Equilibrium Consequences of Corruption on Firms: Evidence from China's Anti-Corruption Campaign*

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Abstract

We use China's recent anti-corruption campaign as a natural experiment to examine the (market expected) equilibrium consequences of President Xi Jinping's anti-corruption campaigns. We argue that the announcement of inspections of provincial governments by the Central Commission for Discipline Inspection (CCDI) on May 17, 2013 represents a significant departure of past norms of anti-corruption campaigns, and thus represents a rare empirical opportunity to examine the equilibrium effects of anti-corruption campaigns for firms. We first present a conceptual framework to illustrate the channels through which anti-corruption actions can influence firms. Using an event study approach and the announcement of anti-corruption inspection to be conducted by the Central Commission for Discipline Inspection (CCDI) as the event date, we find that, overall, the stock market responded positively to the announcement of strong anti-corruption actions. Consistent with a demand-channel, the announcement returns are significantly lower for luxury-goods producers. In addition, SOEs, large firms, or politically connected firms earn lower returns than private, small, or non-connected firms. Finally, existing local institutions also play a crucial role in determining the announcement returns across firms.

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1 Introduction

Corruption is a widespread phenomenon in many developing and transitional economies. A crucial, yet unsettled, question is: what are the consequences of corruption? There are two different views of the effect of corruption on economic development.[1] The conventional wisdom holds that corruption is a distortion and is costly for economic development (e.g., Klitgaard, 1991; La Porta, et al., 1999; Shleifer and Vishny, 1993). The "grabbing hands" of bureaucrats increase the cost of operating business, leading to less entry on the extensive margin and to smaller scale on the intensive margin. Under this view, eliminating governments' grabbing hands will lead to more firm entry and higher profits for existing firms and in general will improve economic efficiency. An alternative view, however, argues that in an environment with excessive bureaucratic burden, paying bribes may help avoid bureaucratic delays and make government officials work harder. This view is first put forth by Leff (1964) in his influential essay "*Economic Development Through Bureaucratic Corruption*" where he laid out several arguments for the possible efficiency-enhancing role of corruption. As Leff put it: "The critique of bureaucratic corruption often seems to have in mind a picture in which the government and civil service of underdeveloped countries are working intelligently and actively to promote economic development, only to be thwarted by the efforts of grafters. Once the validity of this interpretation is disputed, the effects of corruption must also be reevaluated." Leff suggested that the government would often be indifferent or even hostile to entrepreneurs, and it could establish misguided anti-market policies in the form of crushing government bureaucracy and red tapes; bribery of government officials would help the market function by allowing the entrepreneurs who pay the bribes to avoid the shackles of the bureaucracy.[2] This view of corruption as the "grease for the squeaking wheels" of a rigid administration is famously summarized by Huntington (1968, p. 386):[3] "In terms of economic growth, the only thing worse than a society with a rigid, over-centralized, *dishonest* bureaucracy is one with a rigid, over-centralized, *honest* bureaucracy." [italics added]

These two views are not necessarily conflicting. To the extent that red tapes and misguided

[1] See Bardhan (1997) for a review of these issues and also see Chapter 4 of Fisman and Golden (2017) for the consequences of corruption.

[2] Leff also suggested the corruptioin may help economic development by "making possible a higher rate of investment than would otherwise be the case", because corruption can enable entrepreneurs to "control and render predictable this important influence [of harmful government intervention on their affairs] on their environment." In addition, he argued that corruption can increase development since the market for bribery itself may lead to scare resources such as licenses to be allocated more efficiently.

[3] See also, e.g. Beck and Maher (1986), Lien, (1986) and Méon and Sekkat (2005) among others.

regulations are endogenous choices of bureaucrats, rent-seeking incentives by the bureaucrats can serve as the source of the red tapes and misguided regulations that lead to distortions; and at the same time, corruption can serve as the greasy to at least partially undo the distortions by the red tapes and misguided regulations. The effect of corruption on economic performance in this equilibrium framework is more nuanced. In the absence of the opportunities to engage in rent-seeking, the red-tapes and misguided regulations may not be present, thus making moot the "grease-of-the-wheel" role of corruption. However, whether the opportunities of corruption by the bureaucrats increase or hinder the economy crucially depends on the institutions (including government regulations) that would be in place when corruption is rooted out (see, e.g., Kaufmann and Wei, 1999, and Wei, 2000a, 2000b).

In order to evaluate the equilibrium consequences of corruption on firms, one would need to observe firms' performance under different norms of corruption, *ceteris paribus*. This poses an empirical challenge, however. In most of the cases, the norms of corruption in a country change only in conjunction with a radical change in the government caused by either uprising, revolution, or foreign invasion. Therefore it is impossible to disentangle the effect of corruption on firms from other disturbances to the economy. A *substantial* shift in the norms of corruption among bureaucrats in a *stable* country and economy usually do not happen simultaneously. In this paper, we argue that China's recent strong anti-corruption campaign under President Xi Jinping, in particular, the announcement that the Central Commission for Discipline Inspection (CCDI) would conduct several rounds of inspection on May 17, 2013, may signal as the event suggesting Xi's anti-corruption campaign was not business-as-usual, thus serving as a rare natural experiment that can allow us to examine the equilibrium consequences of corruption on firms.[4] The CCDI inspections were sweeping, and resulted in the detainment and prosecution of more than 270,000 bureaucrats at different levels, including more than 100 high-ranking government officials. This unprecedented announcement of the inspections by CCDI is likely to have resulted in a shift in public perception about the nature of President Xi's anti-corruption campaign, and possibly a shift in the norm of corruption among bureaucrats.

A second empirical challenge is that it would likely take a long time for the equilibrium outcomes following the shift of the corruption norm to fully manifest itself; but during the long time horizon many other factors can also change, which would then make it harder to distinguish the effect of the changes in the corruption norm from the effects of other concurrent changes. To overcome

[4]In Section 2 we provide more background information about Xi's anti-corruption campaign and argue why the announcement of inspection of provincial governments by CCDI on May 17, 2013 was different from past practices.

this empirical challenge, we take advantage of the fact that stock market incorporates *expectations* about the future developments in the current pricing of a firm's equity; thus, to the extent that the market expects the anti-corruption campaign to lead to both short- and long-run (i.e., equilibrium) changes in the extent of corruption in the economy, the equilibrium effects of corruption on firm values will be reflected in the changes in the stock market prices *upon* the announcement of the CCDI inspections.

Specifically, we employ an *event study* approach and use the announcement date, May 17, 2013, as our event date, to examine the cumulative abnormal returns (CAR) of publicly listed stocks around the announcement date. We find that the stock market overall responded significantly positively to the CCDI inspection announcement, indicating that the market views this new phase of anti-corruption campaign a positive news that will improve firms' overall performance once a new corruption norm is reached. Since this finding is despite the fact that there has been previous anti-corruption measures such as the Eight-Point Regulation issued on December 4, 2012, we consider this as evidence that the CCDI inspection announcement was considered as significant by the market as it indicates that Xi's anti-corruption campaign is not merely business as usual.

