

## Government Subsidies and Corporate Tax Saving: Evidence from China<sup>1</sup>

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**Abstract:** Corporate tax saving is an important factor of corporate financing. It helps firms promote external liquidity. However, it would be reduced by government subsidies in China. This paper examines the association between corporate tax planning and government subsidies using the data of A-share listed companies in China during the period of 2003-2015. Findings show that government subsidies significantly reduce corporate tax saving activities. The more subsidies firms gain, the more negative the association is. Meanwhile, in the group of firms with large scales, government subsidies are more likely to alleviate corporate tax saving activities. Moreover, empirical evidence also suggests property rights can enhance the relationship in China's transitional economy. Finally, in the group of firms with high cash holdings, government subsidies are likely to reduce the corporate tax saving activities, enhancing the negative relationship between government subsidies and corporate tax saving.

**Keywords:** Government subsidies; Corporate tax saving benefits; Firm scale; Property rights

**JEL Classifications:** G34, G38, H25

### 1. Introduction

In the past decade, most researchers have paid particular attention to tax saving benefits (Davis, *et al.*, 2016; Lanis and Richardson, 2011; Chen, *et al.*, 2010). However, few studies examined the bidirectional effect of taxes and fees, which means that government can impose taxes and fees, and the government also supports firms by government subsidies, especially in the government-led economy. As Su, *et al.* (2012) mentioned, value and performance of China's firms had significant relationship with subsidies. For many China's companies, government subsidies are an important

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income. The government provides support for companies and industries which it wishes to help. This situation attracts many Chinese researchers, and there is growing criticisms about it. In contrast to vast literature on how firm characteristics, such as firm sizes, property rights and managerial abilities, affect firm value and performance (Hanlon, *et al.*, 2007; Wu, 2009; Ma and Li, 2012), there is limited research on how government subsidies affect the corporate cash effective tax rates (CashETRs). Therefore, we are left with some unresolved questions: what is the relationship between government subsidies and CashETRs? Do government subsidies offset the corporate tax saving benefits?

Generally, corporate tax saving can provide external liquidity for firms and increase corporate cash holdings to ease financial constraints to some extent. A research on firm characteristics showed that individual executive characteristics significantly increase corporate tax saving activities (Koester, *et al.*, 2016). However, according to some studies (Weisbach, 2002; Gallemore, *et al.*, 2012), benefits of tax saving have low probable of getting caught. Moreover, subsidies are important for China's economy, and make some industries rapidly develop (Lin and Liu, 2001). When a firm has a tightening financial constraint in China, subsidies from the government can change this fact (Faccio, *et al.*, 2006). Therefore, companies have a strong incentive to decrease tax planning activities to get subsidies.

This paper is motivated by the lacking empirical evidence on the relationship between corporate tax planning and government subsidies. To test our prediction, the paper investigates the association between corporate CashETRs and government subsidies. Specifically, we examine whether and how government subsidies affect the tax planning of different companies (different sizes, property rights, and different government subsidies). Using the data from China during the period of 2003-2015, this paper finds that there is a significantly positive relationship between corporate CashETRs and government subsidies. In other words, firms reduce some tax planning activities to get subsidies from the government. We further find that smaller companies tend to be more motivated to pay more taxes and fees. This is maybe since the government regards taxes and fees paid as a standard of offering subsidies.

We also find that the non-state owned enterprises(non-SOEs) have more incentives to reduce tax planning activities. Because the Chinese government has much economic power, firms must establish political connections to gain resources and developing opportunities (Yu, *et al.*, 2010; Zhao, *et al.*, 2015). Moreover, our study shows that CashETRs have a negative association with government subsidies when we put non-SOEs of less subsidies as a sample. In contrast, we find non-SOEs who gain more subsidies have significantly positive association with corporate tax saving activities. This provides stronger evidence on firms reducing tax planning activities to gain subsidies.

