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Agency costs and tax planning when the government is a major Shareholder

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ABSTRACT

In state owned enterprises (SOEs), taxes are a dividend to the controlling shareholder, the state, but a cost to other shareholders. We examine publicly traded firms in China and find significantly lower tax avoidance by SOEs relative to non-SOEs. The differences are pronounced for locally versus centrally-owned SOEs and during the year of SOE term performance evaluations. We link our results to managerial incentives through promotion tests, finding that higher SOE tax rates are associated with higher promotion frequencies of SOE managers. Our results suggest managerial incentives and tax reporting are conditional on the ownership structure of the firm.

1. Introduction

Desai et al. (2007) articulate that a state is “de facto the largest minority shareholder in almost all corporations” by virtue of its claim on firms’ cash flows via taxes. Thus, the state plays a significant role in corporate governance regardless of actual equity ownership structure, and the influence of the state increases with direct ownership. In this study, we examine how state ownership affects corporate tax avoidance. Conventional wisdom argues that because taxes are a significant cost to a firm, tax avoidance is beneficial to shareholders (e.g., Chen et al., 2010). However, in state owned enterprises (SOEs), taxes are an implicit dividend to the controlling shareholder.¹ Thus, less tax avoidance actually benefits the controlling shareholder of SOEs and is an expropriation of wealth from other shareholders. Further, due to restrictiveness of the SOE executive labor market (discussed later), managers of SOEs face incentives to prioritize the interests of the controlling shareholder, the basis for our prediction of less tax avoidance.

We employ a sample of publicly traded Chinese firms for our empirical analyses. As explained later, this novel setting provides cross-sectional and temporal variation in the level and type of state ownership and provides an opportunity to examine several key determinants of tax avoidance that have been called for in prior research. For example, Hanlon and Heitzman (2010) call specifically for more studies on determinants of tax avoidance within an agency framework, and Dyreng et al. (2010) advocate more research on how tax avoidance affects managers’ careers. Our study addresses both issues.

Historically, all corporations in China were SOEs. However, beginning in the early 1990s, economic reforms and growth in the

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¹ Cash dividends are a direct mechanism for extracting resources but are not prevalent among Chinese companies during our sample period. Recently, the Shanghai stock exchange has initiated incentives for companies to increase dividend payouts (*Reuters*, “China encourages companies to increase dividends,” August 15, 2012). The China Securities Regulatory Commission has finalized a dividend payment policy disclosure and is rumored to be coordinating with other government authorities to encourage dividends (*Beijing Business Today*, “CSRC has finalized plans to implement mandatory dividend payment policy,” November 29, 2011).

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Chinese economy were accompanied by a large number of SOEs being publicly listed on China's stock exchanges. Most common shares owned by the state were generally not allowed to trade until 2005.² Therefore, the state historically realized no benefits from stock price appreciation of its ownership stake in SOEs. In the presence of a weak institutional environment relative to western markets, the state has incentives to derive benefits of corporate ownership through other channels, such as tunneling of resources from SOEs. Distinct labor market differences between SOE and non-SOE managers exacerbate such incentives. For example, SOE managers have very limited non-SOE corporate opportunities, aligning SOE managers' career concerns with objectives of the state (e.g., Li and Zhou, 2005; Cao et al., 2018).

Our first prediction is that SOEs make tax decisions favorable to the state but costly to minority shareholders, captured empirically by higher tax rates and cash tax payments for SOEs relative to non-SOEs. Consistent with our first prediction, SOEs exhibit less tax avoidance than do non-SOEs. The differences in both effective and cash tax rates between SOEs and non-SOEs are approximately 1.4%, after controlling for other variables. SOEs in our sample realize total pre-tax profits of approximately RMB 6.2 trillion, implying SOEs incurred excess taxes of approximately RMB 86.8 billion (USD 13 billion), which equates to approximately 11.8% of total income taxes paid by Chinese SOEs.

Evidence regarding tax rates and payments by SOEs relative to non-SOEs is an implication of the ownership structure of SOEs, but corporate tax reporting is rooted in managers' unique incentives and career concerns (e.g., Armstrong et al., 2012; Rego and Wilson, 2012). Thus, our second prediction uses the level of tax avoidance as an explanatory variable for SOE manager promotions. The assignment of managers among SOEs in China is controlled by the state, and most SOE managers have bureaucratic titles (Li, 1998). For example, managers of large state owned energy firms have bureaucratic titles equivalent to the Secretary of Commerce in China. SOE managers face ongoing evaluations for political promotions, which provide further incentives for SOE managers to cater to the controlling shareholder. In these evaluations, managers are promoted to higher bureaucratic ranks if evaluated favorably; otherwise, they are either retained in their current position or assigned to similar or lower level political positions. We find a positive association between reported SOE income taxes and the probability a SOE manager is promoted to a higher level managerial or bureaucratic position.

We extend the promotion analysis by noting that SOE managers' employment contracts always have a three-year term (SASAC, 2003). Thus, in addition to routine annual performance evaluations, SOE managers receive a term-evaluation at the end of the third year of the contract. Because the most recent performance in the third year of the evaluation cycle may be more informative or simply more salient in predicting future performance, this year may be more important in the evaluation of the SOE manager, or managers may perceive it as such. Thus, we also investigate whether SOE managers report higher taxes *in the specific year* of term-evaluations (i.e., the third year of the three-year term). Indeed, we find that differences in effective and cash tax rates between SOEs and non-SOEs are highest in term-evaluation years, reinforcing the link between promotion incentives and tax decisions.³

To provide insight into the mechanism through which income taxes are associated with SOE ownership and managerial incentives, we examine the effects of local versus central ownership. Relative to the central government in Beijing, local governments can more easily intervene in the operations of SOEs and are less likely to be criticized by constituents, given strong political power within the community (e.g., Wang et al., 2008; Cheung et al., 2010). We find that the difference between SOE and non-SOE tax rates is significantly larger for local government controlled SOEs. The more pronounced effects for local SOEs are consistent with prior research on the differential influence of local stakeholders (e.g., Chhaochharia et al., 2012) and consistent with a direct link between ownership structure and tax reporting incentives of SOE managers.

Our findings are robust to numerous tests that mitigate concerns such as the direction of causality and potential self-selection bias. First, we provide a difference-in-difference test by using a matched sample of privatized SOEs and non-SOEs. Prior to privatization, SOEs exhibit higher tax rates than do non-SOEs, but the difference disappears after privatization of the SOE (i.e., tax avoidance increases). Second, subsample analyses of tax haven operations and merger activity corroborate our basic results about limited tax avoidance by SOEs. Third, the results are robust to treatment effect models and propensity score matching, which mitigate concerns about self-selection (e.g., Maddala, 1983; Li and Prabhala, 2007). Finally, other robustness tests are discussed throughout the text when applicable.

Our study is motivated by and contributes to multiple streams of literature, and highlights links among ownership structures, agency costs and tax avoidance. First, we contribute to the corporate tax literature by providing evidence on the role of organizational structure in determining tax avoidance (Shackelford and Shevlin, 2001). Second, we contribute evidence on the relation between tax avoidance and agency conflicts, especially between controlling and minority shareholders (Scholes et al., 2005; Desai and Dharmapala, 2006, 2009; Desai et al., 2007). Third, we contribute to the internationally focused agency cost and tunneling literature (Johnson et al., 2000; Djankov et al., 2008). Finally, we study SOEs in China, which has become one of the largest economies and is important in its own right.⁴

² In July 2005, the Chinese government announced an initiative to convert non-tradable shares to tradable, which took several years to implement. However, the Chinese government maintains a policy of retaining control of many SOEs. Thus, even after 2005, state owned shares are not actively traded.

³ There are certainly incentives in addition to lower tax avoidance that are associated with promotions, so we do not claim that tax payments are the preeminent focal point of managerial incentives. Nevertheless, anecdotal evidence is consistent with SOEs proudly highlighting the amount of taxes paid by their firms. For example, Yangtze River Pharmaceutical Group (YRPG) specifically highlighted tax payments in their earnings announcement: "YRPG ranked 27th among Top 100, and 1st place in pharmaceutical industry. This indicates that YRPG has made more contribution to country and society" (http://www.yangzijiang.com/en/gsnews_detail.aspx?id=2586).

⁴ Prior research on state ownership generally reveals parallels between China and other markets, such as Canada, Mexico, Southeast Asia, South America and several European countries (Megginson and Netter, 2001). For example, using a sample of 500 large non-US firms, Dewenter and

As a comparison of how ownership structure and agency conflicts speak to tax avoidance in other settings, consider the recent financial crisis in the U.S., which prompted government control over several companies in the auto, banking, and insurance industries. The bailouts of companies like General Motors (GM), Citigroup, and American International Group in the United States (U.S.) transformed the federal government into a controlling shareholder (Kahan and Rock, 2010a). Although relatively unprecedented in the U.S. prior to the recent financial crisis, such government ownership stakes in private firms are relatively common in other countries, such as Norway, Brazil, Mexico and others (Pucher 2012; Pargendler et al., 2013). Moreover, Pargendler (2012a) suggests that “Despite waves of privatization around the world, state ownership of enterprise remains significant” (p. 503). Recently, He et al. (2016) highlight a renaissance of state ownership, particularly among multinational firms, also documented in Clo et al. (2014). Tracking this resurgence in state ownership, there is a burgeoning literature, primarily within law and finance, aimed at understanding the implications of state ownership on firm value and property rights (Kahan and Rock, 2010b; Pargendler, 2012b; Schapiro, 2014; Musacchio et al., 2015). Having established such a precedent in the U.S., experts fully expect that such government intervention is likely to be repeated in the future. For example, Shahabian (2011) argues that, “For TARP, the Treasury Department chose to use equity investments over other available tools, and this decision will likely be repeated in any future bailout” (p. 353).

In addition, some of the companies mentioned above had engaged in well-known tax avoidance prior to U.S. government control. However, while under government control some of these firms received exemptions from section 382 of the tax code, which would have otherwise triggered limits on the use of net operating loss carryforwards upon the change of ownership. For example, in the case of GM, Ramseyer and Rasmussen (2011) suggest the U.S. government used this special tax benefit to benefit the United Auto Workers union, which was a loyal political supporter of the government administration at that time. Thus, the U.S. experience resulted in explicit support for tax avoidance rather than *against* it, as we document for Chinese state ownership. Nevertheless, both settings reveal government decisions consistent with agency conflicts between the government and other shareholders.⁵

We believe one of the most important aspects of our results is that, in addition to highlighting the influence of corporate ownership on tax avoidance, they also represent direct evidence on the influence of manager incentives and career concerns on corporate tax reporting. Variation in these incentives is higher across countries than within a single country like the U.S. Thus, our results highlight how institutional infrastructure interacts with managerial incentives and tax reporting. The results suggest that for state-owned enterprises operating within a country characterized by a weak legal environment and investor protection, promotion incentives of managers subject to state oversight result in lower tax avoidance. A contrasting implication is that different results may obtain for managers at state-owned enterprises in countries with stronger legal environments and investor protection.

2. Prior literature and formal hypotheses

2.1. Prior research

2.1.1. Brief institutional background on the Chinese SOE market

In the early 1990s, the Chinese government initiated a “partial privatization” initiative, which included the sale of a minority ownership in SOEs to private investors at two major stock exchanges in China – Shanghai (in 1990) and Shenzhen (in 1991). In 2015, these two exchanges represented more than 2,600 publicly listed firms with a total market capitalization of approximately US \$10.3 trillion (compared to approximately US\$27.1 trillion for the combined NYSE/Nasdaq). Most common shares owned by the state were non-tradable prior to 2005. However, in July 2005 the Chinese government announced an initiative to convert these shares into tradable shares, which was implemented over several years.

