Malaysian Journal of Economic Studies 54(2): 281–299, 2017 ISSN 1511-4554

Corruption, Marketisation and Corporate Tax Management in China: Evidence from Listed Firms

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Abstract: Most empirical research on the subject of tax management has emphasised the impact of internal corporate governance. Yet, the external governance mechanism regulating corporate behaviour is no less important, but far less studied. This study investigates how corruption and marketisation impact corporate tax management, which lowers corporate tax. It finds an inverted U-shape relationship between corruption and corporate tax management in China during the period of 2008 to 2013, with the effect positive at low to moderate levels of corruption and negative beyond these levels of corruption. However, marketisation, i.e., the greater reliance on market forces, is found to mitigate this impact of corruption on corporate tax management regardless of the level of corruption. In light of these findings, greater reliance on market institutions will directly and indirectly improve corporate decision making.

Keywords: China, Corporate tax management, corruption, marketisation
JEL classification: O53, D73, P3, P2

1. Introduction

Although it is extremely difficult to measure corruption as only those convicted are figured in statistics which may or may not be reflected in perceptions, the Corruption Perceptions Index (CPI) constructed by Transparency International ranked China as the 79th most corrupt nation among 175 countries in 2016[1]. Regardless of its veracity, corruption is a major social problem in contemporary China. Following the large-scale crackdown on corruption in the past few years this topic has moved to the forefront among topics of concern and has attracted considerable attention among researchers (Jiang & Nie, 2014; Liu, 2016; Wang & You, 2012; Xu & Yano, 2017).

However, the question of how corruption influences economic activities is contested. On the one hand, some researchers support the conventional view that corruption of government acts as a "grabbing hand", creating costs for economic activities and distorts resource allocation, thereby negatively affecting long-run

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[1] Source from http://www.transparency.org/news/feature/corruption_perceptions_index_2016

economic activities. On the other hand, other researchers argue that if a country suffers poor governance and heavy regulation, a bribing mechanism actually facilitates the successful completion of economic transactions, and hence, can be viewed as a "helping hand" (see Jiang and Nie (2014) for both arguments). These contrasting conjectures suggest that the relationship between corruption and economic activities may vary in that both theoretical arguments may also be compatible with different levels of corruption.

How does corruption affect business? It does so through its impact on determinants of firm performance. One such determinant is tax management. Using cross-country survey data, Alm, Martinez-Vazquez, and McClellan (2016) found corruption by tax officials affects firms' tax reporting decisions resulting in an understatement of sales reported to tax authorities. Under-reporting of tax liability is part and parcel of tax management, defined as efforts to minimise a firm's tax burden at any time. Although a large body of theoretical and empirical research on corruption and tax management separately has emerged, the relationship between the two issues has remained a largely unexplored area.

With the increased focus on corruption, researchers have also started to consider the role of the institutional environment in moderating the impact of corruption. For instance, using cross-country data, Heckelman and Powell (2010) found that improvements in the institutional environment changed the impact of corruption on growth.

For China, neither the corruption-tax management link nor the role of institutional environment has seen much research. Yet, both issues are particularly salient because China's tax system has undergone considerable reforms over the last three decades, but a well-developed legal framework to stem corruption is not yet in place, thereby allowing enterprises to pursue aggressive tax avoidance to reduce tax costs. From the enterprise perspective, managers can bribe to obtain tax preferences and evade legal restrictions. In the interest of decentralisation, China has also implemented in 1994 a tax sharing system that offers opportunities for local officials to pursue new rent-seeking opportunities. This has added to the complexity of efforts to analyse the impact of corruption on tax management.

At the same time, China has undergone a progressive but dramatic economic transformation from a centrally planned to a market-oriented economy in the space of just over three decades. While, by the marketisation argument, a reduction in corruption should be expected, many commentators believe that corruption is still rife in China (Dong & Torgler, 2013; Foo, Wu, & Chin, 2014; You & Nie, 2017).

The above paradoxes provide the rationale for this paper. The following questions are addressed. First, what are the effects of corruption on corporate tax management? Second, how does marketisation moderate the relationship between corruption and tax management?

This study uses a large panel data of Chinese A-share listed enterprises, making the following contributions to the literature. Firstly, the causal pathways linking political corruption and corporate tax management are little known and still underdeveloped in the literature; therefore, the empirical results of this study will help reduce this research gap while also providing policy implications with respect to how market

development and corruption influence corporate tax management. Secondly, China's strong integration into the global economy having a growing impact on the latter, this study's findings have significance far beyond China's shores.

The rest of the paper is organised as follows. Section 2 reviews the previous research and describes the research hypotheses. Section 3 presents research methodology including the sample details, variables and model descriptions. Section 4 discusses the empirical results addressing the above questions. Section 5 concludes the study by drawing policy implications.

2. Literature Review and Hypotheses

Businessmen typically understand corruption as government bureaucrats abusing their public power to sell government property, influence or circumvent government regulation for private gain (Jiang & Nie, 2014; Ngo, 2008; Petrou & Thanos, 2014).

From a theoretical perspective, rational choice theory characterises an individual being rational and self-interested, and pursuing value-oriented activities (Scott, 2000). Hence, as rational individuals, firms pay bribes to government officials when they deem their benefits reaped from bribes to be higher than their costs. The costs of firms providing bribes have at least two parts: bribe-related payments and potential risks of detection and punishment once caught. On this basis, the impact of corruption on tax management may be non-linear, but instead supports two opposite theoretical views of corruption, the "helping hand" view and "grabbing hand" view. On the view of "helping hand", firms can make more profits by paying a bribe premium (Jiang & Nie, 2014; Petrou & Thanos, 2014; You & Nie, 2017), whereas the "grabbing hand" saddles firms with higher costs.

In the China context, several developments have heightened the likelihood of corruption. First, under fiscal decentralisation, the Chinese central government granted more autonomy and authority to local governments to give local officials more discretionary power. Since the tax-sharing reform in 1994, China has started to adopt a dual system of tax collection and administration, and the revenue from corporate taxation is shared by central and local governments, with the central government's share being 60 percent[2]. Under the current taxation system, local governments, especially local taxation bureaus, have been granted more taxing authority, giving local officials more opportunities to seek bribery.

Second, in the Chinese economy with extensive government intervention, markets have become more relationship-based (*guanxi*) rather than rule-based (Martinsons, 2005), leading to corruption being viewed as "normal" behaviour (Jain, 2001). Thus, firms are apt to bribe their local government officials to obtain extra economic advantage such as direct subsidies tax benefits, tax breaks or tax reduction, and grants (Ngo, 2008).

