Anticorruption Regulation and Firm Value: Evidence from a Shock of Mandated Resignation of Directors in China

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Abstract: China's broad anti-corruption campaign includes a regulation that requires bureaucrats to resign from director positions in listed companies. Using this particular event to test the effect of anticorruption regulation, we find that this regulation costs firms with banned directors on average 4%. This cost cannot be explained by the typical cost of losing a director or by damage from a political vendetta conducted by leadership. We further show that anticorruption regulation impedes firm value not only through political connection, but also through anticorruption disincentive, the incentive to act passively for fear of being accused of corruption. Finally, affected firms reduce investments, hire more employees, and have poor performance afterwards.

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1. Introduction

Fighting corruption is a priority for many countries.[2] Plenty of studies show that enhancing the monitoring of government officers or providing these officers with an incentive not to be corrupted may generate favorable outcomes (Svensson, 2005; Banerjee et al., 2012; Olken and Pande, 2012). Although anticorruption regulations which discipline the actions of government officers directly is prevalent,[3] little is known about the influence of anticorruption regulation, especially in the area of financial economics.[4]

When Jingping Xi became the President of China, an anti-corruption campaign was his first priority. The anti-corruption campaign had many parts: a few are reducing availability of funds for food, drink, gifts, and entertainment that might be used for facilitating contacts for corruption, a prohibition of ostentatious public displays that might promote individual goals at public expense, and the establishment of a new government agency to seek out and punish corruption. To study the effect of anticorruption regulation,[5] this paper investigates a particular piece of the anti-corruption drive, a prohibition of service by government bureaucrats on the

[2] http://www.worldbank.org/en/topic/governance/brief/anti-corruption, http://www.oecd.org/corruption/acn/home/.

[3] For example, some countries, such as the US, have specific restrictions on government officers moving to the private sector, although other countries do not.

[4] Even the anecdotal evidences are mixed with respect to the influence of anticorruption regulation (Svensson, 2005): Hong Kong and Singapore are the most-cited examples where anticorruption regulations enforced by an independent anticorruption agency work well, while the same types of anticorruption agencies in other countries seem to be used to fight against political opponents.

[5] Ke et al. (2016) and Lin et al. (2016) study the overall effect of anticorruption campaign, while Griffin et al. (2016) and Stanfield et al. (2017) study the effects of anticorruption investigations.

boards of publicly-listed firms. We focus on this particular event not only because some events affecting all firms are not qualified to differentiate the effect of anticorruption regulation from natural trends, but also because some events (e.g., anticorruption investigations) including a combination of different anticorruption tools could hardly help understand the specific influence of anticorruption regulation.[6] This prohibition meant that many directors had to leave boards; overall the firms whose directors had to leave suffered a 4% loss in the market value of their common stock. This is much greater than the less-than-one-percent loss from an unexpected random loss of a director, for example through death, and cannot be explained by loss due to the punishment of companies by political enemies. We show that the loss of market value was not only due to losing political connection, but also due to the chilling effect of the anti-corruption regulation on doing anything. Meanwhile, affected firms reduced capital investment, increased hiring of workers and had poor performance.

From a theoretical standpoint, anticorruption regulation may or may not be beneficial for shareholders a priori. First, the impact of corruption on firm value is controversial. On one hand, since government officers who lack incentives and are obsessed with following rules strictly would probably expropriate firm value through rents, corruption could harm firm value (Krueger, 1974; Murphy et al., 1991, 1993; Shleifer and Vishny, 1993; Mauro, 1995; Fisman and Svensson, 2007; Ayyagari et al., 2014). On the other hand, quite a few studies suggest that corruption may benefit firms through political connections that help firms obtain business privileges such as loans from state-owned banks, especially in developing countries (Bardhan, 1997; Fisman, 2001; Svensson, 2005; Li et al., 2008; Calomiris et al., 2010). Second, not only the relation between anticorruption and firm value, but also whether anticorruption regulation is effective for fighting

[6] More details are discussed in Section 2 and Section 3.1.

corruption is ambiguous. In countries where legal and financial institutions are weak and corrupt themselves, anticorruption regulations could be used to repress political opponents, not to fight corruption (Svensson, 2005). Anticorruption regulation could even generate a disincentive for managers and government officers, the incentive to act passively for fear of being accused of corruption.

To test empirically how anticorruption regulation influences firm value, three identification challenges need to be addressed. First, the simple pre-post difference in firm value around any anticorruption regulation may capture the effect of observable and/or unobservable confounding factors, especially when all firms have the same event date. Second, anticorruption regulation usually affects all firms, making it difficult to gauge the effect of anticorruption regulation by comparing treatment firms with control firms. Third, anticorruption regulation may be anticipated by shareholders or firms. Therefore, it is possible that the association between anticorruption regulation and firm value is not driven by anticorruption regulation. Using the anticorruption regulation in China in 2013 may help to address the three above questions.

In China, corruption takes many different forms, from a variety of perquisites to direct embezzlement of public funds. Long before such regulation, former and current government officers served as (independent) directors in Chinese-listed companies (bureaucrat directors hereafter), with high compensations and perquisites relative to bureaucrats' official pay.[7] After President Jinping Xi took power in China in November 2012, he put anticorruption at the top of his agenda. On October 19, 2013, the Organization Department of the Communist Party of China

[7] Government officers could serve as directors other than independent directors, including chairman of the board. However, such a scenario is usually due to the arrangement of the government, not due to corruption. Therefore, our empirical tests focus on former and current government officers who serve as independent directors before the anticorruption regulation.

implemented a particular anticorruption regulation towards independent directors in listed companies. The regulation requires that former and current government officers can serve as directors, without compensations or perquisites, only if the Organization Department approves. Afterwards, bureaucrat directors started to resign from listed companies (Figure 1). This event helps us to pin down the effect of anticorruption regulation by providing clearly defined treatment firms, firms with bureaucrat independent directors before the regulation. Meanwhile, the event also helps us to draw a causal inference of anticorruption regulation on firm value to the extent that such regulation brings an exogenous shock to shareholders and firms.

Firms with bureaucrat directors may not be comparable to other firms, in the sense that firms could hire bureaucrat directors for strategic reasons. To alleviate such a concern, we match firms using the propensity score matching method based on a series of variables, including year, industry and location fixed effects.[8] By performing a difference-in-difference analysis of the matched sample, we find that anticorruption regulation impedes firm value. First, after the Chinese government announced its anticorruption regulation, the value of firms affected by the regulation decreased by about 4%. Second, our descriptive analysis shows that the trends of firm value for treatment firms and control firms are similar before the regulation, supporting the parallel trend assumption (Figure 2). In addition, we find that the reduction in firm value occurs within two years after the regulation, implying that the anticorruption regulation has a long-lasting effect on firm value.

We next perform several additional robustness tests. First, to address the concern that our results may be driven by chance, we perform a placebo test with randomly assigned treatment

[8] Our main findings are qualitatively the same if unmatched sample is used.

firms and control firms 5,000 times. Our placebo test generates an estimator with a zero mean on average. Second, we use the event-study technique to see how the market reacted to the anticorruption regulation. We find that treatment firms experienced significantly lower stock returns after the anticorruption regulation commenced on October 19, 2013. Together with the fact that stock returns of treatment firms and control firms are not distinguishable before the regulation, our market reaction results suggest that the anticorruption regulation was a shock to the shareholders. Importantly, the effect increased from 1% to 4%, as time passed, without reversal in the following year (Figure 3). Last, we test two alternative explanations for our results. One alternative explanation is that anticorruption regulation is just a cover-up, with the real intension being political fight. In other words, it is possible that anticorruption regulation is merely used to fight against firms affiliated with President Xi's rivals. To test this alternative explanation, we check the working experiences of President Xi's alleged rivals: Xilai Bo and Yongkang Zhou,[9] who once worked in Chongqing City, Liaoning Province and Sichuan Province. Partition analysis shows that, for sample firms located in the rest of China, our main results still hold, implying that political fight is not a plausible explanation for our findings. The other alternative explanation is that the decrease in firm value after the regulation is simply driven by the loss of independent directors. Inconsistent with such an alternative explanation, our subsample analysis shows that the decrease in firm value is not driven by firms that presumably are more sensitive to the loss of independent directors, such as firms that have a lower ratio of independent directors or a smaller board. In addition, Nguyen and Nielsen (2010) show that, after the sudden deaths of directors, the stock prices drop by 0.85%, a much smaller percentage

[9] Xilai Bo was once considered as a possible candidate for the top office in China, before he was sentenced to life imprisonment due to alleged corruption. Yongkang Zhou, a former senior leader of the Communist Party of China, was reportedly the ally of Xilai Bo. Yongkang Zhou was also sentenced to life imprisonment in 2015.

than that observed in our study. Therefore, our results are not likely to be driven by the loss of independent directors, although we could not rule out such an alternative explanation completely.

