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## The Moderating Effect of an Anti-corruption Campaign on the Relation between Political Connections and Investment Behavior - The Case of Chinese Listed Firms

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## Keywords

Anti-corruption campaign, investment expenditure, investment efficiency, SOEs, Non-SOEs

## Cover Page Footnote

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## Abstract

This paper examines the effect of the anti-corruption campaign on the investment behavior of Chinese politically connected firms between 2007 and 2016. The results indicate that the campaign impacts on the investment expenditures and investment efficiency of Chinese listed firms. Compared with the pre-campaign period, all types of politically connected firms experience an obvious reduction in investment expenditures and SOEs controlled by local governments and Non-SOEs face enhanced investment efficiency after the campaign. Further analysis shows that it is mainly due to the mitigation of underinvestment for SOEs controlled by local governments and the alleviation of both over-investment and underinvestment for Non-SOEs.<sup>5</sup>

*JEL classification:* G18

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## 1. INTRODUCTION

Political connections are widespread all around the world, especially in developing countries where institutions are less well-established, and regulations and laws are weak. Under such circumstances, to “get things done”, firms have to build connections with bureaucratic officials. However, this could hinder economic development. As a result, a number of countries took action to try to deal with this problem and China is a very noticeable case among them. Shortly after taking the position of the president of China, on December 4, 2012, Xi Jin-Ping announced a new “Eight-point Policy” which limits state-owned enterprises (hereafter, SOEs) top managers’ scope for extracting private benefits and curtails officials accepting private benefits from others (Lin et al., 2017). This is so-called “anti-corruption campaign (hereafter, the campaign)”.

After this campaign was implemented, researchers began to examine the effects of the campaign on Chinese listed firms. Griffin et al. (2016) study the effects of the campaign and document an overall reduction in measures of potential corporate self-dealing, suggesting that the campaign has changed Chinese corporate culture. Then some other researchers such as Ke et al. (2016), Lin et al. (2017) and Liu et al. (2017) investigate the effect of the campaign on stock prices. However, the stock price reaction indicates the perceptions of the future, not the future itself (Ross et al., 2015). The influence of the campaign on investment activity, a critical factor affecting firms’ goal of maximizing shareholder wealth, is still unexplored. This study, therefore, fills this void by examining the impact of the anti-corruption campaign on investment behavior. In addition, little previous research investigates the influence of the loss of politically connected independent directors on corporate investment activity. This study thus also investigates this issue by separating the political-connected firms into independent director-connected and non-independent director-connected subgroups to determine if the campaign effects are mainly driven by politically connected independent directors and/or by other political linkages.

Chinese listed firms are studied due to the following reasons: first, with a population of 1.3 billion, China is the second largest economy and the largest emerging market in the world nowadays. It has also been the largest contributor to world growth since the global financial crisis of 2008 (World Bank, 2017). Second, in China, governments control the allocation of resources and because of this, firms, especially Non-SOEs, build political connections to overcome difficulties such as fundraising. Previous research proposes that corruption is done through political connections. Therefore, the anti-corruption campaign is a good natural experiment to examine the effects on the listed firms in China. Finally, there are SOEs and Non-SOEs in China; the former are owned and normally run by governments while the latter have less relationship with governments. They thus have very different situations. SOEs are known to have overinvestment problem, in contrast, Non-SOEs face financial constraints and in turn, underinvestment problem. This anti-corruption campaign offers a natural experiment since it is an exogenous shock, and thus the association between the campaign and firm investment efficiency is free from an endogeneity problem.

This study contributes to the literature in several ways. First, this study complements stock price reaction literature such as Ke et al. (2016), Lin et al. (2017) and Liu et al. (2017). Stock price response incorporates investors' perceptions around event dates, however, the expectation may not be the future reality itself. This study analyzes the possible changes in corporate investment behavior after the campaign to shed light on the real effect of the campaign on all types of firms, including SOEs and Non-SOEs with political connections. Second, this research extends the work of Pan et al. (2017) who identify 104 politically connected firms that are involved in the corruption cases (bribing firms). In this study we test the campaign effect with a much broader sample, including all Chinese listed firms originally. The findings show the campaign effect on the whole Chinese stock markets rather than only the effect on the event firms involved in the corruption cases. Third, this study extends the literature on political connection-investment efficiency relation. Previous research such as Chen et al. (2011a) and Xu et al. (2011) investigate the relation between political connection and investment efficiency and this study documents that this relation could be changed by exogenous factors such as anti-corruption campaign. Fourth, this study tries to clarify if the anti-campaign effect is the whole stock market phenomenon or only the firms with politically connected independent directors are affected. By doing so, it sheds light on the channels through which the campaign influences the relation between political connection and investment efficiency. Fifth, this study complements Fan (2016), Ye and Li (2017) as well as Tang et al. (2016), who all investigate the stock price response of the loss of politically connected directors, by examining the influence of the change in political independent directors on investment behavior. Finally, the findings of this research demonstrate the impact of the campaign, that is, whether the campaign really works to change something of Chinese listed firms or not. This is critical and intriguing since the institutions, regulations and laws all almost remain the same, and can only cutting off the political connections lead Chinese listed firms to the right way? We address this issue.

We have organized the remainder of this paper as follows: Section 2 reviews the related literature and develops hypotheses. Section 3 describes the methodology. Section 4 presents the empirical results and discussion. Section 5 is devoted to robustness tests. Section 6 concludes the study and offers suggestions.

## **2. RELATED WORK**

### **2.1. Political connections in China**

Political connections are prevalent, especially in emerging economies where the government still controls over firms' access to financial resources and investment projects (Liu et al., 2016). Non-SOEs in China encounter a disadvantage relative to SOEs (Wu, Wu and Rui, 2012). Political connections, therefore, help firms operating in weak institutional environments overcome market and institutional obstacles and pursue favorable treatment from the government (Li et al. 2008; Wu et al. 2012). As a result, Non-SOEs have the incentives to deal with these unfavorable treatments by establishing political connections.