[2] The State Administration of Taxation (SAT) is responsible for the collection of corporate tax of central-SOEs. Local governments are responsible for collecting the corporate tax from local SOEs and all other non-SOEs, and then transfer the 60 percent revenue collected to the central government.

On the opposite view of "grabbing hand", firms operating in an environment with widespread and rampant corruption have to expend more financial and human resources to seek rent via corruption. At the same time, they also have to bear uncertainty risks from engaging in corruption that can result in penalties if caught engaging in corrupt practices (Jain, 2001), which then reduces income. In this case, covert bribing system acts as a "grabbing hand", where the firms' net losses/costs via bribing are higher than their net profits. As a result, it may affect negatively the enthusiasm of firms for avoiding tax or obtaining tax-related benefits via bribe. In light of the above arguments about the variable impact of corruption on tax management, Hypothesis 1 is posited:

> H1. The impact of corruption on corporate tax management is inverted U-shaped so that tax management rises when corruption increases from low to moderate level, but falls when corruption increases from moderate to high levels.

Scholars have also begun to consider the impact of the institutional environment on corruption (Ali & Isse, 2003). When the government plays an intrusive economic role that hurts competition, corruption tends to be more rampant (Ades & Di Tella, 1999; Giavazzi & Tabellini, 2005). Thus, literature also shows that improving marketisation leads to decreased corruption via the mechanisms of governmental deregulation, simplification of regulations, and reduction of bureaucratic discretionary power (Dong & Torgler, 2013; Svensson, 2005). Therefore, there is expected to be a strong correlation between decreased corruption and market development (Goel & Nelson, 2005; Heckelman & Powell, 2010). Still, a contrarian conclusion has also been drawn. Heckelman and Powell (2010) found that in an environment with limited economic freedom, corruption plays a beneficial role in promoting growth via avoiding inefficient policies and regulations.

Recent empirical studies provide evidence of paradoxical co-development of marketisation and corruption in China. Gong and Zhou (2015) using data from a Chinese mid-size city found that the essence of market competition has often been circumvented, modified or simply replaced by conditions conductive to corruption. Hence, along with the promotion of market-oriented economic reform, local officials have been given more discretionary power to influence the setting and implementing of local regulations that may increase officials' rent-seeking activities. Ko and Weng (2012) reported that driven by a rapidly growing private sector, bribery has become the leading form of corruption in China. Dong and Torgler (2013) further found that in the process of transition to a market-oriented economy, economic development will increase corruption. As a result, the transition from communism can lead to new forms or characteristics of corruption (Karklins, 2005).

Given the above opposite views of the impact of the institutional factor on corruption, this study examines the moderating role of marketisation on the relationship between corruption and tax management. This leads to the second hypothesis:

> H2. The relationship between corruption and tax management is moderated by marketisation.

3. Research Methodology

This section presents the sample selection of this study, introduces the empirical measures of main variables, moderator variables, and control variables, and shows the empirical models used to examine the three hypotheses.

3.1 Sample and Data

The research period of this study is from 2008 to 2013. This study contains two levels of data, i.e. firm-level and province-level. The focus is on Chinese A-share (domestic market) companies listed on the Shanghai or Shenzhen Stock Exchanges. The firm-level data, corporate tax management and other financial control variables (e.g. size, leverage, firm age), come from the China Stock Market and Accounting Research (CSMAR) database[3].

Following Dong and Torgler (2013), Jiang and Nie (2014), and Xu, Li, Liu, and Gan (2017), this study uses the number of registered cases of corruption per 10,000 officials in each province in a given year to measure corruption at the provincial level. Thus, the provincial-level panel data for corruption are from the *Procuratorial Yearbooks of China* (published by the Supreme People's Procuratorate of China and listed on the Provincial People's Procuratorate websites). Moreover, to measure marketisation, this study uses the indexes of provincial marketisation. The data of provincial marketisation indexes are collected from *Marketization Index of China's Provinces: NERI Report 2016* prepared by Wang, Fan, and Yu (2017).

Following Wu, Wu, Zhou, and Wu (2012), Xu and Yano (2017), and Zhang, M, Zhang, and Yi (2016), this study excludes firms in the financial industry because their financial reporting and corporate tax practices differ from firms in other industries. Also excluded are the firm-year observations that are labelled as ST or Special Treatment shares, covering firms with financial problems and/or other abnormal challenges. In addition, the sample is also limited to firm-year observations with corporate effective tax rates (*ETR*) between zero and one. Finally, the study deletes firm-year observations with missing information. This leaves 9,033 firm-year observations. To reduce the effect of extreme outliers, the study trims the continuous variables at the 1st and 99th percentiles.

3.2 Variables

3.2.1 Corporate Tax Management

To capture the overall level of corporate tax management, this study uses two categories of corporate effective tax rates. Corporate effective tax rates can reflect all kinds of tax management transactions, even aggressive tax avoidance through permanent book-tax differences (Chen, Chen, Cheng, & Shevlin, 2010). The first category, which is the current effective tax rate defined as *ETR*, is calculated as income

[3] The CSMAR database is developed by Shenzhen GTA Information Technology Co., Ltd. and designed by the China Accounting and Finance Research Centre of the Hong Kong Polytechnic University.

tax expenses minus deferred tax expenses over pretax profit. It reflects the firms' overall tax burden. To adjust the effect of tax deductions in different industries, this study further uses a second category, which is the industry-adjusted effective tax rate defined as *ETR_adj*, estimated by corporate *ETR* minus average industry *ETR*. In 2008, China enacted a new corporate income tax law, which set a unified corporate income tax rate of 25 percent for both domestic and foreign-funded companies. To support the development of special industry, tax preference and incentives are granted to income from these industries, such as new high tech, agriculture, forestry, livestock farming and fishery companies.

3.2.2 Corruption

Following prior studies (Dong & Torgler, 2013; Jiang & Nie, 2014; Xu et al., 2017), this study uses as the measure of corruption the number of registered cases of corruption per 10,000 public officials in a given province in a given year. It is so far the only commonly used proxy to measure the extent of Chinese bureaucratic corruption at the provincial level (Jiang & Nie, 2014). More importantly, this conviction-rate-based[4] proxy provides a relatively less subjective measure to study Chinese provincial corruption, and avoids problems of sampling error and survey non-response (Glaeser & Saks, 2006).