Even with the trajectory of these economic reforms, because of weak enforcement and other implementation issues, risk of controlling shareholder expropriation of minority shareholders remains (Jiang et al., 2010). Further, the government maintains a policy of strategically retaining controlling interest in certain types of SOEs.⁶ Thus, even after the conversion of non-tradable shares to tradable in 2005, the state does not actively trade its shares or directly benefit from stock price appreciation. Consequently, the state may have incentives to derive benefits through other channels, including tunneling of resources from SOEs.⁷ The weak legal and

(footnote continued)

Malatesta (2001) find that state owned enterprises exhibit lower profitability and higher labor intensity, consistent with several findings for Chinese firms (e.g., Lin, Cai and Li, 1998; Liao et al., 2009). Also, the tax rate structure in China is commensurate with those in western countries (Institute for Research on the Economics of Taxation, 2010), and Chinese firms claim similar deductions to those available in western markets (HSBC, 2012).

⁵ In addition to significant differences in institutional infrastructure between the U.S. and China, the expected duration of ownership also likely plays a role in the dynamics of recent U.S. government ownership, which was both new and temporary. For example, the Federal Reserve only held an ownership stake in Citigroup for approximately three years (e.g., Dennis, 2010). In contrast, Chinese government ownership is well-established and is only being unwound for select firms in recent years.

⁶ A state asset management committee is responsible for developing policies governing the private versus state ownership of legacy firms, with a working principle that the state should maintain control of the economic lifeline of a country (Central Committee of the Communist Party of China, 1999; 2003). Not surprisingly, crucial industries like mining, energy, and transportation are most likely to be state-owned, in contrast to less essential industries like furniture and apparel.

⁷ According to recent studies (e.g., Cheung, Rau and Stouraitis, 2006; Jiang, Lee and Yue, 2010c), large blockholders control a majority of international publicly traded firms, including most European and Asian firms. Because managers’ careers are subject to a greater degree of control by these large shareholders, the managers’ career concerns become subject to the objectives of the controlling shareholder, even though those

financial reporting in China exacerbates this agency conflict (e.g., MacNeil, 2002; Piotroski and Wong, 2013).⁸

2.1.3. Tax reporting in an agency context

Because tax planning can improve shareholder value, there is widespread interest in the determinants of tax avoidance (e.g., Hanlon and Heitzman, 2010; Armstrong et al., 2012; Wahab and Holland, 2012; McGuire et al., 2012; Graham et al., 2014). Shackelford and Shevlin (2001) call for a better understanding of the associations among ownership structure, agency conflicts and tax reporting. Existing theory links information asymmetry to aggressive tax reporting behavior that is costly to shareholders (Slemrod, 2004; Crocker and Slemrod, 2005; Chen and Chu, 2005). Given the link between information asymmetry and ownership structure (Hope, 2013), recent empirical research examines this link in the context of potentially costly tax avoidance. For example, Chen et al. (2010) find that family-owned public firms engage in less tax avoidance than other firms, and they conclude that family owners relinquish tax benefits to avoid possible reputation damage from a tax investigation. In contrast, Badertscher et al. (2013) show that private equity-backed firms are more tax aggressive than other privately-held firms. Finally, Khan et al. (2017), Chen et al. (2018) and Bird and Karolyi (2017) find that increases in institutional ownership are associated with increases in tax avoidance. Similarly, Cheng et al. (2012) suggest active hedge fund ownership leads to increased tax avoidance to improve firm performance.

Desai et al. (2007) argue that the state government is a large minority shareholder in most firms due to its tax claims on cash flows. Corporate resources devoted to taxes are unavailable to controlling shareholders. Thus, when tax enforcement becomes stronger, the agency cost of controlling shareholder rent extraction attenuates, leading to higher firm value. Desai et al. (2007) use data from Russia, where both managerial diversion and tax evasion are extreme, and show that when country-level corporate governance is weak, increases in statutory tax rates do *not* increase government tax revenues, because large amounts of corporate resources are diverted away by corporate insiders.

We also examine controlling shareholders and tax avoidance, but our setting is China, which is generally considered similar to Russia in terms of an overall weak corporate governance environment (e.g., The Financial Development Report, 2008). However, whereas results in Desai et al. (2007) are consistent with benefits of control being in conflict with the government's claim on firm cash flows through taxes, we predict controlling state ownership leads to *less* tax avoidance and *higher* tax payments to the government.⁹

2.1.4. State ownership and managerial incentive to tax avoidance

Shleifer and Vishny (1994) argue that bureaucrats are the ultimate controllers of SOEs, and bureaucrats' major objective is to achieve political objectives rather than maximize profits. To address their own political goals, bureaucrats provide incentives for SOE managers to achieve those political objectives (Cragg and Dyck, 2003). The relative inefficiency of state ownership is attributed to managers' weak incentives to maximize profits (e.g., Shleifer and Vishny, 1994; D'Souza and Megginson, 1999). However, other than Cragg and Dyck (2003), empirical evidence on the mechanism used by bureaucrats to incentivize SOE managers is scarce.

Prior studies suggest managerial characteristics and incentives affect corporate tax avoidance. Dyreng et al. (2010) examine executive mobility across firms and demonstrate that individual manager characteristics are associated with tax avoidance. Prior studies also find that managers' economic incentives play important roles in determining the level of corporate tax avoidance. For example, Armstrong et al. (2012) find that compensation of tax executives is positively associated with aggressive tax avoidance. Rego and Wilson (2012) find that risk incentives of CEOs are associated with more aggressive tax avoidance.

2.2. Formal hypotheses

Because taxes are one of the most significant costs to a firm, tax planning is an important part of a manager's job (e.g., Chen et al., 2010). In SOEs, however, taxes represent a dividend to the controlling shareholder—the state—and a potentially excess cost to minority shareholders. Thus, the controlling shareholder benefits directly from higher effective tax rates. Corporate taxes are the major source of revenues for the state, creating a wedge between preferences of minority shareholders and the state. Together, these features of the Chinese SOE market and the agency literature suggest SOE managers make tax decisions favorable to the state. Consistent with prior research, we measure the impact of tax decisions made by SOE managers using effective tax rates and cash payments for taxes. Our first hypothesis (in alternative form) is as follows:

H₁: SOEs exhibit higher effective tax rates and cash tax payments than do non-SOEs.

In addition, we expect a link between SOE manager incentives and tax reporting. One way to capture managers' incentives is to

(footnote continued)

objectives may be anathema to minority shareholders. This risk of controlling shareholder expropriation of minority shareholders is referred to in the agency literature as “self-dealing” (Djankov et al., 2008) or “tunneling” (Johnson et al., 2000). Jiang et al. (2010) provide significant evidence on controlling shareholder tunneling through intercorporate loans in China.

⁸ This type of agency problem is different from the agency conflict of interest between managers and diffuse shareholders (e.g., Jensen and Meckling, 1976; Fama, 1980; Gibbons and Murphy, 1992; Brickley et al., 1999). Grossman and Hart (1988), Hart (1995) and Zingales (1994) are among the earliest studies on the private benefits of control, which are defined as “benefits the current management or the acquirer obtain for themselves, but which the target security holders do not obtain.” More recent studies also conclude controlling ownership decreases firm value (e.g., Faccio et al., 2001; Bae et al., 2002; Bertrand et al., 2002; Lemmon and Lins, 2003).

⁹ Note that the overall level of tax avoidance in China (and many countries in Asia) is low. We replicated the *TaxAvoid* measure from Atwood et al. (2012) for their countries and China, and only Japan exhibits a lower level of tax avoidance than China; indeed, over 60% of our sample observations report *ETR* greater than 80% of the statutory rate.

examine promotions as actual outcomes of managerial incentives. During our sample period, SOE managers primarily maintain decision rights with respect to operations, whereas the state maintains ultimate control over managerial assignments. Li (1998) observes that most SOE managers have bureaucratic titles.¹⁰ SOE managers also receive ongoing evaluations for political promotion, and prior research suggests such political promotions are effective incentives for SOE managers (Li and Zhou, 2005; Cao et al., 2018). Because such evaluations are overseen by bureaucrats, SOE managers likely focus on objectives that best serve those of the bureaucrats. Thus, factors other than financial performance are relevant in determining those evaluation outcomes (Du et al., 2012).¹¹

These features of the SOE labor market suggest SOE managers respond to political objectives of bureaucrats, which include the collection of tax revenues. For our second hypothesis, we restrict the sample to SOE firms (excluding non-SOEs) and adopt a promotion outcome-based approach to investigate whether higher tax rates are associated with political promotions. Our second hypothesis (in alternative form) is stated as follows:

H₂: The probability that a SOE manager is promoted to a higher level position is positively associated with the SOE's tax rates.

3. Sample, tax rate measures, and descriptive statistics

3.1. Sample

We first obtain financial data for all listed Chinese firms (excluding financial institutions) during 1999–2012 ($n = 20,376$). Data are taken from the China Stock Market & Accounting Research Database (CSMAR) (for income tax expenses, financial accounting information, ownership information of the largest shareholder, and corporate governance information), CCER China Economic and Financial Database (for industry classification and ownership), and WIND Database (for information about income taxes deferrals). These three databases are widely used in prior literature on Chinese capital markets (e.g., Wang et al., 2008; Jiang et al., 2010; Li and Zhou, 2005). Further details are in the appendix.

We then manually search financial statements, media announcements, and other sources (e.g., Google, Baidu, and Sina Finance) for information on the CEOs, including age, CEO appointment date, departure date, and information about political appointments. As shown in Panel A of Table 1, we remove firm-year observations with missing tax rate data or negative pre-tax income ($n = 3049$), consistent with prior research (Manzon and Smith, 1994; Rego, 2003). Those with ambiguous (i.e., collective enterprises) or missing ownership information are deleted ($n = 655$). We also delete 270 observations with insufficient data for market value of equity or other variables. Our sample for testing H₁ consists of 16,402 observations (2054 unique firms) using effective tax rates, but we lose 606 observations for tests examining cash taxes paid.

Over 67% of the firms in our sample are SOEs (Panel B). We identify a firm as a SOE if its ultimate controller is the state (Faccio and Lang, 2002).¹² Among SOEs, approximately 72% are controlled by local governments rather than the central state.¹³ Panel C of Table 1 tabulates the industry distribution. Consistent with prior literature (e.g., Wang et al., 2008), there are more SOEs than non-SOEs in most industries except furniture and other manufacturing. Not surprisingly, the distribution of SOEs across industries indicates extremely high state ownership in several crucial industries, such as mining (92%), energy supply (95%), and transportation (91%), consistent with Chang et al. (2014).¹⁴

H₂ analyzes the probability of SOE manager promotion. For the test of H₂, we begin with the sample of 11,130 SOE firm-years. Panel D of Table 1 shows the sample attrition with various sequential data screens. The largest are as follows. We lose 2,583 observations where the CEO held the job for less than one year. We lose 769 observations where the CEO is demoted (because demotions in China are rare and generally reflect end-of-career courtesy moves) or it is not clear that the next job is a promotion or

¹⁰ Both SOEs and non-SOEs in China are traded on the major stock exchanges. However, most non-SOEs in our sample were never owned by the state. Thus, SOE status is not a manager choice. More importantly, the career paths of SOE and non-SOE managers are largely independent. Most SOE managers are Communist Party bureaucrats, whereas non-SOE managers are part of the general labor pool, much like most western markets.