Political connection could lead firms to have both costs and benefits. For Non-SOEs the benefits include better access to capital markets such as gaining bank loans and issuing stocks at favorable

rates (Chan, Dang and Yan, 2012), political ties make Non-SOEs be able to secure contracts with the government and its affiliated parties, including capital financing, operational contracts and even direct subsidies (Hung, Wong and Zhang, 2015). Moreover, with political experience, politically connected directors could contribute experience and information or help firms cope with government affairs legally. Wu, Wu and Rui (2012) claim that Non-SOEs politically connected managers try to obtain favorable treatment from the government, thereby increasing their firm value.

In contrast, politically connected managers for SOEs have to achieve social-economic goals such as decreasing unemployment rate and increasing local GDP rather than to maximizing firm value. Furthermore, it is unnecessary for SOEs to build political connections for favorable treatment from governments (Wu, Wu and Rui, 2012). Government ownership brings disadvantages to SOEs, especially for local SOEs, because their controlling shareholders are local governments. To reach social and political objectives such as lower unemployment rate and higher regional GDP, local governments can powerfully get involved in SOEs' operations (Wu, Wu and Rui, 2012). In China, governments have influence over appointing SOEs' key executives and the ability to secure bank loans, access to equity markets or even state subsidies (DeFond et al. 2000; Fan et al. 2008; Wang et al. 2008; Hung et al. 2012; Hung, Wong and Zhang, 2015). Moreover, connected firms are found to be less efficient than unconnected counterparts (Chan, Dang and Yan, 2012), significantly decreasing investment efficiency for SOEs (Chen et al., 2011b; Fan, 2016) and losing independence from governments (Marquis and Qian, 2013). In contrast, central SOEs mainly keep control over key industries and guarantee national economy safety rather than pursue political objectives (Wu, Wu and Rui, 2012).

In summary, political connections bring Non-SOEs benefits which are greater than the costs while for SOEs, the costs for political connections may be greater than the benefits, especially for local SOEs.

## **2.2. Anti-corruption campaign, political connections and investment behavior**

The campaign may destroy political connections and harm politically connected firms' future opportunities to contract with the government and thus losing the benefits related to these contracts (Hung, Wong and Zhang, 2015). After the campaign, corruption-related firms may lose their connections with the corrupt bureaucrats, and this may hurt the connection-related benefits. Lin et al. (2017) note that the reforms are expected to prevent influential officials and all top party cadres from demanding bribes for removing regulations which hamper market mechanisms and also harm Non-SOEs from investing in "connections" with officials to "get things done". However, the effects of the campaign may vary depending on the ownership type. For SOEs, they are originally politically-connected due to the high government ownership, it may not be necessary for them to build political connections and even when they have political connections, these connections may not bring additional benefits to SOEs but lead to higher costs related to lowering unemployment rate and enhancing local GDP, which cause lower investment efficiency. After the campaign, if the political connections are lessened, the connected SOEs' investment efficiency may be improved.

In contrast, for Non-SOEs, before the campaign, politically-connected firms negotiate government contracts and preferential treatment more easily (Boubakri et al., 2012), however, the benefits could disappear as these firms lose their connections after the campaign. Xu et al. (2013) argue that political connections help a firm reduce financial friction and obtain more external resources at a lower cost, which can mitigate the underinvestment problem. When the campaign took effect, however, Non-SOE politically-connected firms may lose this connection and also the related benefits. We therefore hypothesize:

H<sub>1</sub>: After the anti-corruption campaign, Chinese politically connected Non-SOEs (PC Non-SOEs) have lower investment efficiency than that before the campaign.

H<sub>2</sub>: After the anti-corruption campaign, Chinese politically connected SOEs (PC SOEs) have higher investment efficiency than that before the campaign.

After the campaign, political connections may be destroyed, as a result, for PC SOEs, they may assume less pressure to achieve socio-economic objectives such as increasing local GDP, leading to less severe overinvestment, in turn lowering investment expenditures. In addition, for PC Non-SOEs, their investment expenditures may also decrease because they may lose political connections and the advantages resulting from the connection. This study thus hypothesizes:

H<sub>3</sub>: After the anti-corruption campaign, Chinese politically connected firms have lower investment expenditures than that before.

### **2.3. Anti-corruption, independent directors and investment behavior**

As previous research argues that independent directors play monitoring and consulting roles in developed markets, however, in an institutional setting with weak investor protection and strong government intervention, they may also play a political role. Ye and Li (2017) propose that politically connected independent directors can build a bridge between firms and politicians, helping firms to circumvent policy risks and secure regulatory rent. In China, the anti-corruption regulation requires that former and incumbent government officers could serve as directors without compensation or perquisites, only if the Organization Department authorizes (Xu, 2018). The campaign seems to work as Xu (2018) finds that after the anti-corruption regulation was implemented, from November 2013 to September 2014, the number of independent directors resigned per month increased from 20 to more than 80, and then back to 50 and around one fourth of independent directors' resignations are due to the regulation. Tang et al. (2016) document, in their research examining the impact of forced politically connected directors on firm value in China, that firms with politically connected directors their stock prices drop significantly on the announcements of the anti-corruption campaign and also of the resulting director resignation. Xu (2018) reports that the channels through which the anti-corruption regulation hampers firm value are believed to be financial constraints and government expropriation, and to follow the anti-corruption regulation, firms could modify their board characteristics, investment as well as operation policies. This research goes a step further to examine whether the campaign effects, if any, mainly result from the possible loss of politically connected independent directors and propose the following hypothesis:

H<sub>4</sub>: After the anti-corruption campaign, PC Non-SOEs have lower investment efficiency resulting from the resignation of politically connected directors.

H<sub>5</sub>: After the anti-corruption campaign, PC SOEs have higher investment efficiency resulting from the resignation of politically connected directors.

H<sub>6</sub>: After the anti-corruption campaign, Chinese politically connected firms have lower investment expenditures resulting from the resignation of politically connected directors.