3.2.3 Marketisation

The provincial-level marketisation index, obtained from *Marketization Index of China's Provinces: NERI Report 2016* prepared by Wang et al. (2017), is used as a measure of marketisation. The marketisation index reflects the provincial market environment in the registered place of listed enterprises, and reflects the extent of provincial institutional transition from a government-based to a market-based economic environment. The index has five dimensions: the relationship between the government and the market; the development of the non-state sector; the development of the product markets; the development of the factor markets; and the development of market intermediaries and the legal environment, which together offer a comprehensive assessment of the level of regional marketisation development. A higher index means the provincial environment is more market-oriented.

3.2.4 Control Variables

In addition to the above variables, several other firm-level variables are included as control variables: firm size (*Size*), rate of return on assets (*ROA*), firm age (*Age*), market/

[4] Theoretically, the conviction rate and the number of registered cases of corruption are different. But in China, they tend to be highly correlated, even not identical. Generally, in most cases in China, suspect officials are first investigated by the discipline inspection commission of the Chinese Communist Party and its local branches. Only after they have obtained enough evidence, the discipline inspection commission and its local branches will refer corrupt cases to the procuratorates, then the procuratorates will register the cases. Moreover, in China, the courts and the procuratorates are both controlled by the government. Thus, except in a few very limited circumstances, the courts will not reject public prosecutions against corrupt cases.

book ratio (*MB*), firm leverage (*Leverage*), firm sales growth (*Growth*), largest and top 10 shareholders' shareholdings (*Largest* and *Top10*), and discretionary accruals (*Discacc*).

Prior studies (Dyreng, Hanlon, & Maydew, 2008; Minnick & Noga, 2010) show that firm size and growth may impact corporate tax management because large firms possess superior resources and political power to lobby and get a lower tax rate than smaller firms (Siegfried, 1972). Thus, *Size* calculated by the natural logarithm of firms' total assets and *Growth* measured by firms' sales growth are included as variables. *Leverage* is the ratio of total liabilities to total assets, and reflects the overall level of firms' debts. Because of tax-deductible interest payments, higher leverage may cause a lower ETR that may influence corporate tax management (Gupta & Newberry, 1997; Richardson, Taylor, & Lanis, 2013).

ROA is the return on total assets. Prior research has shown inconsistent results in the relationship between *ROA* and ETRs. On the one hand, firms with more taxable income can mean they are more profitable leading to a positive relationship between *ROA* and ETRs (Dyreng et al., 2008). On the other hand, firms with higher *ROA* may mean they are more efficient and have more ability to pay less taxes (Zhang et al., 2016). *MB* is the market value of equity over the book value of the equity. The firm that has a higher *MB* has more investment opportunities that may impact corporate decisions (Zhang et al., 2016). Firm age (*Age*) is the natural logarithm of the number of years since the firm went public. The longer the firms have existed, the more complex and mature are their corporate management and governance likely to be (Chen, 2015). *Discacc* is the absolute value of discretionary accruals, computed using the modified Jones model. Prior research shows that there is a relationship between tax management and earnings management (Frank, Lynch, & Rego, 2009; Kubick & Masli, 2016). This study also includes the percentage of shareholding by largest and top 10 shareholders to represent ownership concentration of the listed firms, which prior studies (Badertscher, Katz, & Rego, 2013; Richardson, Wang, & Zhang, 2016) have shown inconclusive results relating to the impact of ownership concentration on corporate tax management.

To address the potential problem of endogeneity, this study has included provincial fixed effects in the regressions to avoid unobserved regional characteristics, which may affect provincial corruption and tax management estimates. Following prior studies (Richardson et al., 2016; Zhang et al., 2016), industry and year dummies are added to control for industry and year fixed effects. Appendix 1 shows the definition and details of all variables.

Table 1 displays the distribution of ETRs by industry in the sample. The industrial classification is based on specifications of the China Securities Regulatory Commission (CSRC). The sample is highly skewed towards manufacturing which comprises approximately 61 percent of the total sample (5,524 out of 9,033 firm-years), confirming that China is a manufacturing-based economy. In addition, Table 1 also shows that the different industries have different levels of effective tax rates because of the preferential tax policy to support specific industries such as agriculture, forestry, livestock farming and fishery industry and high-tech industry. Thus, the study controls for industry effects by including industry dummies.

Table 1. Distribution of ETR by industry

Industry	ETR	N
Agriculture, forestry, livestock farming and fishery	0.097	125
Mining	0.264	272
Manufacturing	0.201	5524
Electric power, heat, gas and water production	0.228	355
Construction	0.272	247
Wholesale and retail	0.277	694
Transportation, storage and post	0.209	368
Accommodation and catering services	0.248	46
Information technology and software	0.141	378
Real estate	0.303	619
Leasing and commercial service	0.244	90
Scientific research and technological service	0.190	31
Water conservancy, environment and public establishment	0.226	101
Education	0.488	4
Health and social work	0.293	12
Communication and culture	0.149	72
Miscellaneous	0.242	95
Total	0.216	9033

3.3 Model Specification

To examine the relationship between corruption and corporate tax management (Hypothesis 1), the following regression models, Eq. (1) and Eq. (2), are specified:

$$TAX_{i,t} = \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Age_{i,t} + \beta_5 MB_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 Top10_{i,t} + \beta_8 Largest_{i,t} + \beta_9 Growth_{i,t} + \beta_{10} Discacc_{i,t} + Industry\ Dummies + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \quad (1)$$

$$TAX_{i,t} = \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 Corruption^2_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Age_{i,t} + \beta_6 MB_{i,t} + \beta_7 Leverage_{i,t} + \beta_8 Top10_{i,t} + \beta_9 Largest_{i,t} + \beta_{10} Growth_{i,t} + \beta_{11} Discacc_{i,t} + Industry\ Dummies + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \quad (2)$$

Eq. (1) is used to test the linear relationship between corruption and corporate tax management and Eq. (2) is used to examine the non-linear relationship between them. In the model, $TAX_{i,t}$ represents corporate tax management for firm i in year t, which is the dependent variable proxied by $ETR_{i,t}$ and $ETR\_adj_{i,t}$. The independent variable, $Corruption_{i,t}$, is provincial corruption. A set of control variables includes firm size ($SIZE_{i,t}$), return on assets ($ROA_{i,t}$), firm age ($Age_{i,t}$), market-to-book ratio ($MB_{i,t}$), firm leverage ($Leverage_{i,t}$), shareholding by the top 10 shareholders ($TOP10_{i,t}$), shareholding by the largest shareholders ($Largest_{i,t}$), firm growth rate ($Growth_{i,t}$), absolute value of

discretionary accruals ($Discacc_{i,t}$). The detail definition of each variable is shown in Appendix 1. In addition, three dummy variables of *Province*, *Industry* and *Year* are also included to control for regional, industry and time fixed effects.