We then conduct regression analyses to examine the potential determinants of CARs, which will then inform us about the possible mechanisms through which corruption (or anti-corruption) can impact firm performance. The regression results reveal a substantial amount of heterogeneity across firms. First, there is strong evidence supporting a market demand channel. The CARs are found to be significantly lower for firms that produce luxury goods, which are often used as gifts to bribe government officials (e.g., Cai, Fang, and Xu, 2011; Qian and Wen, 2015). Second, we find that the announcement returns are significantly higher for private firms, small firms, or firms with no established political connections. On the one hand, these firms suffer more from governments' grabbing hands. On the other hand, they also rely more on the efficiency grease in a corrupt environment. Our finding is thus consistent with the general equilibrium view. That is, for sufficiently strong anti-corruption measures, the benefits from eliminating governments' grabbing hands can dominate the costs associated with the loss of the efficiency grease. Finally, there is also evidence that local institutions matter. While private, small or firms without political connections earn higher announcement returns than state-owned, large, or connected firms, the return differentials are significantly lower in provinces with better legal protections (a smaller grabbing-hand effect) or less developed factor markets (a larger grease-of-wheel effect).

Our work contributes to the corruption literature by offering evidence about the likely equilibrium impact of corruption on firm performance based on a large-scale persistent anti-corruption

campaign by President Xi. Most of the previous empirical studies in this literature take a macro approach by relating corruption measures to economic growth or other macro variables, such as capital flows (e.g. Mauro, 1995; Mo 2001; Wei, 2000b, 2001; Javorcik and Wei, 2009). Some more recent studies have also examined the private returns of bribing government officials at the firm level (Fisman and Svensson 2007; Cai, Fang, and Xu, 2011). This paper contributes the existing literature by providing micro evidence on the effects of anti-corruption actions. We also make efforts to distinguish different channels and explore potential heterogeneity across firms.

Our study also fits in a narrower literature on corruptions that focuses particularly on the case of China. A majority of the existing studies focus on detecting corruption behavior in China. For example, Fisman and Wang (2014) identify corruption behavior in sales of state assets in China. Fang, Gu, and Zhou (2014) find that government officials receive discounts in real estate purchases. Fisman and Wei (2004, 2009) use trade data to detect corruption behavior of Chinese customs. Cai, Fang, and Xu (2011) find Chinese firms often use entertainment and travel expenditures to bribe government officials. They also analyze firms' private return of paying bribes.

In particular, our paper is related to several recent working papers that also examine the impacts of various aspects of Xi's anti-corruption campaign. Qian and Wen (2015) examine the effect of the recent anti-corruption on imports of luxury goods. They find a substantial reduction in imports of luxury goods upon the initiation of Xi's anti-corruption campaign. Li, Wang, and Zhou (2017) empirically examine the impact of Xi's anti-corruption campaign on the credit allocation between state-owned enterprises (SOEs) and privately-owned non-SOE firms, and they show that the anti-corruption campaign leads to a credit reallocation from inefficient SOE firms to more productive private firms. Berkowitz, Lin and Liu (2015) study the impact of File 18 regulation issued on October 30, 2013 which required "politically connected" independent directors to resign from the boards. They show that the stock market returns for the private firms with politically connected independent directors suffered relative to those of non-connected private firms upon the issuance of File 18 regulation. They also find evidence that the File 18 regulation encouraged private firms that had politically connected independent directors to become more innovative and more transparent and more efficient investors. Finally, perhaps the most related paper to ours is Lin, Morck, Yeung, and Zhao (2016), which also used event study to investigate the impact of the Eight Point regulation issued on December 4, 2012 on stock market valuations. They find that Chinese shares rose broadly upon the news of the Eight Point regulation, suggesting that reduced expected corruption adds value to the firms overall. They also find that the impact is heterogenous: SOEs gain broadly, but non-SOEs gain in more liberalized provinces, but decline in provinces where

market institutions remain weak.

Our paper is closely related to the above studies, but there are several key differences that distinguish ours from existing contributions. First, while existing studies focus on some specific effects of anti-corruption actions, such as luxury imports or the differential effects on SOEs and non-SOEs, we aim to provide a more comprehensive analysis on the effects of the anti-corruption campaign on firms and to identify different channels. Second, to rationalize our empirical study, we also provide a simple theoretical framework to illustrate the underlying mechanisms through which anti-corruption actions can influence firms. Finally, while all studies examine the impacts of the broadly-defined recent anti-corruption campaign in China, the exact event each study analyzes is in fact rather different. Qian and Wen (2015) focus on two events, the release of a new manifesto by the Third Plenum of the 18th CCP on November 15th, 2013 and the release of CCP's a five-year anti-graft plan on December 25th. Lin, Morck, Yeung, and Zhao (2016) examine the impacts of the Eight-point regulation Policy on government officials' spending of public revenues announced on December 4 2012. Li, Wang, and Zhou (2017) study the investigation of the CEO of Minsheng Bank, one of the largest commercial banks in China. In contrast, we analyze the stock market responses to the announcement of anti-corruption inspections to be conducted by the CCDI on May 17, 2013, which is considered a symbolic event of China's anti- corruption combat. As we shall discuss in more details in Section 2, this announcement is not only a surprise to the market but also sends a clear message to market participants about a strong commitment to fighting corruptions. The anti-corruption inspections will result in serious investigations and arrests of corrupt government officials.

The remainder of this paper is structured as follows. In Section 2 we present the institutional background for the anti-corruption campaign. In Section 3, we present a simple conceptual framework that incorporates various channels of the effect of corruption, and use it to derive our testable hypotheses. In Section 4 we describe the data set we use in the empirical analysis. In Section 5 we report our empirical results. Finally, in Section 6 we conclude.

2 Institutional Background

Like many developing countries, corruption is a central issue in China. Xi Jinping officially assumed the title of the General Secretary of Communist Party and Chairman of the Party Central Military Commission on November 14, 2012 at the conclusion of the Party's 18th National Congress. The new leadership in China considers corruption as not merely a significant problem to economic growth but a real threat to the party's survival. Almost immediately upon assuming power, Xi

started an anti-corruption campaign. On November 20, 2012, the Central Commission for Discipline Inspection (CCDI), which was led by Xi's close ally and CPC Politburo Standing Committee member Wang Qishan, issued a warning that "the public's trust in the Party and the government has fallen to a critical level" and argued that the Party must fight corruption and treat anti-corruption as a major political task.[5] On December 4, 2012, CPC Politburo of the Central Committee issued a policy document titled the *Eight-Point Policy,* which provides explicit rules regarding the behavior of leading cadres from the Communist party, and bans bureaucrats and employees of state-owned-firms of extravagant house and luxury goods purchases and state-funded banquets. However, in China anti-corruption campaigns were often waged after an important political transition and often such campaigns were short-lived and considered possible tactics to weaken or purge political opponents and consolidate power. Moreover, no concrete measures were mentioned in the Eight Point regulations regarding how the regulations would be enforced. Since similar anti-corruption announcements were also made by previous leaders, the market did not view them as a credible commitment to fighting corruption (Qian and Wen, 2015).The expectation at the time when the Eight-Point Policy was issued was that this was yet another anti-corruption campaign by President Xi that would be short-lived.

Concrete and more credible investigation and punishment actions arrive in the middle of 2013. On May 17, 2013, the Central Commission for Discipline Inspection (CCDI), which is the highest internal-control institution within the party system, made an announcement that it will conduct several rounds of inspections. In the first round of inspections, the CCDI will send inspection teams to five provinces, including Chongqing, Guizhou, Jiangxi, Inner-Mongolia, and Hubei.