### 3. METHODOLOGY

#### 3.1 Data

This study examines the moderating effect of the anti-corruption campaign on the relation between political connections and investment behavior by comparing the difference of investment expenditures as well as investment efficiency before and after the anti-corruption campaign for Chinese politically connected firms. Using Taiwan Economic Journal (TEJ) and China Stock Market and Accounting Research (hereafter, CSMAR) databases, this research collects data on Chinese listed firms from 2007 to 2016. Overall, the original sample includes 3,178 of Chinese listed firms. Following previous studies, this research excludes firms in financial industries, since their financial reports are different from those of other industries. This study also deletes firms which have no financial data (missing information) in all the variables we need in this research.

This study uses a dummy variable, ANTI, to proxy for the anti-corruption campaign, which began to be carried out by the National Congress of the Chinese Communist Party in November 2012 ([Pan and Tian, 2017](#)). To take ownership type into consideration, the overall sample is divided into two groups, SOEs and Non-SOEs. Following [Chen et al. \(2011b\)](#), this study determines the nature of ownership type from the annual report. A firm is classified as an SOE if it is ultimately controlled by the government, including the central government, local governments at the provincial, municipal, and county level, as well as other governmental institutions. A firm is defined to be a Non-SOE when its ultimate controlling shareholder is an individual or a non-state entity, such as a town-village enterprise, foreign enterprise, or other non-state-controlled enterprises. This study manually collects background information about top executives from the annual report disclosure contained in the CSMAR database.

To deal with outliers, this study firstly fills the missing data by means of each variable, then follows [Pan and Tian \(2017\)](#) to winsorize those by 1% of top-and-bottom of all continuous variables. The final sample in this study consists of 19,000 firm-years observations of 2,411 of Chinese listed firms.

#### 3.2 Research Design

To investigate the impact of the campaign on the investment behavior of Chinese listed firms, following [Pan and Tian \(2017\)](#), [Stein \(2003\)](#), and [Chen et al. \(2011b\)](#), this study regresses investment expenditures on Tobin's Q and relevant control variables. The main variables in this study are Tobin's Q and ANTI. This study firstly investigates whether investment expenditures and investment efficiency are affected by the campaign using model (1):

$$INV_{i,t} = \alpha_0 + \alpha_1 TQ_{i,t-1} + \alpha_2 ANTI_{i,t} + \alpha_3 TQ_{i,t-1} * ANTI_{i,t} + \alpha_4 CFO_{i,t} + \alpha_5 Lev_{i,t-1} + \alpha_6 Size_{i,t} + \alpha_7 SALES_{i,t-1} + \alpha_8 TANGI_{i,t} + \text{Firm fixed effects} + \text{Year fixed effects} + \varepsilon_{i,t} \quad (1)$$

Where the dependent variable INV is a firm's investment expenditures in a year. Following [Chen et al. \(2011b\)](#) and [Xu et al. \(2011\)](#), INV is defined as cash payments for fixed assets, intangible assets, and other long-term assets from the cash flow statement minus cash receipts from selling these assets, scaled by the beginning total assets. In this study, TQ is a firm's beginning-of-year Tobin's Q. Firms with more valuable investment opportunities are likely to invest more. TQ is calculated as the sum of market value of equity and liabilities, divided by the sum of book value of equity and liabilities. ANTI is a dummy variable equal to 1 for the period when the campaign applied, and 0 for otherwise. The interaction term TQ\*ANTI is added to capture the difference of before and after anti-corruption applied in the investment efficiency of firms.

To be consistent with the literature (e.g. [Chen et al., 2011b](#); [Xu et al., 2013](#); [Pan and Tian, 2017](#)), this study includes several control variables in the models. CFO is the ratio of firms' operating cash flows to total assets. Size is the log of firms' total assets; Leverage (LEV) is the lagged one time period ratio of firms' total debt to total assets; Sales is the lagged one time period ratio of net sales to total assets; and Tangibility (TANGI) is the ratio of tangible assets to firms' total assets. Finally, Firm and year fixed effects are also included. Moreover, to investigate whether Chinese politically connected firms for both SOEs and Non-SOEs have different investment efficiency, the overall sample is partitioned into SOEs and Non-SOEs two groups, then, each group is further separated into politically connected and non-politically connected subgroups, respectively. Finally, this study separately does analysis using model (2).

$$INV_{i,t} = \alpha_0 + \alpha_1 TQ_{i,t-1} + \alpha_2 ANTI_{i,t} + \alpha_3 PC_{i,t} + \alpha_4 TQ_{i,t-1} * ANTI_{i,t} + \alpha_5 TQ_{i,t-1} * PC_{i,t} + \alpha_6 ANTI_{i,t} * PC_{i,t} + \alpha_7 TQ_{i,t-1} * ANTI_{i,t} * PC_{i,t} + \alpha_8 CFO_{i,t} + \alpha_9 Lev_{i,t-1} + \alpha_{10} Size_{i,t} + \alpha_{11} SALES_{i,t-1} + \alpha_{12} TANGI_{i,t} + \text{Firm fixed effects} + \text{Year fixed effects} + \varepsilon_{i,t} \quad (2)$$

Where SOE is a dummy variable, when comparing SOEs with Non-SOEs, SOE variable is state-owned enterprises, which is equal to one for SOEs and zero otherwise. PC is a proxy for a firm's political connections to the government. Following prior studies ([Faccio, 2006, 2010](#); [Xu et al., 2013](#); [Ma et al., 2013](#); [Su et al., 2014](#)), a firm is classified as politically connected if the Chairperson, CEO or one of the board of directors is an ex- or current government bureaucrat, or is a member of the Chinese Communist Party (CPC) or the Chinese People's Political Consultative Conference (CPPCC) in which case it has a value of 1; zero otherwise. Thus, we use political connection (PC) as a dummy variable, which equal to 1 for politically connected firms and 0 for non-politically connected firms. TQ\*ANTI\*PC is the interaction among Tobin's Q, the anti-corruption campaign, and PC. This research predicts (H<sub>1</sub>) that, for Non-SOEs subgroup, the coefficient of TQ\*ANTI\*PC,  $\alpha_7$ , is negative, suggesting that after the campaign, Chinese politically connected Non-SOEs have lower investment efficiency than before the campaign. In contrast, for SOEs subgroup, the coefficient of TQ\*ANTI\*PC,  $\alpha_7$ , is expected to be positive (H<sub>2</sub>), suggesting that after the campaign, PC SOEs have higher investment efficiency than before the campaign. Finally, for SOEs subgroup, the coefficient of ANTI<sub>i,t</sub>,  $\alpha_6$ , is expected to be negative (H<sub>3</sub>), indicating that after the campaign, PC SOEs have lower investment expenditures than before. Finally, to investigate the effect of politically connected director resignation on firm investment behavior, this study separately does regression analysis using model (3).