Next, to test the moderating role of marketisation on the relationship between corruption and tax management, the following regression models, Eq. (3a) and Eq. (3b), are used.

$$\begin{aligned} TAX_{i,t} = {} & \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 Marketisation * Corruption_{i,t} + \beta_3 Marketisation_{i,t} \\ & + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Age_{i,t} + \beta_7 MB_{i,t} + \beta_8 Leverage_{i,t} + \beta_9 Top10_{i,t} \\ & + \beta_{10} Largest_{i,t} + \beta_{11} Growth_{i,t} + \beta_{12} Discacc_{i,t} + Industry\ Dummies \\ & + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \end{aligned} \tag{3a}$$

$$\begin{aligned} TAX_{i,t} = {} & \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 Corruption^2_{i,t} + \beta_3 Marketisation * Corruption_{i,t} \\ & + \beta_4 Marketisation * Corruption^2_{i,t} + \beta_5 Marketisation_{i,t} + \beta_6 SIZE_{i,t} \\ & + \beta_7 ROA_{i,t} + \beta_8 Age_{i,t} + \beta_9 MB_{i,t} + \beta_{10} Leverage_{i,t} + \beta_{11} Top10_{i,t} \\ & + \beta_{12} Largest_{i,t} + \beta_{13} Growth_{i,t} + \beta_{14} Discacc_{i,t} + Industry\ Dummies \\ & + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \end{aligned} \tag{3b}$$

If the result of Eq. (1) is supported, then Eq. (3a) will be used to test the moderating role of marketisation, but if the results of Eq. (2) is significant, then Eq. (3b) will be used to examine the impact of marketisation. In the models of Eq. (3a) and (3b), the dependent variable is corporate tax management, represented by $TAX_{i,t}$, proxied by $ETR_{i,t}$ and $ETR\_adj_{i,t}$. The independent variable $Corruption_{i,t}$, is as defined above. $Marketisation_{i,t}$ the moderator variable, represents the Chinese provincial marketisation level. $Marketisation * Corruption_{i,t}$ is a moderation term of provincial marketisation and provincial corruption status. A set of control variables, already defined, are firm size ($SIZE_{i,t}$), return on assets ($ROA_{i,t}$), firm age ($Age_{i,t}$), market-to-book ratio ($MB_{i,t}$), firm leverage ($Leverage_{i,t}$), shareholding by the top 10 shareholders ($TOP10_{i,t}$), shareholding by the largest shareholders ($Largest_{i,t}$), firm growth rate ($Growth_{i,t}$), absolute value of discretionary accruals ($Discacc_{i,t}$). In addition, three dummy variables of *Province*, *Industry* and *Year* are also included to control for regional, industry and time fixed effects.

4. Empirical Results

4.1 Descriptive Statistics

Table 2 shows the summary statistics for the defined variables. The mean and median *ETR* are 21.6 percent and 18.8 percent, respectively, and the 75th percentile of *ETR* is 26.7 percent. Thus, more than half of the sample firms in this study have a lower corporate effective tax rate than the 25 percent statutory rate, and only about one-fourth of the sample firms have effective tax rates more than 25 percent. Therefore, corporate tax management appears to have become a common and significant strategy of corporate management in Chinese listed enterprises. In addition, the median of

Table 2. Summary statistics of variables

Variables	N	Mean	Standard deviation	25th percentile	50th percentile	75th percentile
ETR	9033	0.216	0.140	0.140	0.188	0.267
ETR_adj	9033	0.000	0.133	-0.069	-0.025	0.041
Marketization	9033	7.065	1.599	5.960	7.270	8.310
Corruption	9033	28.580	8.911	22.570	28.450	33.740
Size	9033	9.514	0.533	9.120	9.439	9.819
ROA	9033	0.051	0.040	0.021	0.041	0.070
Age	9033	1.853	0.931	1.099	2.197	2.639
MB	9033	0.277	0.271	0.004	0.219	0.517
Leverage	9033	0.447	0.207	0.287	0.456	0.612
Top10	9033	57.740	15.930	46.450	59.040	70.210
Largest	9033	37.060	15.440	24.430	35.580	48.560
Growth	9033	0.174	0.358	0.006	0.091	0.235
Discacc	9033	0.146	0.130	0.053	0.113	0.203

Source: Computed by authors.

ETR_adj is -2.5 percent, which means more than half of the sample firms are below their industry average level, consonant with the reported *ETR*.

Table 3 reports the correlation coefficients between all variables. The results show that most variables are correlated with the dependent variables. Since the correlations between all independent variables are less than 0.7, multicollinearity is not a problem in the following regression analysis (Hair, Black, Babin, & Anderson, 2009). Furthermore, the calculated variance inflation factor (VIF) statistics show that VIF values of all variables are less than 5, which further supports the above results.

4.2 The Effect of Corruption on Corporate Tax Management

Table 4 presents empirical results of the relationship between corruption and tax management (H1) using ordinary least squares (OLS) and fixed-effect (FE) models with two dependent variables, *ETR* and *ETR_adj* in columns (1) to (8), respectively. All variables have been defined in Appendix 1. All the regressions control for province, industry and year effects. Standard errors that are heteroskedasticity-robust and clustered at the firm level are used in the analysis.

In columns (1) and (4), the results show that there is no statistically significant linear relationship between corruption and corporate tax management. These results suggest that the effect of corruption on firm activities cannot be simply ascribed to a monotonic detrimental or beneficial effect. However, by including a linear term and a quadratic term of corruption with two measures of tax management (*ETR* and *ETR_adj*) in both OLS and fixed-effect regressions, the coefficient of the linear term is significantly negative indicating that corruption leads to a decreasing corporate tax effective rate (Table 4, columns (6) to (8)). Because the low corporate ETRs represent a