We further explore two possible mechanisms, political connection and anticorruption disincentive, through which anticorruption regulation may harm firm value. For the political connection channel, we perform three subsample tests. First, we use government subsidies as a direct proxy for the political connections. If anticorruption regulation impairs firm value through political connections, firms with less political connections should be more affected by anticorruption regulation. We do find that the effect of anticorruption regulation on firm value is more pronounced in firms with less government subsidies. Second, bureaucrat directors may help firms to gain better access to finance (Faccio et al., 2006; Claessens et al., 2008; Li et al., 2008). Therefore, after anticorruption regulation requests bureaucrat directors to resign, firm value may decrease due to a loss of access to finance. We find evidence that the effect of anticorruption regulation on firm value is mainly driven by firms with high intangibility before the anticorruption regulation, consistent with the financial constraints explanation. Third, bureaucrat directors may prevent the government from expropriating listed companies, especially in developing economies where property rights are not well protected (Johnson et al., 2002; Acemoglu and Johnson, 2005; Cull and Xu, 2005). Consistently, we find that the reduction in firm value is more pronounced for firms located in regions where government deficit growth is high.

More importantly, our results do not simply mean that firm value decreases if political connections are reduced for exogenous reasons. An anticorruption regulation could also impair firm value by providing a disincentive for managers and government officers. For managers, when a firm is involved in an anticorruption regulation, they are potentially subject to

anticorruption investigation. Such anticorruption investigation is very costly for them, not only because they need to divert their time and energy, but also because they may be, wrongly or not, penalized in the name of corruption. Therefore, if possible, managers would rather choose to do nothing to lower the probability of being involved in anticorruption investigation, which would by and large reduce firm value. Similarly, government officers also become less willing to facilitate the business of firms affected by anticorruption regulation. After the regulation, strictly following protocols is much more preferred by government officers, than using their discretions to benefit firms, with or without bribe. Consistent with the anticorruption disincentive channel, we find that the effect of anticorruption regulation is driven not only by firms whose managers have low ownership and firms controlled by the government, but also by firms in the industries relying more on government officers' facilitation and firms located in regions where the development of market economy is low.

Does anticorruption regulation also have other impacts on firms? We find that firms may adjust their board characteristics as well as their investment and operation policies after the anticorruption regulation. First, after bureaucrat directors are requested to resign, the average age and education level of independent directors increase, while the busyness of independent directors decreases. We conjecture that firms may hire more-experienced and diligent directors to fill the position. We notice that the absence rate of independent directors in board meetings also increase, probably due to bureaucrat directors' consideration of resignation. Meanwhile, the percentage of male directors, busyness of directors, and probability of independent directors dissenting from management proposals are unchanged. Second, the overall board size, independent director percentage and average pay for independent directors remain the same. Third, while firms do not change their leverage significantly, they do invest less, consistent with

the anticorruption disincentive channel. Fourth, firms hire more employees and have a lower level of net profit per capita, ROA, and asset turnover. It is possible that, after bureaucrat directors are forced to resign, listed companies try to build an alternative connection with the local government by hiring more employees to alleviate local unemployment issues. It is also possible that, firms no longer protected by bureaucrat directors are forced to hire more employees. Either way, operational efficiency could be reduced by redundant employees.

2. Relation to the Existing Literature

This study is related to several strands of the literature. First, although previous studies try to capture the effect of anticorruption, they mostly focus on monitoring and incentive-based interventions (Svensson, 2005; Olken, 2007; Björkman and Svensson, 2009). Consistently, it is also shown that transparency and decentralization may place a powerful control on corruption (Fisman and Gatti, 2002; Brunetti and Weder, 2003; Fan et al., 2009; Houston et al., 2011). Although anticorruption regulations are prevalent in many countries, such as regulations for the "evolving door,"[10] empirical tests of anticorruption regulations are scarce. One exemption is Zeume (2016), who shows the adverse effect of anti-bribery on firm value, using the passage of the draft of the UK Bribery Act 2010. This Act imposes incremental penalties on firms and managers found to be using bribes. Our study corroborates these early studies by empirically testing the effect of anticorruption regulation that disciplines the actions of government officers. We find that anticorruption regulation could generate long-lasting and sizable effects on firms, through both political connection channel and anticorruption disincentive channel.

[10] "Evolving door" refers to the movement of personnel between government officer positions and positions in related private sectors. https://en.wikipedia.org/wiki/Revolving_door_%28politics%29.

Second, with the Chinese economy becoming the second largest in the world, it is of particular interest to investors around the world to understand the effects of Chinese political reforms, especially those of President Xi's anticorruption campaign. Our study adds to this understanding by examining how anticorruption regulation in President Xi's anticorruption campaign influences firm value. Griffin et al. (2016) provide preliminary evidence, indicating that the anticorruption campaign launched in December 2012 indeed aimed to fight against corruption, while Stanfield et al. (2017) document that firms and their peers experience a significant reduction in firm value once their connected officials are under investigation. Given that both of the above two papers focus on anticorruption investigation, they do not provide too much insight about the effect of anticorruption regulation per se. Meanwhile, Ke et al. (2016) and Lin et al. (2016) test the overall influence of President Xi's anticorruption campaign on firm value by investigating the market reaction around the announcement of the Eight-Point Policy. Lin et al. (2016) (LMYZ, hereafter) study the Eight-Point Policy per se, while Ke et al. (2016) (KLT, hereafter) study a series of announcements starting from the Eight-Point Policy. The research design in LMYZ and KLT may encounter three challenges. First, the Eight-Point Policy is the first announcement made to discipline the behaviors of all government officers after President Xi took power. The timing of the announcement is subtle, since President Xi announced the Eight-Point Policy only three weeks after taking office. Therefore, this announcement inevitably solves a huge amount of political uncertainty, contaminating the empirical tests of the impact of anticorruption with unobservable confounding factors. Second, since this policy is nationwide, it is challenging to define treatment firms and control firms clearly. As a result, LMYZ explore the heterogeneity in the reactions of state-owned and non-state-owned firms located in different provinces, while KLT test the different reactions between

firms that sell luxury goods and services and other firms. Third, the Chinese stock market is far more volatile than the US market (Carpenter et al., 2015). Short-window event studies may capture the sentiment of investors instead of the change in market valuation. Consistent with the above empirical challenges of using the Eight-Point Policy announcement to test the impact of anticorruption, LMYZ and KLT obtain conflicting results: LMYZ (KLT) find a sizable increase (decrease) in firm value after the announcement of the Eight-Point Policy. After the Eight-Point Policy was announced, different anticorruption tools were implemented, including ethics education, regular inspections by the Central Leading Group for Inspection Work, and the anticorruption regulation used in our study. Although LMYZ and KLT shed light on the overall effect of the anticorruption campaign, our paper helps to understand the anticorruption campaign by providing clear and strong evidences for the impacts of anticorruption regulation.

Third, this paper also contributes to a growing literature that explores the relation between political connections and firm value. On one hand, event studies document a positive relation between political connections and firm value (Fisman, 2001; Goldman et al., 2009). Further evidence shows that politically connected firms may benefit from better access to finance and a greater possibility of bailout (Faccio et al., 2006; Claessens et al., 2008; Li et al., 2008). Even in Denmark, arguably the world's least-corrupt country, a large positive effect of political power on the profitability of politically connected firms is observed (Amore and Bennedsen, 2013). On the other hand, a few Chinese studies imply a negative effect of political connections on firm value (Fan et al., 2007; Cai et al., 2011). Fan et al. (2007) find that firms with politically connected CEOs underperform those without politically connected CEOs significantly and have lower post-IPO earnings growth, sales growth and change in returns on sales. Cai et al. (2011) also find that the overall entertainment and travel costs of Chinese listed companies are

negatively associated with firm productivity. At least two papers investigate the market reactions to the forced resignations of directors, to study the association between political connection and firm value in China. While Deng et al. (2016) find no overall market reactions around the announcement of forced resignations, Tang et al. (2016) find that one standard deviation change of the percentage of politically connected directors is associated with 0.66% (=0.22*0.03) reduction of firm value around the announcement of anticorruption regulation. The effect shown in Tang et al. (2016) is comparable to the one due to an unexpected random loss of a director: Nguyen and Nielsen (2010) show that, after the sudden deaths of directors, the stock prices drop by 0.85%. The above weak findings in Tang et al. (2016) may be due to their short-window event-study techniques using October 30 as the event day. Although this regulation was reported widely by Chinese media on October 30, the information could be leaked already after October 19 when the regulation was made. In Figure 3, we show that stock market actually started to react from October 19 and that the effect of anticorruption regulation increased to about 4% in a year. To the extent that anticorruption regulation may result in an exogenous reduction in firms' connectedness to the government, our paper using Tobin's Q as the measure for firm value provides significant and causal evidences supporting the positive impact of political connections on firm value in China, while our robustness tests also show that our results are not likely driven by the typical cost of losing a director or by damage from a political vendetta conducted by leadership. Note that our results do not simply mean that firm value decreases if political connections are reduced for exogenous reasons. We also document that anticorruption regulation could generate a disincentive for managers and government officers, the incentive to act passively for fear of being accused of corruption.

3. Institutional Background and Sample

3.1. Institutional Background

The practice that former and current government officers serve as independent directors in Chinese listed companies is arguably perceived as a form of corruption. In 2004 the Organization Department of the Communist Party of China launched a mild discipline against such a practice to reduce government intervention in the Chinese economy rather than to fight against corruption.[11] The enforcement of the above regulation is so weak that the practice remained almost unchanged afterwards. Since President Jinping Xi took power in November 2012, he has been leading a campaign against corruption. In December 2012 the Political Bureau of the Central Committee of the Communist Party of China announced its Eight-Point Policy to discipline the actions of government officers, including living a frugal life and cutting luxury perks. Meanwhile, the Central Commission for Discipline Inspection of the Communist Party of China started to send out its Central Leading Group for Inspection Work to investigate corruption around China. Hundreds of high-ranking officers have been penalized in the name of corruption since the launch of the anticorruption campaign. Ethics education was also heavily disseminated by the Organization Department and the Propaganda Department of the Central Committee of the Communist Party of China.

