Income tax expense} - \text{Deferred income tax}}{\text{Nominal tax rate}} \]

2.2. Empirical model and variable selection

The explanatory variable in this paper is the level of corporate tax avoidance. Based on the above discussion, we use book-tax difference (BTD) to measure this variable.

According to the “asymmetric information & investment-cash flow sensitivity model” proposed by Qu et al. (2011), we build the following model (Model 1) to test our H1:

\[
\frac{I_t}{K_{t-1}} = \alpha_0 + \alpha_1 BTD_{it} + \alpha_2 \frac{CF_{it}}{K_{t-1}} + \alpha_3 Q_{t,t-1} + \alpha_4 \frac{CF_{it}}{K_{t-1}} * BTD_{it} + \sum Ind + \sum Year \tag{1}
\]

In Model (1), corporate tax avoidance \( BTD_{it} \) is a dummy variable that equals one if its value according to above-mentioned calculation is larger than zero, or equals zero if its value according to above-mentioned calculation is smaller than zero; \( \frac{CF_{it}}{K_{t-1}} \) is the current cash flow of the enterprise; \( Q_{t,t-1} \) is the future investment opportunity for the enterprise; multiplicative term, \( \frac{CF_{it}}{K_{t-1}} * BTD_{it} \) is added to the original investment-cash flow sensitivity model to examine the impact of corporate tax avoidance on investment-cash flow sensitivity; and two dummy variables, year and industry, are also included in the model. Table 2-1 shows each variable’s definition and calculation method.

| Variable | Definition | Calculation |
|----------|------------|-------------|
| \( I_t \) | Current newly added investment | (Sum of the added values of the original price of fixed assets, construction in progress assets and construction materials)/Net fixed assets at the beginning of the period |
| \( I_t \) | Cash flow | Current net cash flow from operating activities/Net fixed assets at the beginning of the period |
| \( Q_{t,t-1} \) | Future investment opportunity | (Total share capital * Closing price at the end of the year)/Total assets |
| Year | Year as a dummy variable | 0 or 1 |
| Ind | Industry as a dummy variable | 0 or 1 |

2.3. Sample data selection

The data used in this study are all from Wind Economic Database. Based on the sample of 7032 firms used in the above section, a new sample of 5056 firms is obtained for regression analysis after removing firms abnormal or missing relevant data as well as a 90% winsorization.

3. Empirical results and analysis

3.1. Sample’s descriptive statistics

| Stats | \( I_t/K_{t-1} \) | BTD | \( CF_{it}/K_{t-1} \) | \( Q_{t,t-1} \) | \( CF_{it}/K_{t-1} * BTD \) |
|-------|----------------|-----|----------------|-------------|----------------|
| Min   | \-.1327718     | 0   | \-.4241186     | .146881     | \-.4241186     |
| Max   | 9.759644       | 1   | 9.928283       | 9.986457    | 9.137049       |
| Mean  | .6609738       | .5633629 | .3352475 | 1.970051 | .1678083       |
| Sd    | 2.112165       | .49603 | .8127197 | 1.86152 | .5482522       |
| N     | 5056           | 5056 | 5056          | 5056        | 5056           |
The descriptive statistics of the sample is shown in Table 3-1. The sample consists of a total of 5056 firms. In addition, as we can see from the table: (1) there are big differences between the maximum and minimum enterprise investments, indicating that the investment varies among enterprises; the average investment is greater than 0, indicating that the overall newly added capital investment of enterprises is increased; and the variance of newly added capital investment is large, indicating great differences of the amount of new capital investments among sampled enterprises; (2) the average level of corporate tax avoidance (a dummy variable) is greater than 0.5, indicating that there are a slightly more enterprises with a high level of tax avoidance than those with a low level of tax avoidance; (3) for cash flow, the difference between the maximum and minimum and the standard deviation are very large, indicating a large cash flow difference among enterprises; and the average cash flow is larger than zero, indicating overall increase of enterprise’s cash flow; (4) for investment opportunity faced by enterprises, the difference between the maximum and minimum and the standard deviation are also very large, indicating a large investment opportunity difference among enterprises.

3.2. Regression analysis

Table 1-3 reports the regression results of Model (1) (investment-cash flow sensitivity model). It can be seen that a firm’s cash flow $\frac{CF_{it}}{Ki_{i,t-1}}$ is significantly and positively correlated to its investment opportunity (regression coefficient = 0.215), indicating that the newly added capital investment is increased with a firm’s cash flow. In the previous section, we have confirmed that enterprises with a higher level of tax avoidance faces increased financing cost and more financing constraints and thus rely more on its internal cash flow for investment. The regression coefficient of the multiplicative term, $\frac{CF_{it}}{Ki_{i,t-1}} * BTD_{it}$ is significant (regression coefficient = 0.15), indicating that firms with a higher level of tax avoidance have a higher investment-cash flow sensitivity, confirming H1 in this paper.

| Coef. | Std. Err. | T | P>|t| | [95% Conf. Interval] |
|-------|-----------|---|-----|-----------------|
| BTD_{it} | -.0020075 | .0792566 | -0.03 | 0.980 | -.157394 | .153379 |
| $\frac{CF_{it}}{Ki_{i,t-1}}$ | .214548 | .0535316 | 4.01 | 0.000 | .1095967 | .3194994 |
| Q_{i,t-1} | .0581086 | .0182636 | 3.18 | 0.001 | .022302 | .0939153 |
| ($\frac{CF_{it}}{Ki_{i,t-1}}$) * BTD_{it} | .1550596 | .0821912 | 2.89 | 0.059 | -.0060803 | .3161996 |
| Year | Controlled | Controlled | Controlled | Controlled | Controlled | Controlled |
| IND | Controlled | Controlled | Controlled | Controlled | Controlled | Controlled |
| $\alpha_0$ | .4414994 | .0795127 | 5.55 | 0.000 | .2856108 | .597388 |

According to the previous conclusion that corporate debt financing cost is positively correlated with tax avoidance, corporate tax avoidance has both increasing and inhibiting effects on cash flow. According to the investment-cash flow sensitivity model (Model (1)), Hypothesis 1 is confirmed: compared with those with a low level of tax avoidance, enterprises with a high level of tax avoidance have higher investment-cash flow sensitivity. This suggests that enterprises with a higher level of tax avoidance face a higher cost of financing, and rely more on free cash flow for investment when limited by more financial constraints.

4. Conclusions

Based on the data of A-share listed companies in China from 2009 to 2015, this paper studies the correlation between tax avoidance behavior and investment - cash flow sensitivity, and comes to the conclusion that companies with higher tax avoidance level have higher investment - cash flow sensitivity than those with lower tax avoidance level. The following inspiration can be drawn from the conclusion of this paper: Tax avoidance of an enterprise can not only directly increase cash flow of the enterprise, but also raise its debt financing cost and thus curb its cash flow. Shareholders should better understand and weigh the advantages and disadvantages of corporate tax avoidance and make better choices to promote corporate value.
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