Table 3. Descriptive statistics of correlations between variables

	ETR	**ETR_adj**	**Marketization**	**Corruption**	Size	ROA	Age
ETR_adj	0.951***						
Marketization	-0.003	-0.026**					
Corruption	0.021*	0.029***	-0.193***				
Size	0.111***	0.044***	-0.034***	-0.066***			
ROA	-0.285***	-0.258***	0.044***	-0.068***	-0.062***		
Age	0.156***	0.086***	-0.159***	0.051***	0.307***	-0.157***	
MB	-0.088***	-0.059***	0.056***	-0.033***	-0.159***	0.137***	-0.582***
Leverage	0.244***	0.158***	-0.127***	0.059***	0.515***	-0.407***	0.448***
Top10	-0.068***	-0.057***	0.123***	-0.073***	0.147***	0.220***	-0.454***
Largest	0.009	-0.011	0.029***	-0.076***	0.258***	0.066***	-0.075***
Growth	-0.029***	-0.031***	-0.029***	-0.016	0.080***	0.208***	-0.083***
Discacc	0.021*	0.014	-0.122***	0.040***	0.146***	-0.044***	0.010
	MB	Leverage	Top10	Largest	Growth		
Leverage	-0.276***						
Top10	0.519***	-0.137***					
Largest	0.230***	0.075***	0.645***				
Growth	0.165***	0.106***	0.164***	0.078***			
Discacc	0.110***	0.181***	0.108***	0.090***	0.245***		

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

2. The variables shown in bold are the main variables in this study. ETR and ETR_adj are the two alternative measures of tax management, which are the dependent variables in Eq. (1) to (3); Corruption is the independent variable in Eq. (1) to Eq. (3); Marketisation is the moderator variable examined in Eq. (3). Other variables: Size, ROA, Age, MB, Leverage, Top 10, Largest, Growth, Discacc are the control variables examined in Eq. (1) to Eq. (3).

Source: Computed by the authors.

Table 4. The impact of corruption on corporate tax management

	(1) OLS ETR	(2) FE ETR	(3) OLS ETR_adj	(4) FE ETR_adj	(5) OLS ETR	(6) FE ETR	(7) OLS ETR_adj	(8) FE ETR_adj
$Corruption_{i,t}$	0.000	0.000	0.000	0.000	-0.003	-0.004*	-0.004*	-0.004*
	(0.43)	(0.81)	(0.34)	(0.73)	(-1.47)	(-1.76)	(-1.73)	(-1.96)
Corruption $squared_{i,t}$					0.000	0.000**	0.000*	0.000**
					(1.60)	(1.98)	(1.84)	(2.16)
$Size_{i,t}$	-0.003	0.013	-0.003	0.013	-0.003	0.013	-0.003	0.012
	(-0.66)	(0.65)	(-0.60)	(0.63)	(-0.66)	(0.63)	(-0.61)	(0.60)
$Age_{i,t}$	0.009***	-0.005	0.009***	-0.005	0.009***	-0.004	0.009***	-0.004
	(3.14)	(-0.74)	(3.06)	(-0.80)	(3.14)	(-0.63)	(3.05)	(-0.67)
$ROA_{i,t}$	-0.836***	-1.334***	-0.825***	-1.307***	-0.836***	-1.331***	-0.826***	-1.304***
	(-14.41)	(-16.24)	(-14.28)	(-15.98)	(-14.41)	(-16.25)	(-14.29)	(-15.99)
$Leverage_{i,t}$	0.050***	0.036	0.048***	0.029	0.049***	0.035	0.048***	0.029
	(3.39)	(1.33)	(3.29)	(1.09)	(3.38)	(1.33)	(3.28)	(1.08)
$MB_{i,t}$	-0.000	0.004	0.000	0.005	-0.000	0.003	0.000	0.005
	(-0.03)	(0.38)	(0.06)	(0.57)	(-0.04)	(0.36)	(0.05)	(0.55)
$Growth_{i,t}$	0.005	0.008*	0.005	0.008*	0.005	0.008*	0.005	0.009*
	(1.06)	(1.65)	(1.17)	(1.69)	(1.08)	(1.69)	(1.19)	(1.73)
$Top10_{i,t}$	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(1.30)	(-0.48)	(1.16)	(-0.49)	(1.30)	(-0.47)	(1.16)	(-0.47)
$Largest_{i,t}$	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.47)	(-0.13)	(-0.36)	(-0.15)	(-0.47)	(-0.11)	(-0.35)	(-0.14)
$Discacc_{i,t}$	-0.013	-0.002	-0.008	0.006	-0.013	-0.002	-0.009	0.005
	(-1.00)	(-0.13)	(-0.65)	(0.41)	(-1.01)	(-0.14)	(-0.67)	(0.39)
Province	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.118**	0.174	0.013	-0.058	0.147***	0.217	0.046	-0.011
	(2.53)	(0.95)	(0.28)	(-0.32)	(2.98)	(1.19)	(0.95)	(-0.06)
N	9033	9033	9033	9033	9033	9033	9033	9033
Adjusted R^2	0.164	0.094	0.082	0.079	0.164	0.095	0.082	0.080

Note: ***, ** and * are significant at 1%, 5% and 10% levels respectively. Figures in parentheses are t-statistics.
Source: Computed by the authors.

low corporate tax burden, it reflects firms with a higher level of tax management. Thus, corruption is positively correlated with corporate tax management at low to moderate levels of corruption. In addition, the quadratic coefficients shown in columns (6) to (8) are significantly positive indicating that high levels of corruption lead to an increasing effective tax rate. Thus, when corruption is over the moderate level, there is a negative correlation between corruption and corporate tax management.

These results provide evidence of a U-shape relationship between corruption and corporate effective tax rates, which indicates that the relationship between corruption and corporate tax management is inverted U-shaped. Hence, Hypothesis 1 is supported. Figure 1 and Figure 2 show a quadratic U-shape curve between corruption and corporate effective tax rates. The probability values of Figure 1 and Figure 2 are computed from the estimated models reported in columns (6) and (8), respectively.

These results also show that when regional corruption is below a certain level, corruption plays a positive role to facilitate enterprises engaging in tax management activities to reduce firms' tax burden, indicating that the benefits of firms' doing such activities outweigh the costs and thus supports the "helping hand" view. But when corruption exceeds the moderate level, corruption shows a negative effect on tax management, indicating that when firms operate in a highly corrupt environment, the costs and/or risk of doing tax management would be greater than the benefits, which supports the "grabbing hand" view of government.