The rest of the paper is structured as follows. Section 2 provides the theoretical analysis and hypothesis development. Section 3 shows the sample data and the empirical methodology. Section 4 presents empirical results. Section 5 provides conclusions.

## **2. Theoretical Analysis and Hypothesis Development**

### **2.1 The corporate tax saving activities and government subsidies**

Corporate tax saving is a hot question in both academy and practice. Corporate tax saving refers that corporate managers take all actions to decrease their cash tax liabilities whatever the actions are legal tax strategies or ambiguous area within the tax law from a broad perspective. And China's corporate tax saving activities contain not only the tax planning strategies which produce a cash flow benefit from reducing the financial statement benefit, but also benefits coming from the

preferential tax policy and government subsidies. We also define the government subsidies as all cash and preferential tax policies gained from the government.

Tax rigidity limited benefits from tax planning strategies. The supervision of government, the cost and venture of tax saving activities restrain corporate tax planning. Government has strong motives to limit tax planning (Besley and Persson, 2009). Especially, government will transfer financial constraints to firms in the difficult period, which enhances firm tax rigidity. Subsidies are important resources for firms in China's transitional economy where the financial and public system is imperfect. Recent tax studies provide evidence to suggest that firms focus primarily on tax planning strategies that increase both net cash flows and reported earnings with only a secondary interest in tax planning strategies that only produce a cash flow benefit, but reduce financial statement benefit (Armstrong, *et al.*, 2012; Graham, *et al.*, 2014). And this will reduce the stakeholders' confidence.

We have some reasons to believe companies will reduce tax saving activities in China's transitional economy. (1) Chinese government makes some strict laws and policies to make sure of getting enough revenue. The growth rate of China's revenue is at less 8.6% during the period of 2000-2014<sup>2</sup> (even more some years the ratio can get above 25%) and the increasing ratio of tax is at less 7.82% during the same period. We find the increasing revenue and tax ratio of the period of 2000-2014 are higher than GDP. According to Dassai, *et al.* (2007), corporate tax saving activities are reduced and firms are willing to pay more taxes and fees when tax office strengthens the supervision. (2) The benefit of tax saving activities is limited by corporate tax rigidity, and mostly it reduces the financial statement benefit which managers are not interested in. However, the benefit of government subsidies is not venturing of policy. Firms are more willing to follow the government and then gain subsidies relative to increasing tax saving activities that produce a cash flow benefit. (3) Government subsidies have great influence on firm value and performance. Government subsidies directly improve corporate net profit. According to Frye and Shleifer (1997), government can better influence economy through providing subsidies. One goal of government subsidies is to satisfy the requirement of the listed companies earning management which is from the department of supervision (Kong, *et al.*, 2013). For instance, some \*ST listed companies can get rid of the name, and turn losses into profits with gaining government subsidies. So China's firms are interested in the way which firms can increase implicit benefits through building the relationship with government, and secondly interested in tax saving activities that do not produce financial statement benefit. Collectively, this leads our first hypothesis:

**Hypothesis1:** Increasing (decreasing) in government subsidies are associated with increasing (decreasing) in cash effective tax rates.

## **2.2 Government subsidies, firm size and political connections**

Large firms are important for national economy in transitional economic system. In general, large firms have more political connections than small firms. Xu (1997) mentions that large firms always produce some important productions for the economy, and the government is willing to support the development of those firms. According to Peng *et al.* (2013), there is a positive association between government subsidies and firm size through the agricultural firm sample. Moreover, most managers in large firms have more opportunities to build close relationship with

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<sup>2</sup> The ratio is calculated by the data from national bureau of Statistics of China. The increasing revenue ratio of the period 2000-2014 is 17.1%, 22.3%, 15.4%, 14.9%, 21.6%, 19.9%, 22.5%, 32.2%, 19.5%, 11.7%, 21.3%, 25%, 12.9%, 10.2%, 8.6%. The increasing tax ratio of the period 2000-2014 is 17.98%, 21.62%, 15.26%, 13.5%, 20.72%, 19.09%, 20.94%, 31.08%, 18.85%, 9.78%, 23%, 22.58%, 12.12%, 9.99%, 7.82% .