[11] Only a few current government officers are required to resign, according to this regulation.

As part of President Xi's anticorruption campaign, the Organization Department of the Communist Party of China launched an anticorruption regulation on October 19, 2013.[12] The main details are as follows.

1. In general, current government officers should not work in firms simultaneously.
2. Former government officers who want to work in firms are under strict supervision of the Party Committee and Organization Department.
3. Government officers who are authorized to work in firms should not have any kinds of compensation.
4. Government officers who are authorized to work in firms should not use their political influence to benefit those firms or themselves.

According to this regulation, only if the Organization Department approves, former and current government officers can serve as directors, with no compensations or perquisites. The resignation of officers who are required to resign is closely supervised by the Organization Department. In practice, the compensation gained by such officers would be confiscated. The same anticorruption regulation was heavily disseminated by the official media on October 30.[13] Afterwards, bureaucrat directors started to resign from listed companies (Figure 1).

[Insert Figure 1 here]

Figure 1 shows independent directors' resignation around the anticorruption regulation.

[12] For more information about the agenda of President Xi's anticorruption campaign, please check the following official website (in Chinese) for the Communist Party of China: http://fanfu.people.com.cn/. In addition, some details (in English) can be found at https://en.wikipedia.org/wiki/Anti-corruption_campaign_under_Xi_Jinping.

[13] http://paper.people.com.cn/rmrb/html/2013-10/31/nw.D110000renmrb_20131031_1-02.htm.

Before the regulation about a dozen independent directors resigned per month, from November 2012 to September 2013. After the regulation, from November 2013 to September 2014, the number of independent directors' resignations per month increased from 20 to more than 80 and then fell to about 50. On average, more than 50 independent directors resigned every month after the anticorruption regulation. Meanwhile, about one-quarter of resignation announcements after the regulation specifically claimed that the independent directors resigned due to the regulation.

3.2. Sample and Descriptive Statistics

We investigate how anticorruption regulation affects firm value by examining the change in firm value around the commencement of anticorruption. Our sample includes all the A-share listed companies in China, except for companies in the financial industry. Our sample is from 2009 to 2014, to avoid the influence of the 2008 financial crisis. We match treatment firms and control firms using the propensity score matching technique. The information on the ultimate controlling shareholder is obtained from the CCER database, while the research and development expenditure is from the WIND database. The independent director background information, as well as the accounting information, stock returns, and other information, is from the CSMAR database. The final sample contains a total of 780 (1,267) unique treatment (control) firms. All the continuous variables are winsorized at 1% and 99%.

[Insert Table 1 here]

3.2.1 Defining Treatment Firms and Control Firms

We define firms with bureaucrat directors before October 19, 2013 as treatment firms, leaving the other firms as control firms. Based on the CSMAR database for board members' personal characteristics, bureaucrat directors are defined as independent directors who have

working experience in a government agency with a rank higher than Chu level. Chu is the lowest level under the direct supervision of the Organization Department of the Central Committee of the Communist Party of China. We do not expect that the anticorruption regulation would have a detectable influence on the directors with the lowest level of bureaucratic background. The Committee of the Chinese People's Political Consultative Conference and the People's Congress of the People's Republic of China are not considered as government agencies, given that positions in the two above institutes are usually offered as an honor. Meanwhile, firms with independent directors who were/are university officers are not considered as treatment firms, since university officers who do not have direct political influence in general are unlikely to be appointed as independent directors for corruption.

To conduct a difference-in-difference analysis, we also define an indicator variable, *Post*, which equals one for observations since 2013, given that the anticorruption regulation was launched on October 19, 2013.

3.2.2 Measuring Firm Value

We follow the extensive literature that uses Tobin's Q to measure firm value (Morck et al., 1988; Lang and Stulz, 1994; Yermack, 1996; Gompers et al., 2003). Tobin's Q is defined as the market value of equity plus the book value of liability, divided by the total assets. Tradable shares are priced at the year-end stock price. Non-tradable shares are priced at the book value of equity per share. In our robustness test, we also consider the market reaction around the commencement of anticorruption. For each trading day, we compute abnormal returns relative to the value-weighted market return (Larker et al., 2011). Then we calculate the cumulative market-

adjusted abnormal returns for both treatment firms and control firms.[14]

3.2.3 Financial Information and Firm Characteristics

Consistent with the prior literature using Tobin's Q as the measure of firm value, we control for several firm characteristics. First, we use the natural logarithm of total sales to control for size. In addition, due to the concern about "bad controls" in the sense of Angrist and Pischke (2009), we only control for size in some of our regressions.[15] Second, in the main test of the impact of anticorruption regulation on firm value, we include several further controls, such as leverage, capital expenditure, R&D, PPE, and ROE, since these variables seem not to be affected significantly by the regulation (the results are not tabulated). Leverage is defined as total liability divided by total asset, and capital expenditure is defined as capital expenditure divided by total assets. R&D is measured by research and development expenditure divided by total assets. PPE is measured by property, plant and equipment divided by total assets. ROE is defined as net income divided by total equity. The definitions of the other variables used in the paper are listed in Table 1 Panel A.

3.2.4 Matching

For each treatment firm, we select a matched control firm based on a propensity score, after a logit model is estimated, using all the sample firms with non-missing variables in the years prior to the regulation. In the logit model, the dependent variable is the *Treat* dummy, which equals one if a firm has at least one independent director with a bureaucratic background before the anticorruption regulation. We include a vector of firm characteristics that may influence the

[14] It is possible that the information about anticorruption regulation was leaked to the stock market before October 19, 2013. If we include one trading day before the announcement, our market reaction results are unchanged.

[15] Untabulated results show that firm size is not changed significantly after the regulation.

hiring of an independent director with a bureaucratic background, such as firm size, leverage, market-to-book ratio, age, ROE, *SOE, StateHoldings*, and *TOP1*. *SOE* is a dummy variable that equals one if the ultimate controlling shareholder is a government agency. *StateHoldings* is defined as the number of shares held by government agencies divided by the total shares outstanding, while *TOP1* is defined as the number of shares held by the largest shareholder, divided by the total shares outstanding. Year dummies, industry dummies, and location dummies are also included in the logit model. We define the location of a firm as the province where the firm's headquarter is located. We include this variable in our logit model, because firms in different provinces may differ in the choice of independent directors due to different levels of market development.

The results of the logit regressions are reported in Panel A of Table 2. Column 1 (2) presents the estimations using sample firms before (after) matching. Before matching, our logit model explains the choice variable well, with a p-value from the χ^2 test below 0.001. After we perform nearest-neighbor propensity score matching, using the predicted probabilities from the estimation in Column 1, the χ^2 test for the logit model in Column 2 becomes insignificant statistically. Panel B presents the comparisons in firm characteristics between treatment and control firms. All the differences shown in Panel B are not significant at the conventional level. The diagnostic analysis in Panel A and Panel B implies that our propensity score matching procedure makes treatment firms and matched control firms comparable.

[Insert Table 2 here]

3.2.5 Descriptive Statistics

One of the underlying assumptions in difference-in-difference analysis is that the

treatment firms and the control firms have the same trend before the regulation. Figure 2 shows the firm value dynamics around the anticorruption regulation. From the top to the bottom, the solid (dash dot) line represents the seventy-fifth percentile, fiftieth percentile, and twenty-fifth percentile of firm value for control (treatment) firms, respectively. Two inferences could be drawn from Figure 2. First, the firm values of treatment firms and control firms follow similar trends before the regulation, supporting the difference-in-difference technique used in this paper. Second, the difference in trends between treatment firms and control firms persists in both 2013 and 2014, implying that the anticorruption regulation may have a long-lasting effect on firm value.

[Insert Figure 2 here]

Panel B of Table 1 reports the summary statistics for our sample. The key variable in this paper, *Tobin's Q*, has a mean (median) equal to 2.082 (1.638), with a heavy right tail. The firm value in our sample from 2009 to 2014 is higher than the firm value before 2009 (Chen et al., 2012).

4. Main Results

4.1. The Effect of the Anticorruption Regulation on Firm Value

To test how anticorruption regulation affects firm value, we regress firm value measured by Tobin's Q on the interaction term of $Treat_i$ and $Post_t$, along with the control variables.

$$Tobin's\ Q_{it} = \alpha_t + \alpha_i + \gamma Treat_i * Post_t + \beta X_{it} + \varepsilon_{it} \quad (1)$$

Tobin's Q_{it} is defined as the market value of equity plus the book value of liability, divided by the total assets. $Treat_i$ is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the regulation. $Post_t$ is an indicator

variable that equals one for observations since 2013. X_{it} is the set of control variables that may influence the level of firm value. α_t and α_i are dummies for year and firm, respectively. ε_{it} is the residual of the model. If the anticorruption regulation enhances (impedes) firm value, we expect a positive (negative) γ in our empirical results. For simplicity, we omit the subscripts of all the variables afterwards.