¹¹ Kato and Long (2011) examine whether the tournament theory of Lazear and Rosen (1981) is applicable in emerging economies like China. They conclude that the compensation differential between the CEO and other employees predicted by tournament theory is concentrated in non-SOEs, suggesting incentives other than compensation are more important for SOE managers.

¹² Chinese firms are required to disclose the shareholder with control over the firm, where control reflects a majority of voting rights (i.e., over 50%) or enough voting rights to have de facto control. According to Chinese regulations (China Securities Regulatory Commission, 2002), de facto control occurs under four conditions: 1) a person or legal entity directly controls an absolute majority (i.e., over 50%) of voting rights; 2) a person or legal entity owns, directly or indirectly, more than 30% of voting rights and no other shareholders own a higher percentage directly or indirectly; 3) a person or legal entity can determine the assignments of more than a half of directors; or 4) a person or legal entity has enough voting rights to influence the company's important operating decisions.

¹³ Prior to 2002, all income tax revenues of centrally-owned SOEs belonged to the central government, and tax revenues of local SOEs belonged to local governments (State Council of China, 1993a; 1993b). Beginning in 2002, the corporate income tax revenues of SOEs are generally divided between the central and local governments. For example, in 2002, central and local governments each received 50% of tax revenues (State Council of China, 2001). After 2002, the central government receives 60% of tax revenues (State Council of China, 2003). The inability to decompose tax payments into local versus central likely works against finding significant results in our pooled sample. For example, if local government ownership triggers less tax avoidance but is unrelated to central government tax avoidance, the combined local plus central government taxes will be a noisy measure of tax avoidance. We think the referee for highlighting this.

¹⁴ Our primary argument is that firm managers play a significant role in tax reporting of SOEs. However, for SOEs with extremely high government ownership (e.g., 90%), government wealth extraction rather than manager decisions may be the more important factor in higher tax rates of SOEs. In analyses discussed later, deletion of extreme government ownership observations has no impact on our results.

Table 1
Sample descriptive statistics.

Panel A: Sample selection				
Observations of Chinese firms (non-financial) from 1999 to 2012				20,376
Less: Observations with missing or ambiguous ownership information				(655)
Observations with missing assets or revenues				(113)
Observations with missing tax expense or negative pre-tax income				(3,049)
Observations with missing market values				(105)
Observations with missing capital expenditure				(47)
Observations with missing block holder ownership				(5)
Final sample for current effective tax rate tests				16,402
Less: Observations with missing cash tax data				(606)
Final sample for cash effective tax rate tests				15,796
Panel B: Sample composition based on ownership				
	# of firm-years	Percent	# of firms	
SOEs	11,130	67.9%	1,304	
<i>Central SOEs</i>	3,113	–	427	
<i>Local SOEs</i>	8,017	–	1,015	
Non-SOEs	5,272	32.1%	1,088	
Full sample	16,402	100.00%	2,054	
Panel C: Industry distribution of sample firm-years				
Industry	# SOEs	# Non-SOEs	# firm-years	% SOEs
Agriculture	242	131	373	64.88%
Mining	302	28	330	91.52%
Food	476	229	705	67.52%
Apparel	328	321	649	50.54%
Furniture	2	50	52	3.85%
Printing	194	134	328	59.15%
Gas and chemistry	1,251	514	1,765	70.88%
Electronic	347	264	611	56.79%
Metal	1,066	426	1,492	71.45%
Machinery	1,776	886	2,662	66.72%
Pharmaceutical products	596	447	1,043	57.14%
Other manufacturing	115	116	231	49.78%
Energy supply	663	35	698	94.99%
Construction	227	106	333	68.17%
Transportation	619	65	684	90.50%
Information technology	567	425	992	57.16%
Retail and wholesale	874	276	1,150	76.00%
Real estate	487	317	804	60.57%
Other service	410	109	519	79.00%
Media	112	35	147	76.19%
Other	476	358	834	57.07%
Total	11,130	5,272	16,402	67.86%
Panel D: Distribution of CEOs by the outcomes of political promotion evaluation				
	Firm-years			
Observations of all CEOs for sample firms	11,130			
Less: CEOs with tenure shorter than one year	2,583			
CEOs with missing data on appointment date and tenure	2			
CEOs who die or leave for illness	45			
CEOs who are arrested	25			
CEOs who retire	84			
CEOs who quit	250			
CEOs who are demoted or departure is ambiguous	769			
CEOs whose information is missing after turnover	371			
Number of CEO observations in our promotion analysis	7,001			
Promotions:				
<i>Government positions</i>	14			
<i>Manager in a parent firm</i>	74			
<i>Vice manager in a parent firm</i>	103			

(continued on next page)

Table 1 (continued)

Panel D: Distribution of CEOs by the outcomes of political promotion evaluation	
	Firm-years
Total promotions	191
CEOs who stay at the same position	6,810
Number of CEO observations in our promotion analysis	7,001

Note: This table shows the descriptive data on the composition of our sample. Panel A shows the sample selection process. Panel B (C) [D] shows partitions based on ownership (industry) [outcomes of CEO political promotion evaluations]. In Panel D, “ambiguous” refers to observations for which we cannot clearly identify whether a departure represents a promotion or other outcome.

demotion (e.g., president of a research institution). We lose 371 observations where we are missing data because we cannot identify the next location of the CEO, and 250 observations for CEOs who are identified as having quit. The final sample for the test of H_2 is 7,001 (6,753) observations for the current effective tax rate (cash effective tax rate) samples. Panel D also shows summary data for manager political promotion evaluations. During this sample period, there are 191 promotions out of the final sample of 7,001 total observations.

3.2. Tax rate measures

Based on prior literature, we use two measures of income tax rates: the current effective tax rate and the cash effective tax rate.¹⁵ During most years of our sample period (through 2006), Chinese accounting standards permit companies to use either the tax payment method (i.e., payable basis) or tax provision method (i.e., deferral basis) to account for income taxes. Companies are prohibited from using the tax payment method after 2007, when China adopted International Accounting Standards (IAS). Under the tax payment method, reported income tax expense equals current tax expense (i.e., deferred tax expense is not recognized); under the tax provision method, reported income tax expense includes both current and deferred tax expense. Over 90% of public companies choose the tax payment method before 2007, so we do not separately examine tax deferral strategies from tax avoidance due to data limitations.

Our first measure is the current effective tax rate (*ETR*), as commonly computed:

$$ETR_{i,t} = \text{Total Current Income Tax Expense}_{i,t} / \text{Pretax Income}_{i,t}$$

The second measure is the cash effective tax rate (*CETR*):¹⁶

$$CETR_{i,t} = \text{Cash Income Taxes Paid}_{i,t} / \text{Pretax Income}_{i,t}$$

We winsorize both measures at 1 to minimize influence of small denominator problems, and negative values are set to 0 (Dyreng et al., 2010). Consistent with prior research, a lower (higher) *ETR* or *CETR* is associated with more (less) tax avoidance.

3.3. Descriptive statistics

We partition the full sample into two groups: SOEs and non-SOEs. We calculate the mean value of *ETR* and *CETR* separately in each year for SOEs and non-SOEs. Fig. 1 indicates that for both *ETR* and *CETR*, SOEs exhibit higher tax rates across all sample years other than 2006, although there is variation in tax rates for both SOEs and non-SOEs. Table 2 provides descriptive characteristics and correlations. According to Panel A, SOEs are larger, more leveraged, more likely to be cross-listed and (not surprisingly) have greater ownership concentration; SOEs have lower market-to-book ratios, lower losses, lower research and development, lower fractions of foreign sales, and are less likely to have the CEO serve as chairman of the board. Panel B reports correlations. *ROA* and *LEV* exhibit the strongest correlation (−0.373), but not large enough to suggest significant problems with multicollinearity (i.e., VIFs are below 10 in all regressions). In addition, effective and cash tax rates are, not surprisingly, highly positively correlated (0.701).

Table 3 presents univariate statistics for the two tax expense measures and probabilities of promotion. Panel A reports the means and medians separately for SOEs and non-SOEs. SOEs exhibit a higher mean *ETR* (0.222) than that for non-SOEs (0.210). The raw

¹⁵ Prior literature also uses other measures of tax avoidance. However, the validity of these other measures is not clear in the Chinese market. For example, Chinese firms are characterized by high earnings manipulation (e.g., Piotroski and Wong, 2013), so alternative book-tax difference measures may be dominated by earnings manipulation, clouding our ability to compare SOEs and non-SOEs based on book-tax differences (see Hanlon and Heitzman, 2010). Lisowsky et al. (2013) suggest that *ETR*-based measures capture a broader continuum of tax avoidance behavior than other measures do. We believe that *ETR*-based measures are the best constructs for our setting, despite the possible influence of earnings management in the denominator of *ETR* and *CETR*. Moreover, the results of our promotion analysis reveal that higher tax rates are associated with higher incidence of promotion; if (upwards) earnings management were dominant, this would depress our tax rate calculations, working against this result.

¹⁶ Due to non-disclosure of cash taxes paid for most of our sample years, we calculate cash income taxes paid as current tax expense plus beginning-of-year income taxes payable minus end-of-year income taxes payable. Hanlon and Heitzman (2010) explain that *CETR* may have a mismatch problem if fiscal (numerator) and calendar (denominator) year-ends are different. All Chinese firms have calendar fiscal year-ends, so our data are not susceptible to this problem.

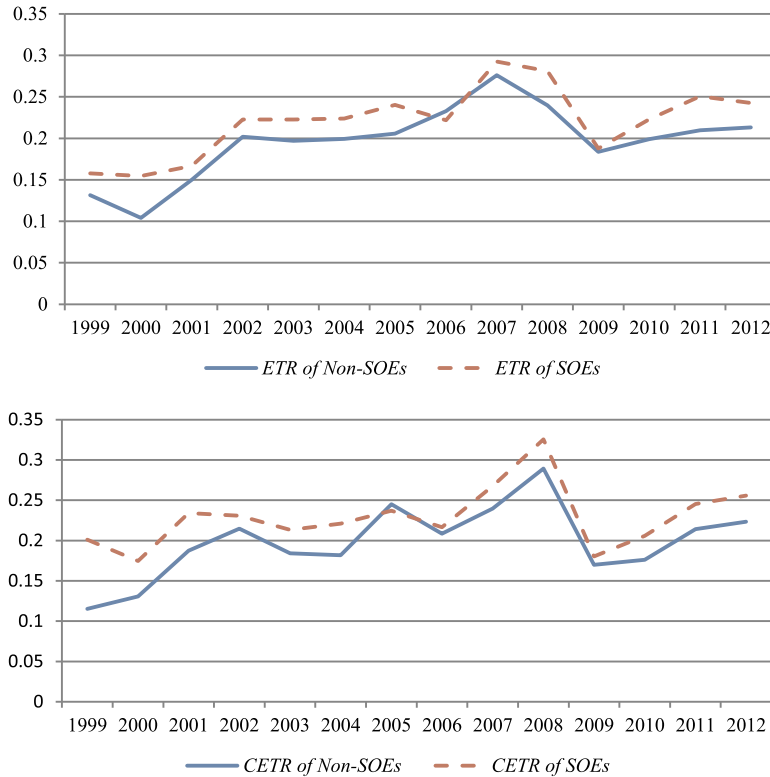


Fig. 1. Time series behavior of tax rates.