Inspection teams are responsible to examine every ministry and government agencies for each province. As leaded by CCDI's secretary, Wang Qishan, the inspection teams have the unlimited power to investigate, detain, and interrogate almost anyone that may involved in bribery, embezzlement, trading power for profit and other personal favors, no matter how big they are. The inspection teams first will perform a background checks of the provinces or organizations to be inspected. Then the teams will stay in the inspected provinces for two months or so and the teams' contact information is released to the public. During the two-month inspection, the inspectors collect information with the help of local discipline inspectors and anti-graft agency officers, and take tips from the public and retired government officials. If there is evidence of corruption, the inspectors will make records and report it to the CCDI.

Compared to previous anti-corruption measures, the CCDI inspection has a concrete plan and

[5]Xinhua News, November 20, 2012.

emphasizes on fighting corruption at all levels of governments. This announcement is an unexpected shock and a wake-up call for both government officials and the market participants. It is quite clear to them that this time is different. The inspections are often interpreted as the symbolic event of the start of China's recent anti-corruption campaign. While the announcement on May 17 did not mention explicit which provinces will be inspected later, it is quite clear that each province will eventually be inspected. As a result, we expect its impact is not regional but national. Firms located in other provinces will also be affected. Indeed, in our empirical analysis, we do find that its impact is national.

During the period of 2013- 2014, the CCDI conducted a total of four rounds of inspections, covering all provinces in China (see Table 8). The inspections broke the unspoken rule regarding "Politburo Standing Committee criminal immunity" by arresting the former Politburo Standing Committee Member Zhou Yongkang (expelled from the Party and sentenced to life in prison). Over 160 high-ranking government officials and more than 270,000 bureaucrats at different levels were detained and punished for corruption activities. Our study examines how the stock market responses to the announcement of this large scale anti-corruption campaign.

2.1 Why is the Announcement of CCDI Inspection Different?

Anti-corruption has been an official theme since President Xi Jinping officially became the Party Secretary in the Eighteenth National Congress. The first official pronouncement of the anti-campaign is the Eight-Point regulation announcement on December 4th, 2012, just weeks after the end of the Eighteenth National Congress. This is the event focused on in Lin, Morck, Yeung an Zhao (2017). In Appendix C we provide the details of the Eight-Point regulation. It mainly regulates the behavior of the political bureau members going forward. We argue that while Eight-Point regulation is a significant event, it was unlikely to be the event that would suggest this anti-corruption campaign to be "different." First, the issuance of Eight-Point regulation was very shortly after the 18th National Congress, and this was a routine action taken by a new leadership. So to the officialdom, this may still suggest that the campaign might be temporary. Second, the Eight-Point regulation did not specify punishments and enforcement. Third, an ex post examination of the officials above the vice ministerial level since 2012 showed that only two officials at the vice ministerial level were investigated after the Eight-point regulation but before the inspection announcement. The majority (over 160) were investigated after the inspection announcement, including 21 top officials at the ministerial level or above. Moreover, among all investigated officials, only 12 were due to the violation of the Eight-point regulation, and these 12

officials all got minimal punishment such as official warning. Finally, it is worth pointing out that even though 2 vice ministerial level officials were investigated between the Eight-Point regulation announcement and the inspection announcement we also observe that, the pace was not unusual relative to the period before the Eight-Point regulation announcement. From 2008 to 2012 before the Eight-Point regulation announcement on December 4, 2012, a total of 38 officials at the vice ministerial level were investigated. Thus, the investigation of two officials at the vice ministerial level after the 8-point regulation is indeed nothing more than business-as-usual from an ex post perspective.

3 Conceptual Framework and Testable Hypothesis

3.1 A Simple Conceptual Framework

In this section, we provide a simple conceptual framework to motivate our empirical analyses. We consider a game between bureaucrats and firms, and study how a strong anti-corrupton campaign may change firm performance. Base on the simple framework, we shall develop several testable hypotheses. Let b denote the corruption activity by government officials. We hypothesize that corruption activity by government officials can affect firm $i's$ net profit via four channels:

1. **Grabbing Hand Channel.** We model this by assuming that the "effective tax rate" of a firm, t, is a non-decreasing function of b. We denote $t\left(b;\mathbf{X}_i\right)$ as tax rate of firm i, with characteristics $\mathbf{X}_i$, when corruption activity is b, with $t'\left(\cdot;\mathbf{X}_i\right)\geq 0$. It should be understood that the effectiveness tax rate is inclusive of both the *tax* the firm pays to the tax authority and the bribe b extracted by the bureaucrats. The tax the firm pays to the tax authority may be a decreasing function of b.

2. **Grease of Wheel Channel.** We model this by assuming that the marginal cost of production for firm i, denoted by $C\left(b;\mathbf{X}_i\right)$, is a non-increasing function of b, i.e., $C'\left(\cdot;\mathbf{X}_i\right)\leq 0$.

3. **Endogenous Grits Channel.** Alternatively, this could be referred to as the *equilibrium* channel. We assume that the grits of the bureaucracy that affects the firm's marginal cost of production are partly chosen by the bureaucrats. For simplicity, we assume that the bureaucrats can choose between two marginal cost functions $C_H\left(b;X_i\right)$ and $C_L\left(b;X_i\right)$, and the two marginal cost functions are related as follows:

$$C_L\left(b;X_i\right)=\kappa C_H\left(b;X_i\right)$$

where $\kappa \in (0,1)$. Thus, one can interpret bureaucrat's choice of H as heavy regulation and more license requirements, while the choice of L is light regulation and less licensing requirements.

4. **Market Demand Channel.** Corruption activity may also affect a firm's profit by affecting its demand. For example, many high-end consumer products are popular choices for bribing government officials. We model this by assuming that the demand curve faced by firm i, $Q(p, b; \mathbf{X}_i)$, depends on b. That is, we assume that $Q_2(p, \cdot; \mathbf{X}_i) \equiv \partial Q/\partial b$ is not necessarily zero. The exact sign of Q_2 may depend on firm $i's$ main product. If firm i produces higher-end consumer products, it is natural to hypothesize that $Q_2 > 0$; but if i produces lower-end consumer products, $Q_2 < 0$ due to substitution.

We suppose that the bureaucrats choose the regulatory regime $r \in \{H, L\}$. They understand that there is an expected penalty if they are caught accepting bribes. The penalty function is given by

$$D(B; a)$$

where B is the bribe taken by the bureaucrat and a represents the anti-corruption intensity. Naturally, we assume that $\partial D/\partial B > 0$ and $\partial D/\partial a > 0$, and $D_{12} > 0$.

The bureaucrats' objective function is a weighted average of the bribes net of the expected penalty and the net tax revenues received by the government. Specifically, we assume that the bureaucrats' payoff function is given by

$$u(B, T) = \lambda B + (1 - \lambda) T - D(B; a)$$

where B is the total bribe collected from the firms, T is the total net tax revenue, and $\lambda \in (0,1)$ is the weight on the bribe in the bureaucrats" payoff function.

In the economy, firms have heterogeneous characteristics denoted by X_i. In the population of firms, X_i is assumed to have a distribution $F(\cdot)$. For each firm with characteristics X_i, the net profit function, when it pays bribe b and charges price p is given by:

$$\pi(p, b; X_i) = [1 - t(b; \mathbf{X}_i)][p - C_r(b; \mathbf{X}_i)] Q(p, b; \mathbf{X}_i).$$

In the analysis below, we assume that bureaucrats choose regulatory regime $r \in \{H, L\}$ and also dictate a bribe level b_i from each firm i, and the firm chooses only the price p_i.[6]

[6]Alternatively, we can assume that the bureaucrats choose only the regulatory regime $r \in \{H, L\}$ and each firm chooses b_i and p_i given the regulatory regime chosen by the bureaucrats. In such a case, the only way anti-corruption

Let us first consider the first case. A firm with characteristics X_i will choose p_i to maximize

$$\Pi\left(\mathbf{X}_i; r\right) \equiv \max_{\{p_i\}} \left[1 - t\left(b_i; \mathbf{X}_i\right)\right] \left[p_i - C_r\left(b_i; \mathbf{X}_i\right)\right] Q\left(p_i, b_i; \mathbf{X}_i\right). \tag{1}$$

Let the optimal price for firm i be denoted by $p_i^*\left(X_i; b_i, r\right)$.