government officers who can help the firm gain government subsidies. Therefore, large firms generally gain more subsidies. And small firms spend more cost on government to establish the political connections. This leads our other hypothesis:

**Hypothesis1a:** Smaller firms have less corporate tax saving activities than larger ones to gain subsidies.

Corporate economic activities are widely affected by government policies. The political surroundings greatly decide whether corporates take aggressive tax planning. Political connections which China's firms establish by spending much money on making firms easier gain subsidies, increasing cash flow benefit, and gaining opportunities to enter into the special industries (Wu, *et al.*, 2009, Claessens, *et al.*, 2008). The Chinese government strengthens its economic impacts through subsidies. Government subsidies greatly affect activities of China's corporate tax saving. Li (1995) mentions that firm activities have a significant association with subsidies. And he suggests that government affects firms using subsidies. Subsidies, as one way of government intervention, are not given to all firms. This creates the possibility that companies look for the political connections. In this circumstance, firms are more willing to cooperate with government, actively enhance the relationship with government, and increase the cash flow benefit through gaining subsidies. Firms can get more benefits through maintaining the relationship with government. The tax planning has few practical significance in China's transitional economy.

Different firms have different subsidies, and government decides how many subsidies a firm can gain (Pan, *et al.*, 2009). According to Kong, *et al.* (2013), SOEs gains more government subsidies. The study of Chen and Zhu (2009) suggests the same finding results. As Yang (2011) mentions, because most firms pursue public resources controlled by government, the relationship with government becomes one of the most important development factors in transitional economy. In the period, government has power to allocate some resources. Under such circumstances, the government inclines to give firms which are stakeholders of government or have strong profitability that relates to the financial statement benefit. Therefore, firms are interested in financial statement benefit and follow the government requirements. Collectively, we predict firms who have smaller scale and less political connections have stronger substitution effects of subsidies. This leads our other hypothesis:

**Hypothesis1b:** Non-SOEs have less corporate tax saving activities than SOEs.

### **3. Empirical Design**

#### **3.1 Data collection**

Our data period is from 2003, the first year on which the government subsidies became available in China Stock Market & Accounting Research (CSMAR) database, to 2015. All financial and accounting variables are obtained from the CSMAR database. Besides, we collected data of firm property rights from the Wind database. According to the Standard of Firm Size Division from the Ministry of Industry and Information Technology, National Bureau of Statistics, National Development and Reform Commission and the Ministry of Finance of China jointly issued in 2011, we divided the sample of firms into two groups, large firms and medium firms<sup>3</sup> (according to the standard, the firms of small scale are not listed in the stock market, which makes their information difficult to find).

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<sup>3</sup> The standards of firm size are different in various industries. And the standards can be found in Chinese governmental website.

Consistent with prior tax planning and subsidies studies, firms are excluded from the sample if (1) the pretax profit is negative; (2) the firms is financial firm; (3) the firm data is lost. The final sample we get includes 14816 observations which consist of 12588 observations of large firms and 2228 observations of medium firms.

### 3.2 Modeling

According to above theoretical analysis, we use following OLS regression model to examine the relationship between government subsidies and corporate tax saving activities:

$$\begin{aligned}
 CashETR_{i,t-1} = & \alpha_0 + \alpha_1 Subsidy_{it} + \alpha_2 Size_{it} + \alpha_3 A/S_{it} + \alpha_4 LnSales_{it} \\
 & + \alpha_5 Inventory_{it} + \alpha_6 PP\&E_{it} + \alpha_7 PROA_{it} + \alpha_8 I/S_{it} \quad (1) \\
 & + \alpha_9 BM_{it} + \alpha_{10} Audit_{it} + \alpha_{11} leverage_{it} \\
 & + \sum \gamma Industry_{it} + \sum \lambda Year_t + \varepsilon
 \end{aligned}$$