Note: The figures plots mean tax rates across years for SOEs and non-SOEs.

magnitude of these differences is similar to the effect of family ownership reported by Chen et al. (2010) in the U.S. (i.e., 0.367 vs. 0.355, respectively). Panel B indicates that differences in tax rates between SOEs and non-SOEs are primarily due to local rather than central ownership, consistent with local governments having stronger influence over SOEs.¹⁷

Panel C of Table 3 shows the probability of promotion for SOE managers across quintiles of tax rates. As tax rates increase, the probability of promotion also tends to increase, although the pattern is nonlinear. In additional analysis in the Online Appendix, the extreme quintiles represent smaller, less profitable firms. An intuitive interpretation that aligns with our prediction is that promotions are more likely for managers of larger SOEs, but managers of smaller SOEs achieve similar promotion probabilities when they report extremely high tax rates. The general pattern of promotion probabilities for ETR quintiles 3–5 relative to quintiles 1–2 is consistent with our predictions, but variation in firm characteristics across the sample highlights the importance of multivariate analysis, discussed next.

4. Regression models and primary empirical results

4.1. Regression models

The first hypothesis predicts that tax rates of SOEs are higher than those of non-SOEs. We estimate the following OLS regression, where *SOE* is an indicator variable equal to one if the firm is state owned (see the Appendix for variable definitions). In model (1) below, we predict α_1 is positive, consistent with less tax avoidance by SOEs.

$$\begin{cases} ETR_{i,t} \\ CETR_{i,t} \end{cases} = \alpha + \alpha_1 SOE_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 ROA_{i,t} + \alpha_4 MB_{i,t} + \alpha_5 Lev_{i,t} + \alpha_6 CAPEX_{i,t} + \alpha_7 NOL_{i,t} \\ + \alpha_8 R\&D_{i,t} + \alpha_9 ForSale + \alpha_{10} M\&A + \alpha_{11} EquOffer + \alpha_{12} CrossList + \alpha_{13} OwnConcen \\ + \alpha_{14} MgmtOwn + \alpha_{15} DualCEO + \alpha_{16} TaxPreference + FixedEffects \quad (1)$$

¹⁷ Comparisons across Panels A and B suggest centrally-owned SOEs have a slightly lower mean ETR (0.207) relative to non-SOEs (0.210), although difference is statistically insignificant. This result is inconsistent with our SOE vs. non-SOE prediction. However, these univariate means do not control for firm characteristics (e.g., profitability, size, R&D, etc.). If we match all centrally-owned SOEs with a non-SOE based on pretax income, centrally-owned SOEs exhibit higher ETR and CETR relative to appropriately matched non-SOEs (results in the Online Appendix), which are significant in three of four comparisons of mean and median ETRs and CETRs.

Table 2
Descriptive firm characteristics and correlation matrix.

Panel A: Descriptive statistics								
	SOEs			Non-SOEs			<i>t</i> -test for difference in means	Wilcoxon test for difference in medians
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.		
<i>Size</i>	21.642	21.499	1.193	21.147	21.072	1.028	27.3***	23.6***
<i>ROA</i>	0.045	0.039	0.057	0.046	0.043	0.066	-1.2	-5.0***
<i>MB</i>	3.553	2.687	3.114	4.099	2.941	3.904	-8.9***	-8.7***
<i>Lev</i>	0.243	0.233	0.164	0.228	0.220	0.172	5.6***	6.6***
<i>CAPEX</i>	0.061	0.043	0.059	0.062	0.044	0.062	-1.2	1.2
<i>NOL</i>	0.164	0.000	0.959	0.424	0.000	1.751	-10.1***	-7.1***
<i>R&D</i>	0.001	0.000	0.003	0.002	0.000	0.005	-9.8***	-4.7***
<i>ForSale</i>	0.055	0.000	0.148	0.092	0.000	0.199	-12.0***	-15.6***
<i>M&A</i>	0.308	0.000	0.462	0.362	0.000	0.480	-6.8***	-6.9***
<i>EquOffer</i>	0.092	0.000	0.289	0.085	0.000	0.279	1.5	1.4
<i>CrossList</i>	0.039	0.000	0.193	0.003	0.000	0.055	18.1***	13.1***
<i>OwnConcen</i>	0.428	0.422	0.165	0.330	0.296	0.144	38.8***	36.0***
<i>MgmtOwn</i>	0.689	1.000	0.463	0.696	1.000	0.460	-1.0	-1.0
<i>DualCEO</i>	0.105	0.000	0.307	0.249	0.000	0.433	-21.7***	-24.0***
<i>TaxPreference</i>	0.572	1.000	0.495	0.576	1.000	0.494	-0.5	-0.5

Panel B: Pair-wise correlations (significant correlations are bold)								
	<i>Size</i>	<i>ROA</i>	<i>MB</i>	<i>Lev</i>	<i>PPE</i>	<i>NOL</i>	<i>R&D</i>	<i>ForSale</i>
<i>ROA</i>	0.203							
<i>MB</i>	-0.300	0.052						
<i>Lev</i>	0.164	-0.373	-0.052					
<i>PPE</i>	0.119	0.198	-0.079	0.075				
<i>NOL</i>	-0.266	-0.344	0.115	0.125	-0.133			
<i>R&D</i>	-0.021	0.062	0.002	-0.097	0.024	-0.033		
<i>ForSale</i>	0.001	0.015	-0.037	-0.038	0.061	-0.056	0.065	
<i>M&A</i>	0.148	0.080	-0.007	0.042	0.079	-0.059	-0.008	0.009
<i>EquOffer</i>	0.125	0.067	-0.010	-0.019	0.078	-0.049	-0.002	-0.003
<i>CrossList</i>	0.290	0.035	-0.036	0.013	0.031	-0.022	0.018	-0.009
<i>OwnConcen</i>	0.202	0.145	-0.051	-0.058	0.055	-0.120	-0.025	-0.046
<i>MgmtOwn</i>	0.035	0.028	-0.026	0.000	-0.009	-0.076	0.038	0.005
<i>DualCEO</i>	-0.102	-0.001	0.042	-0.055	0.026	0.041	0.046	0.057
<i>TaxPreference</i>	-0.096	0.059	0.058	-0.098	0.054	-0.072	0.119	0.059

	<i>M&A</i>	<i>EquOffer</i>	<i>CrossList</i>	<i>OwnConcen</i>	<i>MgmtOwn</i>	<i>DualCEO</i>
<i>EquOffer</i>	0.077					
<i>CrossList</i>	0.012	-0.016				
<i>OwnConcen</i>	-0.004	0.018	0.069			
<i>MgmtOwn</i>	-0.017	0.031	-0.029	-0.123		
<i>DualCEO</i>	-0.004	0.001	-0.029	-0.073	0.029	
<i>TaxPreference</i>	-0.019	0.043	-0.020	0.025	0.095	0.036

Note: This table shows statistics and correlations for firm characteristics. In Panel A, all continuous variables are winsorized at the 1% and 99% levels. The sample includes 11,130 SOE firm-years and 5,272 non-SOE firm-years. Panel B reports the Pearson correlations between variables. In Panel A, ***, ** and * indicate significance at the 0.01, 0.05 and 0.10 level (two-sided test), respectively. In Panel B, significant correlations are bold. Variable definitions are provided in the Appendix

The control variables are taken from prior literature on tax avoidance (e.g., Mills, 1998; Rego, 2003; Dyreng et al., 2008; Frank et al., 2009; Armstrong et al., 2012; Rego and Wilson, 2012). *Size*, *ROA*, *Lev* and *NOL* capture tax planning incentives and opportunities. Because larger firms enjoy economies of scale in tax avoidance, we control for firm size (*Size*) (Cheng et al., 2012). Similarly, we include *ROA* because more profitable firms have stronger incentives to avoid taxes (Manzon and Plesko, 2002; Rego, 2003; Frank et al., 2009; McGuire et al., 2012).¹⁸ Leverage (*Lev*) is included because firms with higher leverage already enjoy the tax shield from debt financing, which may be associated with a differential tendency for incremental tax avoidance; Article 6 of the tax law (State Council of China, 1993a) allows deduction of interest expense. We use a proxy for net operating losses (*NOL*) to control for tax

¹⁸ In contrast, Gupta and Newberry (1997) find a positive relation between ETRs and profitability. They argue higher income is associated with higher marginal tax rates, and therefore more profitable firms will exhibit higher ETRs. However, the corporate income tax rate is not progressive in China, with the income tax rate for domestic corporations being a flat 33% during most years of our sample period, dropping to 25% in 2008 (see article 3 in State Council of China, 1993a).

Table 3
Univariate differences in ETR/CETR and probabilities of promotion.

Panel A: SOEs versus Non-SOEs						
	SOEs Mean	Median	Non-SOEs Mean	Median	t-test	Wilcoxon test
<i>ETR</i>	0.222	0.180	0.210	0.169	4.0***	4.8***
<i>CETR</i>	0.231	0.175	0.211	0.156	5.5***	6.6***
Panel B: Central versus local state ownership						
	Central SOEs Mean	Median	Local SOEs Mean	Median	t-test	Wilcoxon test
<i>ETR</i>	0.207	0.168	0.228	0.186	-5. 5***	-6.0***
<i>CETR</i>	0.215	0.160	0.238	0.181	-4. 8***	-5.5***
Panel C: Ex post promotion probabilities						
<i>Quintiles of ETR</i>	1 (Lo- west)	2	3	4	5 (Highest)	
<i>Mean</i>						<i>ET- R</i>
0.026 <i>Prob</i>	0.128	0.186	0.269	0.506		<i>(P- ro- m- oti- on)</i>
0.019	0.023	0.033	0.030	0.032		
<i>Quintiles of CETR</i>	1 (Lo- west)	2	3	4	5 (Highest)	
<i>Mean</i>						<i>CETR</i>
0.021 <i>Prob</i>	0.110	0.178	0.268	0.572		<i>(Promoti- on)</i>
0.022	0.024	0.029	0.032	0.031		

Note: This table shows univariate comparisons between tax rates (*ETR* and *CETR*) and state ownership (Panels A and B) and the relation between tax rates and manager promotion (Panel C). Panel A is based on all available observations; Panels B and C are based on the subsample of state owned enterprises only. ***, ** and * refer to two-tailed significance at the 0.01, 0.05 and 0.10 level, respectively. Variable definitions are provided in the Appendix.

benefits of carryforwards.¹⁹

We control for growth with the market to book ratio (*MB*), as growth firms may make more investments in tax-favored assets and have more opportunities to avoid taxes (e.g., Chen et al., 2010). We include capital expenditures, *CAPEX*, to control for possible investment related tax incentives (Armstrong et al., 2012). Similarly, we control for R&D (e.g., Rego and Wilson, 2012). The ratio of foreign to total sales, *ForSale*, controls for the effect of foreign operations (Rego, 2003). *M&A* controls for merger and acquisition activities that may provide tax benefits (e.g., Devos et al., 2009). Seasoned equity offering (*EquOffer*) controls for incentives to increase earnings around external financing, possibly through tax expense. *OwnConcen* is a proxy for ownership concentration. We use three proxies for potential variation in corporate governance: cross listing (*CrossList*), management ownership (*MgmtOwn*) and CEO–Chair duality (*DualCEO*).

