

# Public governance and tunneling: evidence from a quasi-experiment in China

Public  
governance  
and tunneling

1

Xiaofang Ma

*Zhejiang University of Technology, Hangzhou, China*

Wenming Wang

*Zhejiang University – Zijingang Campus, Hangzhou, China*

Gaoguang Zhou

*Hong Kong Baptist University, Kowloon, Hong Kong, and*

Jun Chen

*Zhejiang University – Zijingang Campus, Hangzhou, China*

Received 15 January 2022  
Revised 30 April 2022  
Accepted 2 May 2022

## Abstract

**Purpose** – This study aims to take advantage of the unprecedented anti-corruption campaign launched in China in December 2012 and examine the effect of improved public governance on tunneling.

**Design/methodology/approach** – This study uses a sample of Shanghai and Shenzhen Stock Exchange listed companies from 2010 to 2014 and conduct regression analyses to investigate the effect of improved public governance attributed to the anti-corruption campaign on tunneling.

**Findings** – This study finds that the level of tunneling decreased significantly after the anti-corruption campaign, suggesting that increased public governance effectively curbs tunneling. Cross-sectional results show that this mitigating effect is more pronounced for non-SOE firms, especially non-SOE firms with political connections, firms audited by non-Big 8 auditors, firms with a large divergence between control rights and cash flow rights and firms located in areas with lower marketization.

**Practical implications** – This study highlights the importance of anti-corruption initiatives in improving public governance and in turn reducing tunneling. This study provides important implications for many other emerging economies to improve public governance.

**Originality/value** – This study contributes to the literature on the role of public governance in constraining corporate agency problems and advances the understanding of the economic consequences of China's anti-corruption campaign in the context of tunneling.

**Keywords** Anti-corruption, Public governance, Tunneling

**Paper type** Research paper

## 1. Introduction

Tunneling is the process of transferring assets or profit from a company to its controlling shareholders (e.g. Johnson, Porta, Lopez-De-Silanes, & Shleifer, 2000). Such expropriation behavior is especially prevalent in emerging economies, which offer limited legal protection

---

### JEL Classification — D73, G34

© Xiaofang Ma, Wenming Wang, Gaoguang Zhou and Jun Chen. Published in *China Accounting and Finance Review*. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

The authors would like to thank the participants for their valuable comments in the 6th World Business Ethics Forum (WBEF) and seminars at Hong Kong Baptist University and Zhejiang University. The authors also thank Guowei Xu and Tao Peng for their excellent research assistance. Xiaofang Ma acknowledges the financial support from the National Social Science Fund of China (21BGL094).



China Accounting and Finance  
Review  
Vol. 25 No. 1, 2023  
pp. 1-22  
Emerald Publishing Limited  
e-ISSN: 2307-3055  
p-ISSN: 1029-807X  
DOI 10.1108/CAFR-05-2022-0041

and public enforcement (e.g. Shleifer & Vishny, 1997; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997, 1998; Johnson *et al.*, 2000). Although governments in many emerging economies have launched initiatives to combat corruption and improve public governance [1], few studies have examined whether such anti-corruption initiatives are effective in deterring tunneling. In this study, we take advantage of China's unprecedented anti-corruption campaign initiated in December 2012 as an exogenous event to examine whether and how the improved public governance as a result of the anti-corruption campaign can curb tunneling.

China's anti-corruption campaign provides an ideal setting to investigate our research questions for several reasons. First, the anti-corruption campaign is recognized as an exogenous event that has improved public governance in China. In December 2012, Mr. Xi Jinping launched the campaign shortly after he became General Secretary of Communist Party of China (CPC). He demonstrated his determination to tackle corruption and vowed to target all party members regardless of their rank in government. This campaign was unexpected, which shocked even the most seasoned political observers (Griffin, Liu, & Shu, 2016). The unexpected nature of this campaign can help our study avoid the endogeneity problems that have been a major issue in prior cross-country studies (e.g. Lemmon & Lins, 2003; Nenova, 2003; Dyck & Zingales, 2004; Fan, Rui, & Zhao, 2008). Second, tunneling is prevalent in China because of concentrated ownership and weak legal protections (Jiang, Lee, & Yue, 2010). Several studies show that controlling shareholders in China extract private benefits from listed companies via various channels such as inter-corporate loans (Jiang *et al.*, 2010), loan guarantees (Beckman *et al.*, 2009) and related-party transactions (Jian & Wong, 2010). Finally, wide variations in institutional environments among different regions of China allow us to shed some light on how local institutions influence the relationship between public governance and tunneling within a single country.

We argue that the anti-corruption campaign could affect tunneling for two reasons. On the one hand, the anti-corruption campaign can significantly improve public governance, which strengthens regulatory enforcement and undermines the ability of controlling shareholders to circumvent regulatory monitoring by colluding with government officials (e.g. Johnson *et al.*, 2000; Lemmon & Lins, 2003; Nenova, 2003; Dyck & Zingales, 2004). As a result, the anti-corruption campaign can improve public governance in the way that deters tunneling. On the other hand, the anti-corruption campaign improves institutional environments and in turn strengthens corporate governance at the firm level (Doidge, Andrew Karolyi, & Stulz, 2004; Doidge, Karolyi, & Stulz, 2007; Claessens & Yurtoglu, 2013), which in turn restrict controlling shareholders from diverting firm resources to extract private benefits (Gao & Kling, 2008; Jiang *et al.*, 2010; Cheung, Haw, Tan, & Wang, 2014). Therefore, we hypothesize that the level of tunneling decreases in the period following the anti-corruption campaign in China.

Using a sample of China's listed firms during a four-year window around the launch of the anti-corruption campaign in 2012, we find that the intensity of tunneling is significantly reduced in the post-campaign period relative to the pre-campaign period. Our further analyses reveal that the deterring effect of the anti-corruption campaign on tunneling is more pronounced for firms located in regions with weaker public governance in the pre-campaign period and for firms experienced a higher improvement in corporate governance in the post-campaign period over the pre-campaign period. All these results combined together support our hypothesis that the anti-corruption campaign significantly improves both public governance and corporate governance and in turn constrains the tunneling. To bolster our main result, we carry out a difference-in-differences (DiD) analysis. We classify firms with high entertainment expenditures in the pre-campaign period (2010 and 2011) as treatment firms because these firms are susceptible to corrupt the government officials (e.g. Zhong, Lu, & Yuan, 2016). Our DiD analysis shows that the treatment group experience higher level

---

reduction of tunneling, further strengthening our inference. Our results are also robust to alternative measure for tunneling and alternative sampling.

To shed light on how anti-corruption campaign affects tunneling, we conduct a set of cross-sectional tests. Firstly, we investigate whether the effect of the anti-corruption campaign on tunneling is different between state-owned firms (SOEs) and non-SOE firms. In China, the government appoints high-ranked officials as executives in SOEs and constantly monitors these executives. Because the detected tunneling can negatively impact their political advancement, these executives tend to disengage in tunneling than their counterparts in non-SOE firms in the pre-campaign period and therefore the effect of anti-corruption campaign is smaller for SOEs. Our results support this hypothesis by showing that the deterring effect of the anti-corruption campaign on tunneling is more pronounced for non-SOE firms.

Secondly, we examine whether our baseline result differs between private firms with political connections and those without such connections in the pre-campaign period. It is widespread practice in China that non-SOE firms make efforts to establish political ties to obtain favorable treatment from the government and regulatory bodies (Wu, Johan, & Rui, 2016). Non-SOE firms with political connections tend to engage in more tunneling than those firms without political connections in the pre-campaign period but will be affected to a greater extent in the post-campaign period as the anti-corruption campaign cracks down political connections. Consistent with this hypothesis, our results show, that the deterring effect of the anti-corruption campaign on tunneling is more pronounced for non-SOE firms with political ties.

Thirdly, we attempt to test whether the effect of the anti-corruption campaign on tunneling is influenced by auditor's monitoring efforts. External auditors play an important monitoring role in constraining corporate opportunistic behaviors. Extant studies show that the Big 8 auditors provide more effective audit services and better restrict their clients from undertaking tunneling in the period before the anti-corruption campaign in China (e.g. Jiang *et al.*, 2010). Thus, we expect that firms audited by the Big 8 auditors will be less affected by the anti-corruption campaign. Our results are in line with this hypothesis by showing that the deterring effect of the anti-corruption campaign on tunneling is more pronounced for firms audited by non-Big 8 auditors.

Fourthly, we examine whether firm's ownership matters. Chinese firms with a divergence of control rights from cash flow rights (C/O) owned by controlling shareholders tend to engage in more tunneling in the pre-campaign period (Jiang *et al.*, 2010), and they are thus expected to be affected more by the anti-corruption campaign. Our results provide supportive evidence for this hypothesis.