In Eq. (1), our dependent variable, *CashETR*, is measured as cash taxes and fees paid to the pretax income. Detailed descriptions of variables are presented in the table 1. According to Hanlon and Heitzman (2010), selecting an appropriate measurement of corporate tax saving activities is very important. Consistent with prior studies (Edwards, *et al.*, 2016; Terando and Omer, 1993; Omer, *et al.*, 1993), we reset the *CashETR* above 1(below 0) to 0(0). *Subsidy* represents how many government subsidies a company gains. Control variables in our model include an indicator variable (*Size*), the General & Administrative expense (*A/S*), the natural log of sales(*LnSales*), firm inventory intensity (*Inventory*), the firm capital assets (*PP&E*), the firm profitability (*PROA*), the firm gross profit rate (*I/S*), the firm book-to-market ratio (*BM*), the firm auditor’s opinion (*Audit*), the firm capital structure (*Leverage*). Besides, we also control industry and year fixed effects.

**Table 1.** Definition of variables

Category	Variables	Definition
Tax saving activities measure	<i>CashETR</i>	The firm’s cash effect tax rates. The ratio of cash taxes and fees paid to the pretax profit ( <i>TXPD/PP</i> )
Government subsidies	<i>Subsidy</i>	Subsidies gained. Calculated as (government subsidies + preferential tax)/ <i>PP</i>
Other tax saving activities opportunities	<i>Size</i>	An indicator variable equals to 1 if a firm is an SOE and large firm, and 0 otherwise, when it is in the sample of all firms. And it equals to 1 if a firm is an SOE, and 0 otherwise, when it is in the sample of large firms.
	<i>A/S</i>	The ratio of G&A expense to sales ( <i>GA/S</i> )
	<i>LnSales</i>	The natural log of sales ( <i>LnSales</i> )
	<i>Inventory</i>	The ratio of the inventory intensity to lagged total assets ( <i>IN/lag(TA)</i> )
	<i>PP&amp;E</i>	The ratio of the fixed assets to lagged total assets ( <i>PP&amp;E/lag(TA)</i> )
	<i>PROA</i>	The ratio of the pretax profit to lagged total assets ( <i>PP/lag(TA)</i> )
	<i>I/S</i>	The gross profit rate
	<i>BM</i>	The ratio of the book value of equity to the market value of equity
	<i>Audit</i>	The audit opinion. The variable equal 1 if the auditor issues standard unqualified opinion, and 0 otherwise.
	<i>Leverage</i>	The ratio of the total debt to the total asset ( <i>TD/TS</i> )

### 3.3 Descriptive statistics of key variables

Table 2 shows summary statistics results of main variables. Our paper winsorizes main variables at 1% level, in order to eliminate the interference of abnormal values. The average *CashETR* is 0.686. The average *Subsidy* is 0.520.

**Table 2.** Description statistics of key variables

Variables	<i>n</i>	Min	Max	Mean	Std.Dev
<i>CashETR</i>	14816	0.080	1.000	0.686	0.290
<i>Subsidy</i>	14816	0.000	9.435	0.520	1.291
<i>A/S</i>	14816	0.000	0.521	0.099	0.093
<i>LnSales</i>	14816	18.368	25.281	21.324	1.390
<i>Inventory</i>	14816	0.000	1.046	0.200	0.195
<i>PP&amp;E</i>	14816	0.004	0.980	0.280	0.202
<i>PROA</i>	14816	0.002	0.477	0.077	0.076
<i>I/S</i>	14816	0.025	0.800	0.27	0.164
<i>BM</i>	14816	0.733	18.834	3.856	3.053
<i>Audit</i>	14816	0.000	1.000	0.020	0.135
<i>Leverage</i>	14816	0.048	0.881	0.446	0.207

Table 3 shows correlations among 11 variables employed in this paper. We find that the correlation between *CashETR* and *Subsidy* is significantly positive, which supports our predictions.