TaxPreference is an indicator variable equal to one if a firm enjoys a preferential statutory tax rate under Chinese financial regulations (e.g., Ministry of Finance, 1994, 1996, 1997). There are three major types of firms that potentially enjoy a preferential tax

¹⁹ Chinese firms are allowed to carry losses forward for five years (but firms are not allowed carrybacks; Ernst and Young, 2006). However, Chinese firms do not report the tax benefit of NOLs on the balance sheet. Because of the importance of this variable for ETRs, we estimate a continuous variable, *NOL*, equal to the aggregate net losses reported in the last five years, or 0 if positive.

Table 4
Multivariate analyses of the association between state ownership and tax avoidance.

Panel A: Full sample tests		
Dependent variable =	(1) <i>ETR</i>	(2) <i>CETR</i>
<i>SOE</i>	0.014*** (2.7)	0.014*** (2.7)
<i>Size</i>	0.003 (0.8)	0.004 (0.8)
<i>ROA</i>	-0.138 (-1.3)	-0.646*** (-7.7)
<i>MB</i>	-0.002* (-1.7)	-0.002* (-1.7)
<i>Lev</i>	0.027* (1.7)	-0.026 (-1.5)
<i>CAPEX</i>	-0.110** (-2.6)	-0.049 (-1.3)
<i>NOL</i>	-0.024*** (-10.7)	-0.026*** (-8.3)
<i>R&D</i>	-1.201*** (-3.8)	-1.185*** (-3.0)
<i>ForSale</i>	-0.010 (-0.7)	0.001 (0.1)
<i>M&A</i>	-0.003 (-0.8)	-0.009** (-2.0)
<i>EquOffer</i>	-0.017*** (-3.2)	-0.031*** (-3.9)
<i>CrossList</i>	-0.013 (-1.6)	-0.011 (-0.9)
<i>OwnConcen</i>	-0.020 (-1.4)	-0.012 (-0.7)
<i>MgmtOwn</i>	-0.002 (-0.4)	0.001 (0.2)
<i>DualCEO</i>	-0.007 (-1.6)	-0.008 (-1.6)
<i>TaxPreference</i>	-0.056*** (-11.2)	-0.050*** (-8.9)
Intercept	0.086 (0.9)	0.127 (1.3)
Industry Fixed Effects	YES	YES
Year Fixed Effects	YES	YES
Province Fixed Effects	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year
#Observations	16,402	15,796
R ²	0.12	0.10

Panel B: Analysis of central versus local SOEs		
Dependent Variable =	(1)	(2)
Central SOE	<i>ETR</i> 0.008 (1.2)	<i>CETR</i> 0.010 (1.5)
Local SOE	0.016*** (3.1)	0.015*** (2.8)
<i>Size</i>	0.004 (0.8)	0.004 (0.8)
<i>ROA</i>	-0.138 (-1.3)	-0.646*** (-7.7)
<i>MB</i>	-0.002 (-1.6)	-0.002* (-1.7)
<i>Lev</i>	0.026* (1.7)	-0.026 (-1.5)
<i>CAPEX</i>	-0.111** (-2.6)	-0.050 (-1.3)
<i>NOL</i>	-0.024*** (-10.7)	-0.026*** (-8.3)
<i>R&D</i>	-1.182*** (-3.7)	-1.173*** (-3.1)
<i>ForSale</i>	-0.009 (-0.6)	0.002 (0.2)
<i>M&A</i>	-0.003	-0.009**

(continued on next page)

Table 4 (continued)

Panel B: Analysis of central versus local SOEs	(1)	(2)
	(−0.8)	(−2.0)
<i>EquOffer</i>	−0.017***	−0.031***
	(−3.2)	(−3.9)
<i>CrossList</i>	−0.012	−0.010
	(−1.4)	(−0.8)
<i>OwnConcen</i>	−0.021	−0.012
	(−1.4)	(−0.7)
<i>MgmtOwn</i>	−0.002	0.001
	(−0.4)	(0.1)
<i>DualCEO</i>	−0.007*	−0.008*
	(−1.7)	(−1.7)
<i>TaxPreference</i>	−0.055***	−0.050***
	(−11.0)	(−8.8)
<i>Intercept</i>	0.084	0.126
	(0.9)	(1.2)
Industry Fixed Effects	YES	YES
Year Fixed Effects	YES	YES
Province Fixed Effects	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year
#Observations	16,402	15,796
R ²	0.12	0.10

Note: Panel A employs the full sample; Panel B replicates the primary tests but partitions based on the hierarchy of state ownership. *Central SOE* (*Local SOE*) refers to a state owned enterprises controlled by the central (a local) government. Variable definitions are provided in Appendix. *t*-statistics are reported in parentheses. ***, ** and * refer to two-tailed significance at the 0.01, 0.05 and 0.10 level, respectively.

rate (designated economic/technology development zones, those with foreign direct investment, and certain start-up firms). To control for regional differences in economic development, culture, legal environment and other factors, we include fixed effects for the province where the firm's headquarters are located. Finally, we include both industry and year fixed effects to control for possible variation in tax policies across industries and years.

For our analysis of manager promotions, we restrict the sample to SOEs and, in contrast to our primary analyses that use *ETR* or *CETR* as the *dependent* variable, we use *ETR* or *CETR* as the *independent* variable. The dependent variable is *PROMOTION*, which equals 1 if the manager is promoted to a higher level position in the next year and 0 otherwise. Because management performance evaluation is often based on a firm's performance relative to that of other firms (e.g., Holmstrom, 1982; Gong et al., 2011), we also use the within-year decile rank transformations of a firm's *ETR* and *CETR* (*RANK_ETR* and *RANK_CETR*, respectively). H_2 predicts β_1 is positive in the following model:

$$\begin{aligned}
 PROMOTION_{i,t} = & \beta_0 + \beta_1 \begin{cases} ETR_{i,t} \\ CETR_{i,t} \end{cases} + \beta_2 Size_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Lev_{i,t} + \beta_5 OtherTax_{i,t} \\
 & + \beta_6 OwnConcen_{i,t} + \beta_7 Age_{i,t} + \beta_8 Tenure_{i,t} + FixedEffects
 \end{aligned} \quad (2)$$

We control for several determinants of promotions based on prior research (Li and Zhou, 2005). We expect managers at larger (*Size*) and more profitable firms (*ROA*) are more likely to be promoted, but do not have a clear prediction for *Lev*. In addition, we use *OtherTax* to control for other taxes or fees, exclusive of income taxes. A large part of *OtherTax* reflects value-added taxes. Firms are not likely to avoid these taxes because of prohibitively high legal costs; the highest penalty for value-added tax evasion is death. *OtherTax* is scaled by revenue because other fees and taxes are usually a function of revenue. Second, we control for CEO age (*Age*) and CEO tenure (*Tenure*), as we suspect a manager is less likely to be promoted if older or having been at a firm for many years. We also control for the proportion of ownership of the largest shareholder, which is the state for SOEs, to capture the influence of ownership concentration (*OwnConcen*). We continue to include fixed effects for the province where the firm's headquarters are located, as well as industry and year fixed effects.

4.2. Primary empirical results

4.2.1. State ownership and tax avoidance

H_1 predicts that income taxes of SOEs are higher than those of non-SOEs. Results appear in Panel A of Table 4, where *t*-statistics are based on standard errors clustered by firm and year (e.g., Petersen, 2009). In Column 1 (2), we use *ETR* (*CETR*) as the dependent variable. For both measures of tax rates, the coefficients on SOE are positive and significant, consistent with a tunneling hypothesis whereby SOEs pay greater taxes than do non-SOEs. The differences in tax rates between SOEs and non-SOEs are, on average, 1.4%. Coefficients on the control variables are generally consistent with prior research. Firms with higher profitability (*ROA*), higher market to book ratio (*MB*), more capital expenditures (*CAPEX*), greater loss carryovers (*NOL*), more R&D, equity financing (*EquOffer*)

and preferential statutory tax rates exhibit lower tax rates.

To assess the economic importance of these results, we perform several analyses. First, the incremental R^2 of the SOE indicator is small, around 8 basis points (bp). However, the incremental R^2 of other independent variables shown to be important in prior research is similar or even smaller, including that for *SIZE* (2 bp), *Lev* (4 bp), and *R&D* (5 bp).²⁰ Second, because incremental R^2 may not properly characterize economic importance, especially for an indicator variable, we estimate standardized regression coefficients in the Online Appendix (where variances of dependent and independent variables are transformed to equal 1). The standardized coefficient on *SOE* (0.034) is higher than many other important explanatory variables, including those for *SIZE* (0.021), *Lev* (0.023) and *R&D* (−0.024). Finally, for both regressions, the coefficient on *SOE* is 0.014. Given total pretax income for SOEs during our sample period is 6.2 trillion RMB, the coefficient implies that SOEs report approximately 86.8 billion RMB (i.e., US\$ 13 billion) higher taxes relative to non-SOEs, which strikes us as economically significant. The total income taxes paid by all publicly listed firms in China equals US\$135.28 billion during our sample period, with public SOEs accounting for US \$110.07 billion; our estimate of the higher taxes approximates 11.8% of total income taxes paid by SOEs.

4.2.2. Local versus central state ownership

Our second analysis captures whether cross-sectional variation in tax rates is consistent with local governments exerting more influence than does the central government, similar to Wang et al. (2008) regarding auditor choice and Cheung et al. (2010) regarding prosecution for misconduct. Therefore, if the effect of state ownership on tax payments and the effect of tax payments on promotions (examined in the next section) are subject to state intervention, we expect local governments are more likely to use SOEs to fulfill political objectives, manifesting in higher tax rates reported by locally owned SOEs.

We construct two indicator variables: *Central SOE* and *Local SOE*, equal to 1 if the firm is controlled by the Beijing central government (or its agencies) versus local governments, respectively. We then re-estimate model (1) substituting these two indicator variables for *SOE*. Results appear in Panel B of Table 4. For both columns in the table, coefficients on *Local SOE* are positive and significant, but the coefficients on *Central SOE* are insignificant. For example, in the first column, the coefficient on *Local SOE* is 0.016 (t -statistic = 3.1), but the coefficient on *Central SOE* is 0.008 (t -statistic = 1.2). Thus, local ownership of SOEs appears more influential in discouraging tax avoidance than does central government ownership.

The insignificant coefficients on *Central SOE* are likely due to the differential status of Central SOEs relative to Local SOEs. Central SOEs tend to be much larger, and managers enjoy higher political ranks by virtue of the size of the firm. Prior studies like Yin and Zhang (2014) suggest managers ranked lower in a promotion tournament (“interim losers”) make more risky and aggressive decisions than “interim winners.” In unreported analysis, we find that small, but not large, Central SOEs exhibit higher ETRs than those of non-SOEs. This result foreshadows our results discussed later regarding the strong effect of managerial incentives on tax reporting behavior.

4.2.3. Difference-in-differences test of privatizations

To alleviate concerns about correlated omitted variables, we perform a subsample analysis on privatizations (where the state's ownership ceases to be controlling), for which we predict that tax rates decline after privatizations of SOEs. Based on firm size at the end of the year prior to privatization, we match each pre-privatization SOE with a non-state-owned enterprise from the same industry. We use this matched subsample to perform difference-in-difference tests. We define *Pre-Privatization* as an indicator equal to 1 for SOEs prior to privatizations and 0 for matched non-SOE observations; similarly, *Post-Privatization* is an indicator equal to 1 for SOEs after privatizations, and 0 for matched non-SOE observations.²¹

We expect SOEs to exhibit higher tax rates than non-SOEs prior to privatizations, but the difference should disappear after privatizations. Results reported in Table 5 indicate *Pre-Privatization* is significantly associated with higher tax rates, but *Post-Privatization* is not. Further, we provide a comparison of tax rates of SOEs before and after privatizations. As shown in Fig. 2, both effective and cash tax rates decline after privatization, which mitigates concerns about omitted time-invariant characteristics in our primary results showing higher tax rates for SOEs. Further, this result provides a natural transition to our analysis of how the incentives of managers are related to tax avoidance conditional on ownership structure.