$$\begin{aligned}
INV_{i,t} = & \alpha_0 + \alpha_1 TQ_{i,t-1} + \alpha_2 ANTI_{i,t} + \alpha_3 \Delta POLDIR_{i,t} + \alpha_4 TQ_{i,t-1} * ANTI_{i,t} \\
& + \alpha_5 TQ_{i,t-1} * \Delta POLDIR_{i,t} + \alpha_6 ANTI_{i,t} * \Delta POLDIR_{i,t} + \alpha_7 TQ_{i,t-1} * ANTI_{i,t} \\
& * \Delta POLDIR_{i,t} + \alpha_8 CFO_{i,t} + \alpha_9 Lev_{i,t-1} + \alpha_{10} Size_{i,t} + \alpha_{11} SALES_{i,t-1} \\
& + \alpha_{12} TANGI_{i,t} + \text{Firm fixed effects} + \text{Year fixed effects} + \varepsilon_{i,t}
\end{aligned} \tag{3}$$

Where  $\Delta POLDIR_{i,t}$  is the change in the number of politically connected independent directors or the percentage of politically connected independent directors, equal to the number of politically connected independent directors of year  $t$  minus the number of year  $t-1$ . For PC Non-SOEs, the coefficient of  $TQ_{i,t-1} * ANTI_{i,t} * \Delta POLDIR_{i,t}$ , that is  $\alpha_7$ , is expected to be negative ( $H_4$ ), suggesting that after the campaign, PC Non-SOEs have lower investment efficiency resulting from the loss of politically connected directors. In contrast, for politically-connected SOEs, the coefficient is predicted to be positive, indicating that after the campaign, PC SOEs have higher investment efficiency resulting from the loss of politically connected directors. Finally, for PC SOEs, the coefficient of  $ANTI_{i,t} * \Delta POLDIR_{i,t}$ ,  $\alpha_6$ , is predicted to be negative, suggesting that after the campaign, PC SOEs have lower investment expenditures resulting from the loss of politically connected directors.

## 4. RESULT AND DISCUSSION

### 4.1 Descriptive Statistics

Table 1 reports descriptive statistics and results of differences in mean analysis between PC Non-SOEs and PC Central SOEs as well as PC Local SOEs (politically connected SOEs controlled by local governments) before and after the campaign. It can be seen from the table that, compared with the pre-anti period, all types of firms, including PC Non-SOEs, PC Central SOEs and PC Local SOEs, have lower investment level and Tobin's Q after the campaign, supporting Hypothesis 3 that after the campaign, Chinese politically connected firms have lower investment expenditures than that before the campaign. In addition, debt ratio (Lev) decreases significantly for PC Non-SOEs, however, it increases significantly for both PC Central SOEs and PC Local SOEs. This implies that after the campaign, it should be more difficult for PC Non-SOEs to raise debt from state-owned banks due to the loss of political connections compared with that before the campaign. Finally, PC NSOEs have much lower sales after the campaign, the difference is negative and significant at the 1% level while the sales for both PC Central SOEs and PC Local SOEs have little change. It suggests that the campaign really negatively harms PC NSOEs' operating activities.

In summary, the results suggest that the campaign does indeed affect Chinese politically connected firms, in that all three types of firms have much lower investment expenditures and Tobin's Q after the campaign compared with that before the campaign. Furthermore, after the campaign, PC Non-SOEs experience a significant reduction in financial leverage and sales, while both PC Central SOEs and PC Local SOEs do not decrease or even increase. These results suggest that the campaign lowers the investment opportunities and investment level for all Chinese politically connected firms. In addition, the loss of political connections for Non-SOEs harms their abilities to raise funds from state-owned banks and that of doing business with public institutions.

**Table 1.** The Descriptive Statistics and the Differences in Mean and Median of Variables of PC Non-SOEs, PC Central SOEs and PC Local SOEs

Var.	PC Non-SOEs						Difference		PC SOEs Central						Difference	
	N	Mean		Median		t-value	z-value	N	Mean		Median		t-value	z-value		
		Before	After	Before	After				Before	After	Before	After				
INV	6786	0.054	0.045	0.039	0.033	-6.577***	-5.505***	625	0.063	0.035	0.047	0.026	-6.915***	-4.152***		
TQ	6786	2.893	1.855	1.836	1.301	-17.651***	-17.019***	625	2.344	1.300	1.656	0.990	-7.070***	-11.942***		
CFO	6786	0.036	0.037	0.035	0.037	0.832	-1.170	625	0.046	0.036	0.046	0.036	-1.449	-3.445***		
LEV	6786	0.525	0.467	0.496	0.461	-7.180***	-4.343***	625	0.529	0.587	0.547	0.590	2.702***	-3.639***		
SIZE	6786	9.420	9.650	9.370	9.570	15.619***	-15.919***	625	9.850	10.020	9.660	9.910	2.515**	-9.590***		
SALE	6786	0.696	0.631	0.573	0.503	-5.003***	-6.271***	625	0.798	0.806	0.661	0.683	0.150	-1.564		
TANGI	6786	0.228	0.232	0.190	0.198	0.898	-1.168	625	0.274	0.228	0.214	0.170	-2.485**	-1.839*		

  

Var.	PC SOEs Local						Difference	
	N	Mean		Median		t-value	z-value	
		Before	After	Before	After			
INV	1121	0.058	0.048	0.041	0.033	-2.545**	-2.281**	
TQ	1121	2.283	1.289	1.575	0.776	-7.288***	-10.521***	
CFO	1121	0.054	0.037	0.054	0.035	-2.952***	-3.400***	
LEV	1121	0.529	0.570	0.542	0.577	2.559**	-2.950***	
SIZE	1121	9.600	9.970	9.570	9.960	9.586***	-9.258***	
SALE	1121	0.701	0.641	0.580	0.535	-1.603	-0.929	
TANGI	1121	0.299	0.285	0.276	0.253	-1.058	-1.181	