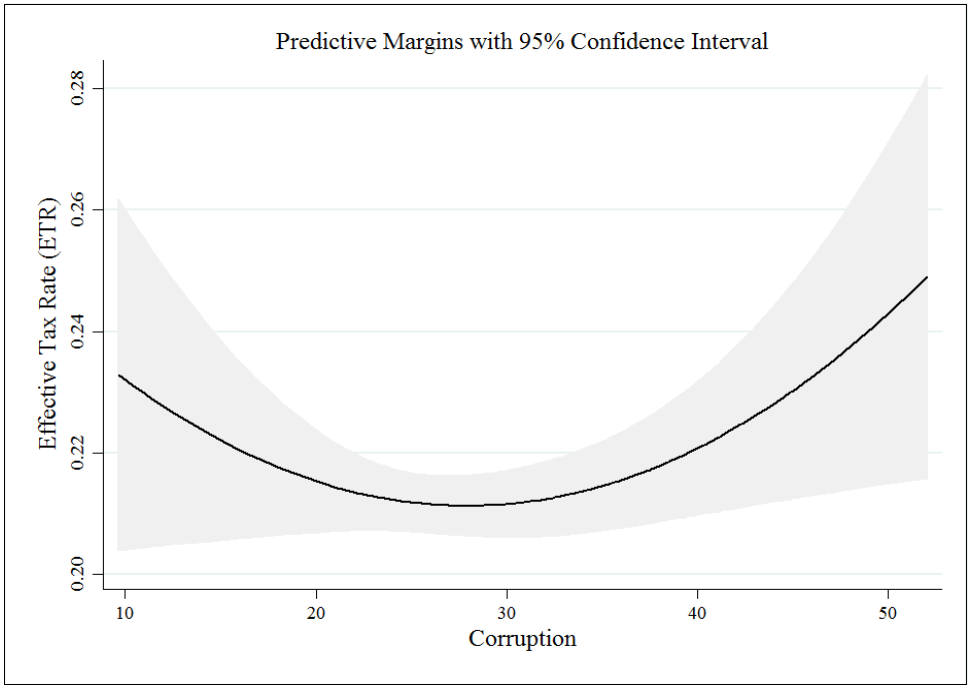

Figure 1. U-shaped effect of corruption on effective tax rate (ETR)

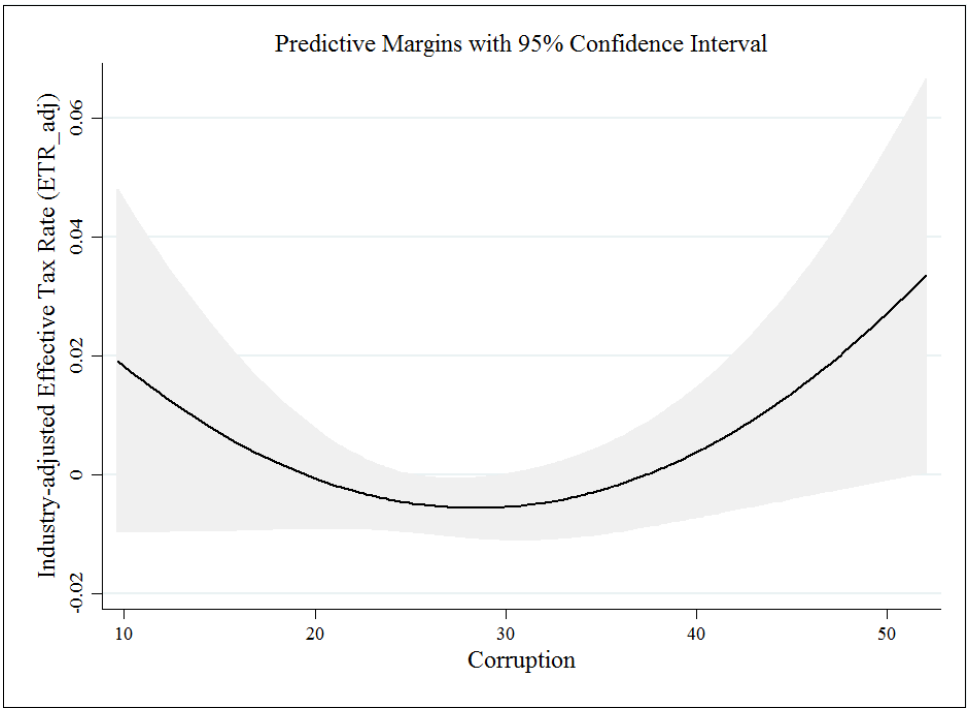

Figure 2. U-shaped effect of corruption on industry-adjusted effective tax rate (ETR_adj)

4.3 The Moderating Effect of Marketisation

Table 5 presents results of the moderating effect of marketisation on the inverted U-shaped relationship between corruption and tax management using OLS and fixed-effect models (FE) with two dependent variables, *ETR* and *ETR_adj* in columns (1) to (4), respectively. All the regressions control for province, industry, and year effects. Standard errors that are heteroskedasticity-robust and clustered at the firm level are used in the analysis. The moderation terms between marketisation and linear ($Corruption_{i,t}$) and quadratic terms of corruption ($Corruption\ squared_{i,t}$) are the key variables of interest in this section.

In columns (1) to (4), the coefficients of the moderation terms between corruption and linear term of corruption ($Corruption{*}Marketisation_{i,t}$) are highly significant and positive, while the moderation terms of marketisation and quadratic term of corruption ($Corruption\ squared{*}Marketisation_{i,t}$) are highly significant and negative. Thus, these results support H2, which indicates that marketisation moderates the curvilinear relationship between corruption and tax management. More specifically, marketisation diminishes the impact of corruption on corporate tax management at both low to moderate levels of corruption and moderate to high levels of corruption. Therefore, market institutions are strengthened, the market environment is becoming more efficient and transparent, with greater fairness and reduced likelihood of bureaucratic

Table 5. The impact of marketisation on the relationship between tax management and corruption