4.2.4. Probability of manager promotion

We now investigate the second hypothesis, which predicts managers are more likely to be promoted when they report higher tax rates. Our formal test of H_2 relies on multivariate regressions to control for factors shown in model (2). Results appear in Panel A of Table 6, where the probability of promotion is the dependent variable, and tax rates are the primary independent variables of interest. In columns 1 and 3, we use *ETR* and *CETR*, respectively, as our measures of tax avoidance. In columns 2 and 4, the tax measures are *RANK_ETR* and *RANK_CETR*, which are the decile ranks of a firm's *ETR* or *CETR*, respectively, among all the observations in the same year. The results in Panel A are stronger for *ETR* than for *CETR*. Nevertheless, for all columns, the coefficients on both *ETR* (*CETR*) and *RANK_ETR* (*RANK_CETR*) are positive and statistically significant. In the Online Appendix, we estimate that the marginal effect of *ETR* (*CETR*) on promotion probability is 0.022 (0.014). Further, the standard deviations of *ETR* and *CETR* are 0.189 and 0.218, respectively. Thus, a one standard deviation increase in *ETR* increases the probability of promotion by 0.4% (= 0.022*0.189). Similarly,

²⁰ The variables with the largest incremental R^2 are *NOL* (205 bp) and *TaxPreference* (147 bp).

²¹ Another ideal control group for the difference-in-differences test would be firms with 100% state ownership. However, we do not have data on such firms.

Table 5
Matched sample difference-in-differences test for SOE privatizations.

Dependent Variable =	(1) <i>ETR</i>	(2) <i>ETR</i>	(3) <i>CETR</i>	(4) <i>CETR</i>
<i>Pre-Privatization</i>	0.040*** (3.0)		0.033*** (2.9)	
<i>Post-Privatization</i>		0.002 (0.2)		-0.004 (-0.2)
<i>Size</i>	0.003 (0.3)	0.015* (1.8)	0.017 (0.9)	0.008 (1.2)
<i>ROA</i>	0.202* (1.7)	-0.202 (-1.3)	-0.353 (-1.4)	-0.644*** (-4.4)
<i>MB</i>	-0.003 (-1.6)	0.000 (0.2)	-0.003 (-1.4)	-0.001 (-0.5)
<i>Lev</i>	-0.020 (-0.5)	0.030 (0.5)	-0.163** (-2.2)	-0.047 (-1.0)
<i>CAPEX</i>	0.015 (0.1)	-0.147 (-1.4)	-0.016 (-0.2)	-0.144* (-1.7)
<i>NOL</i>	-0.015*** (-3.4)	-0.020*** (-5.4)	-0.014*** (-2.6)	-0.015*** (-3.1)
<i>R&D</i>	-2.157 (-1.2)	-0.020 (-0.0)	-0.114 (-0.1)	-0.459 (-0.3)
<i>ForSale</i>	-0.043 (-1.0)	-0.056 (-1.4)	0.032 (0.7)	-0.056 (-1.5)
<i>M&A</i>	-0.008 (-0.5)	-0.004 (-0.5)	-0.034** (-2.1)	-0.015 (-1.5)
<i>EquOffer</i>	-0.007 (-0.4)	-0.037*** (-3.2)	-0.041** (-2.0)	-0.051*** (-2.6)
<i>CrossList</i>		-0.003 (-0.1)		-0.201*** (-3.4)
<i>OwnConcen</i>	0.033 (1.0)	-0.085* (-1.7)	0.044 (1.1)	-0.032 (-0.7)
<i>MgmtOwn</i>	-0.007 (-0.4)	-0.030** (-2.6)	-0.017 (-0.9)	-0.011 (-1.4)
<i>DualCEO</i>	-0.029* (-1.7)	-0.014 (-1.1)	-0.023 (-1.2)	-0.025* (-1.8)
<i>TaxPreference</i>	-0.039** (-2.4)	-0.053*** (-3.4)	-0.043 (-1.4)	-0.051*** (-4.8)
Intercept	-0.075 (-0.3)	0.129 (0.5)	-0.375 (-1.0)	0.266 (1.4)
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year	Firm, Year	Firm, Year
#Observations	940	1,638	846	1,613
R ²	0.23	0.17	0.21	0.17

Note: We match a sample of SOE firms that are privatized during our sample period with a sample of non-SOEs based on firm size at the end of the year prior to privatization. Columns 1 and 3 test differences in tax rates between SOE and matched non-SOEs prior to privatizations; columns 2 and 4 test differences in tax rates between previous SOE and matched non-SOEs after privatizations. *CrossList* is omitted in columns (1) and (3) because there are no cross-listed firms in these subsamples. Variable definitions are provided in Appendix. *t*-statistics are reported in parentheses. ***, ** and * refer to two-tailed significance at the 0.01, 0.05 and 0.10 level, respectively

a one-standard-deviation increase in *CETR* increases the probability of promotion by 0.3% (= 0.014*0.218). Given that the unconditional average probability of promotion by 2.7% (= 191/7001 as reported in Panel D of Table 1), the effect of tax avoidance on manager promotion probability seems economically meaningful.

4.2.5. Effect of term year evaluation

SOE managers' employment contracts always have a three-year term (SASAC, 2003). Because performance in the third year of the evaluation cycle may be more important in the evaluation (or at least the manager may believe it is), we corroborate the manager promotion test in Panel A of Table 6 by examining whether SOE tax decisions favorable to the state are more likely in the third year relative to the first two years of their three-year terms. We split the sample based on whether or not the manager is in the third year of the three-year term and re-estimate model (1) for each subsample. We expect the coefficient on *SOE* to be greater in the third year of SOE managers' terms relative to the first two years.

In Panel B of Table 6, the coefficient on *ETR* (or *CETR*) is positive and larger in the third year relative to the first two years. For example, when *ETR* is the dependent variable, the coefficients on *SOE* are 0.010 (*t*-statistic = 1.7) for the first two years but 0.028 (*t*-

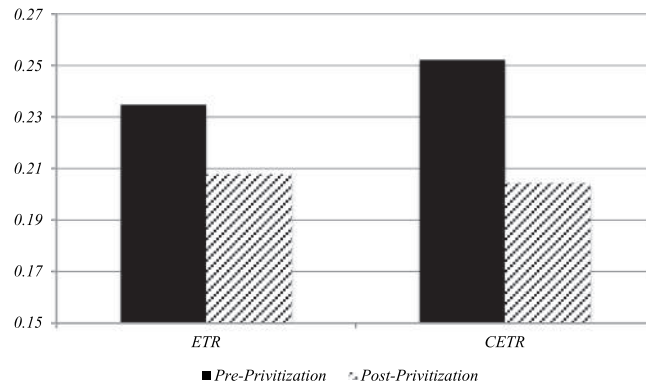


Fig. 2. Tax rates before and after privatization.

Note: The figure presents mean tax rates for a subsample of 120 firms that were privatized during the sample period. For each firm, the pre-privatization (post-privatization) period includes observations from the year before (after) privatization.

Table 6
Analyses of the association between tax avoidance and promotions.

Panel A: Probit analyses of SOE manager promotion probability				
Dependent Variable =	(1)	(2)	(3)	(4)
		<i>Promotion</i>		
<i>ETR</i>	0.444** (2.3)			
<i>RANK_ETR</i>		0.034** (2.4)		
<i>CETR</i>			0.284** (2.2)	
<i>RANK_CETR</i>				0.021** (2.1)
<i>Size</i>	0.101*** (3.8)	0.101*** (3.9)	0.102*** (3.9)	0.101*** (3.9)
<i>ROA</i>	0.867 (1.3)	0.661 (0.9)	0.733 (1.1)	0.572 (0.8)
<i>Lev</i>	0.047 (0.2)	0.035 (0.1)	0.052 (0.2)	0.047 (0.2)
<i>OtherTax</i>	0.748 (1.1)	0.753 (1.1)	0.506 (0.7)	0.537 (0.8)
<i>OwnConcen</i>	0.597*** (3.0)	0.594*** (3.0)	0.609*** (3.0)	0.605*** (2.9)
<i>Age</i>	-0.025*** (-4.6)	-0.025*** (-4.8)	-0.025*** (-5.2)	-0.025*** (-5.3)
<i>Tenure</i>	0.009 (0.5)	0.008 (0.5)	0.008 (0.5)	0.008 (0.5)
<i>Intercept</i>	-3.238*** (-4.6)	-3.306*** (-4.7)	-3.213*** (-5.0)	-3.222*** (-5.0)
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year	Firm, Year	Firm, Year
#Observations	7,001	7,001	6,753	6,753
Pseudo R ²	0.07	0.07	0.07	0.07

Panel B: The effect of manager term evaluation on tax avoidance

Dependent Variable =	(1)	(2)	(3)	(4)
	Evaluation year	Other years	Evaluation year	Other years
<i>SOE</i>	0.028*** (2.7)	0.010* (1.7)	0.030*** (3.3)	0.014** (2.2)
<i>Size</i>	0.000 (0.1)	0.000 (0.1)	-0.000 (-0.0)	-0.001 (-0.4)

(continued on next page)

Table 6 (continued)

Panel B: The effect of manager term evaluation on tax avoidance				
ROA	-0.314*	-0.165	-0.791***	-0.680***
	(-1.9)	(-1.4)	(-6.9)	(-7.2)
MB	-0.003	-0.002*	-0.003*	-0.003***
	(-1.6)	(-1.7)	(-1.9)	(-3.0)
Lev	-0.006	0.044***	-0.014	-0.012
	(-0.3)	(2.6)	(-0.4)	(-0.5)
CAPEX	-0.087	-0.135***	-0.060	-0.086
	(-1.5)	(-2.7)	(-1.0)	(-1.6)
NOL	-0.030***	-0.023***	-0.034***	-0.025***
	(-5.5)	(-10.8)	(-6.3)	(-8.9)
R&D	-0.822	-1.183**	-1.646*	-0.956
	(-1.2)	(-2.0)	(-1.9)	(-1.5)
ForSale	-0.029*	-0.010	-0.014	-0.006
	(-1.7)	(-0.5)	(-0.7)	(-0.4)
M&A	-0.006	0.002	-0.009	-0.004
	(-0.6)	(0.3)	(-0.8)	(-0.6)
EquOffer	-0.021*	-0.019***	-0.032**	-0.033***
	(-1.7)	(-3.7)	(-2.1)	(-3.3)
CrossList	-0.019	-0.004	-0.036*	-0.012
	(-0.8)	(-0.2)	(-1.7)	(-0.6)
OwnConcen	-0.008	-0.006	0.020	-0.018
	(-0.3)	(-0.3)	(0.9)	(-0.9)
MgmtOwn	-0.005	-0.003	0.008	-0.006
	(-0.5)	(-0.5)	(1.1)	(-1.1)
DualCEO	-0.015**	0.002	0.012	0.001
	(-2.1)	(0.4)	(1.5)	(0.1)
TaxPreference	-0.065***	-0.054***	-0.070***	-0.050***
	(-10.7)	(-7.7)	(-5.8)	(-7.2)
Intercept	0.148	0.147	0.199*	0.237***
	(1.3)	(1.4)	(1.9)	(2.7)
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Observations	3,056	7,690	2,947	7,423
R ²	0.17	0.13	0.16	0.11

Note: Panel A presents results for four different measures of tax avoidance. Panel B partitions the pooled results into different years of the term-evaluation cycle; "Evaluation year" indicates observations in the third year of the term-evaluation cycle, whereas "Other years" indicates observations in the first two years of the term-evaluation cycle. For the *ETR* (*CETR*) tests in Panel B, we must delete 5,656 (5,426) observations due to an inability to identify in which year of the three-year evaluation cycle the observation falls. Variable definitions are provided in the Appendix. *t*-statistics are reported in parentheses. ***, ** and * refer to two-tailed significance at the 0.01, 0.05 and 0.10 level, respectively

statistic = 2.7) for the third year. Z-tests for differences in coefficients for the third year relative to the other two years are marginally significant at the 10% level. Using an alternative specification in the Online Appendix, we include an interaction term for *SOE* and an indicator for the third year, and the coefficient on the interaction term is significant at the 5% level. The coefficients on *CETR* are also significantly different across columns 3 and 4 at the 10 percent level using a one-tail Z-test (Z-statistic = 1.4 p-value = 0.09). When we include an interaction term for *SOE* and an indicator for the third year, the coefficient is marginally significant at the 10 percent level (*t*-statistic = 1.8). Overall, these results are consistent with managers making tax decisions favorable to the state, especially in the years of their term-evaluations.