By the Envelope Theorem, we have

$$\begin{aligned} \left.\frac{\partial \Pi}{\partial b_i}\right|_r = & \overbrace{-t'\left(b_i; \mathbf{X}_i\right)\left[p_i^*\left(X_i; b_i, r\right) - C_r\left(b_i; \mathbf{X}_i\right)\right] Q\left(p_i^*\left(b, r\right), b_i; \mathbf{X}_i\right)}^{\text{Grabbing Hand Effect}} \\ & \overbrace{-\left[1 - t\left(b_i; \mathbf{X}_i\right)\right] C_r'\left(b_i; \mathbf{X}_i\right) Q\left(p_i^*\left(X_i; b_i, r\right), b_i; \mathbf{X}_i\right)}^{\text{Grease of the Wheal Effect}} \\ & \overbrace{+\left[1 - t\left(b_i; \mathbf{X}_i\right)\right]\left[p_i^*\left(X_i; b_i, r\right) - C_r\left(b_i; \mathbf{X}_i\right)\right] Q_2\left(p_i^*\left(b, r\right), B; \mathbf{X}_i\right)}^{\text{Demand Effect}} \end{aligned} \tag{2}$$

The first term captures the grabbing hand effect. As we will show below, the anti-corruption campaign reduces the demand for bribes from the bureaucrats even if the bureaucrats do not change the regulatory regime in response to the anti-corruption campaign, then since $-t'\left(p^* - C\right) Q < 0$, the grabbing hand effect will increase firm's profit. The second term captures the grease of wheal effect. When b_i is lowered in response to the anti-corruption campaign, and since $-\left(1 - t\right) C_r' Q > 0$, the grease of wheal effect will lower the firm profit, *conditional on the same regulatory regime.* The third term $\left(1 - t\right)\left(p_i^* - C\right) Q_2$ captures the demand effect. As anti-corruption campaign reduced the total demand for bribes B, then the demand curve for some firms, e.g., firms that produce luxury products or expensive meals that are often used as bribes, will be lowered. Whether this effect is positive or negative for a firm depends on the firm's characteristics X_i, which will affect the sign of Q_2.

What is not yet captured in (2) is the *endogenous grits effect*. To capture this, we need to describe the bureaucrats' choice of b_i and $r \in \{H, L\}$. Fix $r \in \{H, L\}$. If the bureaucrats choose $b\left(X_i\right)$ for firms with characteristics X_i, the total bribes will be

$$B^r = \int b\left(X_i\right) dF\left(X_i\right), \tag{3}$$

and the total net tax revenue collected will be

$$T^r = \int \left\{ \begin{array}{c} t\left(b\left(X_i\right); \mathbf{X}_i\right)\left[p_i^*\left(X_i; b_i, r\right) - C_r\left(b\left(X_i\right); \mathbf{X}_i\right)\right] Q\left(p_i^*\left(X_i; b_i, r\right), b_i; \mathbf{X}_i\right) \\ -b\left(X_i\right) \end{array} \right\} dF\left(X_i\right). \tag{4}$$

campaigns will affect the level of bribes and firm performance is that the bureaucrats choose a different regulatory regime. For simplicity, we have assumed only two regulatory regimes, H and L; but we assume that there is a continuum of regulatory regimes indexed by κ, then similar qualitative conclusions can be obtained in this alternative model as well.

For a given r, and facing anti-corruption intensity a, the bureaucrats' choice of bribes for firm with characteristics X_i, $b_i(X_i)$, solves:

$$V^r(a) = \max_{\{b(X_i)\}} \left[\lambda B^r + (1-\lambda) T^r - D(B^r; a)\right]$$

where B^r and T^r are given by (3) and (4) respectively. Clearly, for a given r, we have

$$\left.\frac{\partial b(X_i)}{\partial a}\right|_r < 0.$$

The bureaucrats' optimal choice $r^* \in \{H, L\}$ solves:

$$r^*(a) = \arg\max \left\{V^H(a), V^L(a)\right\}.$$

The *endogenous grits effect* is captured by how $r^*(a)$ is related to the anti-corruption intensity a. When the anti-corruption intensity increases from a_0 to $a_1 > a_0$, it is possible that the bureaucrats will switch from the high regulatory regime to low regulatory regime if taking bribes is too costly and the bureaucrats choose instead to focus on tax revenues. This is likely to happen when λ is not very high. The switch to low regulatory regime will provide an additional boost to the firm's profits. However, when λ is sufficiently high, it is also possible that the bureaucrats will stay within the high regulatory regime and demand less bribes, resulting in higher marginal costs for the firms.

To summarize the effect of increasing the anti-corruption intensity a will have four possible effects. Total bribes will decrease, but the net effect of anti-corruption on firm $i's$ after tax profit is ambiguous and depends on firm characteristics.

3.2 Testable Hypotheses

The above simple conceptual framework suggests that anti-corruption actions influence firms through different channels, and their effects are likely to be heterogeneous across firms. Below we derive some testable hypotheses based on the predictions of the simple model.

Hypothesis 1. *The overall market response to the announcement is ambiguous. However, if market participants expect that the anti-corruption actions are strong enough to change the institutional constraints that give rise to the efficient grease effect of corruption in the first place, then the overall market reactions are likely to be positive.*

Our simple model predicts that the anti-corruption actions affect firms through three channels. Since the market demand effect influences mainly a small fraction of firms that produce luxury goods, the overall announcement effect depends largely on the relative strength of the grabbing-hand

effect and the grease-of-wheel effect. In a general equilibrium framework, however, the magnitude of the grease-of-wheel effect depends on market participants' expectations on whether the anti-corruption actions are strong enough to change the fundamental institutional constraints that give rise to the efficient grease effect of corruption in the first place. Market anticipations of a sufficiently strong anti-corruption campaign are thus likely to lead to positive returns.

Hypothesis 2. *The announcement returns are lower for firms that produce luxury products compared to other firms.*

Hypothesis 3. *The announcement effects on state-owned, large, or politically connected firms depend on the relative strength of the grabbing-hand channel and the grease-of-wheel channel. An anticipation of sufficiently strong anti-corruption actions lowers the returns of state-owned, large, or politically connected firms relative to private, small, or non-connected firms.*

The grabbing-hand and the grease-of-wheel channels predict conflicting effects on state-owned, large, or politically connected firms. Existing studies have well documented that those firms are treated favorably in China compared to private, small, or firms with no political connections (e.g., Dollar and Wei, 2007; Li et al., 2008; Song et al., 2011). On the one hand, they suffer less from government interventions and extractions at different levels. The beneficial effects of anti-corruption measures associated with eliminating the grabbing hands are thus smaller for those firms. On the other hand, state-owned, large, or connected firms also have access to cheaper inputs (capital, land, etc.) and are treated favorably in obtaining government services. As a result, they rely less on the grease-of-wheel channel, and, compared to private, small, or non-connected firms, they suffer less from anti-corruption measures that weakens such a channel. Nonetheless, it is important to note that this difference depends on whether the anti-corruption actions can change the underlying institutional constraints that give rise to the efficient grease effect of corruption in the first place. For a sufficiently strong anti-corruption campaign, eliminating the grabbing hands would be the dominant effect, and we would expect a lower announcement return for state-owned, large, or politically connected firms.