	OLS (1) ETR	OLS (2) ETR_adj	FE (3) ETR	FE (4) ETR_adj
$Corruption_{i,t}$	-0.018***	-0.019***	-0.019***	-0.019***
	(-2.87)	(-2.93)	(-2.91)	(-2.89)
$Corruption\ squared_{i,t}$	0.000***	0.000***	0.000***	0.000***
	(2.78)	(2.79)	(2.81)	(2.75)
$Corruption*Marketisation_{i,t}$	0.002***	0.002***	0.002***	0.002**
	(2.64)	(2.63)	(2.63)	(2.55)
$Corruption\ squared*Marketisation_{i,t}$	-0.000**	-0.000**	-0.000**	-0.000**
	(-2.48)	(-2.44)	(-2.44)	(-2.34)
$Marketisation_{i,t}$	-0.034***	-0.036***	-0.035***	-0.036***
	(-2.65)	(-2.81)	(-2.76)	(-2.87)
$Size_{i,t}$	-0.003	-0.003	0.011	0.010
	(-0.67)	(-0.62)	(0.53)	(0.49)
$Age_{i,t}$	0.009***	0.008***	-0.004	-0.004
	(3.09)	(3.00)	(-0.56)	(-0.58)
$ROA_{i,t}$	-0.835***	-0.824***	-1.329***	-1.302***
	(-14.38)	(-14.26)	(-16.16)	(-15.90)
$Leverage_{i,t}$	0.050***	0.048***	0.036	0.030
	(3.40)	(3.30)	(1.36)	(1.12)
$MB_{i,t}$	-0.001	0.000	0.003	0.004
	(-0.08)	(0.01)	(0.27)	(0.46)
$Growth_{i,t}$	0.005	0.005	0.008*	0.008*
	(1.05)	(1.16)	(1.65)	(1.70)
$Top10_{i,t}$	0.000	0.000	-0.000	-0.000
	(1.30)	(1.16)	(-0.45)	(-0.44)
$Largest_{i,t}$	-0.000	-0.000	-0.000	-0.000
	(-0.46)	(-0.35)	(-0.05)	(-0.07)
$Discacc_{i,t}$	-0.013	-0.009	-0.003	0.005
	(-1.03)	(-0.68)	(-0.18)	(0.35)
Province	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Constant	0.378***	0.292***	0.472**	0.256
	(3.71)	(2.87)	(2.27)	(1.24)
N	9033	9033	9033	9033
Adjusted R^2	0.164	0.083	0.096	0.081

Note: ***, ** and * are significant at 1%, 5% and 10% levels respectively. Figures in parentheses are t-statistics

Source: Computed by the authors.

discretionary behaviour in financial markets. At a result, the impact of corruption on business activities will be reduced by market development.

5. Conclusion

Corruption is a subject that has become much debated in China, with the conventional wisdom being that it is uniformly bad for firm activities. In investigating corruption's relationship with tax management, this study finds this view to be an oversimplification. There exists an inverted U-shaped relationship between corruption and corporate tax management. The relationship is positive at low to moderate levels of corruption but negative as corruption escalates. However, this relationship is mitigated by marketisation, so that as the economy becomes more market oriented, corruption's impact is reduced.

The results here can prove useful for further studies on this increasingly important subject. Firstly, this study sheds light on the effects of corruption on corporate tax management. Instead of the monotonic relationship advanced by the "grabbing hands" and "helping hands" proponents, the U-shaped relationship supports both opposing arguments at different levels of corruption. Moreover, the significant moderating effects of marketisation indicate the validity of market-oriented reform, which impacts firm decision-making directly and indirectly through reducing the effects of imperfect external governance. In addition, the study also contributes to the literature on corporate tax management, which has focused mostly on firm level determinants, by looking at the macro level influence on corporate decision making in their taxation activities.

Finally, the results of this study have several important implications. First, corruption and the institutional environment not only matters for the macroeconomy, but also for internal corporate activities. Second, China's fight against corruption requires structural reforms with the corresponding strengthening of institutions and clarification of rules and regulations. More specifically, the process of marketisation as an inherent external governance mechanism plays an obvious role in business behaviours. The government should steadfastly deepen the market-oriented reforms to build a more perfect legal environment and supervision mechanisms. It is important to note that the large differences of regional marketisation process may hugely limit national development, which should attract attention. Fourth, the empirical results speak to the need for shareholders and investors to cautiously assess the consequence of corruption in their calculus of benefits and costs.

References

Ades, A., & Di Tella, R. (1999). Rents, competition, and corruption. *The American Economic Review, 89*(4), 982-993.

Ali, A.M., & Isse, H.S. (2003). Determinants of economic corruption: A cross-country comparison. *Cato Journal, 22*(3), 449-466.

Alm, J., Martinez-Vazquez, J., & McClellan, C. (2016). Corruption and firm tax evasion. *Journal of Economic Behavior & Organization, 124*(April), 146-163. http://dx.doi.org/10.1016/j.jebo.2015.10.006

Badertscher, B.A., Katz, S.P., & Rego, S.O. (2013). The separation of ownership and control and corporate tax avoidance. *Journal of Accounting and Economics, 56*(2–3), 228-250. https://doi.org/10.1016/j.jacceco.2013.08.005

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics, 95*(1), 41-61. https://doi.org/10.1016/j.jfineco.2009.02.003

Chen, T. (2015). Institutions, board structure, and corporate performance: Evidence from Chinese firms. *Journal of Corporate Finance, 32*(June), 217-237. https://doi.org/10.1016/j.jcorpfin.2014.10.009

Dong, B., & Torgler, B. (2013). Causes of corruption: Evidence from China. *China Economic Review, 26*(September), 152-169. http://dx.doi.org/10.1016/j.chieco.2012.09.005

Dyreng, S.D., Hanlon, M., & Maydew, E.L. (2008). Long-run corporate tax avoidance. *The Accounting Review, 83*(1), 61-82. doi: 10.2308/accr.2008.83.1.61

Foo, C.-T., Wu, W., & Chin, T. (2014). Governance for China: A multi-method research in corruption studies. *Chinese Management Studies, 8*(3), 288-312. https://doi.org/10.1108/CMS-08-2014-0160

Frank, M.M., Lynch, L.J., & Rego, S.O. (2009). Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review, 84*(2), 467-496. doi: 10.2308/accr.2009.84.2.467

Giavazzi, F., & Tabellini, G. (2005). Economic and political liberalizations. *Journal of Monetary Economics, 52*(7), 1297-1330. http://dx.doi.org/10.1016/j.jmoneco.2005.05.002

Glaeser, E.L., & Saks, R.E. (2006). Corruption in America. *Journal of Public Economics, 90*(6–7), 1053-1072. https://doi.org/10.1016/j.jpubeco.2005.08.007

Goel, R.K., & Nelson, M.A. (2005). Economic freedom versus political freedom: Cross-country influences on corruption. *Australian Economic Papers, 44*(2), 121-133. doi: 10.1111/j.1467-8454.2005.00253.x

Gong, T., & Zhou, N. (2015). Corruption and marketization: Formal and informal rules in Chinese public procurement. *Regulation & Governance, 9*(1), 63-76. doi: 10.1111/rego.12054

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy, 16*(1), 1-34. https://doi.org/10.1016/S0278-4254(96)00055-5

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2009). *Multivariate data analysis* (7th edition). Harlow, Essex: Pearson.