Finally, we examine whether the deterring effect of the anti-corruption campaign on tunneling varies with regional marketization. Prior studies document that tunneling are more prevalent in firms located in provinces with less developed marketization in China before the anti-corruption campaign (e.g. Jiang *et al.*, 2010). To the extent that the anti-corruption campaign improves the public enforcement countrywide, firms located in provinces with less developed marketization should experience a larger extent of reduction in tunneling because of their higher levels of tunneling in the pre-campaign period. Our results support this hypothesis.

Our study makes several contributions to the literature. First, this study enriches our understanding of the effect of institutions on tunneling (e.g. Johnson *et al.*, 2000; Lemmon & Lins, 2003; Nenova, 2003; Dyck & Zingales, 2004). Prior studies investigating the effect of public governance on tunneling are predominantly based on cross-country data, which suffers omitted-correlated-variable problems. Using a quasi-experimental approach, this study alleviates endogeneity problems and shows the causal impact of a unique political institution, political campaign, on expropriations. Our study therefore adds to the literature

by showing that government-initiated campaign can be a viable way to crack down tunneling.

Second, our study complements the emerging literature examining the economic consequences of the anti-corruption campaigns (Fan *et al.*, 2008; Griffin *et al.*, 2016; Ke, Liu, & Tang, 2016; Lin, Morck, Yeung, & Zhao, 2016). Most of these studies are motivated by the controversy over the genuine anti-corruption intention [2]. An unresolved debate in the literature has been whether the anti-corruption campaigns increase firm value and benefit shareholders (e.g. Ke *et al.*, 2016; Lin *et al.*, 2016). Our study shows that shareholders in general and minority shareholders in particular do benefit from the anti-corruption campaign because it deters the controlling shareholders' expropriation.

Finally, our study provides important implications for China's regulators and beyond. Tunneling prevails in many emerging economies where legal protections are weak (e.g. Johnson *et al.*, 2000; Lemmon & Lins, 2003; Dyck & Zingales, 2004). Many governments are considering adopting measures to curb tunneling to develop their stock markets. Our evidence on the effectiveness of the anti-corruption campaign in reducing tunneling in China, the largest emerging economy in the world, suggests that anti-corruption campaigns offer a viable way to prevent tunneling in emerging economies.

The remainder of this paper proceeds as follows. Section 2 introduces China institutional background and develops hypotheses. Section 3 describes the research design and sample selection. Section 4 presents the empirical results. Section 5 concludes the paper.

## 2. Institutional background and hypothesis development

### 2.1 The anti-corruption campaign in China

China has serious problems with corruption. The Corruption Perception Index developed by Transparency International ranked China 78th out of 175 countries in 2010, worse than many other emerging economies such as Brazil (69th) and Malaysia (56th) [3]. Although China government has taken various measures to tackle corruption in past years, corruption remains a serious concern. On November 14, 2012, Mr. Xi Jinping was elected as General Secretary of the CPC in the 18th CPC National Congress. He stressed that corruption threatened the survival of the CPC and committed himself to tackling corruption. Shortly after taking office, he embarked on an anti-corruption campaign in China. On December 4, 2012, the party promulgated the eight-point regulation of the center to regulate party members' conduct, representing the official start of the anti-corruption campaign. The campaign target was "tigers and flies," which covered all party members of all ranks. The Central Commission for Discipline Inspection (CCDI), an internal-control institution of the CPC, is responsible for supervising all party members by eliminating those who engage in corrupt activities and go against the CPC party line. CCDI encourages public scrutiny and whistleblowing by providing various reporting channels, including email and telephone hotlines. The CPC also makes effort to reduce government officials' corruption by severing ties between them and firms. In October 2013, Organization Department of the Communist Party (ODCP) promulgated its 18th decree, which restricts government officials' employment in enterprises and payment from firms for approved cases.

According to China News Agency, roughly 336,000 officials received administrative punishment and 4,000 were referred to judicial authority for committing crimes in 2015 [4]. Prior studies indicate that the unprecedented anti-corruption campaign materially strengthens public governance. For instance, Lin *et al.* (2016) find that SOEs gain in shareholder value after the anti-corruption campaign because the campaign forces executives to forgo perks. Ke *et al.* (2016) find SOEs reduce their excessive perk consumption of luxury goods and services following the anti-corruption campaign. Wang, Xu, Zhang, and Shu (2018) find that the value of non-SOE firms decreases after their connected government officials are

---

dismissed in the anti-corruption campaign. However, little is known the effect of the anti-corruption campaign on tunneling, a prevalent misconduct that impairs minority shareholders' interest and undermine the investors' confidence to the stock market.

### *2.2 Tunneling: theory and China's experience*

The conflict of interest between managers and shareholders is the central agency problem in developed economies such as the US. and UK., where ownership is dispersed (Berle & Means, 1932; Jensen & Meckling, 1976). In most emerging economies where ownership is concentrated and legal protections are under-developed (e.g. Shleifer & Vishny, 1997; La Porta *et al.*, 1997, 1998, 1999; Claessens, Djankov, & Lang, 2000; Claessens, Djankov, Fan, & Lang, 2002; Faccio & Lang, 2002), another major type of agency problem is the tendency of controlling shareholders to expropriate minority shareholders (Johnson *et al.*, 2000; Djankov, Porta, Lopez-De-Silanes, & Shleifer, 2008). Controlling shareholders can expropriate minority shareholders using two main forms of tunneling: transferring resources to themselves outright by self-dealing, and increasing their shares in the firm without asset outflows through financial transactions that discriminate against minority shareholders.

Although there are many anecdotes of tunneling around the world, it is challenging to directly measure tunneling in the literature. Jiang *et al.* (2010) provide a novel and direct measure of tunneling in China. Because suspected tunneling is likely to occur through inter-party loans that are reported as part of other receivables (OREC) in China, they use OREC as a proxy for tunneling. They find firms with smaller size, higher leverage, lower profits and non-state controlling shareholders are more likely to commit tunneling in China. Several other studies reveal other means of tunneling. Jian and Wong (2010) show that group firms in China are more likely to use related-party transactions as a method of tunneling. Berkman, Cole, and Fu (2009) find that controlling shareholders expropriate minority shareholders by issuing related guarantees. Aharony, Wang and Yuan (2010) show that IPO firms inflate their earnings via related-party sales before IPO, and divert resources to their controlling owners after IPO. The widespread use of tunneling in China has also attracted regulators' attention. In the beginning of 2003, the China Securities Regulatory Commission (CSRC) that oversees China securities markets launched a series of initiatives to curb tunneling (see Jiang *et al.*, 2010 for details).

### *2.3 Hypothesis development*

We expect that the anti-corruption campaign would deter tunneling for at least two major reasons. First, the anti-corruption campaign increases the effectiveness of public governance and thus deters controlling shareholders' incentives from expropriating minority shareholders. Globally, tunneling is prevalent in countries with under-developed legal institutions (e.g. Shleifer & Vishny, 1997; La Porta *et al.*, 1997, 1998; Johnson *et al.*, 2000; Nenova, 2003). Corruption undermines legal enforcement and weakens investor protection (Shleifer & Vishny, 1997). As China's government can exert significant influence over regulatory and juridical processes, many firms seek to circumvent regulations by corrupting government officials in the pre-campaign period (Firth, Rui, & Wu, 2011; Wu *et al.*, 2016), which conducive to the prevalence of tunneling. With the launch of the anti-corruption campaign, the CPC put a series of measures in place to crack down corruption and strengthen public governance. For example, the 18th Decree implemented by the ODCP in October 2013 effectively restricts government officials from working with private enterprises and receiving any payment from firms for approved cases. Additionally, CCDI encourages greater scrutiny from the public and provides many channels to invite whistleblowing. These initiatives can enhance public governance by severing the ties between government officials and firms and

detering corruption, which makes the controlling shareholders difficult to conduct tunneling without the shelter of the government officials.

Second, the anti-corruption campaign increases corporate governance at the firm level and makes it easier for minority shareholders to curb tunneling. A country's institutional environments are important determinants of corporate governance quality (Dojige *et al.*, 2004, 2007). In corrupted countries, the minority shareholders cannot exert their influence to combat the controlling shareholders' expropriation because the controlling shareholders can obtain protection from the corrupted government officials (Claessens & Yurtoglu, 2013). By reducing the possibility that the controlling shareholders corrupt the government official for favorable treatments, the anti-corruption campaign not only renders the minority shareholders confidence but also encourages them to appoint more independent directors to monitor the controlling shareholders, increasing firm-level corporate governance. Because the minority shareholders have both stake in the firm and firm-specific information, they can supplement the regulators to monitor tunneling in the post-campaign period. Taken together, we predict that the anti-corruption campaign would significantly deter tunneling. We formally state our first hypothesis as follows:

*H1.* The level of tunneling decreases following the launch of the anti-corruption campaign in China.