[Insert Table 3 here]

Table 3 presents the results from estimating model (1). Column 1 shows the estimation of the effect of the regulation with only the firm fixed effect and year fixed effect. The coefficient for the interaction term of *Treat* and *Post* is -0.105 (t-statistic=2.16, significant at the 5% level, two-tailed). The magnitude of the effect is nontrivial: -0.105 represents a 5.1% (=0.105/2.068) reduction relative to the sample average in the pre-regulation period. In Column 2 we add a few additional control variables to our regressions. While the coefficient for *Treat*Post* is still significant at the 10% level, the economic magnitude is reduced to 3.7% (=0.077/2.068). Collectively, Table 2 Column 1 and Column 2 suggest that the anticorruption regulation reduces firm value by about 4%. Together with Figure 2, our empirical results support the argument that the anticorruption regulation results in an economically sizable reduction in firm value, a persisting effect without reversal, at least for a year. We also find that *LEV, R&D, PPE,* and *ROE* are positively associated with firm value, while *SIZE* is negatively associated with firm value.

4.2 Robustness Checks

4.2.1 Placebo Tests

We next perform several robustness tests. First, we perform a placebo test to determine whether our results are purely driven by chance. For all the unique firms, we randomly select 780

firms as treatment firms, leaving the rest as control firms, for 5,000 times. Table 4 represents the results of the placebo test. In the placebo test for Column 1 (Column 2) of Table 3, the mean value of the coefficient for *Treat*Post* is 0.0008 (0.0005), with the mean value of the t-statistic equal to 0.0164 (0.0073). In other words, based on falsified treatment firms and control firms, our placebo test does not generate a significant effect of anticorruption regulation on firm value, implying that our previous results may not be driven by chance.

[Insert Table 4 here]

4.2.2 Event Study

Second, we use the event study technique to see how the market reacts to the launch of anticorruption regulation. We calculate the cumulative market-adjusted stock return (CAR) for both treatment firms and control firms. Table 5 shows the results in different event windows. During the two-day event window (the two trading days following the launch of anticorruption regulation), the difference in CARs between treatment firms and control firms is -0.2% (t-statistic=0.94). More importantly, the tests for the 6-, 31-, 51-, 101-, 151-, 201-, and 251-day event windows show that treatment firms experience significantly lower stock returns, with the difference in CARs decreasing from -0.6% to -4.3%.

[Insert Table 5 here]

As we can see in Figure 3, the magnitude of the effect increases as time passes, without reversal in the following year. Since the market returns between treatment firms and control firms are not distinguishable before the announcement, the results using the event study technique support the assumption that the anticorruption regulation represents an exogenous shock to shareholders. Meanwhile, it seems that Tobin's Q, which we use as a proxy for firm

value, could better capture the effect of anticorruption regulation than short-window cumulative abnormal returns.

[Insert Figure 3 here]

4.2.3 Sensitivity to Alternative Explanations

We also test two alternative explanations. First, it is possible that anticorruption regulation is just a cover-up, the real intention being to fight against firms affiliated with political rivals. Since the legal and financial institutions in China are weak and even occasionally corrupt themselves, anticorruption regulations could be used to repress political opponents rather than to fight corruption (Svensson, 2005). We notice that President Jinping Xi's alleged rivals, Xilai Bo and Yongkang Zhou, once worked in Chongqing City, Liaoning Province and Sichuan Province. As a result, firms located in these provinces may be more likely to be affected by the above alternative explanation. However, Panel A Column 1, in Table 6 shows that the reduction in firm value is not significant in the provinces where President Xi's rivals once worked. Instead, after we exclude firms located in the above provinces, our main results still hold in Column 2, implying that anticorruption regulation instead of political repression is a plausible explanation for our findings.

[Insert Table 6 here]

Second, it is also possible that the decrease in firm value after the regulation is simply driven by the loss of independent directors. Presumably, firms with a lower ratio of independent directors or a smaller board may be more sensitive to the loss of independent directors. Inconsistent with this alternative explanation, Panel B of Table 6 shows that our results are not driven by these firms. Meanwhile, a prior study shows that the sudden death of an independent

director is associated with a less than 1% loss of firm value (Nguyen and Nielsen, 2010). Taken together, our results are not likely to be driven by the loss of an independent director.

5. Possible Underlying Mechanisms

The empirical findings thus far show that firm value may be impeded by anticorruption regulation. In this section we explore two potential channels, political connection and anticorruption disincentive, through which anticorruption regulation may harm firm value.

5.1 Political connection

We test the political connection channel by the following three subsample tests.

First, we directly use *Subsidies* to measure political connections. *Subsidies* is defined as the subsidies from the government divided by total assets.[16] Intuitively, anticorruption regulation is not a serious issue for a well-connected firm. Therefore, we expect more reduction in firm value for firms with low *Subsidies*, if anticorruption reduces firm value through political connections. Table 7 Column 1 (Column 2) is estimated on firms whose *Subsidies* in the year before anticorruption regulation are higher (lower) than the sample median, 0.003. The coefficient for *Treat*Post* in Column 1 is insignificantly negative, while the coefficient for *Treat*Post* in Column 2 is significantly negative at the 10% level. The magnitude of the effect for firms with low *Subsidies* is not negligible: -0.101 represents a 4.9% (=0.101/2.046) reduction relative to the average pre-regulation firm value for the low *Subsidies* sample.

[Insert Table 7 here]

Second, previous studies show that political connection may help firms to gain better access

[16] CSMAR database provides the detailed information of subsidies from the government, including tax returns, interest subsidies, and R&D subsidies.

to finance, especially from state-owned banks (Faccio et al., 2006; Claessens et al., 2008; Li et al., 2008). Therefore, if anticorruption regulation reduces firm value through political connections, the value of treatment firms that are more financially constrained before the regulation should drop more. We use *Intangibility*, defined as intangible assets divided by total assets, to proxy the severity of financial constraints. The intuition is that it is difficult for firms with more intangible assets to borrow from banks, since intangible assets can hardly be used as collateral. Therefore, the higher the value of *Intangibility* is, the more financially constrained the firms are.

Table 7 Column 3(Column 4) is estimated for firms with higher (lower) *Intangibility* than the sample median, 0.031, before the year 2013 is higher (lower). The coefficient for *Treat*Post* in Column 3 is significantly negative at the 1% level, while the coefficient for *Treat*Post* in Column 4 is insignificantly positive. The magnitude of the effect for firms with high *Intangibility* is economically significant: -0.170 represents a 7.9% (=0.170/2.150) reduction compared with the average pre-regulation firm value for the high *Intangibility* sample. The above result shows that the reduction in firm value is mostly driven by firms with severe financial constraints, suggesting that anticorruption regulation may impede firm value through political connections.

Last, previous economics and finance literature documents that the government may expropriate private property (Johnson et al., 2002; Acemoglu and Johnson, 2005; Cull and Xu, 2005). Accordingly, listed companies may utilize the political connections of bureaucrat directors to help prevent government expropriation. Therefore, if anticorruption regulation reduces firm value through political connections, the value of treatment firms that are vulnerable to government expropriation should drop more. We proxy the possibility of government expropriation by *DeficitGrowth*, defined as the local government deficit growth rate in the region

where listed firms' headquarters are located. If a local government has a high demand to meet its deficit, the resources in publicly owned listed companies may be squeezed out by the local government. Therefore, the higher the *DeficitGrowth* is, the higher the possibility of government expropriation is.

Table 7 Column 5 (Column 6) is estimated for firms in which the *DeficitGrowth* before 2013 is higher (lower) than the sample median, 0.154. The coefficient for *Treat*Post* in Column 6 is insignificantly negative, while the one in Column 5 is significantly negative at the 5% level. The coefficient in Column 5 is -0.122, implying that firm value decreases by 5.9% (=0.122/2.068) in high *DeficitGrowth* Sample. We find that the reduction in firm value is mostly driven by firms that are sensitive to government expropriation, supporting the explanation that anticorruption may impede firm value through political connections.

5.2 Anticorruption disincentive

Besides reducing political connections, anticorruption regulation can also impair firm value by providing a disincentive for managers and government officers. Managers may be investigated when a firm is affected by an anticorruption regulation. On one hand, they need to divert their time and energy to deal with such investigation. On the other hand, they may be penalized in the name of corruption, no matter whether they misbehave or not. To avoid the above two costs of being investigated, managers become less active in managing the firm, which reduces firm value in general. Similar to managers, government officers also become reluctant to facilitate the business of firms affected by anticorruption regulation, since government officers could reduce their chance of being accused of corruption by being less cooperative.

Intuitively, managers who have low ownership and mangers in firms under the control of

government do not have strong incentive to manager a firm. If anticorruption regulation create a disincentive for managers, we expect the effect of anticorruption is mostly driven by those firms. Table 8 Panel A represents the results for the disincentive of managers. Column 1 (Column 2) is estimated on firms whose *MgmHoldings* in the year before anticorruption regulation are higher (lower) than the sample median. Column 3 (Column 4) is estimated on firms controlled by government (non-government) agents. Consistent with the anticorruption disincentive channel, we find that the impact of anticorruption regulation are mostly driven by firms whose managers have low ownership and by firms controlled by the government. The coefficients for *Treat*Post* in Column 2 and Column 3 represent 4.8% (=0.104/2.150) and 5.3% (=0.105/1.973) reduction of firm value, respectively.