Hypothesis 4. *The announcement return differentials between private and state-owned firms (small and large firms, or non-connected and connected firms) are smaller in provinces with better legal protections (a smaller grabbing-hand effect) or less developed factor markets (a larger grease-of-wheel effect).*

In this hypothesis, we relate the return differentials between different types of firms to local institutions. Since private, small, or non-connected firms benefit (suffer) more than state-owned,

large, or politically connected firms from the anti-corruption actions through the grabbing-hand (grease-of-wheel) channel, we expect the return differentials are smaller in provinces with better legal protections (a smaller grabbing-hand effect) or less developed factor markets (a larger grease-of-wheel effect).

4 Data Description

Our sample covers all non-financial corporations listed on China's stock exchanges. Stock returns and financial data are extracted from the China Stock Market and Accounting Research Database (CSMAR). Our sample contains 2258 firms listed by the end of 2012.

To empirically test our hypotheses, we construct several key firm level variables. First, we define a LUXURY dummy equals one if a company belongs to a high-end jewelry, high-end health care, or high-end liquor producer, or the high-end tailing industry and zero otherwise. Next, we create a dummy variable for state ownership of a firm, labeled as SOE, which takes the value of one if the firm is ultimately controlled by the state government directly or through the equity chain and zero otherwise. Following existing studies in the literature (Fan et al., 2007), we also construct a dummy variable to measure political connections (labeled as CONNECTED), which takes the value of one if a top management team member belongs to the People's Congress (PC) or the Chinese People's Political Consultative Conference (CPPCC).[7] Firm size is defined as the logarithm of firm total assets. We also control for other variables at the firm level, including firm tax burden (labeled as TAX) and leverage ratio (labeled as LEVERAGE).

In addition, we also create measures of quality of local institutions using the province-level marketization index constructed by the National Economic Research Institute (NERI), (e.g., Du et al., 2008; Firth et al.,2009; Fan et al., 2011). This index is constructed using statistics of enterprise and household surveys. It covers five fields with a total of 23 basic indicators, ranging from 0 to 10 with higher scores indicating better quality of local institution.[8] We make use of two of them to proxy two particular aspects of the quality of local institutions in China. The first indicator is the protection of producers' legitimate rights and interests. We expect that the grabbing-hand effect associate with corruption is weaker in provinces with stronger legal protections. The second indicator we consider is the degree of factor market development. In provinces with more developed and market-oriented factor markets, the gains from paying bribes (i.e., the grease-of-wheel effects) are weaker. We also include other provincial variables, including GDP per capita and education

[7]We also tried to use a simple count measure, and our results are robust to this alternative measure.

[8]See Fan et al. (2011) for details of this index.

Variable	Obs	Mean	Std. Dev.	Min	Max
Inspected	2,257	0.0779796	0.2681989	0	1
Luxury	2,257	0.0119628	0.1087424	0	1
Leverage	2,257	0.4340214	0.2838895	0.011034	7.995218
SOE	2,257	0.3708463	0.4831384	0	1
SOE_2	2,257	0.4142667	0.4927041	0	1
Connection	2,257	0.2857776	0.4518841	0	1
Connection_2	2,257	0.242142	0.4072899	0	2.484907
FactorMarket	2,257	6.257833	1.385197	2.28	8.52
Protection	2,257	5.653456	1.591343	-1.91	8.93
Ln_Asset	2,257	21.8258	1.309468	15.72943	28.40521
Tax	2,257	0.0376107	0.0467997	-0.2332803	0.3636613
Ln_Labor	2,257	7.534821	1.334634	2.397895	13.21468
Alternative Cumulative Abnormal Return Measures					
CAR(-5, 5)	2,257	0.0281724	0.0707597	-0.2937874	0.4860494
CAR (-5,10)	2,257	0.033104	0.0843174	-0.3262317	0.5456844
CAR(-10,10)	2,257	0.046014	0.1020358	-0.2975708	0.7387986
CAR(-10,20)	2,257	0.0543229	0.1392712	-0.7772036	0.8167191
3_Factor CAR (-5,5)	2,257	0.033152	0.0706414	-0.2983915	0.4805908
Total Value CAR(-5, 5)	2,257	0.0242929	0.0706552	-0.2962005	0.481732
Hushen Index 300 CAR(-5,5)	2,257	0.0421525	0.0710584	-0.2828002	0.4998292

Table 1: Summary Statistics of Key Variables

expense as control variables. Summary statistics are reported in Table 1. Details of variable definitions and data sources are shown in Appendix B.

5 Empirical Results

5.1 The Event Date

We employ an event study approach to examine the reactions of stock market to the inspection announcement. To implement an event study, we first need to identify a clear event date. The CCDI launched a total of four rounds of anti-corruption inspections in years 2013 and 2014. Before

Big Events	Highest Baidu Index
World Horticultural Exposition	506
Anti-corruption Inspection	**1607**
South Asia Expo	468
Railway System Reform	842
Regulations of Food Safety	181

Table 2: Most Relevant News in May 2013.

Notes: Baidu is the most popular local search engine in China. The Baidu Index is an indicator reflecting the search scale of one specific event within a given period. Here we report the Baidu index for top political events (top search phrases) in the inspected month (May 2013). The bigger the number, the larger the search scale of the event.

each round of inspection, the CCDI would initiate a deployment meeting, in which the provinces to be inspected are announced. Appendix A lists the announcement dates and provinces to be inspected in each round. For an event study to be valid, the event must be unexpected news. Therefore, we pick the announcement of the first round inspection as our event date. The effective date is May 17, 2013.

We also check whether the inspection announcement is the most relevant news during the event periods. In Table 2, we report the Baidu Index, an indicator for Baidu search scale, for each top political event in the inspected month (May 2013). The anti-corruption inspection is clearly the most relevant news.

5.2 Market Responses

To examine the market responses to the event, we first estimate a market model over a 180 estimation window ending 11days before the announcement date. A value-weighted average return of all stocks in our sample is adopted as the market return. We then calculate cumulative abnormal returns (CARs) over an 11 day (-5, 5) event window centered on the inspected announcement date (May 17, 2013) and test their statistical significance. Reported in Table 3, the average of the CARs is positive and significantly different from zero. We also report the ratio of firms with negative CARs to the total number of firms. We find only 774 out of 2258 firms experienced a decline in their stock prices in the 11-day event window. Our results thus indicate that overall market participants view this anti-corruption inspection as positive news. Quantitatively, the estimated average CARs suggest that the market gains 2.818% in the 11-day event window. This finding is consistent with our first hypothesis that sufficiently strong anti-corruption actions in equilibrium

Model	Average CAR	Negative Firms/All Firms
CAR (-5, 5)	0.02818***	774/2258
Three factor CAR (-5, 5)	0.03316***	648/2258
Total value CAR (-5, 5)	0.02430***	850/2258
Hushen300 CAR (-5, 5)	0.04216***	516/2258
CAR(-5, 10)	0.03311***	723/2258
CAR(-10, 10)	0.04601***	707/2258
CAR(-10, 20)	0.05428***	828/2258

Table 3: Stock Market Reactions

Notes: *, ** and *** denote the 10, 5 and 1 percent significance levels, respectively.

can change the underlying institutional constraints that give rise to the efficient grease effect of corruption in the first place.