China's government retains great influence in the corporate sector by holding controlling ownership in a number of large listed companies (SOEs). As controlling shareholders in SOEs, governments appoint high-ranked officials as executives (Chen, Firth, & Xu, 2009). Unlike executives in private firms, the executives in SOEs are additionally subject to scrutiny and punishment from the party if their misconduct such as tunneling is detected. Additionally, to the extent that the executives in SOEs have strong incentives to seek political promotion, they tend to avoid engaging in tunneling that can adversely affects their political promotion [5] In contrast, the executives in private companies usually do not have political promotion incentives but have strong incentives to extract private benefits. Consistent with this view, Jiang *et al.* (2010) find that private companies are more likely to engage in tunneling compared to SOEs in China. As the anti-corruption campaign increases both public and corporate governance, which increase the effectiveness of monitoring over corporate misconduct, non-SOE firms that engage in tunneling more actively in the pre-campaign period (Jiang *et al.*, 2010) are more affected by the anti-corruption campaign. We thus hypothesize:

*H2.* The deterring effect of the anti-corruption campaign on tunneling is more pronounced for non-SOE firms than for SOEs.

Weak legal protections and institutional instability in China put private companies at a disadvantage position compared to SOEs (Nee, 1992). In response to this institutional environment, private companies seek to obtain political connections to gain political legitimacy and access to resources. Political connections also enable private firms to obtain favorable treatment during the regulation process as China's government can exert great influence over regulatory agencies (Naughton, 2007). For example, Wu *et al.* (2016) find that private firms with political connections are less likely to be investigated for fraud. As a result, private companies can use political connections to reduce the risk of being caught and punished due to tunneling in pre-campaign period. However, the anti-corruption campaign deters collusion between regulators and firms by adopting several anti-corruption measures. As a result, private firms with political connections would be more affected by the campaign. We thus hypothesize:

*H3.* The deterring effect of the anti-corruption campaign on tunneling is more pronounced for private firms with political connections than for those without political connections.

External auditors play an important governance role by verifying financial statements prepared by a company and express their opinions on the company's compliance with generally accepted accounting principles. In China, the auditing market is rather segmented: the international Big 4 auditors and a handful of largest local auditors (or Big 8) audited 52.68% of all listed companies in 2014, the end of our sample period. Prior studies show that the Big 8 auditors provide more effective audit services and that the firms they audited engaged in less tunneling before the anti-corruption campaign (e.g. [Jiang et al., 2010](#)). In response to tightened regulatory pressures, auditors make more effort to reduce audit risks (e.g. [Geiger, Raghunandan, & Rama, 2005](#); [Ghosh & Pawlewicz, 2009](#)). As such, it is plausible to expect that the campaign pressures the auditors to pay more attention to tunneling, which is conducive to material misstatement fraud and enforcement actions ([Firth, Mo, & Wong, 2005](#)). Given that tunneling is more prevalent in firms audited by non-Big 8 auditors before the campaign (e.g. [Jiang et al., 2010](#)), the non-Big 8 auditors should be more sensitive to tunneling following the anti-corruption campaign. Therefore, we expect that firms audited by non-Big 8 auditors experience a greater decrease in tunneling following the anti-corruption campaign. We state our fourth hypothesis as below:

*H4.* The deterring effect of the anti-corruption campaign on tunneling is more pronounced for firms audited by non-Big 8 auditors.

Previous studies suggest a larger C/O ratio gives controlling shareholders stronger incentives to expropriate minority shareholders (e.g. [Claessens et al., 2002](#); [Lemmon & Lins, 2003](#)). Related to our study, [Jiang et al. \(2010\)](#) document a significantly positive relation between the C/O ratio and tunneling among Chinese firms before the anti-corruption campaign. As the anti-corruption campaign enhances corporate governance and public enforcement, the costs of tunneling should increase following the campaign. Therefore, the incentives of controlling shareholders to engage in tunneling should decrease due to the reduced benefits of tunneling after the campaign. And such effect is more pronounced for firms with larger C/O ratios as these firms engage in tunneling more in the pre-campaign period. We thus hypothesize:

*H5.* The deterring effect of the anti-corruption campaign on tunneling is more pronounced for firms with higher C/O ratios than those with lower C/O ratios.

Institutional development is highly uneven in China ([Fan, Wang, & Zhu, 2011](#)). Prior studies document that the severity of tunneling varies with institutions: in less economically developed environments, the private benefits of tunneling outweigh the costs (e.g. [Lemmon & Lins, 2003](#); [Nenova, 2003](#); [Dyck & Zingales, 2004](#)). [Jiang et al. \(2010\)](#) provide evidence that tunneling is more prevalent in firms located in provinces with less developed marketization in the pre-campaign period. The anti-corruption campaign's slogan "cover all" suggests that firms in all areas through the whole China will face the same level of strengthened regulatory monitoring and the same enforcement actions against their misconduct after the campaign. We expect that firms in less marketization regions are affected more by the campaign because of their higher levels of tunneling in the pre-campaign period. Therefore, we formally state our final hypothesis as follows:

*H6.* The deterring effect of the anti-corruption campaign on tunneling is more pronounced for firms located in provinces with less developed marketization.

### 3. Sample and research design

#### 3.1 Sample and data sources

Our initial sample consists of all A-share listed firms on the Shanghai and Shenzhen Stock Exchanges from 2010 to 2014. We define the years 2010 and 2011 (2013 and 2014) as the pre-campaign (post-campaign) period and exclude the event year of 2012 from our sample.

We obtain all firm related data from the China Stock Market and Accounting Research (CSMAR) database. We delete firms in the finance industry, firms that have not yet been listed for one year, those that do not have at least one observation in both the pre- and post-campaign periods (before and after 2012), and the observations with the value of necessary variables missed. Finally, our sample contains 7,697 firm-year observations associated with 2,279 unique firms, representing 85.93% of all A-share listed firms at the end of our sample period, 2014. To mitigate the effect of outliers, all continuous variables are winsorized at the top and bottom 1%.

### 3.2 Regression specification

To examine the effect of the anti-corruption campaign on tunneling, we specify the following baseline regression model:

$$\begin{aligned} ORECTA_{i,t} = & \alpha + \beta * POST_{i,t} + \gamma 1 * BLOCK_{i,t} + \gamma 2 * HIGHMARKET_{i,t} \\ & + \gamma 3 * ROA_{i,t-1} + \gamma 4 * SIZE_{i,t} + \gamma 5 * SOE_{i,t} + \gamma 6 * LEVERAGE_{i,t} \quad (1) \\ & + \gamma 7 * MB_{i,t} + Industry\ dummies + \varepsilon_{i,t} \end{aligned}$$

Where  $i$  indexes firms,  $t$  indexes years, and  $\varepsilon_{i,t}$  is the error term.

We use the percentage of the net other receivables to total assets for firm  $i$  in year  $t$  ( $ORECTA_{i,t}$ ) as primary proxy for tunneling following prior literature (e.g. [Jiang et al., 2010](#); among others). Our variable of interest is  $POST$ , a dummy variable which is equal to 1 if the observations fall in post-campaign period (year 2013 and 2014), and 0 otherwise. We expect a significantly negative coefficient of  $POST$  if the anti-corruption campaign improves public governance and in turn reduces tunneling.

We control for a set of variables that are found to affect tunneling in previous literature. We include the percentage of shares held by the largest shareholders ( $BLOCK$ ) which might be negatively related to a firm's tunneling ([Claessens et al., 2002](#); [Lemmon & Lins, 2003](#); [Jiang et al., 2010](#)). Firms located in more developed regions tend to engage in less tunneling ([Jiang et al., 2010](#); [Wang & Xiao, 2011](#)). We thus include  $HIGHMARKET$ , defined as a dummy variable that equals 1 if the marketization index of a province ([Fan et al., 2011](#)) where a firm is located is above sample median and 0 otherwise, to control for the effect of local market development. We also control for several firm characteristics including performance ( $ROA$  in prior fiscal year), firm size ( $SIZE$ ), leverage ratio ( $Leverage$ ) and market-to-book ratio ( $MB$ ), which are found to be related with tunneling ([Jiang et al., 2010](#); [Wang & Xiao, 2011](#); [Chizema, Jiang, Kuo, & Song, 2020](#)). Specifically, we define  $ROA$  as net profit divided by total assets,  $SIZE$  as the natural logarithm of total assets,  $Leverage$  as the ratio of total debt over total assets, and  $MB$  as the total market value of a firm's equity divided by total assets. In China, most of the SOE managers are appointed by government, they have less incentive to engage in tunneling as if could negatively affect their political advancement ([Jiang et al., 2010](#)). We thus include a dummy variable,  $SOE$ , which equals 1 if a firm is controlled by the government and 0 otherwise. We also include industry fixed-effect dummies to account for the potential heterogeneity of tunneling across industries.