[Insert Table 8 here]

The firms in the industries that rely more on government officers' involvement and the firms located in regions with lower level of market development are very sensitive to government officers' cooperation. If anticorruption regulation also create a disincentive for government officers, we expect the effect of anticorruption on firm value is more pronounced for the above two kinds of firms. Table 8 Panel B represents the results for the disincentive of government officers. Column 1 is estimated on firms in more government related industries, including petro, coal, utility, steel, real estate and media, while Column 2 is estimated on the rest of firms. Column 3 (Column 4) is estimated on firms located in regions with Marketization Index higher (lower) than the 33 percentile of the sample. China's National Economic Research Institute generated the Marketization Index in their 2011 report. The higher the index is, the more developed a region's market economy is. We do find that the impact of anticorruption regulation are mostly driven by firms that are sensitive to government officers' cooperation. The

coefficients for *Treat*Post* in Column 1 and Column 4 represent 12.1% (=0.215/1.770) and 7.2% (=0.157/2.176) reduction in firm value, respectively.

6. Other Impacts of Anticorruption Regulation on Firms

While firm value is reduced by anticorruption regulation, other firm characteristics can be affected by anticorruption regulation as well. In this section, we discuss the effects of anticorruption regulation on board characteristics, financial policies, investment policies and operation policies. Difference-in-difference regression techniques are used in this section. To avoid potential "bad controls" in the sense of Angrist and Pischke (2009), we only control for size in these regressions.

6.1 The Effect of Anticorruption on Board Characteristics

Once bureaucrat directors are forced to resign by anticorruption regulation, listed firms need to fill these positions on their boards. Listed firms may change the board characteristics to lessen the adverse effect of anticorruption. We test both the characteristics of individual independent directors and those of the overall board.

We use the following firm-year variables as proxies for the personal characteristics of independent directors. *DirAge* is the average age of independent directors. *Male* is the number of male independent directors divided by the number of all the independent directors. We include *Male* in our empirical analysis, since Ahern and Dittmar (2012) show that the gender diversity of board members matters for firm value. *Education* is the number of independent directors with graduate degrees divided by the number of all the independent directors. *Busyness* is the number of independent directors with multiple positions divided by the number of all the independent directors. *Absence* is the number of board meetings from which any independent director is

absent divided by the number of board meetings. *Dissent* is an indicator variable that equals one if an independent director dissents from a management proposal. One recent paper shows that in China independent directors who care about their reputation may vote against management proposals (Jiang et al., 2016).

[Insert Table 9 here]

Table 9 Panel A shows that *Busyness* decreases after the anticorruption regulation, while *DirAge*, *Education* and *Absence* increase. Meanwhile, *Male*, *Busyness* and *Dissent* are not affected significantly. One explanation is that firms hire more-experienced and diligent independent directors whose expertise could be used by listed firms to counterbalance the adverse effect caused by bureaucrat directors' forced resignation. We also speculate that the increase in the absence rate of independent directors may be due to the consideration of resignation for bureaucrat directors.

We use the following variables to proxy the overall board characteristics. Ln(*BdSize*) is the natural logarithm of the number of board members. *IndBd* is the number of independent directors divided by the number of all the board members. Ln(*IndBdPay*) is the natural logarithm of the average pay of independent directors. Table 9 Panel B shows that the size of the board, percentage of independent directors and average pay of independent directors remain the same after the anticorruption regulation.

6.2 The Effect of Anticorruption on Financial and Investment Policies

Once listed firms are subject to anticorruption regulation, they may adjust their financial and/or investment policies. We use the following variables to proxy financial and investment policies. *LEV* is equal to total liability divided by total assets. *CurrentRatio* is measured by

current assets divided by current liability. *Cash* is defined as cash holdings divided by total assets. *CAPEX* (*R&D*) is equal to capital expenditure (research and development expenditure) divided by total assets. Table 9 Panel C shows that capital expenditures decrease after the anticorruption regulation, while leverage and R&D intensity are not changed. We conjecture that managers who are concerned about anticorruption investigation have less incentive to invest in new projects after anticorruption regulation. Another plausible explanation is that many projects are postponed after the regulation because government officers become less cooperative. The results in Table 9 Panel C are consistent with anticorruption disincentive channel in Section 5.2

6.3 The Effect of Anticorruption on Operation Policies

Firms may also adjust their operation policies so that they can adapt better to the new era without the help of bureaucrat directors. We use Ln*(# of employees)* (the natural logarithm of number of employees), Ln*(ProfitPerEmployee)* (the natural logarithm of net profit per employee), *ROA* (earnings before interest and taxes, divided by total asset) and *AssetTurnover* (sales divided by total asset) as proxies for the operational efficiency. Our empirical results in Table 9 Panel D show that after anticorruption regulation the number of employees increases significantly, while the net profit per employee, ROA, and asset turnover decrease significantly. Consistent with political connection channel in Section 5.1, after bureaucrat directors are forced to resign, listed companies may try an alternative way to rebuild a connection with the local government. Since unemployment is always a serious issue for local government officers, listed companies could help local government officers by hiring more employees in exchange for favors from the local government. It is also possible that firms without protection of bureaucrat directors are forced to hire more employees to improve local employment. Either way, once listed firms hire excessive employees for whom they may not have good use, their operational efficiency would be reduced.

7. Conclusion

Our paper investigates how anticorruption regulation affects firm value using a quasi-natural experiment in China. Empirically, we test two competing hypotheses, the value-enhancing hypothesis versus the value-destructing hypothesis, by analyzing the change in firm value for treatment firms and control firms around the anticorruption regulation. Our difference-in-difference analysis shows that, after the Chinese government launched its anticorruption regulation on October 19, 2013, firm value measured by Tobin's Q decreased by about 4%. The event study technique shows similar results: firms affected by the regulation underperform by 0.6% to 4.3% as time passes, without reversal in the following year. The reduction in firm value is not explained by political repression or the loss of directorship. We further show that anticorruption regulation impedes firm value not only through political connection, but also through anticorruption disincentive. Therefore, our paper is not just a replication of previous political connection studies such as Fisman (2001). Finally, firms adjust their corporate governance practices as well as their investment and operation strategy after anticorruption regulation. Specifically, treatment firms hire more experienced and diligent independent directors and invest less. Meanwhile, treatment firms hire more employees, resulting in lower operational efficiency.

We draw three important implications from our results. First, consistent with Griffin et al. (2016), we find that the anticorruption regulation in October 2013 indeed aims to fight against corruption. Moreover, anticorruption regulation generates long-lasting effects, compared with monitoring and incentive-based anticorruption tools. Second, corruption in developing countries like China may be necessary for business success. Frictions in the economy caused by reluctant bureaucrats may impose a much more severe burden on firms. In addition, fighting against corruptions may even push firms to take actions that adversely affect their operational efficiency.

Third, the negative impact of anticorruption regulation does not mean that anticorruption is unnecessary. It could only imply that anticorruption alone may not be beneficial for long-lasting economic growth, especially given the disincentive generated by anticorruption regulation. Therefore, policy makers should take complementary actions such as improving government transparency, enhancing legal enforcement, protecting property rights and further developing the market-oriented economy.

This paper has at least two limitations. First, one implicit assumption is that the Chinese stock market is at least semi-strong efficient in the long run. Although we believe this assumption to be valid by and large (Carpenter et al., 2015), our results inevitably rely on the Efficient Market Hypothesis to some extent. Second, it must be noticed that the regulation studied by our paper is part of President Xi's anticorruption campaign. Although this regulation help us pin down the effect of anticorruption regulation, it is hard to infer the overall effect of anticorruption campaign. Meanwhile, the institutional background and the political environment around the anticorruption regulation may be crucial for the effectiveness of anticorruption regulation. Our findings should be generalized to other settings with caution. To achieve a better understanding about the economics of anticorruption regulation, further studies need to be undertaken by analyzing other anticorruption actions, including ethics education and regular inspections.

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References

Acemoglu, Daron, and Simon Johnson, 2005, Unbundling institutions, *Journal of Political Economy* 113, 949–995.

Ahern, Kenneth R., and Amy K. Dittmar, 2012, The changing of the boards: The implication on firm valuation of mandated female board representation, *Quarterly Journal of Economics* 127, 137–197.

Amore, Mario D., and Morten Bennedsen, 2013, The value of local political connections in a low-corruption environment, *Journal of Financial Economics* 110, 387–402.

Angrist, Joshua D., and Jörn-Steffen Pischke, 2009, *Mostly harmless econometrics: An empiricist's companion* (Princeton University Press, Princeton, NJ).

Ayyagari, Meghana, Asli Demirgüç-Kunt, and Vojislav Maksimovic, 2014, Bribe payments and innovation in developing countries: Are innovating firms disproportionately affected? *Journal of Financial and Quantitative Analysis* 49, 51–75.

Banerjee, Abhijit, Sendhil Mullainathan, and Rema Hanna, 2012, Corruption, in Robert Gibbons and John Roberts, ed.: *The Handbook of Organizational Economics* (Princeton University Press, Princeton, NJ), 1109–1147.

Bardhan, Pranab, 1997, Corruption and development: A review of issues, *Journal of Economic Literature* 35, 1320–1346.

Björkman, Martina, and Jakob Svensson, 2009, Power to the people: Evidence from a randomized field experiment on community-based monitoring in Uganda, *Quarterly Journal of Economics* 124, 735–769.