\*, \*\*, \*\*\* represent significance at the 10 %, 5 %, and 1 % levels (2-tailed), respectively. This table reports the descriptive statistics and the differences in mean and median of variables of PC Non-SOEs, PC Central SOEs and PC Local SOEs. SOEs are state-owned enterprises, while Non-SOEs are otherwise. PC SOEs Central is politically connected SOEs controlled by the central government while PC SOEs Local is politically connected SOEs controlled by local governments. INV is defined as cash payments for fixed assets, intangible assets, and other long-term assets from the cash flow statement minus cash receipts from selling these assets, scaled by the beginning total assets. TQ is calculated as the sum of market value of equity and liabilities, divided by the sum of book value of equity and liabilities. This study includes several control variables in the models. CFO is the ratio of firms' operating cash flows to total assets. Size is the log of firms' total assets; Leverage (LEV) is the lagged one time period ratio of firms' total debt to total assets; Sales is the lagged one time period ratio of net sales to total assets; and Tangibility (TANGI) is the ratio of tangible assets to firms' total assets.

#### 4.2 The effect of the campaign on the investment behavior of politically connected firms

Table 2 shows the regression results for the effect of the campaign on the investment behavior of different ownership types. As can be seen from the table, all coefficients on ANTI are negative and significant at the 1% level from Column I to Column IV, indicating that the investment level of all types of firms significantly decreases after the campaign. This result is consistent with the finding in Table 1 and supports our Hypothesis 3 that after the campaign, Chinese politically connected firms have lower investment expenditures than that before the campaign. Regarding the influence of the campaign on investment efficiency, Column I shows that the coefficient on TQ\*ANTI is positive but insignificant at conventional levels. When the SOEs are divided into Central SOEs and Local SOEs, the coefficient on TQ\*ANTI is insignificant at conventional levels for Central SOEs while that for Local SOEs is positive and significant at the 5% level. This result suggests that after the campaign, the investment efficiency of PC SOEs has little change, however, that of Local SOEs is enhanced, implying that Local SOEs benefits more than Central SOEs in investment efficiency from the campaign. This finding partially supports our Hypothesis 2 that after the campaign, Chinese politically connected SOEs have higher investment efficiency than that before the campaign. Finally, Column IV shows that the coefficient on TQ\*ANTI is positive and significant at the 5% level, indicating an increase in investment efficiency for Non-SOEs after the campaign. This result is not consistent with our Hypothesis 1, one possible reason is that after the campaign, Non-SOEs overinvest less due to the difficulty to raise funds from state-owned banks or they make investment decisions more cautiously due to the loss of political connections, thereby mitigating the overinvestment problem.

**Table 2.** The Effect of the Campaign on the Investment Behavior of Politically Connected Firms

VARIABLE	I SOE	II SOE-Central	III SOE-Local	IV Non-SOE
C	0.0080 (0.1236)	0.1369 (1.2095)	0.0707 (0.6787)	0.0369 (1.1530)
TQ	0.0015** (2.0435)	0.0006 (0.4587)	0.0014 (1.2730)	0.0004 (1.0860)
ANTI	-0.0241*** (-5.4503)	-0.0244*** (-3.4150)	-0.0267*** (-4.0338)	-0.0207*** (-10.3565)
TQ*ANTI	0.0032 (1.3708)	-0.0016 (-0.4784)	0.0090** (2.3585)	0.0016** (2.4729)
CFO	0.0010 (0.0591)	0.0224 (0.8121)	-0.0064 (-0.2600)	0.0265*** (2.9915)
LEV	-0.0416*** (-4.6218)	-0.0219 (-1.3169)	-0.0449*** (-3.6655)	-0.0364*** (-10.9569)
SIZE	0.0106 (1.6159)	-0.0010 (-0.0847)	0.0046 (0.4260)	0.0057* (1.7050)
SALE	-0.0017 (-0.3597)	-0.0183** (-2.3226)	0.0078 (1.1807)	-0.0029 (-1.0604)
TANGI	-0.1127*** (-7.6049)	-0.1564*** (-5.1604)	-0.1382*** (-6.7385)	-0.0738** (-8.8705)

**Table 2** (continued)

Cross-section (dummy variables)	fixed			
	Yes	Yes	Yes	Yes
R-squared	0.7126	0.7880	0.7183	0.5972
Adjusted R-squared	0.5407	0.6478	0.5085	0.4652
F-statistic	4.1450***	5.6181***	3.4230***	4.5237***
N	1895	566	1027	5765

\*, \*\*, \*\*\* represent significance at the 10 %, 5 %, and 1 % levels (2-tailed), respectively. This table reports the effect of the campaign on the investment behavior of politically connected firms. INV is defined as cash payments for fixed assets, intangible assets, and other long-term assets from the cash flow statement minus cash receipts from selling these assets, scaled by the beginning total assets. ANTI is a dummy variable equal to 1 for the period when the campaign applied, and 0 for otherwise. TQ is calculated as the sum of market value of equity and liabilities, divided by the sum of book value of equity and liabilities. The interaction term TQ\*ANTI is added to capture the difference of before and after anti-corruption applied in the investment efficiency of firms. This study includes several control variables in the models. CFO is the ratio of firms' operating cash flows to total assets. Size is the log of firms' total assets; Leverage (LEV) is the lagged one time period ratio of firms' total debt to total assets; Sales is the lagged one time period ratio of net sales to total assets; and Tangibility (TANGI) is the ratio of tangible assets to firms' total assets. Finally, Firm and year fixed effects are also included. T-statistics (t-value) are reported in parentheses.

#### 4.3 The effect of the campaign on the investment behavior of politically-connected and non-politically connected firms – a Difference-in-Differences test.