## 4. Empirical results

### 4.1 Descriptive statistics

[Table 1](#) Panel A reports descriptive statistics of the main variables and the univariate comparisons of these variables before and after the anti-corruption campaign. The mean (median)  $ORECTA$  for the full sample is 1.626% (0.785%) with a standard deviation of 2.393%. The mean  $ORECTA$  decreases from 1.726% before the anti-corruption campaign to



	POST	N	Mean	Median	Std. Dev	Q1	Q3
<i>Panel A: Main variables</i>							
<i>ORECTA(%)</i>	0	3,362	1.726	0.801	2.563	0.343	1.887
	1	4,335	1.548	0.772	2.250	0.335	1.732
	Total	7,697	1.626	0.785	2.393	0.338	1.802
<i>BLOCK</i>	0	3,362	0.367	0.350	0.156	0.240	0.483
	1	4,335	0.361	0.345	0.153	0.240	0.469
	Total	7,697	0.364	0.347	0.154	0.240	0.477
<i>ROA</i>	0	3,362	0.048	0.044	0.059	0.020	0.073
	1	4,335	0.041	0.038	0.053	0.015	0.068
	Total	7,697	0.044	0.040	0.056	0.017	0.070
<i>SIZE</i>	0	3,362	21.861	21.675	1.313	20.931	22.621
	1	4,335	22.060	21.874	1.302	21.134	22.787
	Total	7,697	21.973	21.793	1.310	21.038	22.702
<i>SOE</i>	0	4,335	0.535	1.000	0.499	0.000	1.000
	1	4,512	0.421	0.000	0.494	0.000	1.000
	Total	7,697	0.471	0.000	0.499	0.000	1.000
<i>LEVERAGE</i>	0	3,362	0.468	0.479	0.229	0.294	0.638
	1	4,335	0.440	0.431	0.220	0.259	0.611
	Total	7,697	0.452	0.453	0.225	0.272	0.622
<i>MB</i>	0	3,362	1.640	1.225	1.442	0.763	1.993
	1	4,335	1.573	1.262	1.288	0.747	1.968
	Total	7,697	1.603	1.244	1.358	0.755	1.977
<i>HIGHMARKET</i>	0	3,362	0.409	0.000	0.492	0.000	1.000
	1	4,335	0.373	0.000	0.484	0.000	1.000
	Total	7,697	0.389	0.000	0.487	0.000	1.000
<i>Panel B: Mean value of ORECTA: before and after the anti-corruption campaign</i>							
<i>ORECTA(%)</i>	0		1.726				
	1		1.726				
	Diff		0.178***				
<i>Panel C: ORECTA across industries</i>							
Agriculture, forestry and fishing		109	2.479	1.265	2.961	0.508	3.591
Mining		225	1.769	0.729	2.880	0.310	1.972
Manufacturing		4,611	1.307	0.668	1.990	0.308	1.423
Electricity, steam, gas and water supply		338	1.275	0.509	2.090	0.209	1.344
Construction		210	3.272	2.209	3.378	0.718	4.503
Wholesale and retail		475	2.582	1.481	3.055	0.607	3.310
Transportation, storage and post		304	1.394	0.741	2.471	0.206	1.459
Accommodation and catering		34	1.923	0.780	3.071	0.473	1.669
Information and communication		488	2.062	1.243	2.556	0.616	2.368
Real estate activities		426	2.296	1.287	2.885	0.357	2.887
Leasing and commercial services		107	2.634	1.505	3.124	0.741	3.468
Scientific and technical services		42	1.651	0.602	2.485	0.409	1.511
Irrigation, environment and public administration		110	1.674	0.825	2.355	0.457	1.857
Education		19	0.976	0.862	1.045	0.223	1.375
Health and social work activities		25	1.083	0.744	0.932	0.561	1.200
Culture, sports and entertainment		113	2.034	1.115	2.626	0.504	2.273
Comprehension		7,697	1.626	0.785	2.393	0.338	1.802

**Note(s):** This table presents descriptive statistics for main variables used in our empirical analyses. Panel A reports descriptive statistics for main variables in both pre- and post-campaign periods. Panel B presents the difference of tunneling proxy (*ORECTA*) before and after the campaign. Panel C reports descriptive statistics for *ORECTA* across industries based on the CSRC (China Securities Regulatory Commission) Industrial Classification Guidelines (2012). All the variables are defined in [Appendix](#). \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

**Table 1.**  
Descriptive statistics

1.548% after the campaign. The decrease in the mean *ORECTA* is significant at the 1% level as shown in Panel B, providing preliminary evidence that our sample firms undertake less tunneling after the anti-corruption campaign. On average, the largest shareholders (*BLOCK*) own 36.354% of shares, suggesting the prevalence of concentrated ownership structure in Chinese listed companies. The mean (median) *ROA* is 0.044 (0.041), the mean (median) *SIZE* is 21.973 (21.793), the mean (median) *Leverage* is 0.452 (0.453) and the mean (median) *MB* is 1.603 (1.245). Around 38.87% of the observations are from China provinces with less developed marketization and 47.07% are SOEs.

Table 1 Panel C shows the descriptive statistics for *ORECTA* across industries. Manufacturing (education) industry contributes the most (least) observations to our sample. There is a large variance of the mean *ORECTA* across different industries. Firms in construction industry report the highest level of *ORECTA* (3.621%), while firms in education industry report the lowest level of *ORECTA* (0.976%).

Table 2 reports the Pearson correlation between the key variables. The correlation between *ORECTA* and *POST* is significantly negative, again providing the preliminary evidence that the anti-corruption campaign reduces tunneling in China. *ORECTA* is also significantly and negatively correlated with *BLOCK*, *ROA* and *SIZE*, indicating that firms with higher largest shareholdings, better performance and/or larger size engage less in tunneling, consistent with the findings in Jiang *et al.* (2010). In contrast, *ORECTA* is significantly and positively related to *Leverage* and *MB*, suggesting that firms with higher leverage ratio and higher market-to-book ratio are more likely to engage in tunneling.

#### 4.2 The effect of the anti-corruption campaign on tunneling (H1)

Table 3 reports the regression results on the effect of the anti-corruption campaign on tunneling. The coefficient of *POST* is negative and statistically significant, suggesting that tunneling is materially decreased following the anti-corruption campaign. This mitigating effect of the anti-corruption campaign on tunneling is economically significant as well. Holding other variables constant, the level of tunneling is reduced by around 5.97% ( $-0.103/1.726*100\%$ ) in the post-campaign period compared with the pre-campaign period. These results support our first hypothesis (H1) that the anti-corruption campaign reduces the level of tunneling in China.

The results on the control variables are generally consistent with prior literature (e.g. Jiang *et al.*, 2010; Chizema *et al.*, 2020). The coefficient on *BLOCK* is significantly negative, suggesting firms with higher C/O owned by the largest shareholder engage less in tunneling. The coefficients on *ROA*, *SIZE* and *SOE* are also significantly negative, implying that firms with better financial performance, larger size, and government as controlling owners undertake less tunneling. In contrast, both *Leverage* and *MB* are significantly positive, suggesting that firms with higher leverage and growth opportunities tend to engage in more tunneling.