**Table 3.** Correlation of 11 key variables

	CETR	Sub	A/S	LnS	Inv	PP&E	PROA	I/S	BM	Aud	lev
CETR	1										
Sub	<b>0.219</b>	1									
A/S	<b>0.053</b>	<b>-0.042</b>	1								
LnS	<b>0.176</b>	<b>-0.018</b>	<b>-0.023</b>	1							
Inv	<b>0.083</b>	<b>-0.039</b>	<b>0.014</b>	<b>0.116</b>	1						
PP&E	<b>0.062</b>	<b>0.028</b>	0.009	<b>0.131</b>	<b>-0.241</b>	1					
PROA	<b>-0.457</b>	<b>-0.251</b>	<b>0.408</b>	<b>0.018</b>	<b>0.079</b>	<b>0.072</b>	1				
I/S	<b>-0.214</b>	<b>-0.229</b>	<b>0.326</b>	<b>-0.356</b>	<b>-0.061</b>	<b>-0.113</b>	<b>0.391</b>	1			
BM	<b>-0.140</b>	<b>-0.041</b>	<b>0.229</b>	<b>-0.282</b>	<b>-0.019</b>	<b>-0.083</b>	<b>0.270</b>	<b>0.200</b>	1		
Aud	<b>0.020</b>	<b>0.098</b>	-0.005	<b>-0.085</b>	<b>-0.035</b>	<b>-0.020</b>	<b>-0.028</b>	<b>-0.033</b>	<b>0.107</b>	1	
lev	<b>0.338</b>	<b>0.105</b>	<b>-0.163</b>	<b>0.482</b>	<b>0.327</b>	<b>0.110</b>	<b>-0.257</b>	<b>-0.395</b>	<b>-0.023</b>	<b>0.100</b>	1

**Note:** Correlations in bold are statistically significant at the 10 percent level or lower.

## 4. Regression Analysis

### 4.1 Government subsidies and corporate tax saving

Table 4 presents regression analysis results of *CashETR* and government subsidies. The coefficient on *Subsidy* of all firms is 0.021 and statistically significant ( $p < 0.01$ ), which means firms gaining more government subsidies have higher Cash ETRs. This result supports the H1. The coefficient on *Subsidy* of large firms (medium firms) is 0.020 (0.022) and statistically significant (both coefficient is significant under  $p < 0.01$ ). This coefficient of large firms is smaller than that of medium firms, which means medium firms have higher *CashETR* under the same circumstance than

large firms. Moreover, we also find the coefficient on *Size* of all firms (large firm) is significantly positive. It indicates that smaller firms have to use more resources to establish the relationship with government in order to gain subsidies. On the other hand, large firms have stronger connections with government. The result supports H1a.

**Table 4.** Regression analysis results of *CashETR* and *Subsidy* (large and medium firms)

Variables	Pred.	Coeff	Coeff	Coeff
		(Std. Err)	(Std. Err)	(Std. Err)
		All Firms	Large Firms	Medium Firms
<i>Subsidy</i>	+	0.021*** (0.002)	0.020*** (0.002)	0.022*** (0.005)
<i>Size</i>	+	0.037*** (0.004)	0.041*** (0.004)	0.015 (0.012)
<i>A/S</i>	+	0.935*** (0.024)	0.870*** (0.025)	1.709*** (0.098)
<i>LnSales</i>	+	0.013*** (0.002)	0.012*** (0.002)	0.030*** (0.008)
<i>Inventory</i>	+	0.116*** (0.013)	0.092*** (0.014)	0.167*** (0.029)
<i>PP&amp;E</i>	+	0.125*** (0.011)	0.118*** (0.012)	0.089*** (0.032)
<i>PROA</i>	-	-2.094*** (0.032)	-2.050*** (0.037)	-2.133*** (0.067)
<i>I/S</i>	?	0.118*** (0.015)	0.156*** (0.017)	-0.088*** (0.032)
<i>BM</i>	-	-0.001 (0.001)	-0.003*** (0.001)	-0.001 (0.001)
<i>Audit</i>	?	0.001 (0.014)	0.021 (0.017)	-0.028 (0.027)
<i>Leverage</i>	+	0.201*** (0.013)	0.228*** (0.015)	0.147*** (0.032)
<i>Cons</i>	?	-0.038 (0.051)	0.074 (0.058)	-0.189 (0.175)
<i>Year</i>		controlled	controlled	controlled
<i>Industry</i>		controlled	controlled	controlled
<i>Adj.R<sup>2</sup></i>		0.420	0.426	0.420
<i>N</i>		14816	12588	2228