Even though the anti-corruption campaign is an exogenous shock which causes little endogeneity problem, we still use difference-in-differences method to deal with this issue. The results are reported in Table 3<sup>6</sup>. Columns I to IV show that the coefficients on ANTI are all negative and significant at the 1% level except that of Non-SOEs. In addition, the coefficients on ANTI\*SOE\_PC, ANTI\*SOE Central\_PC, ANTI\*SOE Local\_PC and ANTI\*NON-SOE\_PC are all positive and not significant at conventional levels. These results indicate that after the campaign, all types of firms experience decreased investment expenditures, and there is little difference between those with and without political connections. One possible reason is that this campaign negatively impacts on Chinese firms widely.

Regarding the effect of the campaign on investment efficiency of Chinese listed firms, as can be seen from Columns I and II of the table, the coefficients on both TQ\*ANTI and TQ\*ANTI\*SOE\_PC as well as those on both TQ\*ANTI and TQ\*ANTI\*SOE\_CEN\_PC are all insignificant at conventional levels, however, Column III shows that the coefficients on TQ\*ANTI and TQ\*ANTI\*SOE\_LOC\_PC are both positive with the latter significant at the 5% level. This result suggests that the campaign does not affect the investment efficiency of Central SOEs, whether they are politically connected or not. In addition, the investment efficiency of Local SOEs without political connections is not influenced by the campaign, however, that of politically connected Local SOEs is enhanced after the campaign. Finally, the investment efficiency of Non-SOEs is improved after the campaign, whether they are politically connected or not, and the

<sup>6</sup> To save space, only the results of the key variables are shown in the table.

difference of the investment efficiency enhancement is not significant between those with and without political connections.

In summary, the campaign causes a widely and significantly lower investment expenditure, all firms experience a great reduction in investment level. In addition, the investment efficiency of PC Local SOEs is improved and that of all Non-SOEs is enhanced and the enhancement shows no difference between PC Non-SOEs and NPC Non-SOEs (not politically connected Non-SOEs).

**Table 3.** Difference-in-Differences Analysis

VARIABLE	I SOEs	II SOEs-Central	III SOEs-Local	IV Non-SOEs
ANTI	-0.0322*** (-3.2341)	-0.0320*** (-4.6849)	-0.0259*** (-3.5825)	-0.0081 (-0.1028)
ANTI*SOE_PC	0.0078 (0.8417)			
ANTI*SOE CENTRAL_PC		0.0081 (0.8164)		
ANTI*SOE LOCAL_PC			0.0005 (0.0467)	
ANTI*NON-SOE_PC				0.0006 (1.1958)
TQ*ANTI	-0.0009 (-0.2829)	0.0020 (0.6488)	0.0024 (0.6178)	0.0016** (2.5185)
TQ*ANTI*SOE_PC	0.0027 (0.4644)			
TQ*ANTI*SOE CEN_PC		-0.0050 (-1.1272)		
TQ*ANTI*SOE LOC_PC			0.0142** (2.1066)	
TQ*ANTI*NON-SOE_PC				0.0008 (1.1811)

\*, \*\*, \*\*\* represent significance at the 10 %, 5 %, and 1 % levels (2-tailed), respectively. This table reports Difference-in-Differences Analysis. ANTI is a dummy variable equal to 1 for the period when the campaign applied, and 0 for otherwise. SOE is state-owned enterprises, while Non-SOE is otherwise. SOE\_PC is politically connected SOEs. SOE Central/Cen\_PC is politically connected SOEs controlled by the central government while SOE Local/Loc\_PC is politically connected SOEs controlled by local governments. TQ is calculated as the sum of market value of equity and liabilities, divided by the sum of book value of equity and liabilities. The interaction term TQ\*ANTI is added to capture the difference of before and after anti-corruption applied in the investment efficiency of firms. TQ\*ANTI\*SOE is the interaction among TQ, ANTI, and SOE. This study includes several control variables in the models. CFO is the ratio of firms' operating cash flows to total assets. Size is the log of firms' total assets; Leverage (LEV) is the lagged one time period ratio of firms' total debt to total assets; Sales is the lagged one time period ratio of net sales to total assets; and Tangibility (TANGI) is the ratio of tangible assets to firms' total assets. Finally, Firm and year fixed effects are also included. T-statistics (t-value) are reported in parentheses.

**4.4 The effect of the change in politically connected independent directors on the investment behavior of politically connected firms.**

Here we investigate the influence of this regulation on investment behavior. We focus only on the firms with politically connected independent directors (POLDIR) and classify the firms into three groups – Central SOEs POLDIR, Local SOEs POLDIR and Non-SOEs POLDIR. Table 4 presents the results. As can be seen from Column I to Column VI, coefficients on ANTI are all negative and significant at the 1% level, indicating that after the campaign, the investment expenditures are much lower than those before the campaign for all types of firms with politically connected independent directors. The coefficients on TQ\*ANTI in Columns I and III are both positive and significant at the 1% level, suggesting that the investment efficiency of SOEs increases after the campaign and this enhancement of investment efficiency is due to the Local SOEs. In addition, the coefficient on TQ\*ANTI\*SOEPC\_POLDIR\_PER is positive and significant at the 5% level, as shown in Column I, indicating that after the campaign, the decrease in politically connected independent directors causes lower investment efficiency for SOEs. Furthermore, the coefficients on both TQ\*ANTI\*SOECENPC\_POLDIR\_PER and TQ\*ANTI\*SOELOCPC\_POLDIR\_PER are positive, as shown in Columns I and III, respectively, indicating that the investment efficiency of SOEs controlled both by the central government and by local governments decreases after the campaign. However, they are not significant at conventional levels. Finally, Column IV reports that the coefficients on ANTI\*POLDIR\_PER and TQ\*ANTI\*POLDIR\_PER are positive and negative, respectively, both are significant at or better than the 10% level. This finding suggests that after the campaign, for Non-SOEs, the decrease in politically connected independent directors leads to decreased investment expenditures, but it causes enhanced investment efficiency.