Brunetti, Aymo, and Beatrice Weder, 2003, A free press is bad news for corruption, *Journal of Public Economics* 87, 1801–1824.

Cai, Hongbin, Hanming Fang, and Lixin C. Xu, 2011, Eat, drink, firms, government: An investigation of corruption from the entertainment and travel costs of Chinese firms, *Journal of Law and Economics* 54, 55–78.

Calomiris, Charles W., Raymond Fisman, and Yongxiang Wang, 2010, Profiting from government stakes in a command economy: Evidence from Chinese asset sales, *Journal of Financial Economics* 96, 399–412.

Carpenter, Jennifer N., Fangzhou Lu, and Robert F. Whitelaw, 2015, The real value of China's stock market, NBER Working Paper No. w20957. Available at SSRN: http://ssrn.com/abstract=2568493.

Chen, Qi, Xiao Chen, Katherine Schipper, Yongxin Xu, and Jian Xue, 2012, The sensitivity of corporate cash holdings to corporate governance, *Review of Financial Studies* 25, 3610–3644.

Claessens, Stijn, Erik Feijen, and Luc Laeven, 2008, Political connections and preferential access to finance: The role of campaign contributions, *Journal of Financial Economics* 88, 554–580.

Cull, Robert, and Lixin C. Xu, 2005, Institutions, ownership, and finance: The determinants of profit reinvestment among Chinese firms, *Journal of Financial Economics* 77, 117–146.

Deng, Xiaofei, Yu Xin, and Fei Teng, 2016, Mandatory resign of independent directors with government official identity and the loss of political connections (in Chinese), *China Industrial Economics* 33 (2), 130-145.

Faccio, Mara, Ronald W. Masulis, and John J. McConnell, 2006, Political connections and corporate bailouts, *Journal of Finance* 61, 2597–2635.

Fan, C. Simon, Chen Lin, and Daniel Treisman, 2009, Political decentralization and corruption: Evidence from around the world, *Journal of Public Economics* 93, 14–34.

Fan, Gang, Xiaolu Wang, and Hengpeng Zhu, 2011, NERI index of marketization of China's provinces: 2011 report (in Chinese). Economic Science Press, Beijing.

Fan, Joseph P.H., T.J. Wong, and Tianyu Zhang, 2007, Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms, *Journal of Financial Economics* 84, 330–357.

Fisman, Raymond, 2001, Estimating the value of political connections, *American Economic Review* 91, 1095–1102.

Fisman, Raymond, and Roberta Gatti, 2002, Decentralization and corruption: Evidence across countries, *Journal of Public Economics* 83, 325–345.

Fisman, Raymond, and Jakob Svensson, 2007, Are corruption and taxation really harmful to growth? Firm level evidence, *Journal of Development Economics* 83, 63–75.

Goldman, Eitan, Jörg Rocholl, and Jongil So, 2009, Do politically connected boards affect firm value? *Review of Financial Studies* 22, 2331–2360.

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107–155.

Griffin, John, Clark Liu, and Tao Shu, 2016, Is the Chinese anti-corruption campaign effective? Working paper. Available at SSRN: http://ssrn.com/abstract=2779429.

Houston, Joel F., Chen Lin, and Yue Ma, 2011, Media ownership, concentration and corruption in bank lending, *Journal of Financial Economics* 100, 326–350.

Jiang, Wei, Hualin Wan, and Shan Zhao, 2016, Reputation concerns of independent directors: Evidence from individual director voting, *Review of Financial Studies* 29, 655–696.

Johnson, Simon, John McMillan, and Christopher Woodruff, 2002, Property rights and finance, *American Economic Review* 92, 1355–1356.

Ke, Bin, Na Liu, and Song Tang, 2016, The effect of anti-corruption campaign on shareholder value in a weak institutional environment: Evidence from China, working paper.

Krueger, Anne O., 1974, The political economy of the rent-seeking society, *American Economic Review* 64, 291–303.

Lang, Larry H.P., and René M. Stulz, 1994, Tobin's q, corporate diversification, and firm performance, *Journal of Political Economy* 102, 1248–1280.

Larker, David F., Gaizka Ormazabal, and Daniel J. Taylor, 2011, The market reaction to corporate governance regulation, *Journal of Financial Economics* 101, 431–448.

Li, Hongbin, Lingsheng Meng, Qian Wang, and Li-An Zhou, 2008, Political connections, financing and firm performance: Evidence from Chinese private firms, *Journal of Development Economics* 87, 283–299.

Lin, Chen, Randall Morck, Bernard Yeung, and Xiaofeng Zhao, 2016, Anti-corruption reforms and shareholder valuations: Event study evidence from China, *Journal of Financial Economics*, forthcoming.

Mauro, Paolo, 1995, Corruption and growth, *Quarterly Journal of Economics* 110, 681–712.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1988, Management ownership and market valuation: An empirical analysis, *Journal of Financial Economics* 20, 293–315.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny, 1991, The allocation of talent: Implications for growth, *Quarterly Journal of Economics* 106, 503–530.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny, 1993, Why is rent-seeking so costly to growth?, *American Economic Review* 83, 409–414.

Nguyen, Bang D., and Kasper M. Nielsen, 2010, The value of independent directors: Evidence from sudden deaths, *Journal of Financial Economics* 98, 550–567.

Olken, Benjamin, 2007, Monitoring corruption: Evidence from a field experiment in Indonesia, *Journal of Political Economy* 115, 200–249.

Olken, Benjamin, and Rohini Pande, 2012, Corruption in developing countries, *Annual Review of Economics* 4, 479–509.

Shleifer, Andrei, and Robert W. Vishny, 1993, Corruption, *Quarterly Journal of Economics* 108, 599–617.

Stanfield, Jared, Bohui Zhang, and Le Zhang, 2017, Staying clean: Do non-implicated peer firms necessarily benefit from anti-corruption policies? UNSW Australia Working paper. Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2845004.

Svensson, Jakob, 2005, Eight questions about corruption, *Journal of Economic Perspectives* 19, 19–42.

Tang, Xuesong, Yan Lin, Qing Peng, Jun Du, and Kam C. Chan, 2016, Politically connected directors and firm value: Evidence from forced resignations in China, *North American Journal of Economics and Finance* 37, 148-167.

Yermack, David, 1996, Higher market valuation of companies with a small board of directors, *Journal of Financial Economics* 40, 185–211.

Zeume, Stefan, 2016, Bribes and firm value, Ross School of Business Paper No. 1273. Available at SSRN: http://ssrn.com/abstract=2179437.

Table 1: Variable definitions and summary statistics

Panel A：Variable definitions

Variable Name	Variable Definition
Tobin's Q	The market value of the equity plus the book value of liability, divided by the total assets. Tradable shares are priced at the year-end stock price. Non-tradable shares are priced at the book value of equity per share.
Treat	An indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation.
Post	An indicator variable that equals one for observations since 2013.
SIZE	The natural logarithm of total sales.
LEV	Total liability divided by total assets.
CAPEX	Capital expenditure divided by total assets.
R&D	Research and development expenditure divided by total assets.
PPE	Property, plant and equipment divided by total assets.
ROE	Net income divided by the book value of equity.
M2B	Ratio of market value to the book value of equity.
AGE	The number of years since the firm was listed on the exchange.
SOE	A dummy variable that equals one if the ultimate controlling shareholder is a government agency.
StateHoldings	The number of shares held by government agencies, divided by the total shares outstanding.
TOP1	The number of shares held by the largest shareholder, divided by the total shares outstanding.
Intangibility	Intangible assets divided by total assets.
BankLoan	Bank loans divided by total assets.
Subsidies	Subsidies from the government divided by total assets.
DeficitGrowth	The local deficit growth rate in the region where listed firms' headquarters are located.
MgmHoldings	The number of shares held by the management team, divided by total shares outstanding.
Marketization	The index from China's National Economic Research Institute. The higher the index is,

	the more developed a region is.
DirAge	The average age of independent directors.
Male	The number of male independent directors divided by the number of all independent directors.
Education	The number of independent directors with graduate degrees divided by the number of all independent directors.
Busyness	The number of independent directors with multiple positions divided by the number of all independent directors.
Absence	The number of board meetings from which any independent director is absent divided by the number of board meetings.
Dissent	An indicator variable that equals one if an independent director dissents from a management proposal.
BdSize	The number of all board members.
IndBd	The number of independent directors divided by the number of all board members.
IndBdPay	The average pay of independent directors.
CurrentRatio	Current assets divided by current liability.
Cash	Cash divided by total assets.
# of Employees	The number of employees.
Ln*(ProfitPerEmployee)*	The natural logarithm of net profit per employee.
ROA	Earnings before interest and taxes divided by total assets.
AssetTurnover	Sales divided by total assets.