#### 4.3 Further analyses

As previously discussed, the mitigating effect of the anti-corruption campaign on tunneling could be attributed to the improved public governance and corporate governance. In this subsection, we conduct tests to examine this conjecture. Specifically, we use the index of the relation between local government and market developed by Fan *et al.* (2011) as the proxy for public governance as this index reflects the degrees to which local government interferes with corporate sectors, and use the percentage of outside directors in the board of directors to capture a firm's corporate governance as in prior literature (e.g. Gao & Kling, 2008; Cheung *et al.*, 2014). With respect to public governance, we split the sample into two groups based on whether the public governance index of a firm's province in the year (2011) prior to the launch

	<i>ORECTA</i>	<i>POST</i>	<i>BLOCK</i>	<i>ROA</i>	<i>SIZE</i>	<i>SOE</i>	<i>LEVERAGE</i>	<i>MB</i>	<i>HIGHMARKET</i>
<i>ORECTA</i>	1								
<i>POST</i>	-0.037***	1							
<i>BLOCK</i>	-0.104***	-0.019*	1						
<i>ROA</i>	-0.133***	-0.059***	0.077***	1					
<i>SIZE</i>	-0.030***	0.075***	0.285***	0.001	1				
<i>SOE</i>	0.007	-0.113***	0.192***	-0.163***	0.358***	1			
<i>LEVERAGE</i>	0.210***	-0.061***	0.052***	-0.400***	0.440***	0.324***	1		
<i>MB</i>	0.069***	-0.024***	-0.169***	0.138***	-0.524***	-0.162***	-0.329***	1	
<i>HIGHMARKET</i>	-0.001	-0.036***	0.073***	0.072***	0.013	-0.088***	-0.078***	0.028**	1

**Note(s):** This table presents Pearson's correlation between main variables used in our multivariate analyses. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively. All the variables are defined in [Appendix](#)

**Table 2.**  
Correlation matrix

CAFR  
25,1

12

**Table 3.**

The effect of the anti-corruption campaign on tunneling

Dep. Var. = <i>ORECTA</i>	Coef	<i>t</i> -value
<i>INTERCEPT</i>	3.850***	3.39
<i>POST</i>	-0.103**	-2.04
<i>BLOCK</i>	-1.138***	-4.69
<i>ROA</i>	-2.295***	-2.67
<i>SIZE</i>	-0.099**	-2.00
<i>SOE</i>	-0.208**	-2.11
<i>LEVERAGE</i>	2.538***	7.70
<i>MB</i>	0.200***	4.27
<i>HIGHMARKET</i>	-0.013	-0.16
Industry FE	Yes	
<i>N</i>	7697	
Adj- <i>R</i> <sup>2</sup>	0.114	

**Note(s):** This table reports the regression results of the effect of the anti-corruption campaign on tunneling (*ORECTA*). All the variables are defined in Appendix. The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

of the anti-corruption campaign is higher than sample median; with respect to corporate governance, we split the sample into two groups based on whether the increase in a firm's corporate governance from the year (2011) before to the year (2013) after the launch of the anti-corruption campaign is higher than sample median. We then re-estimate Equation (1) for the subsamples, respectively.

Table 4 reports the results with Columns (1) and (2) for the regressions regarding public governance and Columns (3) and (4) for the regressions regarding corporate governance. It shows that the coefficient of *Post* is negative in all four regressions but statistically significant only in Column (2) with lower public governance index and Column (3) with higher increase in

Dep. Var. =	(1) Public governance				(2)				(3) Corporate governance				(4)	
	High		Low		High		Low		High		Low		Coef	<i>t</i> -value
<i>ORECTA</i>	Coef	<i>t</i> -value	Coef	<i>t</i> -value	Coef	<i>t</i> -value	Coef	<i>t</i> -value	Coef	<i>t</i> -value	Coef	<i>t</i> -value	Coef	<i>t</i> -value
<i>INTERCEPT</i>	6.174***	2.60	2.962**	2.13	3.359***	2.62	6.782***	3.15						
<i>POST</i>	-0.009	-0.12	-0.170**	-2.41	-0.109**	-1.98	-0.029	-0.22						
<i>BLOCK</i>	-0.970***	-2.77	-1.338***	-4.09	-1.141***	-4.34	-1.064*	-1.73						
<i>ROA</i>	-2.726**	-2.27	-1.742	-1.47	-1.664*	-1.70	-4.573***	-2.86						
<i>SIZE</i>	-0.177**	-2.34	-0.057	-0.85	-0.084	-1.53	-0.207*	-1.90						
<i>SOE</i>	-0.037	-0.27	-0.378***	-2.70	-0.197*	-1.86	-0.210	-0.81						
<i>LEVERAGE</i>	2.700***	6.00	2.361***	4.99	2.517***	-6.88	2.718***	3.57						
<i>MB</i>	0.199***	3.67	0.193***	2.64	0.205***	3.85	0.165*	1.81						
<i>HIGHMARKET</i>	0.126	1.29	-0.212	-1.33	-0.017	-0.19	-0.024	-0.12						
Industry FE	Yes		Yes		Yes		Yes							
<i>N</i>	3845		3852		6614		1083							
Adj- <i>R</i> <sup>2</sup>	0.130		0.115		0.111		0.176							

**Note(s):** This table presents the results regarding the two channels through which the anti-corruption campaign curbs tunneling. Columns (1) and (2) report the results regarding public governance channel. The subsample in Column (1) includes firms located in the provinces with public governance index higher than sample median in the pre-campaign period and the subsample in Column (2) includes the other firms. Public governance index is drawn from Fan et al. (2011). The subsample in Column (3) includes firms with the increase in corporate governance from the pre-campaign to the post-campaign period higher than sample median and the subsample in Column (4) includes other firms. Corporate governance is measured as the percentage of outside directors on a firm's board of directors. The dependent variable is *ORECTA*. All the variables are defined in Appendix. The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

**Table 4.**

The effect of the anti-corruption campaign on tunneling: channel analyses

corporate governance following the campaign. To the extent that the anti-corruption campaign has larger incremental effect for the provinces with lower public governance level, our result in Columns (1) and (2) suggests that the improvement of public governance is a channel through which the campaign reduces tunneling. Similarly, our result in Columns (3) and (4) suggests that the campaign reduces tunneling by improving firm-level corporate governance.

#### 4.4 The impact of the nature of the ultimate controller (H2)

To test our second hypothesis (H2), we divide the sample into SOE and non-SOE subsamples, and re-estimate Equation (1) for the two groups, separately. Table 5 reports the results. The coefficient of *POST* is negative and statistically significant only for the subsample of non-SOE firms, suggesting the mitigating effect of the anti-corruption on tunneling is mostly driven by non-SOE firms. These results support H2 that non-SOE firms have stronger incentives to tunnel in the pre-anti-corruption campaign period and thus are affected more by the anti-corruption campaign compared to SOEs.

#### 4.5 The impact of political connections (H3)

To test H3, we further split non-SOE subsamples into two groups: non-SOE firms with and without political connections. We then re-estimate Equation (1) for the two groups, respectively. Table 6 reports the results. The coefficients of *POST* are negative for both groups but statistically significant only for non-SOE firms with political connections, suggesting that non-SOE firms with political connections reduce tunneling to a greater extent than their counterparts without political connections do. This finding supports H3 and suggests the facilitating role of political connections in tunneling in the pre-anti-corruption-campaign period is significantly weakened following the anti-corruption campaign.

#### 4.6 The impact of auditor (H4)

To test H4, we divide our full sample into firms audited by Big 8 auditors and those audited by non-Big 8 auditors and re-estimate Equation (1) for the two groups, separately. Table 7 reports the results. The coefficients of *POST* are negative for both groups but statistically significant only for the firms audited by non-Big 8 auditors, indicating that the firms audited

Dep. Var. = <i>ORECTA</i>	(1) SOEs		(2) Non-SOEs	
	Coef	<i>t</i> -value	Coef	<i>t</i> -value
<i>INTERCEPT</i>	0.048***	3.05	0.036**	2.07
<i>POST</i>	0.052	0.75	-0.250***	-3.31
<i>BLOCK</i>	-1.309***	-3.40	-1.083***	-3.52
<i>ROA</i>	-1.488	-1.13	-2.672**	-2.42
<i>SIZE</i>	-0.080	-1.29	-0.142*	-1.70
<i>LEVERAGE</i>	2.208***	4.78	2.821***	6.20
<i>MB</i>	0.230***	3.02	0.175***	2.91
<i>HIGHMARKET</i>	0.151	1.09	-0.146	1.51
Industry FE	Yes		Yes	
<i>N</i>	3623		4074	
Adj- <i>R</i> <sup>2</sup>	0.114		0.144	

**Note(s):** The table presents the results regarding whether the effect of the anti-corruption campaign on tunneling differs between SOEs and Non-SOE firms. The dependent variable is *ORECTA*. All the variables are defined in Appendix. The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10 levels, respectively

**Table 5.**  
The differential effect  
of the anti-corruption  
campaign on tunneling  
for SOEs vs. non-  
SOE firms

Dep. Var. = <i>ORECTA</i>	(1)		(2)	
	Non-SOEs with political ties		Non-SOEs without political ties	
	Coef	<i>t</i> -value	Coef	<i>t</i> -value
<i>INTERCEPT</i>	2.650	1.40	4.099	1.58
<i>POST</i>	-0.354***	-3.35	-0.156	-1.44
<i>BLOCK</i>	-0.404	-0.99	-1.622***	-3.76
<i>ROA</i>	-2.443**	-2.08	-2.515*	-1.66
<i>SIZE</i>	-0.067	-0.76	-0.188	-1.50
<i>LEVERAGE</i>	2.034***	4.83	3.115***	5.17
<i>MB</i>	0.061	1.01	0.204**	2.48
<i>HIGHMARKET</i>	-0.084	-0.70	-0.229	-1.58
Industry FE	Yes		Yes	
<i>N</i>	1823		2251	
Adj- <i>R</i> <sup>2</sup>	0.165		0.148	