**Table 4.** The Effect of the Change in Politically Connected Independent Directors on Investment Behavior of Politically Connected Firms

VARIABLE	I SOEs	II SOEs-Central	III SOEs-Local	IV Non-SOEs
C	-0.0004 (-0.0049)	0.1217 (1.0239)	0.1776 (1.1467)	0.0823** (2.4198)
TQ	-0.0012 (-0.9752)	-0.0015 (-0.7684)	-0.0023 (-1.0784)	0.0017*** (3.3278)
ANTI	-0.0242*** (-5.9947)	-0.0259*** (-4.3302)	-0.0193*** (-2.9346)	-0.0145*** (-8.2307)
TQ*ANTI	0.0052*** (2.7975)	0.0020 (0.6063)	0.0087*** (2.8423)	0.0005 (0.8876)
SOEPC_POLDIR_PER	0.0027 (1.0682)			
TQ*SOEPC_POLDIR_PER	-0.0012 (-0.6785)			
ANTI*SOEPC_POLDIR_PER	-0.0134* (-1.7662)			
TQ*ANTI*SOEPC_POLDIR_PER	0.0054** (2.2059)			
SOELOCPC_POLDIR_PER			0.0073 (0.8947)	

**Table 4 (continued)**

TQ*SOELOCPC_POLDIR_PER				-0.0008 (-0.3192)
ANTI*SOELOCPC_POLDIR_PER				-0.0165 (-1.3687)
TQ*ANTI*SOELOCPC_POLDIR_PER				0.0049 (1.4195)
SOECENPC_POLDIR_PER	0.0079 (1.0849)			
TQ*SOECENPC_POLDIR_PER	0.0016 (0.4385)			
ANTI*SOECENPC_POLDIR_PER	-0.0086 (-0.7919)			
TQ*ANTI*SOECENPC_POLDIR_PER	0.0006 (0.1141)			
POLDIR_PER				-0.0033 (-1.1078)
TQ*POLDIR_PER				0.0015 (1.4321)
ANTI*POLDIR_PER				0.0081** (2.0929)

Table 4 (continued)

TQ*ANTI*POLDIR_PER				-0.0024* (-1.6836)
Control Variables	Yes	Yes	Yes	Yes

Cross-section variables)	fixed	(dummyYes	Yes	Yes	Yes
R-squared	0.7212	0.8067	0.7281	0.6172	
Adjusted R-squared	0.5616	0.6766	0.5372	0.4940	
F-statistic	4.5189***	6.1982***	3.8126***	5.0106***	
N	1358	416	682	5547	

\*, \*\*, \*\*\* represent significance at the 10 %, 5 %, and 1 % levels (2-tailed), respectively. This table reports the effect of the change in politically connected independent directors on investment behavior of politically connected firms. ANTI is a dummy variable equal to 1 for the period when the campaign applied, and 0 for otherwise. SOE is state-owned enterprises, while Non-SOE is otherwise. SOEPC is politically connected SOEs. SOECENPC\_POLDIR\_PER is politically connected independent directors SOEs controlled by the central government while SOELOCPC\_POLDIR\_PER is politically connected independent directors SOEs controlled by local governments. TQ is calculated as the sum of market value of equity and liabilities, divided by the sum of book value of equity and liabilities. The interaction term TQ\*ANTI is added to capture the difference of before and after anti-corruption applied in the investment efficiency of firms. POLDIR\_PER is the percentage of politically connected

independent directors. TQ\*ANTI\*POLDIR\_PER is the interaction among TQ, ANTI, and POLDIR\_PER. Finally, Firm and year fixed effects are also included. T-statistics (t-value) are reported in parentheses.

Overall, the results in Table 1 to Table 4 indicate that the campaign does have an impact on investment behavior. After the campaign, all types of firms, whether they are politically connected or not, experience a significant reduction in investment expenditures. In addition, the investment efficiency for both PC Local SOEs and PC Non-SOEs is improved. Finally, the investment efficiency for both PC Local SOEs and PC Non-SOEs is enhanced after the campaign.

## 5. Robustness tests

### 5.1 An alternative proxy for the influence of politically connected independent directors

In the last section, we use the change in the number of politically connected independent directors to examine the effect of Regulation No. 18 on investment behavior. Here, another proxy – the total number of politically connected independent directors – is utilized to investigate the campaign effect from another aspect. The results are reported in Table 5. As can be seen from Column I, the coefficient on ANTI\*SOEPC\_POLDIR\_SUM is negative and significant at the 10% level, indicating that after the campaign, the number of politically connected independent directors is negatively related to investment expenditures for SOEs. One possible reason is that after the campaign, politically independent directors put less pressure on Local SOEs to overinvest. In addition, the coefficient on TQ\*ANTI\*SOEPC\_POLDIR\_SUM is positive and significant at the 5% level, suggesting that after the campaign, a higher number of politically independent directors leads to better investment efficiency, and this effect is mainly due to the Local SOEs, as is evidenced by the positive and significant (at the 10% level) coefficient on TQ\*ANTI\*SOELOCPC\_POLDIR\_SUM. Furthermore, Column IV shows that the coefficient on ANTI\*POLDIR\_SUM is positive and significant at the 10% level, indicating that after the campaign, for Non-SOEs, politically connected independent directors induce more investment expenditures. Finally, the coefficient on TQ\*ANTI\*POLDIR\_SUM is negative and significant at the 10% level, suggesting that after the campaign, for Non-SOEs, lower number of politically connected independent directors leads to higher investment efficiency.

**Table 5.** The Effect of the Number of Politically Connected Independent Directors on Investment Behavior

VARIABLE	I SOEs	II SOEs-Central	III SOEs-Local	IV Non-SOEs
C	-0.0174 (-0.2340)	0.1351 (1.1179)	0.1913* (1.8206)	0.0686** (2.1506)
TQ	-0.0003 (-0.2557)	-0.0010 (-0.4925)	-0.0006 (-0.4151)	0.0015*** (3.1687)
ANTI	-0.0225*** (-6.2311)	-0.0223*** (-3.9653)	-0.0157** (-2.4413)	-0.0153*** (-9.1739)
TQ*ANTI	0.0045** (2.7328)	-0.0001 (-0.0268)	0.0061*** (2.9572)	0.0006 (1.019)
SOEPC_POLDIR_SUM	0.0027 (1.0682)			
TQ*SOEPC_POLDIR_SUM	-0.0008 (-0.8317)			