To establish the robustness of our results, we consider a variety of alternative market benchmarks. Following Ji and Wei (2014), an equal-weighted average return and Hushen 300 index are considered as alternative market benchmarks. In addition, we also consider a three factor model (i.e., adding the size factor and book-to-market factor as two new factors in addition to the market factor). As shown in Table 3, our results are not affected by the choice of the market benchmark.

Another way to check the sensitivity of our results is to choose alternative event windows. To deal with the issue that eleven days may not long enough to absorb the inspection news, we also try three longer event windows, a 16-day window, a 21-day window, and a 31-day window. As shown in the last three rows in Table 3, using alternative event windows does not alter our finding either. The estimated CARs are all positive and significant.

5.3 Firm Heterogeneity

5.3.1 Benchmark results

The above results indicate that overall stock market responded positively to the announcement of anti-corruption inspections by the CCDI. In this subsection, we explore further the heterogeneous effects of anti-corruption inspections across different firms. Our simple conceptual framework and the hypotheses developed in Section 3 suggest that the effects of combating corruption on individual firms depend on firm characteristics and local institutions. We examine firms' heterogeneous responses by regressing the estimated firm CARs obtained from the event study on firm and province

characteristics. Specifically, we consider the following model:

$$\text{CAR}_i = \alpha + \beta_1 \text{Luxury}_i + \beta_2 \text{SOE}_i + \beta_3 \text{Size}_i + \beta_4 \text{Connected}_i + \gamma C_i + \varphi_j + \varphi_k, \tag{5}$$

where CAR is cumulative abnormal return of each firm. LUXURY and SOE are dummies for firms that produce luxury products and firms with state ownership, respectively. Specifically, LUXURY equals one is a firm is a high-end jewelry, high-end health care, or high-end liquor producer, or belongs to the high-end tailing industry, and SOE takes the value of one if a firm is controlled by local or national governments. SIZE is a measure of firm size and is defined as the logarithm of firm total assets. CONNECTED is a dummy variable for political connections, which takes the value of one if a top management team member belongs to the People's congress or CPPCC. We also control for other variables at the firm level, including firm tax burden (TAX) and leverage ratio (LEVERAGE). φ_j and φ_k are industry and province fixed effects, respectively.

Table 4 shows the benchmark results using the market model and an 11-day event window. In Column (1), we perform a preliminary analysis without controlling for industry or province fixed effects. In Column (2), we add industry fixed effects. In both columns, we also create an INSPECTED dummy variable for provinces to be inspected in the first round of anti-corruption inspection and include it in the regressions. The omitted group thus consists of provinces not included in the first round inspection. Both regressions yield favorable results supporting our Hypothesis 2, which is based on the market demand channel illustrated in the simple theoretical framework. The estimated coefficient on the LUXURY dummy is negative and significant. Compared to other firms, firms that produce luxury products have a lower return of 3.19%. We also find that, interestingly, the INSPECTED dummy is statistically insignificant and quantitatively very small in each column, indicating that the announcement of the anti-corruption campaign has a nationwide effect. While the announcement only informs market participates of the five provinces to be inspected in the first round, the market well anticipates that all provinces will be inspected eventually in the future.

Our simple model does not make an unambiguous prediction on the differential effect of fighting corruption on private and state-owned firms. On the one hand, private firms are more subject to government extractions. On the other hand, the grease-of-wheel channel also has greater impact on private firms as their operations are often more sensitive to government service provision. Anti-corruption measures thus can have an ambiguous effect on the return differential between private and state-owned firms. However, as emphasized by Kaufman and Wei (1999), in a general equilibrium, a strong enough combat on corruption can change the institution constraints giving rise to the grease of wheel channel in the first place. If this is the case, then we should expect a higher return for private firms. Our results are indeed in favor of this speculation. We find that state-owned firms

Dep = CARs	(1)	(2)	(3)
Inspected	-0.0073	-0.0045	
	(-1.701)	(-1.324)	
Luxury	-0.0366***	-0.0321**	-0.0334***
	(-3.305)	(-2.874)	(-3.371)
SOE	-0.0085*	-0.0061**	-0.0068*
	(-2.003)	(-2.466)	(-2.347)
Size	-0.0048***	-0.0034***	-0.0038***
	(-4.351)	(-4.185)	(-4.910)
Connected	-0.0082***	-0.0073***	-0.0061**
	(-3.272)	(-3.131)	(-2.709)
Tax	0.0121	-0.0210	-0.0221
	(0.500)	(-0.685)	(-0.711)
Leverage	-0.0086*	-0.0078	-0.0040
	(-1.760)	(-1.660)	(-1.034)
Constant	0.1434***	0.1113***	0.1296***
	(5.365)	(6.097)	(7.468)
Industry F.E.	No	Yes	Yes
Province F.E.	No	No	Yes
Observations	2,257	2,257	2,257
R^2	0.027	0.057	0.080

Table 4: Benchmark Regressions

Notes: Standard errors are clustered at industry level. T-values are reported in the parentheses. *, ** and *** denote the 10, 5 and 1 percent significance levels, respectively.

have significantly lower anti-corruption announcement returns than private firms. This finding is also consistent with those documented by Lin, Morck, Yeung, and Zhao (2016) and Li, Wang, and Zhou (2017) that non-SOEs benefit more from the anti-corruption actions. Similarly, we also find that the announcement returns are significantly lower for large or politically connected firms as the estimated coefficients on firm size and the political connection dummy are both significantly negative. The evidence from the return differentials between private and state-owned (small and large, or non-connected and connected) firms thus is consistent with our third hypothesis.

In the last column of Table 4, we control for both industry and province fixed effects. The INSPECTED dummy submerges with the inclusion of the province fixed effects. We, however, still find consistent results that the announcement returns are significantly lower for luxury goods producers, state-owned, large, or politically connected firms.

5.3.2 Robustness checks

In this subsection, we conduct a series of sensitivity analyses to ensure the robustness of our results. In Table 5, we conduct two sets of robustness checks. The first set of robustness checks is to consider alternative event winds. Specifically, we consider a (-5,10), a (-10,10), and a (-10, 20) event window and report the results in Columns (1)-(3), respectively. Next, in Columns (4)-(6), we try different market benchmarks. In Column (4), we change the market model to a three factor model (i.e., adding the size factor and book-to-market factor as two additional factors). In Columns (5) and (6), we use value weighted average return and Hushen 300 index as market benchmarks, respectively. Using alternative event winds or market benchmarks does not change our main findings. The estimated coefficients on SOE, LUXURY,SIZE, and CONNECTED are still negative and mostly significant.

Table 6 considers further the robustness of our results to alternative measures to the three key firm characteristics, ownership, size, and political connections. Column (1) employs an alternative measure of state-owned firms dummy based on firms' registration type rather than actual controller. In Column (2), we use number of employees (in natural log) to proxy for firm size. Finally, we use a count measure defined as ln(1+number of connected board directors) as an alternative measure of political connections, where connected board directors are those who are current or former member of the people's congress or the CPPCC. Using alternative measures of firm characteristics does not affect our results either. We continue to find a significantly lower announcement return for state-owned, large, or connected firms.