**Note:** \*\*\* indicates that coefficients are statistically significant at the level of  $p < 0.01$ .

In general, the size of SOEs is larger than that of non-SOEs in China. However, large firms are not all SOEs. SOEs have stronger political connections. They are easier to gain government subsidies. Table 5 presents that the coefficient on *Subsidy* of SOEs and non-SOEs in the large firms is statistically significant, and positively related with the *CashETR*. Moreover, the coefficient on *Subsidy* of non-SOEs (SOEs) is 0.037 (0.012), which means non-SOEs pay more taxes and fees under the same condition. According to prior studies, SOEs can get subsidies without meeting governmental demand because of their natural link of the government. However, non-SOEs must meet the governmental demand (sometimes they must do better). The result is consistent with H1b.

Table 5. Regression analysis results of *CashETR* and *Subsidy* (SOEs and non-SOEs in the large firms)

Variables	Pred.	Coeff (Std. Err)	Coeff (Std. Err)	Coeff (Std. Err)
		Large firms	The SOEs	The non-SOEs
<i>Subsidy</i>	+	0.020 <sup>***</sup> (0.002)	0.012 <sup>***</sup> (0.002)	0.037 <sup>***</sup> (0.003)
<i>A/S</i>	+	0.041 <sup>***</sup> (0.004)	0.858 <sup>***</sup> (0.038)	0.854 <sup>***</sup> (0.033)
<i>Size</i>	+	0.870 <sup>***</sup> (0.025)		
<i>LnSales</i>	+	0.012 <sup>***</sup> (0.002)	0.017 <sup>***</sup> (0.003)	0.001 (0.004)
<i>Inventory</i>	+	0.092 <sup>***</sup> (0.014)	0.141 <sup>***</sup> (0.020)	0.035 <sup>*</sup> (0.020)
<i>PP&amp;E</i>	+	0.118 <sup>***</sup> (0.012)	0.137 <sup>***</sup> (0.015)	0.067 <sup>***</sup> (0.018)
<i>PROA</i>	-	-2.050 <sup>***</sup> (0.037)	-2.225 <sup>***</sup> (0.059)	-1.786 <sup>***</sup> (0.046)
<i>I/S</i>	+	0.156 <sup>***</sup> (0.017)	0.115 <sup>***</sup> (0.027)	0.167 <sup>***</sup> (0.023)
<i>BM</i>	?	-0.003 <sup>***</sup> (0.001)	0.001 (0.002)	-0.007 <sup>***</sup> (0.001)
<i>Audit</i>	+	0.021 (0.017)	0.022 (0.026)	0.015 (0.023)
<i>Leverage</i>	+	0.228 <sup>***</sup> (0.015)	0.177 <sup>***</sup> (0.021)	0.289 <sup>***</sup> (0.021)
<i>Cons</i>	+	0.074 (0.058)	0.009 (0.072)	0.357 <sup>***</sup> (0.105)
<i>Year</i>		controlled	controlled	controlled
<i>Industry</i>		controlled	controlled	controlled
<i>Adj.R<sup>2</sup></i>		0.426	0.421	0.404
<i>N</i>		12588	5849	6739

**Note:** \* and \*\*\* indicate that coefficients are statistically significant at the level of  $p < 0.10$  and  $p < 0.01$ , respectively.