**Table 5 (continued)**

ANTI*SOEPC_POLDIR_SUM	-0.0073*			
	(-1.8048)			
TQ*ANTI*SOEPC_POLDIR_SUM	0.0032**			
	(1.9940)			
SOELOCPC_POLDIR_SUM			0.0051	
			(1.4687)	
TQ*SOELOCPC_POLDIR_SUM			-0.0008	
			(-0.5882)	
ANTI*SOELOCPC_POLDIR_SUM			-0.0122**	
			(-2.314)	
TQ*ANTI*SOELOCPC_POLDIR_SUM			0.0038*	
			(1.7812)	
SOECENPC_POLDIR_SUM	-0.0008			
	(-0.2001)			
TQ*SOECENPC_POLDIR_SUM	0.0023			
	(0.9294)			
ANTI*SOECENPC_POLDIR_SUM	0.0024			
	(0.3881)			
TQ*ANTI*SOECENPC_POLDIR_SUM	-0.0021			
	(-0.6257)			
POLDIR_SUM				-0.0010
				(-0.6945)
TQ*POLDIR_SUM				0.0003
				(0.6731)
ANTI*POLDIR_SUM				0.0035*
				(1.7276)
TQ*ANTI*POLDIR_SUM				-0.0014*
				(-1.8099)
Control Variables	Yes	Yes	Yes	Yes
Cross-section fixed (dummy variables)	Yes	Yes	Yes	Yes
R-squared	0.7141	0.7915	0.7274	0.6123
Adjusted R-squared	0.5579	0.6570	0.5502	0.4960
F-statistic	4.5700***	5.8858***	4.1041***	5.2642***
N	1512	455	765	6129

\*, \*\*, \*\*\* represent significance at the 10 %, 5 %, and 1 % levels (2-tailed), respectively. This table reports the effect of the change in politically connected independent directors on investment behavior of politically connected firms. ANTI is a dummy variable equal to 1 for the period when the campaign applied, and 0 for otherwise. SOE is state-owned enterprises, while Non-SOE is otherwise. SOEPC is politically connected SOEs. SOECENPC\_POLDIR\_SUM is politically connected independent directors SOEs controlled by the central government while SOELOCPC\_POLDIR\_SUM is politically connected independent directors SOEs controlled by local governments. TQ is calculated as the sum of market value of equity and liabilities, divided by the sum of book value of equity and liabilities. The interaction term TQ\*ANTI is added to capture the difference of before and after anti-corruption applied in the investment efficiency of firms. POLDIR\_SUM is the change in the number of politically connected independent directors. TQ\*ANTI\*POLDIR\_SUM is the interaction among TQ, ANTI, and POLDIR\_SUM. Finally, Firm and year fixed effects are also included. T-statistics (t-value) are reported in parentheses.

## 5.2 An alternative way to measure investment efficiency

We use a model to predict a firm's investment efficiency, following Wang, Zhu and Hoffmire (2015). We then take the residuals, which represent the deviations from predicted investment, from

the model to proxy for investment inefficiency. A positive residual is classified as overinvestment while a negative deviation is assigned as underinvestment. Finally, to determine how the campaign affects the investment efficiency of Chinese politically connected firms, we regress the residuals on ANTI for positive and negative groups, respectively. The results are shown in Table 6.

**Table 6.** The Effect of The Anti-Corruption Campaign on Overinvestment and Underinvestment Problems

VARIABLE	(I) Overinvestment	(II) Underinvestment
Panel A: SOEs		
ANTI	-0.0018 (-0.5467)	0.0022(1.2543)
Panel B: SOEs-Central		
ANTI	-0.0106**(-2.1342)	0.0016(0.5292)
Panel C: SOEs-Local		
ANTI	-0.0037(-0.7021)	0.0043*(1.9218)
Panel D: Non-SOEs		
ANTI	-0.0031**(-2.2762)	0.0025***(2.9130)

\*, \*\*, \*\*\* represent significance at the 10 %, 5 %, and 1 % levels (2-tailed), respectively. This table reports The effect of the anti-corruption campaign on overinvestment and underinvestment problems. ANTI is a dummy variable equal to 1 for the period when the campaign applied, and 0 for otherwise. SOEs are state-owned enterprises, while Non-SOEs are otherwise. SOEs-Central is SOEs controlled by the central government. SOEs-Local is SOEs controlled by the local government T-statistics (t-value) are reported in parentheses.

The results show that, on average, the anti-corruption campaign implemented in China does affect the investment behavior of Chinese listed firm. After the campaign, all types of firms encounter great reduction in investment level. In addition, PC Local SOEs experience better investment efficiency due to the mitigated underinvestment and PC Non-SOEs have improved investment efficiency because of their less severe under- and over-investment.

Taken together, the results of the robustness checks in this study reveal that our main findings are robust to alternative proxies and difference-in-differences test.

## 5. CONCLUSION AND SCOPE FOR FURTHER RESEARCH

This research empirically analyzes the impact of the anti-corruption campaign on the investment behavior of Chinese politically connected firms. We hypothesize that the campaign may lead to lower investment expenditures for all types of politically connected firms and cause enhancement of investment efficiency for politically connected SOEs while that of Non-SOEs may be harmed. The findings of this paper on average support our hypotheses and demonstrate the impact of the campaign on the investment behavior of Chinese politically connected firms. However, one result is intriguing, that is, after the campaign, the investment efficiency of PC Non-SOEs is better than that before the campaign. This is inconsistent with our hypothesis<sub>1</sub>, which we predict a lower investment efficiency after the campaign. We find, from our robustness test that, this enhancement of investment efficiency is due to the mitigation of both under- and over-investment. This may be because it becomes more difficult for PC Non-SOEs to raise funds externally when losing political connections so that they make investment decisions more cautiously, thereby mitigating overinvestment problem. In addition, after the campaign, the investment opportunities of Chinese stock markets reduce sharply, leading to much lower underinvestment for PC Non-SOEs.

Political connections are pervasive, especially in emerging markets. Researchers are encouraged to examine the influence of political connections on corporate policy in common, and on financial policy, in particular, to shed more light on the impact of these connections on capital market development.

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