5. Extensions, robustness tests and self-selection

Our primary results demonstrate that (i) SOEs report higher tax rates than non-SOEs, (ii) SOEs that transition from state to private ownership experience declines in tax rates, (iii) locally-owned SOEs exhibit higher tax rates relative to centrally-owned SOEs, and (iv) SOE manager promotions are positively associated with tax rates. To examine the robustness of these primary results, we provide several additional tests. Each of these extensions either partitions the sample based on an important covariate

or places additional data constraints on the sample, so we present them as supplemental tests rather than incorporating them into our primary analyses.

5.1. Extensions

5.1.1. Taxes and possible reciprocity of governmental grants

There are numerous theories about the influence of government ownership of corporations, such as the contrasting "helping hand" and "grabbing hand" views (Frye and Shleifer, 1996; Cheung et al., 2010). Our primary results are consistent with the expropriation of wealth from minority shareholders (the grabbing hand view) through higher tax payments. The contrasting helping hand perspective posits that SOEs (and minority shareholders) realize other benefits from the state. A direct test of the helping hand view of government ownership is to examine government grants to SOEs. We obtain data on government grants from the WIND database for years beginning in 2007 (i.e., data availability). In the Online Appendix, we show that, after controlling for any prior year grants, current year governmental grants (scaled by total sales) are not significantly associated with either a SOE's effective tax rate (coefficient = -0.001 , t -statistic = -0.7) or cash tax rate (coefficient = -0.000 , t -statistic = -0.5). Again, these results are inconsistent with an alternative explanation that SOEs' higher tax rates translate into benefits for the firm (or minority shareholders).

5.1.2. Merger and acquisition activity in tax havens

Tax haven operations are associated with tax avoidance (e.g., Hope et al., 2013). Chinese firms do not disclose detailed data about tax haven operations, but many Chinese companies establish their operations in tax havens by acquiring firms located in such countries (e.g., Ramasamy et al., 2012). We examine whether SOE status is associated with the probability of acquiring foreign firms in tax havens, and expect SOEs are less likely to engage in such transactions. We collect data on foreign M&A transactions from CSMAR and code the acquisition based on whether the target location is in a tax haven using the procedure in Dyreng and Lindsey (2009). Using probit regressions, the Online Appendix reveals that SOEs are less likely than non-SOEs to acquire or merge with foreign firms in tax havens. These findings further reinforce our primary results that SOEs are less likely to engage in tax avoidance.

5.1.3. Substitutes for excess tax payments

Companies that avoid taxes might pay bribes as an alternative means of tunneling resources, consistent with prior research (e.g., Chernykh, 2008 in Russia and Atanasov et al., 2010 in Bulgaria). Unfortunately (and obviously), we cannot directly examine bribes in our setting. Nevertheless, we examine two indirect proxies: variation in regional legal environment and the frequency of government official arrests. First, we extract an index of the regional (provincial) legal environment for the year of 2009 from Fan et al. (2011), who evaluate the development of intermediary markets (such as the law and accounting professions). In the Online Appendix, we estimate regressions with tax rates as the dependent variable and find no interaction effect of an indicator variable for weak regional legal environment in the bottom quartile and state ownership. Additionally, we hand-collect data on the number of government officials arrested in 2009 for corruption across different regions and test whether our results are associated with the number of government corruption cases. Again, results indicate no interaction effect of an indicator variable for government corruption cases in the top quartile and state ownership.²²

5.1.4. Substitution of tax avoidance in other countries

One possibility is that SOEs substitute tax avoidance in other countries for tax avoidance in China. To examine this, we identify "red-chip" firms, which are incorporated and publicly listed in Hong Kong but controlled by the mainland Chinese government. Thus, they are SOEs, but are subject to Hong Kong taxes. Although not required, approximately 85% of red-chip Hong Kong firms disclose Hong Kong-only revenues separately. Because firms are not required to disclose pretax income in Hong Kong, we collect data on revenues derived in Hong Kong and income taxes paid by these firms to the Hong Kong government. We match each red-chip firm (with disclosed revenues) to a local Hong Kong firm based on the closest match of Hong Kong revenues, and calculate the ratio of Hong Kong income taxes to Hong Kong revenues. With the caveat that the sample size is small ($N = 232$), in the Online Appendix we find no difference in this measure between samples, inconsistent with SOEs substituting foreign for Chinese tax avoidance.

5.1.5. The role of financial health in tax avoidance by SOEs

When the U.S. government controlled several large firms that had previously engaged in observable tax avoidance, some observers alleged lenient enforcement of tax law. Extending this link to our setting, our primary results showing a positive association between government ownership and tax rates should be attenuated if the financial health of an SOE is low. Indeed, we show in the Online Appendix that the positive association between state ownership and tax rates is insignificant for firms with poor financial health (Wang and Campbell, 2010).

²² It is also noteworthy that the courts in China monitor non-SOEs more closely than SOEs, and the courts in China generally are more favorable to SOEs than non-SOEs (e.g., Firth et al., 2011). Thus, it seems that non-SOEs are actually much less likely to engage in bribes or other such behavior relative to SOEs, lessening the concern over a substitution of bribes for tax payments.

5.2. Specification tests

We also perform numerous robustness tests for alternative variable specifications, and the results are in the Online Appendix. First, to ensure we are capturing the strongest SOE effects, we use an alternative definition of SOEs, where a firm is identified as a SOE if the shares held by the largest shareholder are state-owned shares and exceed 20%. Second, although we control for financial performance with ROA, the numerator of ROA (operating income) is positively correlated (0.984) with the denominator of *ETR* (pretax income). To ensure our results are not impacted by any mechanical relation, we exclude *ROA* from the regressions with no impact on primary results. Alternatively, we substitute buy-and-hold stock returns as a proxy for financial performance, and again find no change in our primary results. Third, because extremely high ownership levels may diminish the role the manager plays in specific decisions like tax avoidance, we delete firms with state ownership greater 70%, with no change in results. Finally, the tax reform in 2008 changed the statutory tax rate for Chinese firms, and IFRS was adopted in China, potentially affecting reported taxes. We find no significant changes in the association between state ownership and tax avoidance after 2008.

5.3. Tests for self-selection bias

5.3.1. Exogenous shocks in state ownership and treatment effect model tests

We perform tests based on the treatment effect model to mitigate concerns about self-selection of firms into SOE status. The treatment effect model uses a two-stage approach, where the first stage is a prediction model with an indicator variable as the dependent variable for SOE status (i.e., the treatment condition). The second stage includes the hazard ratio (e.g., Lambda estimated from the first stage) to correct the effect of self-selection bias.²³ Our first stage regression uses five variables not included in the second stage regression. According to two recent government decisions (i.e., the 3rd Plenary Session of the 16th China Communist Party Central Committee meeting and the split share structure reform), the state strategically reduced control of public corporations after 2003. Thus, we expect these two government decisions (i.e. *CPCMeeting* and *SplitShareReform*) to reduce state ownership. However, even after 2003, the state still maintains control of certain regulated industries (*Regulated Industries*), which are “the economic lifeline of a country” and “the important industries and key fields that have a bearing on national security” (*Central Committee of the Communist Party of China, 2003*). We expect that state ownership is higher in regulated industries, and the effect of the two government decisions on state ownership is mitigated for regulated industries.

We report the results of the treatment effect model in [Table 7](#). Panel A shows the first stage regression. Consistent with our expectations, all variables are significantly related to the indicator for state ownership (*SOE*), the dependent variable in the first stage. The results suggest higher state ownership for regulated industries. On average, state ownership decreases after the CPC meeting in 2003 and the split share reform, but the decreases are mitigated for regulated industries. Panel B of [Table 7](#) reports the second stage regression results after controlling for the hazard ratio from the first stage, and indicates state ownership is associated with significantly higher tax rates, consistent with our primary findings.

As an alternative to the treatment effect model, in the Online Appendix we also perform one-to-one propensity score matched sample tests, which follow a two-stage approach. Using the full sample, the first-stage regression predicts the probability that a firm is a SOE. Then, we match each non-SOE with a SOE based on the predicted probability from the first stage regression. The second stage regression uses the matched samples, and results remain robust, again mitigating concerns about unobserved differences in SOE and non-SOE firm characteristics as an alternative explanation for our primary results.

6. Conclusion

We find that SOEs report significantly higher effective tax rates and cash tax rates than do non-SOEs, corroborated by a difference-in-differences test for SOEs that are privatized. We also find a positive association between tax rates and SOE manager promotions. Further, SOE managers exhibit a marked increase in tax rates in the specific year in which they face term-evaluations for promotions. The effects of SOE ownership on reduced tax avoidance are greater for SOEs controlled by local governments than by those controlled by the central government. The primary results are robust in several extensions and robustness tests. Collectively, the findings suggest SOEs make tax decisions favorable to the controlling shareholder, the state, but costly to the minority shareholders, and the state utilizes SOE managers’ career concerns to incentivize these decisions.

Our study contributes to a better understanding of corporate ownership and tax avoidance ([Hanlon and Heitzman, 2010](#)). First, we provide evidence on the importance of ownership structure in determining a firm’s tax avoidance (e.g., [Shackelford and Shevlin, 2001](#)). Second, results are consistent with individual managers’ career concerns playing important roles in corporate tax reporting (e.g., [Dyreg et al., 2010](#)). Finally, our study suggests corporate tax avoidance is associated with agency conflicts between controlling and minority shareholders, and these findings have important implications for investors in international markets (e.g.,

²³ [Maddala \(1983\)](#) extends [Heckman's \(1979\)](#) sample selection model to evaluate the treatment effect. The treatment effect model is widely used in prior research to mitigate the effects of non-random treatment assignment and self-selection biases ([Guo and Fraser, 2014](#); [Li and Prabhala, 2007](#)). The treatment effect model is different from the common Heckman sample selection model in two respects: (1) the indicator variable indicating the treatment condition is also included in the second stage of the treatment effect model; and (2) the dependent variable of the stage second is available for observations with and without treatments.

Table 7
Tests for self-selection bias.