Panel B：Summary statistics

Variable	N	p25	Median	Mean	p75	S.D.
Tobin's Q	11300	1.276	1.638	2.082	2.333	1.385
Treat	11441	0.000	0.000	0.377	1.000	0.485
Post	11441	0.000	0.000	0.358	1.000	0.479
SIZE	11432	20.232	21.119	21.213	22.099	1.493
LEV	11439	0.272	0.455	0.455	0.627	0.232
CAPEX	11439	0.028	0.061	0.098	0.117	0.130
R&D	11439	0.000	0.006	0.012	0.020	0.016
PPE	11439	0.098	0.198	0.235	0.339	0.173
ROE	11439	0.032	0.073	0.070	0.119	0.134
Intangibility	11439	0.014	0.033	0.048	0.060	0.056
M2b	11300	1.883	2.827	3.792	4.440	3.657
AGE	11441	4.000	11.000	10.226	15.000	6.207
SOE	9311	0.000	0.000	0.486	1.000	0.500
StateHoldings	11440	0.000	0.000	0.066	0.000	0.158
TOP1	9393	0.240	0.348	0.366	0.481	0.155
BankLoan	11392	0.024	0.135	0.163	0.262	0.151
Subsidies	11439	0.001	0.003	0.006	0.007	0.008
DeficitGrowth	9393	0.040	0.123	0.117	0.193	0.153
MgmHoldings	10978	0.000	0.000	0.107	0.112	0.195
Marketization	11441	7.560	9.020	9.051	10.420	2.034
DirAge	11438	48.143	50.600	50.623	53.000	3.643
Male	11441	0.800	0.889	0.877	1.000	0.112
Education	7210	0.375	0.571	0.573	0.769	0.259
Busyness	11438	0.556	0.727	0.707	0.875	0.200
Absence	10559	0.000	0.000	0.002	0.000	0.011
Dissent	10671	0.000	0.000	0.009	0.000	0.097
BdSize	11395	8.000	9.000	8.928	9.000	1.749
IndBd	11395	0.333	0.333	0.369	0.400	0.052
IndBdPay	11433	37143	50000	55823	64167	29446
CurrentRatio	11440	1.020	1.534	2.622	2.626	3.424
Cash	11439	0.095	0.160	0.211	0.281	0.164
# of Employees	11418	824	1869	4644	4371	8910
Ln*(ProfitPerEmployee)*	10401	10.148	11.003	10.961	11.834	1.382
ROA	11439	0.029	0.053	0.057	0.084	0.061
AssetTurnover	11439	0.355	0.554	0.666	0.830	0.471

Table 2: Propensity score matching

Panel A: Propensity score regression and diagnostic regression

	(1) Pre-match	(2) Post-match
SIZE	0.242***	0.013
	[6.00]	[0.31]
LEV	-0.213	-0.031
	[0.87]	[0.12]
M2B	0.0131	0.003
	[1.09]	[0.27]
AGE	0.000	0.002
	[0.05]	[0.15]
ROE	0.169	-0.026
	[0.67]	[0.09]
SOE	0.130	0.013
	[1.06]	[0.10]
StateHoldings	0.244	-0.178
	[0.96]	[0.65]
TOP1	-0.101	0.050
	[0.31]	[0.15]
Year FE	YES	YES
Industry FE	YES	YES
Location FE	YES	YES
N	8080	5184
Pseudo R^2	0.048	0.002
P-value of χ^2	<0.001	1.000

Panel B: Balance tests

	Treatment	Control	Difference	T-test	P-value
SIZE	21.270	21.249	0.021	0.52	0.601
LEV	0.458	0.459	0.000	0.00	0.998
M2B	3.788	3.756	0.031	0.31	0.755
AGE	9.689	9.658	0.032	0.19	0.848
ROE	0.079	0.079	0.000	0.05	0.963
SOE	0.527	0.532	-0.005	-0.36	0.718
StateHoldings	0.085	0.090	-0.005	-1.05	0.294
TOP1	0.372	0.372	0.000	0.02	0.986

This table reports the diagnostics and results for propensity score matching. The sample selection begins with all firms with non-missing matching variables in the years prior to the anticorruption regulation. We match firms using one-to-one nearest-neighbor propensity score matching, without replacement, on a set of variables. Panel A presents the results from the logit model used in estimating the propensity scores for the treatment and control groups. The dependent variable in the logit model is the *Treat* dummy. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. Column 1 reports the parameter estimates of the logit model estimated using the sample prior to

matching. The propensity scores for matching treatment and control firms are based on these estimates. Column 2 reports the parameter estimates of the logit model estimated using the subsample of matched treatment-control pairs after matching. The definitions of all the other variables are listed in Panel A of Table 1. The models in both columns of Panel A include year, industry and location fixed effects. The coefficient estimates are reported with the absolute value of z-statistics displayed in brackets below. Panel B reports the balance test results for the pairs of treatment and control firms after matching. The absolute values of t-statistics based on errors clustered by firm are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 3: The impact of anticorruption regulation on firm value

	(1)	(2)
*Treat*Post*	-0.105**	-0.077*
	[2.16]	[1.77]
SIZE		-0.679***
		[9.99]
LEV		0.990***
		[4.84]
CAPEX		0.090
		[0.70]
R&D		6.125***
		[3.11]
PPE		0.677***
		[3.02]
ROE		0.949***
		[7.26]
Firm	YES	YES
Year	YES	YES
N	11300	11295
Adj. R^2	0.119	0.230

This table reports the results of the difference-in-difference regressions to test the effect of anticorruption regulation on firm value. The dependent variable is firm value measured by Tobin's Q. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. *Post* is an indicator variable that equals one for observations since 2013. The definitions for the other variables are reported in Panel A of Table 1. All the regressions include firm and year fixed effects. The absolute values of t-statistics based on errors clustered by firm are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 4: Placebo tests

	Mean	P5	P25	Median	P75	P95	S.D.
Table 3 Column 1							
Coefficient for *Treat*Post*	0.0008	-0.0790	-0.0314	0.0004	0.0334	0.0816	0.0488
T-stat for *Treat*Post*	0.0164	-1.6350	-0.6444	0.0092	0.6839	1.6718	1.0016
Table 3 Column 2							
Coefficient for *Treat*Post*	0.0005	-0.0718	-0.0296	0.0005	0.0303	0.0736	0.0443
T-stat for *Treat*Post*	0.0073	-1.6372	-0.6662	0.0110	0.6818	1.6436	1.0017

This table presents the placebo test for the results in Table 3, Column 1, and in Table 3, Column 2. The placebo test is based on a randomized sample from 5,000 simulations. For each simulation, we draw a random sample of 807 "treatment firms" from the pool of all firms and then treat the other firms as "control firms." The dependent variable is firm value measured by Tobin's Q. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. *Post* is an indicator variable that equals one for observations since 2013. The distribution of the coefficient and corresponding t-statistics for the *Treat*Post* variable are reported. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 5: Market reaction to the commencement of anticorruption regulation

	Number of Firms	Cumulative market-adjusted abnormal returns within different event windows							
		(0,+2)	(0,+5)	(0,+30)	(0,+50)	(0,+100)	(0,+150)	(0,+200)	(0,+250)
Treatment firms	780	-0.001	-0.006***	-0.018***	0.034***	0.107***	0.105***	0.136***	0.152***
		[-0.69]	[-2.70]	[3.85]	[6.20]	[12.56]	[11.14]	[13.23]	[13.99]
Control firms	1267	0.001	-0.000	-0.007**	0.050***	0.131***	0.137***	0.172***	0.195***
		[0.67]	[0.19]	[2.04]	[11.09]	[20.35]	[19.03]	[21.14]	[22.51]
Difference	2047	-0.002	-0.006*	-0.010*	-0.016**	-0.024**	-0.032***	-0.036***	-0.043***
		[0.94]	[1.89]	[1.72]	[2.20]	[2.28]	[2.73]	[2.73]	[3.06]

This table presents the market reaction of treatment firms and control firms around the commencement of anticorruption regulation. Treatment firms are firms that have at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. Other firms are considered as control firms. The absolute values of t-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 6: Tests for alternative explanations
Panel A: Anticorruption vs. political repression

	(1) Rivals	(2) Others
*Treat*Post*	-0.064	-0.077*
	[0.42]	[1.71]
SIZE	-0.720***	-0.674***
	[3.55]	[9.47]
LEV	0.820	1.008***
	[1.53]	[4.60]
CAPEX	0.025	0.086
	[0.06]	[0.64]
R&D	14.510*	5.565***
	[1.81]	[2.74]
PPE	1.153	0.638***
	[1.63]	[2.69]
ROE	0.770***	0.960***
	[2.82]	[6.73]
Firm	YES	YES
Year	YES	YES
N	916	10379
Adj. R^2	0.337	0.221

Panel B: Loss of independent directors

	(1) More Independent Directors	(2) Fewer Independent Directors	(3) Large Board	(4) Small Board
*Treat*Post*	-0.135**	-0.013	-0.109**	-0.022
	[2.16]	[0.21]	[2.28]	[0.26]
SIZE	-0.812***	-0.494***	-0.552***	-0.816***
	[8.89]	[6.03]	[6.44]	[7.99]
LEV	1.211***	0.617***	0.865***	1.016***
	[3.94]	[3.12]	[3.62]	[3.14]
CAPEX	0.003	0.246	0.303*	-0.150
	[0.02]	[1.49]	[1.76]	[0.78]
R&D	9.048***	2.455	5.792**	6.691**
	[3.43]	[0.92]	[2.26]	[2.17]
PPE	0.311	1.207***	0.981***	0.414
	[1.03]	[4.19]	[3.70]	[1.13]
ROE	0.917***	1.015***	0.894***	0.987***
	[5.35]	[5.07]	[5.03]	[5.18]
Firm	YES	YES	YES	YES
Year	YES	YES	YES	YES
N	5738	5557	6997	4298
Adj. R^2	0.258	0.211	0.217	0.255