Heckelman, J.C., & Powell, B. (2010). Corruption and the Institutional Environment for Growth. *Comparative Economic Studies, 52*(3), 351-378. doi: 10.1057/ces.2010.14

Jain, A.K. (2001). Corruption: A Review. *Journal of Economic Surveys, 15*(1), 71-121. doi: 10.1111/1467-6419.00133

Jiang, T., & Nie, H. (2014). The stained China miracle: Corruption, regulation, and firm performance. *Economics Letters, 123*(3), 366-369. http://dx.doi.org/10.1016/j.econlet.2014.03.026

Karklins, R. (2005). *The system made me do it: Corruption in post-communist societies*. London and New York: M.E. Sharpe.

Ko, K., & Weng, C. (2012). Structural changes in Chinese corruption. *The China Quarterly, 211*(September), 718-740. https://doi.org/10.1017/S0305741012000793

Kubick, T.R., & Masli, A.N.S. (2016). Firm-level tournament incentives and corporate tax aggressiveness. *Journal of Accounting and Public Policy, 35*(1), 66-83. https://doi.org/10.1016/j.jaccpubpol.2015.08.002

Liu, X. (2016). Corruption culture and corporate misconduct. *Journal of Financial Economics, 122*(2), 307-327. http://dx.doi.org/10.1016/j.jfineco.2016.06.005

Martinsons, M.G. (2005). Online success in a relationship-based economy—Profiles of e-commerce in China. In R.M. Davison, R.W. Harris, S. Qureshi, D.R. Vogel, & G-J. de Vreede (Eds.), *Information Systems in Developing Countries: Theory and Practice* (pp. 173-191). Hong Kong: City University of Hong Kong Press.

Minnick, K., & Noga, T. (2010). Do corporate governance characteristics influence tax management? *Journal of Corporate Finance, 16*(5), 703-718. https://doi.org/10.1016/j.jcorpfin.2010.08.005

Ngo, T.-W. (2008). Rent-seeking and economic governance in the structural nexus of corruption in China. *Crime, Law and Social Change, 49*(1), 27-44. https://doi.org/10.1007/s10611-007-9089-x

Petrou, A.P., & Thanos, I.C. (2014). The "grabbing hand" or the "helping hand" view of corruption: Evidence from bank foreign market entries. *Journal of World Business, 49*(3), 444-454. https://doi.org/10.1016/j.jwb.2013.10.004

Richardson, G., Taylor, G., & Lanis, R. (2013). The impact of board of director oversight characteristics on corporate tax aggressiveness: An empirical analysis. *Journal of Accounting and Public Policy, 32*(3), 68-88. https://doi.org/10.1016/j.jaccpubpol.2013.02.004

Richardson, G., Wang, B., & Zhang, X. (2016). Ownership structure and corporate tax avoidance: Evidence from publicly listed private firms in China. *Journal of Contemporary Accounting & Economics, 12*(2), 141-158. https://doi.org/10.1016/j.jcae.2016.06.003

Scott, J. (2000). *Rational choice theory*. Thousand Oaks, California: SAGE Publications Inc.

Siegfried, J.J. (1972). *The relationship between economic structure and the effect of political influence: Empirical evidence from the Federal Corporation Income Tax Program*. Madison, WI: University of Wisconsin.

Svensson, J. (2005). Eight questions about corruption. *The Journal of Economic Perspectives, 19*(3), 19-42. doi: 10.1257/089533005774357860

Wang, X., Fan, G., & Yu, J. (2017). *Marketization index of China's provinces: NERI report 2016*. Beijing, China: Social Science Academic Press.

Wang, Y., & You, J. (2012). Corruption and firm growth: Evidence from China. *China Economic Review, 23*(2), 415-433. http://dx.doi.org/10.1016/j.chieco.2012.03.003

Wu, W., Wu, C., Zhou, C., & Wu, J. (2012). Political connections, tax benefits and firm performance: Evidence from China. *Journal of Accounting and Public Policy, 31*(3), 277-300. http://dx.doi.org/10.1016/j.jaccpubpol.2011.10.005

Xu, G., & Yano, G. (2017). How does anti-corruption affect corporate innovation? Evidence from recent anti-corruption efforts in China. *Journal of Comparative Economics, 45*(3), 498-519. https://doi.org/10.1016/j.jce.2016.10.001

Xu, X., Li, Y., Liu, X., & Gan, W. (2017). Does religion matter to corruption? Evidence from China. *China Economic Review, 42*(February), 34-49. https://doi.org/10.1016/j.chieco.2016.11.005

You, J., & Nie, H. (2017). Who determines Chinese firms' engagement in corruption: Themselves or neighbors? *China Economic Review, 43*(April), 29-46. https://doi.org/10.1016/j.chieco.2017.01.002

Zhang, M., M, L., Zhang, B., & Yi, Z. (2016). Pyramidal structure, political intervention and firms' tax burden: Evidence from China's local SOEs. *Journal of Corporate Finance, 36*(February), 15-25. https://doi.org/10.1016/j.jcorpfin.2015.10.004

Appendix 1. Variable definitions

Dependent Variable	Description
Panel A: Tax management	
ETR	Corporate current effective tax rate, corporate tax expenses minus deferred tax expenses to the pretax profit.
ETR_adj	Corporate industry-adjusted effective tax rate, calculated by ETR minus average-industry ETR
Panel B: corruption and marketisation	
Corruption	Number of registered cases of corruption per 10,000 public officials in a province in each year, data stems from *Procuratorial Yearbook of China* and *China Statistical Yearbook*.
Marketisation	The overall marketisation index in China's 31 provinces. The higher index suggests higher marketisation. The indexes are obtained from National Economic Research Institute (NERI) *Index of Marketization of China's provinces in 2016* to measure the quality of market-supporting institutions at the provincial level. The NERI Index project was sponsored by the National Economic Research Institute and the China Reform Foundation and conducted by Wang et al. (2017). The NERI indices capture the progress of the institutional transition in China's 31 provinces. Appraisals of the regional institutions are made along several dimensions, namely, the relationship between the government and the market, the development of the non-state sector, the development of the factor markets, the development of the product markets, and the development of market intermediaries and the legal environment.
Panel C: Control variables	
Size	Firm size, natural logarithm of total assets
Age	Firm age, the natural logarithm of current year minus the year when the firm went public.
Leverage	Firm's overall debt levels, total debts / total assets in book value
ROA	Return on total assets, net income/total assets.
Growth	Firm sales growths, the changes in sales scaled by lag sales.
MB	Market-to-book ratio, the market value of equity over book value of equity
Discacc	The absolute value of abnormal accruals, measured as the absolute value of discretionary accruals estimated by the modified Jones model
Largest	Percentage of shareholding by the largest shareholder.
Top10	Percentage of shareholding by the top 10 largest shareholders.

Source: Prepared by the authors.