In general, SOEs have stronger political connections than non-SOEs. Some papers show that political connections can bring preferential tax policies, and make firms gain more subsidies when they are in financial crisis (Bai, *et al.*, 2006; Li, *et al.*, 2006; Yu, *et al.*, 2012). This paper strengthens the result through analysis of the subsidies at both high level and the low level. We divide the sample of non-SOEs into two groups, the high firms and low firms, according to the mean of *Subsidy*. Table 6 presents the result of analysis. Low firms can gain so few subsidies that they have to increase the tax saving activities which produce a cash flow benefit, but reduce their financial statement benefit. Those firms have the weakest political connections, so that they will directly give up to build the relationship with the government, and turn to tax planning. Therefore, the result proves how strong the political connections' effectivity for China's firms.

**Table 6.** Regression analysis results of *CashETR* and *Subsidy* (the high and low level of the non-SOEs)

Variables	Pred.	Coeff (Std. Err)	Coeff (Std. Err)	Coeff (Std. Err)
		The non-SOEs	The high level	The low level
<i>Subsidy</i>	?	0.037*** (0.003)	0.031** (0.002)	-0.015 (0.024)
<i>A/S</i>	+	0.854*** (0.033)	0.692*** (0.102)	0.872*** (0.035)
<i>LnSales</i>	+	0.001 (0.004)	0.022*** (0.008)	-0.004 (0.004)
<i>Cons</i>	+	0.357*** (0.105)	0.397 (0.270)	0.394*** (0.113)
<i>Year</i>		controlled	controlled	controlled
<i>Industry</i>		controlled	controlled	controlled
<i>Adj.R<sup>2</sup></i>		0.404	0.436	0.383
<i>N</i>		6739	1334	5408

**Notes:** (1) \*\* and \*\*\* indicate that coefficients are statistically significant at the level of  $p < 0.05$  and  $p < 0.01$ , respectively. (2) This table just presents the coefficients of the key variables.

## 4.2 Robustness test table

### 4.2.1 The loss firm

Consistent with prior studies, we eliminate loss firms in our regression analysis. However, loss firms lack of cash flow and have strong motives to increase the tax saving activities which produce the cash flow benefit, and reduce the paid taxes and fees. Table 7 presents the regression analysis results of cash effective tax rates and loss firms' other variables. We use sales to replace the pretax profit which adjusts the *CashETR* and *Subsidy*, since loss firms' pretax profit is negative. The coefficient on *Subsidy* is 0.074 and statistically significant, which means loss firms take measures in order to produce the financial statement benefit, boost the investors' confidence, enhance the political connections, and gain the subsidies to relax their financial constraints caused by the loss profit as profitable firms do. The result from loss firms also supports H1.

**Table 7.** Regression analysis results of *CashETR* and government subsidies of loss firms

Variables	Pred.	Coeff.	(Std. Err)
<i>Subsidy</i>	+	0.074***	(0.035)
<i>Size</i>	+	0.006**	(0.003)
<i>A/S</i>	+	-0.076***	(0.023)
<i>LnSales</i>	-	-0.010***	(0.001)
<i>Inventory</i>	+	0.057***	(0.011)
<i>PP&amp;E</i>	+	0.007	(0.008)
<i>PROA</i>	-	-0.028	(0.018)
<i>I/S</i>	+	0.156***	(0.011)
<i>BM</i>	+	0.0001	(0.0001)
<i>Audit</i>	+	0.002	(0.003)
<i>Leverage</i>	+	-0.001	(0.005)
<i>Cons</i>	+	0.170***	(0.041)
<i>Year</i>		controlled	
<i>Industry</i>		controlled	
<i>Adj.R<sup>2</sup></i>		0.443	
<i>N</i>		1593	

**Note:** \*\* and \*\*\* indicate that coefficients are statistically significant at the level of  $p < 0.05$  and  $p < 0.01$ , respectively.