**Table 6.**  
The effect of the anti-corruption campaign on tunneling for non-SOE firms with and without political connections

**Note(s):** The table presents the results regarding whether the effect of the anti-corruption campaign on tunneling differs between non-SOE firms with and without political connections. The dependent variable is *ORECTA*. All the variables are defined in [Appendix](#). The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

Dep. Var = <i>ORECTA</i>	(1)		(2)	
	Firms audited by Big 8 auditors		Firms audited by non-Big 8 auditors	
	Coef	<i>t</i> -value	Coef	<i>t</i> -value
<i>INTERCEPT</i>	3.899**	2.35	4.433***	3.03
<i>POST</i>	-0.023	-0.32	-0.145**	-2.00
<i>BLOCK</i>	0.981***	-3.07	-1.258***	-3.90
<i>ROA</i>	-2.700**	-2.53	-1.838*	-1.69
<i>SIZE</i>	-0.042	-0.78	-0.160**	-2.29
<i>SOE</i>	-0.134	-1.04	-0.236*	-1.92
<i>LEVERAGE</i>	1.919***	5.43	2.917***	7.14
<i>MB</i>	0.066	1.27	0.296***	4.62
<i>HIGHMARKET</i>	0.004	0.04	0.001	0.01
Industry FE	Yes		Yes	
<i>N</i>	3508		4189	
Adj- <i>R</i> <sup>2</sup>	0.100		0.140	

**Table 7.**  
The effect of the anti-corruption campaign on tunneling for firms audited by big 8 and non-big 8 auditors

**Note(s):** The table presents the results regarding whether the effect of the anti-corruption campaign on tunneling varies with the auditors. The dependent variable is *ORECTA*. All the variables are defined in [Appendix](#). The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

by non-Big 8 auditors reduce tunneling to a greater extent than their counterparts audited by Big 8 auditors do. Our findings support [H4](#) and are consistent with prior studies that non-Big 8 auditors are more tolerate with tunneling than Big 8 auditors in the period before the anti-corruption campaign (e.g. [Jiang et al., 2010](#)), and thus are affected more by the anti-corruption campaign.

#### 4.7 The impact of the divergence between control rights and cash flow rights (*H5*)

To test [H5](#), we divide our full sample into two groups based on whether the controlling shareholder's control rights are larger than their C/O, and re-estimate [Equation \(1\)](#) for the two groups separately. [Table 8](#) reports the results. The coefficient of *POST* is negative and

Dep. Var. = <i>ORECTA</i>	(1) C/O = 0		(2) C/O > 0	
	Coef	<i>t</i> -value	Coef	<i>t</i> -value
<i>INTERCEPT</i>	0.043***	2.88	0.044***	2.75
<i>POST</i>	0.027	0.39	-0.218***	-2.83
<i>BLOCK</i>	-1.133***	-3.37	-1.335***	-4.03
<i>ROA</i>	-0.798	-0.68	-3.652***	-2.93
<i>SIZE</i>	-0.131**	-2.10	-0.117	-1.57
<i>SOE</i>	0.033	0.22	-0.448***	-3.44
<i>LEVERAGE</i>	2.916***	6.02	2.114***	4.89
<i>MB</i>	0.250***	3.35	0.140**	2.33
<i>HIGHMARKET</i>	0.021	0.17	-0.049	-0.44
Industry FE	Yes		Yes	
<i>N</i>	4142		3555	
Adj- <i>R</i> <sup>2</sup>	0.130		0.126	

**Note(s):** The table presents the results regarding whether the effect of the anti-corruption campaign on tunneling differs between firms with and without the divergence between the controlling shareholders' control rights and cash flow rights (C/O). The subsample in Column (1) consists of firms without the divergence between control rights and cash flow rights (C/O = 0), while the subsample in Column (2) includes firms with the divergence between control rights and cash flow rights (C/O > 0). The dependent variable is *ORECTA*. All the variables are defined in Appendix. The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

**Table 8.** The effect of the anti-corruption campaign on tunneling for firms with and without the divergence between control rights and cash flow rights

statistically significant for firms with a deviation of control rights from C/O owned by the controlling shareholder, indicating that the mitigating effect of the anti-corruption campaign on tunneling is more pronounced for the firms with a divergence between control rights and C/O as predicted by H5.

#### 4.8 The impact of regional market development (H6)

To test H6, we split the full sample into two groups: a subsample consisting of the observations from the regions with a higher than sample median marketization index and a subsample consisting of all the other observations. The regional marketization index is obtained from Fan *et al.* (2011). We then re-estimate Equation (1) for the two groups, separately. Table 9 reports the results. The coefficient of *POST* is negative and statistically significant only for the subsample with low marketization index, suggesting that firms located in regions with underdeveloped markets reduce tunneling to a greater extent than their counterparts located in regions with relatively developed markets following the anti-corruption campaign as predicted by H6.

#### 4.9 Robustness checks

In this section, we conduct several tests to check the robustness of our main results. Firstly, in previous analyses, we capture the deterring effect of the anti-corruption campaign by comparing the levels of tunneling between the post-campaign period and the pre-campaign period. However, with the development of stock market and the improvement of regulation, Chinese firms may have improved corporate governance and reduced tunneling over time (Jiang *et al.*, 2010). That is, our findings could be spurious due to the time trend. We conduct a DiD test to address this concern. Extant literature documents that companies with severe corruption are more susceptible to the anti-corruption campaign (Zhong *et al.*, 2016). Specifically, we follow prior studies (e.g. Cai, Fang, & Xu, 2011; Zhong *et al.*, 2016) and employ entertainment expenditures as the proxy for a firm's level of corruption. We classify firms with entertainment expenditures in the pre-campaign period (2010 and 2011) higher than

**Table 9.**

The effect of the anti-corruption campaign on tunneling for firms located in high and low marketization areas

Dep. Var. = <i>ORECTA</i>	(1) <i>HIGHMARKET</i> = 1		(2) <i>HIGHMARKET</i> = 0	
	Coef	<i>t</i> -value	Coef	<i>t</i> -value
<i>INTERCEPT</i>	8.224***	2.69	2.839**	2.10
<i>POST</i>	0.008	0.10	-0.181***	-2.82
<i>BLOCK</i>	-0.857**	-2.04	-1.233***	-4.32
<i>ROA</i>	-3.261**	-2.35	-1.780*	-1.75
<i>SIZE</i>	-0.127*	-1.93	-0.074	-1.14
<i>SOE</i>	-0.001	-0.00	-0.315***	-2.67
<i>LEVERAGE</i>	2.392***	5.42	2.641***	6.48
<i>MB</i>	0.151***	2.99	0.238***	3.61
Industry FE	Yes		Yes	
<i>N</i>	2992		4705	
Adj- <i>R</i> <sup>2</sup>	0.114		0.134	

**Note(s):** The table presents the results regarding whether the effect of the anti-corruption campaign on tunneling differs between firms located in regions with higher vs. lower levels of marketization. The dependent variable is *ORECTA*. All the variables are defined in Appendix. The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

upper quartile as the treatment group and other firms as the control group. We then conduct a DiD test by estimating the following regression model:

$$\begin{aligned}
 ORECTA_{i,t} = & \alpha + \beta * TREAT_i * POST_{i,t} + \gamma_1 * TREAT_i + \gamma_2 * POST_{i,t} + \gamma_3 * BLOCK_{i,t} \\
 & + \gamma_4 * HIGHMARKET_{i,t} + \gamma_5 * ROA_{i,t-1} + \gamma_6 * SIZE_{i,t} + \gamma_7 * SOE_{i,t} \\
 & + \gamma_8 * LEVERAGE_{i,t} + \gamma_9 * MB_{i,t} + Industry\ dummies + \epsilon_{i,t}
 \end{aligned}
 \tag{2}$$

Where *i* indexes firms, *t* indexes years, and  $\epsilon_{i,t}$  is the error term. The variable *TREAT* is an indicator variable equal to 1 if a firm is susceptible to engage in corruption and 0 otherwise. All the other variables are defined as previously.

Table 10 reports the results. It shows that the coefficient of the interaction term *TREAT\*POST* is significantly negative as predicted, while *POST* remains negative and statistically significant, suggesting that tunneling is materially reduced in all firms but to a greater degree among firms with higher levels of corruption following the anti-corruption campaign. These results to some extent mitigate the possibility that our main findings are driven by the omitted time trend problem. We also conduct a placebo test by moving the event year of the anti-corruption campaign two years backward to 2010 and use this pseudo-event year to redo the analyses in Table 3. The unreported results for brevity show that the coefficient on pseudo *POST* is negative but statistically insignificant, lending further support that our main findings are not driven by omitted time trend.