	Alternative Event Windows			Alternative Market Models		
	(1)	(2)	(3)	(4)	(5)	(6)
Dep = CARs	CAR(-5,10)	CAR(-10,10)	CAR(-10,20)	Three Factor	Weighted Benchmark	Hushen300
Luxury	-0.0274***	-0.0248***	-0.0379**	-0.0317***	-0.0327***	-0.0357***
	(-3.090)	(-3.298)	(-2.446)	(-3.092)	(-3.327)	(-3.498)
SOE	-0.0068	-0.0153**	-0.0204***	-0.0059*	-0.0067**	-0.0068**
	(-1.367)	(-2.769)	(-3.554)	(-1.982)	(-2.301)	(-2.363)
Size	-0.0055***	-0.0088***	-0.0129***	-0.0011	-0.0036***	-0.0040***
	(-5.921)	(-9.178)	(-8.762)	(-1.439)	(-4.798)	(-4.852)
Connected	-0.0051**	-0.0059**	-0.0015	-0.0057**	-0.0061**	-0.0062**
	(-2.815)	(-2.608)	(-0.434)	(-2.544)	(-2.667)	(-2.728)
Tax	-0.0601	-0.0545	-0.0596	-0.0060	-0.0199	-0.0300
	(-1.337)	(-0.748)	(-0.543)	(-0.184)	(-0.638)	(-0.946)
Leverage	-0.0043	-0.0164***	-0.0259***	-0.0044	-0.0036	-0.0050
	(-1.130)	(-3.395)	(-3.131)	(-1.244)	(-0.924)	(-1.278)
Constant	0.1562***	0.2198***	0.2942***	0.0764***	0.1224***	0.1480***
	(7.795)	(9.999)	(10.606)	(4.488)	(7.149)	(8.121)
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Province F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,257	2,257	2,257	2,257	2,257	2,257
R^2	0.057	0.096	0.111	0.065	0.078	0.082

Table 5: Alternative Event Windows and Market Models

Notes: Standard errors are clustered at industry level. T values are reported in the parentheses. *, ** and *** denote the 10, 5 and 1 percent significance levels, respectively.

5.4 The Role of Local Institutions

So far we have shown that the effects of China's anti-corruption campaign vary across firms. Here we explore further the role of local institutions in determining the return differentials across different types of firms. As discussed in Hypothesis 4, to the extent local institutions affect the grabbing-hand and the grease-of-wheel channels, they also influence the return differentials. For example, compared to private firms, SOEs benefit less from fighting corruption through the grabbing-hand channel. This differential, however, is smaller in provinces with better legal protections of firm rights and interests where the grabbing hand effect is weaker. On the other hand, the impact of the grease-of-wheel channel depends also on local institutions. Our model suggests that the grease-of-wheel channel works though its impact on firms' marginal costs. Its impact thus is weaker in provinces where factor markets are more developed and market-oriented (so that governments have less influence on factor prices and allocations). While the adverse effect of fighting corruption through the grease-of-wheel channel is larger for private firms, the differential should be smaller in provinces with more developed factor markets. Similar arguments also apply to the comparisons between large and small firms or connected and non-connected firms. To empirically test this hypothesis, here we employ two measures of institutions at the province level constructed by a non-government research institute in China, the National Economic Research Institute (NERI). The first one is an index of legal protections, PROTECTION, and a higher value means better legal protections of firm rights and interests. The second index, FACTORMKT, measures the degree of factor market development. A higher value of this index means the government plays a smaller role in determining the allocations or prices of financial resources, labor, and patents, etc..

We then re-estimate the benchmark model with industry and province fixed effects (the last regression in Table 4) but adding the interaction terms between firm characteristics and local institution measures as additional regressors. The results are reported in Table 7. Column(1) shows the interaction effects between the two institution variables and the SOE dummy. The evidence is in favor of our hypothesis. The estimated coefficient on interaction term SOE*PROTECTION is positive and statistically significant, while that on SOE*FACTORMKT significantly negative. The two significant interaction terms suggest that local institutions do play a role in determining the effects of fighting corruption across firms. Specifically, the first interaction term indicates that the return differentials between private and state-owned firms due to the grabbing-hand effect declines with the degree of local legal protections of firm rights. The second interaction effect suggests that the adverse effect of anti-corruption actions on private firms is smaller in provinces with more developed factor markets. Columns (2) and (3) report the interaction effects between

	(1)	(2)	(3)
Dep = CARs	Alternative Ownership	Alternative Size	Alternative Connection
Luxury	-0.0333***	-0.0335***	-0.0328***
	(-3.288)	(-3.240)	(-3.313)
SOE		-0.0074**	-0.0066**
		(-2.366)	(-2.308)
SOE_2	-0.0049**		
	(-2.203)		
Size	-0.0039***		-0.0038***
	(-4.851)		(-4.979)
Size_2		-0.0031***	
		(-3.502)	
Connected	-0.0060**	-0.0065**	
	(-2.382)	(-2.944)	
Connected_2			-0.0049*
			(-1.774)
Tax	-0.0219	-0.0360	-0.0234
	(-0.703)	(-1.147)	(-0.758)
Leverage	-0.0044	-0.0051	-0.0042
	(-1.126)	(-1.606)	(-1.083)
Constant	0.1314***	0.0729***	0.1298***
	(7.624)	(8.185)	(7.518)
Industry F.E.	Yes	Yes	Yes
Province F.E.	Yes	Yes	Yes
Observations	2,257	2,257	2,257
R^2	0.079	0.079	0.079

Table 6: Alternative measures of firm ownership, size, or political connections.

Notes: Standard errors are clustered at industry level. T-values are reported in the parentheses. *, ** and *** denote the 10, 5 and 1 percent significance levels, respectively.

Dep = CAR (5, 5)	(1)	(2)	(3)
SOE * Protection	0.0040*		
	(1.980)		
SOE * FactorMarket	-0.0086***		
	(-5.804)		
SIZE * Protection		0.0012**	
		(2.159)	
SIZE * FactorMarket		-0.0026***	
		(-3.076)	
Connected * Protection			0.0043
			(1.412)
Connected * FactorMarket			-0.0067**
			(-2.169)
Luxury	-0.0329***	-0.0334***	-0.0333***
	(-3.321)	(-3.309)	(-3.373)
SOE	0.0232*	-0.0069**	-0.0065*
	(1.661)	(-2.412)	(-2.145)
Size	-0.0037***	0.0056	-0.0038***
	(-4.933)	(1.461)	(-4.920)
Connected	-0.0059**	-0.0063**	0.0112
	(-2.632)	(-2.854)	(1.531)
Tax	-0.0170	-0.0187	-0.0227
	(-0.550)	(-0.585)	(-0.734)
Leverage	-0.0039	-0.0033	-0.0045
	(-1.053)	(-0.811)	(-1.116)
Constant	0.1230***	0.0413	0.1262***
	(7.207)	(1.053)	(7.236)
Industry F.E.	Yes	Yes	Yes
Province F.E.	Yes	Yes	Yes
Observations	2,257	2,257	2,257
R^2	0.083	0.082	0.081

Table 7: The Role of Local Institutions

Notes: Standard errors are clustered at industry level. T values are reported in the parentheses. *, ** and *** denote the 10, 5 and 1 percent significance levels, respectively.

the local institution variables and firm size and political connections, respectively. The results are also consistent with Hypothesis4. In Column (2), we find that a positive and significant estimated coefficient on the interaction term between firm size and PROTECTION but a negative and significant coefficient on the interaction term between firm size and FACTORMKT. The two interaction terms in Column (3) also have correct signs. CONNECTION*PROTECTION has a t-value of 1.5, and CONNECTION*FACTORMKT is statistically significant at the 5% level.