Panel A: First stage of treatment effect model		
	(1) ETR test sample	(2) CETR test sample
Dependent Variable =	SOE	SOE
Size	0.348*** (11.4)	0.346*** (11.1)
ROA	-2.485*** (-5.4)	-3.014*** (-6.3)
MB	0.000 (0.0)	0.002 (0.3)
Lev	-0.725*** (-3.1)	-0.732*** (-3.1)
CAPEX	-0.870** (-2.1)	-0.866** (-2.0)
CrossList	0.748*** (2.9)	0.749*** (2.9)
OwnConcen	1.647*** (5.2)	1.628*** (5.1)
MgmtOwn	0.007 (0.1)	-0.008 (-0.1)
DualCEO	-0.470*** (-5.1)	-0.484*** (-5.4)
CPCMeeting	-0.592*** (-4.3)	-0.553*** (-4.4)
CPCMeeting*Regulated Industries	0.519** (2.4)	0.513** (2.5)
SplitShareReform	-1.192*** (-7.3)	-1.164*** (-7.4)
SplitShareReform*Regulated Industries	0.708*** (3.1)	0.621*** (3.0)
Regulated Industries	0.318 (1.4)	0.407* (1.8)
Intercept	-5.951*** (-9.2)	-5.897*** (-9.1)
Province Fixed Effects	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year
Observations	16,402	15,796
Pseudo R ²	0.23	0.23
Panel B: Second stage of treatment effect model		
	(1)	(2)
Dependent Variable =	ETR	CETR
SOE	0.059** (2.0)	0.076*** (2.9)
Size	-0.001 (-0.2)	-0.002 (-0.5)
ROA	-0.107 (-1.1)	-0.594*** (-7.4)
MB	-0.002* (-1.8)	-0.002* (-1.8)
Lev	0.034** (2.1)	-0.016 (-0.9)
CAPEX	-0.099** (-2.3)	-0.034 (-0.8)
NOL	-0.024*** (-11.0)	-0.026*** (-8.8)
R&D	-1.188*** (-3.3)	-1.166*** (-2.6)
ForSale	-0.009 (-0.6)	0.002 (0.2)
M&A	-0.003 (-0.8)	-0.009** (-2.4)
EquOffer	-0.018*** (-3.6)	-0.031*** (-4.2)

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Table 7 (continued)

Panel B: Second stage of treatment effect model	(1)	(2)
<i>CrossList</i>	−0.015* (−1.9)	−0.014 (−1.1)
<i>OwnConcen</i>	−0.039* (−1.8)	−0.038 (−1.6)
<i>MgmtOwn</i>	−0.002 (−0.4)	0.001 (0.2)
<i>DualCEO</i>	−0.000 (−0.0)	0.002 (0.3)
<i>TaxPreference</i>	−0.056*** (−11.4)	−0.050*** (−9.1)
<i>Lambda</i>	−0.027 (−1.5)	−0.038** (−2.3)
<i>Intercept</i>	0.134 (1.5)	0.194** (2.3)
Industry Fixed Effects	YES	YES
Year Fixed Effects	YES	YES
Province Fixed Effects	YES	YES
Standard Errors Clustering	Firm, Year	Firm, Year
#Observations	16,402	15,796
R ²	0.12	0.10

Note: In this table we perform the two-stage Heckman treatment effect test. Panel A shows the first stage probit model to predict state ownership. The first stage includes five plausibly exogenous variables and other variables measuring firm fundamentals and corporate governance. Panel B shows the second stage regression after controlling for the hazard ratio (Lambda) estimated from the first stage regression. *t*-statistics are reported in parentheses. ***, ** and * refer to two-tailed significance at the 0.01, 0.05 and 0.10 level, respectively

Desai and Dharmapala, 2006, 2009; Desai et al., 2007).

We believe our results are relevant in any market where the government holds an ownership stake in the firm. For example, many countries with weak legal environments (e.g., Italy, Indonesia, Mexico, Brazil, and Philippines) also have numerous state-owned enterprises. We would expect our results to also be descriptive of tax avoidance in these countries, where managerial incentives are not moderated by strong institutional infrastructure. However, it is possible that state-owned enterprises in other countries with strong investor protection and legal environments would exhibit less tax avoidance. For example, Norway is highly ranked for its institutional infrastructure, which includes features like employees having rights to elect at least one-third of directors that appoint executives. Thus, the career path of Norwegian SOE managers is not fully controlled by the state, so the tax avoidance behavior of those managers would likely reflect different incentives, and anecdotal evidence is consistent with lower tax rates reported by Norwegian SOEs.²⁴ We believe future research can further explore how different features of institutional environments interact with manager incentives and affect managerial tax reporting and other behavior.

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Supplementary materials

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²⁴ Recent news indicates that “the Norwegian state-owned investment company Argentum invested in 27 funds in the tax havens Jersey and Guernsey. Politicians in opposition had protested Argentum’s channeling of billions through tax havens, while Norway officially fights against tax heavens [sic]” (“Norway Takes Lead in Combating Tax Evasion in Developing Countries,” July 7, 2012, available at www.tnp.no/norway/economy/). Similar allegations were made against the Norwegian Oil Fund and Statoil (“Narrative Report on Norway, Financial Secrecy Index,” November, 7, 2013, available at www.financialsecrecyindex.com).

Appendix. Variable definitions

Table A1

Table A1

Variable	Definition
<i>ETR</i>	Current income tax expense divided by pretax income. Source: CSMAR database.
<i>CETR</i>	Cash income tax paid divided by pretax income. Source: CSMAR database, Wind database and hand collection.
<i>RANK_ETR</i>	The decile rank of a firm's <i>ETR</i> among all observations in the same year. Source: CSMAR database.
<i>RANK_CETR</i>	The decile rank of a firm's <i>CETR</i> among all observations in the same year. Source: CSMAR database, Wind database and hand collection.
<i>SOE</i>	An indicator variable equal to one if a firm is controlled by the state, and zero otherwise. The controlling owner is defined as the one who controls an absolute majority (i.e., over 50%) of voting rights, or holds enough voting rights to have de facto control. Source: CSMAR database, CCEER database and hand collection.
<i>Local SOE</i>	An indicator variable equal to one if a firm is controlled by a local government, and zero otherwise. Source: CSMAR database and hand collection.
<i>Central SOE</i>	An indicator variable equal to one if a firm is controlled by the central government, and zero otherwise. Source: CSMAR database and hand collection.
<i>Promotion</i>	An indicator variable for manager promotion in state owned enterprises, which equals to one if the manager is promoted to a higher level position in the next year; zero, if the manager stays at the same position. Source: Hand collection.
<i>ROA</i>	Operating income divided by total assets at the end of the year. Source: CSMAR database.
<i>Size</i>	Firm Size, measured by the natural logarithm of the book value of total assets (in RMB) at the end of the year. Source: CSMAR database
<i>MB</i>	Market to book ratio, the sum of market value of equity at the end of the year, divided by the book value of equity at the end of the year. Source: CSMAR database.
<i>Lev</i>	Financial leverage, measured by total debt divided by total assets at the end of the year. Source: CSMAR database
<i>CAPEX</i>	Capital expenditure divided by total assets at the end of the year. Source: CSMAR database.
<i>NOL</i>	The accumulated pre-tax losses reported in the prior five years; set to 0 if the accumulated earnings in the prior five years are positive. Source: CSMAR database.
<i>R&D</i>	Research and development expense divided by total assets at the end of the year; set to 0 if missing Source: Hand collection.
<i>ForSale</i>	The percentage of foreign sales to total sales, set to 0 if missing. Source: CSMAR database and Hand collection.
<i>M&A</i>	An indicator variable for merger and acquisition in the current year. Source: CSMAR database.
<i>EquiOffer</i>	An indicator variable for seasonal equity offering. Source: CSMAR database.
<i>CrossList</i>	An indicator variable for firms that are also cross-listed in both A-share and H-Share stock markets. Source: CSMAR database.
<i>TaxPreference</i>	An indicator variable for firms that potentially enjoy a preferential tax rate. Three major types of firms enjoy preferential tax rates: 1) firms domiciled in special locations, including hi-tech industry development zones and economic development zones (that sometimes receive preferential tax rates); 2) firm-years with foreign ownership (that are eligible for preferential tax rates); 3) observations of firms younger than three years (that receive special deductions for start-up expenses). Source: WIND database.
<i>OtherTax</i>	Other taxes or fees paid to the government divided by revenue. Source: CSMAR database.
<i>OwnConcen</i>	The ownership percentage of the largest shareholder. Source: CSMAR database.
<i>Age</i>	CEO age. Source: CSMAR database and hand collection.
<i>Tenure</i>	CEO tenure. Source: CSMAR database and hand collection.
<i>MgmtOwn</i>	An indicator variable equals to one if the management has equity ownership, 0 otherwise. Source: CSMAR database.
<i>DualCEO</i>	An indicator variable equal to one if the CEO is also the chairman of the board of directors, and zero otherwise. Source: CSMAR database.
ΔETR	<i>ETR</i> in year <i>t</i> minus <i>ETR</i> in year <i>t</i> -1. Source: CSMAR database.
$\Delta CETR$	<i>CETR</i> in year <i>t</i> minus <i>CETR</i> in year <i>t</i> -1. Source: CSMAR database.
$\Delta ETR3$	<i>ETR</i> in year <i>t</i> minus the average <i>ETR</i> from year <i>t</i> -3 to year <i>t</i> -1. Source: CSMAR database.
$\Delta CETR3$	<i>CETR</i> in year <i>t</i> minus the average <i>CETR</i> from year <i>t</i> -3 to year <i>t</i> -1. Source: CSMAR database.
ΔROA	<i>ROA</i> in year <i>t</i> minus <i>ROA</i> in year <i>t</i> -1. Source: CSMAR database.
$\Delta ROA3$	<i>ROA</i> in year <i>t</i> minus the average <i>ROA</i> from year <i>t</i> -3 to year <i>t</i> -1. Source: CSMAR database.
<i>Pre-Privatization</i>	An indicator which is set to 1 for SOEs prior to privatizations, 0 for matched non-SOEs. Source: CSMAR database.
<i>Post-Privatization</i>	An indicator which is set to 1 for previous SOEs after privatizations, 0 for matched non-SOEs. Source: CSMAR database.
<i>CPCMeeting</i>	An indicator for the 3rd Plenary Session of the 16th China Communist Party Central Committee meeting in 2003, which lessened state control of public corporations (Central Committee of the Communist Party of China, 2003). We expect the proportion of state owned enterprises to decrease after the meeting. Source: CSMAR database.
<i>SplitShareReform</i>	An indicator for the split share structure reform (initiated in 2005), which allows previously non-tradable state-owned shares to be tradable on the stock market (e.g., Liao et al., 2014). By 2007, most firms (i.e., 97% of the market capitalization at the time) completed the reform (Li et al., 2011), and the state could more freely trade shares, leading to a reduction in state ownership. Source: CSMAR database.
<i>Regulated Industries</i>	An indicator for regulated industries for which the state strategically retains control. Even though the Communist Party reduced control of public firms after 2003, the state maintains policies to control “the economic lifeline of a country” and “the important industries and key fields that have a bearing on national security” (Central Committee of the Communist Party of China, 2003). We obtain the list of regulated industries from Chang et al. (2014), and include mining, railroads, trucking, airlines, telecommunications, energy supply, and media. These industries are identified based on policy reports from the state council (The General Office of the State Council, 2006) and Shenzhen stock exchange (Chen et al., 2008). We expect state ownership to be higher in regulated industries. Source: CSMAR database.

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