Secondly, we introduce an alternative proxy for tunneling based on related party transactions. Prior literature shows the controlling shareholders could conduct related party transactions to divert resources from listed firms (e.g. Cheung, Rau, & Stouraitis, 2006; Jian & Wong, 2010; Peng, Wei, & Yang, 2011). Following Cheung et al. (2006), we identify five types of related party transactions, including asset acquisitions, asset sales, equity sales, trading relationships involving the trade of goods and services and cash payments happening between the listed company and the private company majority-controlled by a connected person, and then construct an alternative measure of tunneling, related party transactions (*RPT*), calculated as the total related party transaction amount divided by total assets. Using *RPT* in place of *ORECTA* as the dependent variable, we repeat the regression in Table 3 and



Dep. Var. = <i>ORECTA</i>	Coef	<i>t</i> -value
<i>INTERCEPT</i>	4.509***	2.87
<i>TREAT*POST</i>	-0.435***	-2.48
<i>TREAT</i>	0.073	0.39
<i>POST</i>	-0.472***	-2.95
<i>BLOCK</i>	-1.323***	-4.54
<i>ROA</i>	-2.393**	-2.17
<i>SIZE</i>	-0.109	-1.54
<i>SOE</i>	-0.221*	-1.90
<i>LEVERAGE</i>	2.518***	6.64
<i>MB</i>	0.245***	3.83
<i>HIGHMARKET</i>	-0.024	-0.23
Industry FE	Yes	
<i>N</i>	4317	
Adj- <i>R</i> <sup>2</sup>	0.120	

**Note(s):** This table reports the results of DiD analysis. The dependent variable is *ORECTA*. The variable *TREAT* equals 1 if a firm's entertainment expenditures in the pre-campaign period (2010 and 2011) are higher than sample upper quartile and 0 otherwise. All the other variables are defined in [Appendix](#). The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

**Table 10.**  
The effect of the anti-corruption campaign on tunneling: DiD analysis

report the results in [Table 11](#). The coefficient of *POST* remains significantly negative, indicating that the tunneling through the related party transactions is substantially reduced in the period following the anti-corruption campaign as well. These findings support that our main results are robust to alternative measure of tunneling.

Thirdly, our sample period spans two years before and after the launch of the anti-corruption campaign. We further examine whether the mitigating effect of the campaign on tunneling persists over the two years after the launch of the campaign. We introduce two indicator variables: *YEAR2013* and *YEAR2014*, for each year post the campaign and repeat the regression in [Table 3](#). [Table 12](#) reports the results. Both *YEAR2013* and *YEAR2014* are significantly negative, with a larger coefficient on *YEAR2014*. The result suggests that the effect of anti-corruption campaign is persistent and becomes stronger in 2014.

Dep. Var. = <i>RPT</i>	Coef	<i>t</i> -value
<i>INTERCEPT</i>	0.016	0.40
<i>POST</i>	-0.010***	-4.98
<i>BLOCK</i>	0.056***	3.12
<i>ROA</i>	-0.018	-0.67
<i>SIZE</i>	-0.001	-0.46
<i>SOE</i>	-0.008*	-1.70
<i>LEVERAGE</i>	-0.004	-0.36
<i>MB</i>	-0.002	-1.04
<i>HIGHMARKET</i>	0.002	0.40
Industry FE	Yes	
<i>N</i>	7697	
Adj- <i>R</i> <sup>2</sup>	0.013	

**Note(s):** This table presents the results using related party transactions (*RPT*) as an alternative measure of tunneling. The dependent variable is *RPT*, calculated as the total related party transaction amount divided by total assets as in [Cheung et al. \(2006\)](#). All the other variables are defined in [Appendix](#). The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

**Table 11.**  
The effect of the anti-corruption campaign on tunneling: using related party transaction as tunneling measure

Dep. Var. = <i>ORECTA</i>	Coef	<i>t</i> -value
INTERCEPT	3.823***	3.34
<i>YEAR2013</i>	-0.088*	-1.72
<i>YEAR2014</i>	-0.118**	-2.01
<i>BLOCK</i>	-1.140***	-4.70
<i>ROA</i>	-2.303***	-2.67
<i>SIZE</i>	-0.098**	-1.97
<i>SOE</i>	-0.209**	-2.11
<i>LEVERAGE</i>	2.537***	7.70
<i>MB</i>	0.202***	4.24
<i>HIGHMARKET</i>	-0.014	-0.16
Industry FE	Yes	
<i>N</i>	7697	
Adj- <i>R</i> <sup>2</sup>	0.114	

**Table 12.**  
Time trend of the effect  
of the anti-corruption  
campaign on tunneling

**Note(s):** This table reports the results regarding time trend of the anti-corruption campaign's effect on tunneling. The dependent variable is *ORECTA*. *YEAR2013* is a dummy variable equal to 1 for the year 2013, and 0 otherwise; *YEAR2014* is a dummy variable equal to 1 for the year 2014, and 0 otherwise. All the other variables are defined in [Appendix](#). The *t*-statistics is calculated based on standard errors clustering at the firm level. \*\*\*, \*\* and \* signify statistical significance at the 1, 5 and 10% levels, respectively

Finally, a small proportion of our sample firms also cross-list in overseas stock markets such as Hong Kong, Singapore and U.S. These cross-listing firms are subject to different regulatory environments and disclosure requirements, and are found to undertake a lower level of tunneling. As a result, the anti-corruption campaign should have different impact on those cross-listing firms. We thus exclude those cross-listing firms from our sample and re-estimate the regression in [Table 3](#). The results unreported for brevity show that the coefficient of *POST* remains significantly negative, indicating that our results are robust to different sampling.

## 5. Conclusions

Tunneling is a manifestation of agency conflict between controlling and minority shareholders in most emerging economies and public governance is believed to play an important role in constraining tunneling. We take advantage of an exogenous shock in public governance, the unprecedented anti-corruption campaign initiated by the CPC in December 2012, to examine the mitigating effect of improved public governance on tunneling in China. We find Chinese listed firms engage in less tunneling in the post-campaign period than in the pre-campaign period, and this mitigating effect is more pronounced among firms in regions with weaker public governance and firms with poorer corporate governance in the pre-campaign period. Our further cross-sectional analyses reveal that the deterring effect of the anti-corruption campaign is significantly strengthened for non-SOE firms, particularly non-SOE firms with political connections, firms audited by non-Big 8 auditors, firms with a separation of control rights from C/O owned by controlling shareholders, and firms located in regions with less developed marketization. Our findings support that this unprecedented anti-corruption campaign has materially improved public governance and in turn significantly reduced tunneling, especially those that were more likely to tunnel in the pre-campaign period.

This study contributes to the literature on the role of public governance in constraining corporate agency problems. Our findings also advance understanding of the economic consequences of China's anti-corruption campaign in the context of tunneling. Using a quasi-experiment approach, we offer strong evidence that anti-corruption campaigns can be a

viable way to improve public governance and reduce corporate misdeeds. Given the prevalence of various forms of expropriation in the corporate sector in emerging economies, we encourage future researchers to further examine whether anti-corruption campaigns can restrict other forms of expropriation and corporate opportunistic behaviors.

## Notes

1. The Organization of Economic Cooperation and Development (OECD) defines public governance as “the formal and informal arrangements that determine how public decisions are made and how public actions are carried out, from the perspective of maintaining a country’s constitutional values when facing changing problems and environments”.
2. For example, Economist suspects that the campaign is intended to consolidate power by removing political enemies that threaten the current political power base (See: <http://www.economist.com/news/china/21636086-zhou-yongkang-may-well-have-been-corrupt-his-real-problem-was-losing-power-struggle-tiger>).
3. For details, see: <http://www.transparency.org/cpi2010/results>.
4. China news reported that in 2015, 1,023 officials who fled to other countries were recaptured; roughly 82,000 officials were given severe administrative party discipline; 2,479 discipline supervisors were given administrative punishment (See: <http://news.sina.com.cn/c/2016-01-15/doc-ifxnqrk6451216.shtml>).
5. The executives in SOEs normally have an agency problem in the form of perk consumption. Consistent with this view, Lin *et al.* (2016) show that the managers in SOEs reduced their perk consumption after the anti-corruption campaign. However, due to the focus of our study, we do not examine how the campaign affects perk consumption.