6 Conclusion

China's recent anti-corruption campaign provides a unique opportunity to study the economic consequences of large scale government anti-corruption effects in developing countries where corruption is a central issue. We first provide a simple theoretical framework to illustrate three potential channels through which anti-corruption policy can affect firms. It predicts an ambiguous effect of combating corruption on an individual firm depending on firm characteristics and local institutions.

In the empirical part of our study, we use an event study approach to examine the market expected effects of the anti-corruption campaign. Specifically, we focus on market responses to the symbolic event of this campaign, the announcement of anti-corruption inspections to be conducted by the CCDI of the CCP. We find robust evidence that stock market responded significantly positively to the announcement. The estimated cumulative abnormal returns range from 2.4%-5.3% depending on different event windows or methods. Further regression analysis reveals that the effects are heterogeneous across firms. In particular, consistent with a market demand channel, stock prices of luxury good producers fall after the announcement. Moreover, the announcement returns are significantly smaller for SOEs, large firms or firms with established political connections. This finding along with an overall positive market response is in favor of the general equilibrium view. They suggest that, for a strong anti-corruption campaign, the beneficial effect associated with eliminating governments' grabbing hands on average dominates the potential adverse effect associated the potential loss of efficiency grease.

Finally, we also explore the role of local institutions in determining the effects across firms. We show that the return differentials between private firms and SOEs (small and large firms, or connected and non-connected firms) are smaller in provinces with better legal protections of firm rights and interests (i.e., weaker grabbing-hand effect) but larger in provinces with more developed and market-oriented factor markets (i.e., a weaker grease-of-wheel effect).

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A Multiple Rounds of Inspection

Round of Inspection	Provinces	Effective Date	Number of listed firms located in inspected provinces
1st	Chongqing, Guizhou, Jiangxi, InnerMongolia, Hubei	May 17, 2013	183
2nd	Anhui, Hunan, Jilin, Yunnan, Shanxi, Guangdong	October 23, 2013	575
3rd	Xinjiang, Liaoning, Beijing, Ningxia, Shandong, Tianjin, Henan, Gansu, Hainan, Fujian	March 15, 2014	677
4th	Guangxi, Shanghai, Qinghai, Tibet, Zhejiang, Hebei, Shanxi, Heilongjiang, Sichuan, Jiangsu	July 16, 2014	850

Table 8: Announcement of Inspection Dates for Various Provinces

B Variable Definitions

- **Stock Market Data:** Daily comparable closing returns (with cash dividend reinvested) and daily aggregated market returns without cash dividend (current value weighted) are denoted as stock and market returns, respectively. Data Source: CSMAR.
- **Inspected:** A dummy variable equals one if the firms are registered in the inspected provinces (usually located in the same provinces), and zero otherwise. Data Source: CSMAR.
- **Luxury:** A dummy variable to indicate luxury products, equals one if the list company belongs to jewelry industry, high-end retailing industry, high-end health care products industry, high-end liquor industry, etc., and zero otherwise. Data Source: CSMAR.
- **SOE:** A dummy variable equals one if the firm is ultimately controlled by the state government directly or through the equity chain, and zero otherwise. Data Source: CSMAR.
- **SOE_2:** A dummy variable equals one if a firm is registered as a state-owned firm. Data Source: CSMAR.
- **Size:** The logarithm of total assets. Data Source: CSMAR.
- **Size_2:** The logarithm of number of employees. Data Source: CSMAR.
- **Connected:** A dummy variable equals one if a top management team member (including CEO) belongs to People's Congress or CPPCC at any level, and zero otherwise. Data Source: CSMAR.
- **Connected_2:** A count variable that count the number of total political ties (membership of PC or CPPCC). Data Source: CSMAR.
- **Tax:** The ratio of total tax to the total sales. Data Source: CSMAR.
- **Leverage:** The ratio of total debts to total assets. Data Source: CSMAR.
- **PCGDP:** The logarithm of GDP of a province. Data Source: National Bureau of Statistics of China.
- **Education:** The ratio of education expenditures to GDP of a province. Data Source: National Bureau of Statistics of China.

- **Protection:** Protection denotes the protection of producer's legitimate rights and interests, which is measured by an index of court's efficiency in resolving legal cases (economic disputes). The higher the value, the stronger the legal protection. Data Source: National Economic Research Institute (NERI).

- **FactorMarket:** Factor market represents factor market development, which is comprised by the degree of financial sector marketization, the degree of foreign capital importation, the degree of labor movement, and the marketization of technological achievements. The higher the score, the more developed the factor market. Data Source: National Economic Research Institute (NERI).

C Eight-Point Regulation: December 4, 2012[9]

The Eight-Point regulation issued on December 4, 2012, made explicit requirements on how Political Bureau members should improve their work style in eight aspects, focusing on rejecting extravagance and reducing bureaucratic visits, meetings and empty talk. The political bureau, which has 25 members, includes the top decision-makers, such as State leaders, Party chiefs of several key provincial-level regions, ministers and top army officials.

1. **(Keep Close Contact with the Grassroots, but Prohibit Inspection Tours)** Leaders must keep in close contact with the grassroots. They must understand the real situation facing society through in-depth inspections at grassroots. Greater attention should be focused on places where social problems are more acute, and inspection tours must be carried out more thoroughly. Inspection tours as a mere formality should be strictly prohibited. Leaders should work and listen to the public and officials at the grassroots, and people's practical problems must be tackled. There should be no welcome banner, no red carpet, no floral arrangement or grand receptions for officials' visits.

2. **(Prohibit Empty Meetings)** Meetings and major events should be strictly regulated, and efficiency improved. Political Bureau members are not allowed to attend ribbon-cutting or cornerstone-laying ceremonies, or celebrations and seminars, unless they get approval from the CPC Central Committee. Official meetings should get shortened and be specific and to the point, with no empty and rigmarole talks.

3. **(Reduce Official Documents)** The issuing of official documents should be reduced.

[9]The material in this appendix is from: http://cpcchina.chinadaily.com.cn/2012-12/05/content_15991171.htm

4. **(Restrict Official Visits Overseas)** Officials' visits abroad should only be arranged when needed in terms of foreign affairs with fewer accompanying members, and on most of the occasions, there is no need for a reception by overseas Chinese people, institutions and students at the airport.

5. **(Leaders' Travel by Car Should Follow Traffic Rules)** There should be fewer traffic controls when leaders travel by cars to avoid unnecessary inconvenience to the public. There should be fewer traffic controls arranged for the leaders' security of their trips to avoid unnecessary inconvenience to the public.

6. **(Media Should Report only Official Events with Real News Value)** The media must not report on stories about official events unless there is real news value. The regulations also ban worthless news reports on senior officials' work and activities and said such reports should depend on work needs, news value and social effects.

7. **(Leaders Should Not Publish Without the Approval from the Central Leadership)** Leaders should not publish any works by themselves or issue any congratulatory letters unless an arrangement with the central leadership has been made. Official documents without substantial contents and realistic importance should be withheld. Publications regarding senior officials' work and activities are also restricted.

8. **(Leaders Should Live a Thrifty Lifestyle)** Leaders must practise thrift and strictly follow relevant regulations on accommodation and cars.