4.2.2 The cash holdings with the tax saving activities

In general, firms with higher cash holdings have less financial constraints. We select some firms from the data and divide them into two groups and how we select firms from the data is based on the ranking of cash holdings. Group 1 is in the top 20% of the ranking of cash holdings which is called high level and group 2 is in the bottom 20% of the ranking of cash holdings which is called low level. Table 8 presents the coefficients on variables of the high and low level cash holdings. The coefficient on *Subsidy* of high level (low level) is 0.063 (0.011) which is statistically significant. The coefficient of high level is bigger than the low level, which means the high level is more motivated to reduce the tax saving activities to gain the government subsidies. Firms with high cash holdings are interested in building relationships with government, rather than avoiding taxes. The result supports a strong proof for our hypothesis.

**Table 8.** Regression analysis results of *CashETR* and government subsidies of firms' cash holdings

Variables		Coeff (Std. Err)	Coeff (Std. Err)	Coeff (Std. Err)
		All firms	Group 1	Group 2
<i>Subsidy</i>	+	0.021*** (0.002)	0.063*** (0.007)	0.011*** (0.002)
<i>Size</i>	?	0.037*** (0.004)	-0.018 (0.013)	0.048*** (0.009)
<i>A/S</i>	+	0.935*** (0.024)	1.083*** (0.070)	0.720*** (0.048)
<i>LnSales</i>	+	0.013*** (0.002)	0.022*** (0.005)	0.012*** (0.004)
<i>Inventory</i>	+	0.116*** (0.013)	0.204** (0.030)	0.028 (0.028)
<i>PP&amp;E</i>	+	0.125*** (0.011)	0.022 (0.029)	0.164*** (0.021)
<i>PROA</i>	-	-2.094*** (0.032)	-1.701*** (0.062)	-2.447*** (0.072)
<i>I/S</i>	+	0.118*** (0.015)	0.074*** (0.028)	0.220*** (0.041)
<i>BM</i>	-	-0.001 (0.001)	-0.002 (0.002)	-0.0003 (0.001)
<i>Audit</i>	-	0.001 (0.014)	-0.021 (0.029)	-0.023 (0.025)
<i>Leverage</i>	+	0.201*** (0.013)	0.156*** (0.029)	0.114*** (0.029)
<i>Cons</i>	?	-0.038 (0.051)	-0.273** (0.134)	0.234** (0.100)
<i>Adj.R<sup>2</sup></i>		0.420	0.379	0.405
<i>Year</i>		controlled	controlled	controlled
<i>Industry</i>		controlled	controlled	controlled
<i>N</i>		14816	2964	2964

**Note:** \* and \*\*\* indicate that coefficients are statistically significant at the level of  $p < 0.10$ , and  $p < 0.01$ , respectively.

## 5. Conclusion

We examine the association between government subsidies and the CashETRs in this paper. Using the data from China's listed companies during the period of 2003-2015, we find that the more subsidies the firm gains, the higher CashETRs it has. Furthermore, we find that medium firms have more significantly positive association between the government subsidies and CashETRs.

We also find that non-SOEs have more significantly positive association between the government and CashETRs. This result proves that SOEs can easier gain government resources, and the government have strong power in China's transitional economy. We find that the government subsidies substitute the corporates tax saving benefit, and the situation is the most advent in the medium level on subsidies.

This empirical evidence illustrates that government subsidies, firm size and property rights will greatly affect corporate CashETRs. Results from this paper support that the government subsidies replace the corporates tax saving benefits in China's special market circumstance. Firm scale and the property rights to some extent reduce the effect of substitution. This paper is of interest to the public policy makers, the stakeholders and the firm managers who want examine the relation between government and CashETRs in China's transitional economy.

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