## References

- Aharony, J., Wang, J., & Yuan, H. (2010). Tunneling as an incentive for earnings management during the IPO process in China. *Journal of Accounting and Public Policy*, 29(1), 1–26.
- Berkman, H., Cole, R. A., & Fu, L. J. (2009). Expropriation through loan guarantees to related parties: Evidence from China. *Journal of Banking and Finance*, 33(1), 141–156.
- Berle, A. A., & Means, G. C. (1932). *The Modern Corporation and Private Property*. New York: Macmillan.
- Cai, H., Fang, H., & Xu, L. C. (2011). Eat, drink, firms, government: An investigation of corruption from the entertainment and travel costs of Chinese firms. *Journal of Law Economics*, 54(1), 55–78.
- Chen, G., Firth, M., & Xu, L. (2009). Does the type of ownership control matter? Evidence from China’s listed companies. *Journal of Banking and Finance*, 33(1), 171–181.
- Cheung, Y., Haw, I.-M., Tan, W., & Wang, W. (2014). Board structure and intragroup propping: Evidence from family business groups in Hong Kong. *Financial Management*, 43(3), 569–601.
- Cheung, Y., Rau, P., & Stouraitis, A. (2006). Tunneling, propping, and expropriation: Evidence from connected party transactions in Hong Kong. *Journal of Financial Economics*, 82(2), 343–386.
- Chizema, A., Jiang, W., Kuo, J. M., & Song, X. (2020). Mutual funds, tunneling and firm performance: Evidence from China. *Review of Quantitative Finance and Accounting*, 55, 355–387.
- Claessens, S., Djankov, S., Fan, J. P., & Lang, L. H. (2002). Disentangling the incentive and entrenchment effects of large shareholdings. *The Journal of Finance*, 57(6), 2741–2771.
- Claessens, S., Djankov, S., & Lang, L. H. (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, 58(1), 81–112.
- Claessens, S., & Yurtoglu, B. B. (2013). Corporate governance in emerging markets: A survey. *Emerging Markets Review*, 15, 1–33.

- Djankov, S., Porta, R. L., Lopez-De-Silanes, F., & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of Financial Economics*, 88(3), 430–465.
- Doidge, C., Andrew Karolyi, G., & Stulz, R. M. (2004). Why are foreign firms listed in the US worth more?. *Journal of Financial Economics*, 71(2), 205–238.
- Doidge, C., Karolyi, G. A., & Stulz, R. M. (2007). Why do countries matter so much for corporate governance?. *Journal of Financial Economics*, 86(1), 1–39.
- Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *The Journal of Finance*, 59(2), 537–600.
- Faccio, M., & Lang, L. H. (2002). The ultimate ownership of Western European corporations. *Journal of Financial Economics*, 65(3), 365–395.
- Fan, G., Wang, X., & Zhu, H. (2011). *NERI Index of Marketization of China's Provinces 2011 Report*. Beijing: Economic and Science Press. (In Chinese).
- Fan, J. P., Rui, O. M., & Zhao, M. (2008). Public governance and corporate finance: Evidence from corruption cases. *Journal of Comparative Economics*, 36(3), 343–364.
- Firth, M., Mo, P. L., & Wong, R. M. (2005). Financial statement frauds and auditor sanctions: An analysis of enforcement actions in China. *Journal of Business Ethics*, 62(4), 367–381.
- Firth, M., Rui, O. M., & Wu, W. (2011). The effects of political connections and state ownership on corporate litigation in China. *Journal of Law and Economics*, 54(3), 573–607.
- Gao, L., & Kling, G. (2008). Corporate governance and tunneling: Empirical evidence from China. *Pacific-Basin Finance Journal*, 16(5), 591–605.
- Geiger, M. A., Raghunandan, K., & Rama, D. V. (2005). Recent changes in the association between bankruptcies and prior audit opinions. *Auditing: A Journal of Practice and Theory*, 24(1), 21–35.
- Ghosh, A., & Pawlewicz, R. (2009). The impact of regulation on auditor fees: Evidence from the Sarbanes-Oxley act. *Auditing: A Journal of Practice and Theory*, 28(2), 171–197.
- Griffin, J. M., Liu, C. and Shu, T. (2016), Is the Chinese anti-corruption campaign effective?, Working paper, University of Texas, Austin.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Jian, M., & Wong, T. J. (2010). Propping through related party transactions. *Review of Accounting Studies*, 15(1), 70–105.
- Jiang, G., Lee, C., & Yue, H. (2010). Tunneling through intercorporate loans: The China experience. *Journal of Financial Economics*, 98(1), 1–20.
- Johnson, S., Porta, R. L., Lopez-De-Silanes, F., & Shleifer, A. (2000). Tunneling. *American Economic Review*, 90(2), 22–27.
- Ke, B., Liu, N., & Tang, S. (2016). The effect of anti-corruption campaign on shareholder value in a weak institutional environment: Evidence from China. Working Paper. Singapore: National University of Singapore.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *The Journal of Finance*, 52(3), 1131–1150.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113–1155.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). Corporate ownership around the world. *The Journal of Finance*, 54(2), 471–517.
- Lemmon, M. L., & Lins, K. V. (2003). Ownership structure, corporate governance, and firm value: Evidence from the East Asian financial crisis. *The Journal of Finance*, 58(4), 1445–1468.
- Lin, C., Morck, R., Yeung, B., & Zhao, X. (2016). Anti-corruption reforms and shareholder valuations: Event study evidence from China. Working paper. University of Hong Kong.

- 
- Naughton, B. (2007). *The Chinese Economy: Transitions and Growth*. Cambridge: The MIT Press.
- Nee, V. (1992). Organizational dynamics of market transition: Hybrid forms, property rights, and mixed economy in China. *Administrative Science Quarterly*, 37(1), 1–27.
- Nenova, T. (2003). The value of corporate voting rights and control: A cross-country analysis. *Journal of Financial Economics*, 68(3), 325–351.
- Peng, W. Q., Wei, K. J., & Yang, Z. (2011). Tunneling or propping: Evidence from connected transactions in China. *Journal of Corporate Finance*, 17(2), 306–325.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737–783.
- Wang, F., Xu, L., Zhang, J., & Shu, W. (2018). Political connections, internal control and firm value: Evidence from China's anti-corruption campaign. *Journal of Business Research*, 86, 53–67.
- Wang, K., & Xiao, X. (2011). Controlling shareholders' tunneling and executive compensation: Evidence from China. *Journal of Accounting and Public Policy*, 30(1), 89–100.
- Wu, W., Johan, S. A., & Rui, O. M. (2016). Institutional investors, political connections, and the incidence of regulatory enforcement against corporate fraud. *Journal of Business Ethics*, 134(4), 709–726.
- Zhong, Q. L., Lu, Z. F., & Yuan, C. (2016). Anti-corruption, firm performance and channel effects: Based on anti-corruption campaign of 18th CPC National Congress. *Journal of Financial Research*, 9, 161–176.

Variable	Definition
<i>Dependent variable</i>	
<i>ORECTA</i>	Tunneling proxy, calculated as the percentage of the net other receivables scaled by the total assets
<i>Variable of interest</i>	
<i>POST</i>	Dummy variable, equals to 1 if an observation falls in the post-campaign period (year 2013 and 2014), and 0 (year 2010 and 2011) otherwise
<i>Control and other variables</i>	
<i>BLOCK</i>	Block shareholders' ownership, calculated as the percentage of shares held by the largest shareholder to total shares outstanding
<i>LEVERAGE</i>	Financial leverage, measured as the ratio of total debt over total assets
<i>HIGHMARKET</i>	Dummy variable, defined as 1 if the marketization index of firm's location is above the median and 0 otherwise. Marketization index is a comprehensive index measuring the development of the regional market in which the company is registered (Fan <i>et al.</i> , 2011)
<i>MB</i>	The market-to-book ratio of a firm, defined as the total market value of a firm's equity divided by total assets
<i>ROA</i>	Return on assets, calculated as net income scaled by total assets in the previous fiscal year
<i>RPT</i>	Related party transaction amount. Following Cheung <i>et al.</i> (2006), we identify five types of related party transactions: asset acquisitions, asset sales, equity sales, trading relationships, which involve the trade of goods and services and cash payments, happened between the listed company, and the private company majority-controlled by a connected person. <i>RPT</i> is calculated as the total related party transaction amount divided by total assets
<i>SIZE</i>	Firm size, measured as the natural logarithm of total assets
<i>SOE</i>	Dummy variable which equals 1 if the ultimate controller is any government-owned institutions and 0 otherwise

**Table A1.**  
Variable definitions

**Corresponding author**

Wenming Wang can be contacted at: [wuming@zju.edu.cn](mailto:wuming@zju.edu.cn)