This table reports the results of the test of alternative explanations for our findings. The dependent variable is firm value measured by Tobin's Q. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. *Post* is an indicator variable that equals one for observations since 2013. The definitions for the other variables are reported in Panel A of Table 1. In Panel A of Table 6, Column 1 uses sample firms in Chongqing City, Liaoning Province and Sichuan Province, where Xilai Bo and Yongkang Zhou (President Jingping Xi's rivals) once worked. Column 2 uses the rest of the sample. In Panel B of Table 6, Column 1 (2) is based on firms with a ratio of independent directors on the board is higher (lower) than the sample median, 0.333. Column 3 (4) is based on firms in which the number of board members is higher (lower) than the sample median, 9. All the regressions include firm and year fixed effects. The absolute values of t-statistics based on errors clustered by firm are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 7: The impact of anticorruption regulation on firm value: Political connection channel

	(1) High *Subsidies*	(2) Low *Subsidies*	(3) High *Intangibility*	(4) Low *Intangibility*	(5) High *DeficitGrowth*	(6) Low *DeficitGrowth*
*Treat*Post*	-0.0552	-0.101*	-0.170***	0.0298	-0.122**	-0.0239
	[0.89]	[1.72]	[2.81]	[0.48]	[2.01]	[0.37]
SIZE	-0.637***	-0.697***	-0.811***	-0.548***	-0.768***	-0.577***
	[5.45]	[8.60]	[9.04]	[5.37]	[8.72]	[5.43]
LEV	1.157***	0.811***	0.848***	1.048***	1.167***	0.737**
	[4.22]	[2.75]	[3.11]	[3.32]	[4.41]	[2.31]
CAPEX	0.318	-0.135	0.0518	0.0933	-0.249	0.416**
	[1.49]	[0.92]	[0.24]	[0.65]	[1.40]	[2.21]
R&D	8.507***	1.220	5.438*	6.377**	7.481***	3.701
	[3.34]	[0.39]	[1.83]	[2.47]	[2.78]	[1.36]
PPE	0.808**	0.582*	0.613**	0.688**	0.313	1.090***
	[2.40]	[1.93]	[1.98]	[2.24]	[1.10]	[3.10]
ROE	1.183***	0.724***	0.977***	0.844***	0.833***	1.149***
	[6.00]	[4.28]	[6.29]	[3.86]	[5.24]	[5.24]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	5539	5756	5691	5604	5609	5449
Adj. R^2	0.248	0.226	0.262	0.206	0.263	0.212

This table reports the results of the difference-in-difference regressions to test the political connection channel through which the anticorruption regulation may affect firm value. The dependent variable is firm value measured by Tobin's Q. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. *Post* is an indicator variable that equals one for observations since 2013. Column 1 (Column 2) is estimated on firms whose government subsidies, measured as subsidies divided by total assets in the year before anticorruption regulation, is higher (lower) than the sample median. Column 3 (Column 4) is estimated on firms whose intangibility, measured as intangible assets divided by total assets before year 2013, is higher (lower) than the sample median. Column 5 (Column 6) is estimated on firms whose headquarters are located in regions where local government's deficit increase before 2013 is higher (lower) than the sample median. The definitions for the other variables are reported in Panel A of Table 1. All the regressions include firm and year fixed effects. The absolute values of t-statistics based on errors clustered by firm are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 8: The impact of anticorruption regulation on firm value: Anticorruption disincentive channel

Panel A: Disincentive for managers

	(1) High *MgmHoldings*	(2) Low *MgmHoldings*	(3) SOE	(4) Non-SOE
*Treat*Post*	-0.029	-0.104*	-0.105**	-0.014
	[0.50]	[1.66]	[1.99]	[0.22]
SIZE	-0.467***	-0.806***	-0.704***	-0.710***
	[4.07]	[10.10]	[7.01]	[8.06]
LEV	1.303***	0.553**	0.888***	0.884***
	[4.40]	[2.13]	[2.95]	[3.33]
CAPEX	0.615**	-0.508	-0.083	0.115
	[1.98]	[0.99]	[0.20]	[0.29]
R&D	7.719***	2.782	-0.529	10.470***
	[3.51]	[0.87]	[0.18]	[3.84]
PPE	1.062***	0.341	0.586**	0.454
	[4.04]	[1.02]	[2.11]	[1.25]
ROE	1.960***	0.620***	0.892***	1.109***
	[6.78]	[4.36]	[5.69]	[5.15]
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	5327	5968	5306	5788
Adj. R^2	0.224	0.271	0.270	0.230

Panel B: Disincentive for government officers

	(1) More Government Related Industry	(2) Less Government Related Industry	(3) High *Marketization*	(4) Low *Marketization*
*Treat*Post*	-0.215**	-0.049	-0.0346	-0.157**
	[2.14]	[1.02]	[0.67]	[2.01]
SIZE	-0.640***	-0.678***	-0.614***	-0.761***
	[5.80]	[8.28]	[6.81]	[7.54]
LEV	-0.379	1.235***	1.156***	0.627*
	[0.73]	[5.71]	[4.74]	[1.79]
CAPEX	-1.769	0.418	0.257	-0.088
	[1.45]	[1.43]	[0.72]	[0.17]
R&D	-3.166	7.197***	7.433***	3.362
	[0.37]	[3.72]	[2.96]	[1.06]
PPE	0.164	0.716***	0.724**	0.596
	[0.36]	[2.76]	[2.47]	[1.64]
ROE	0.567*	1.013***	0.916***	0.925***
	[1.79]	[6.86]	[5.30]	[4.94]
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	1683	9612	7403	3892
Adj. R^2	0.276	0.234	0.211	0.269

This table reports the results of the difference-in-difference regressions to test the anticorruption disincentive channel through which the anticorruption regulation may affect firm value. The dependent variable is firm value measured by Tobin's Q. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. *Post* is an indicator variable that equals one for observations since 2013. In panel A, Column 1 (Column 2) is estimated on firms whose management holdings, measured as the number of shares held by the management team divided by the total shares outstanding in the year before anticorruption regulation, is higher (lower) than the sample median. Column 3 (Column 4) is estimated on firms whose ultimate controlling shareholders are government (non-government) agencies in the year before anticorruption regulation. In panel B, Column 1 is estimated on firms in more government-related industries, including petro, coal, utility, steel, real estate and media, while Column 2 is estimated on the rest of firms. Column 3 (Column 4) is estimated on firms located in regions with Marketization Index higher (lower) than the 33 percentile of the sample. Marketization Index is from China's National Economic Research Institute. The higher the index is, the more developed a region is. The definitions for the other variables are reported in Panel A of Table 1. All the regressions include firm and year fixed effects. The absolute values of t-statistics based on errors clustered by firm are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Table 9: Other impacts of anticorruption regulation on listed firms

Panel A: The impact of anticorruption regulation on independent director characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.	*DirAge*	*Male*	*Education*	*Busyness*	*Absence*	*Dissent*
*Treat*Post*	0.168*	-0.002	0.016*	-0.012*	0.001**	0.542
	[1.91]	[0.75]	[1.75]	[1.72]	[2.34]	[1.20]
SIZE	0.276***	0.005*	0.005	-0.000	-0.000	-0.149
	[4.00]	[1.93]	[0.68]	[0.01]	[0.83]	[0.72]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	11429	11432	7206	11429	10550	481
Adj. R^2	0.266	0.013	0.027	0.123	0.003	
Pseudo R^2						0.114

Panel B: The impact of anticorruption regulation on board characteristics

	(1)	(2)	(3)
Dep. Var.	Ln(*BdSize*)	*IndBd*	Ln(*IndBdPay*)
*Treat*Post*	-0.000	-0.001	-0.014
	[0.01]	[0.45]	[0.97]
SIZE	0.015***	-0.003**	0.061***
	[3.67]	[2.46]	[5.20]
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	11387	11387	11266
Adj. R^2	0.026	0.007	0.060

Panel C: The impact of anticorruption regulation on financial and investment policies

	(1)	(2)	(3)	(4)	(5)
Dep. Var.	*LEV*	*CurrentRatio*	*Cash*	*CAPEX*	*R&D*
*Treat*Post*	0.009	-0.030	-0.002	-0.014**	0.000
	[1.54]	[0.28]	[0.43]	[2.37]	[0.29]
SIZE	0.022**	-0.685***	-0.025***	-0.001	0.000
	[2.38]	[5.58]	[5.32]	[0.18]	[0.72]
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
N	11430	11431	11430	11430	11430
Adj. R^2	0.017	0.061	0.142	0.027	0.116

Panel D: The impact of anticorruption regulation on firm operations

	(1)	(2)	(3)	(4)
Dep. Var.	Ln(*# of employees*)	Ln*(ProfitPerEmployee)*	*ROA*	*AssetsTurnover*
*Treat*Post*	0.044**	-0.112***	-0.004**	-0.017*
	[2.05]	[2.75]	[2.21]	[1.84]
SIZE	0.501***	0.397***	0.024***	0.173***
	[16.44]	[7.04]	[8.77]	[12.01]
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	11409	10397	11430	11430
Adj. R^2	0.317	0.068	0.077	0.179

This table reports the results of the difference-in-difference regressions to test other impacts of the anticorruption regulation on listed firms. In Panel A the dependent variables are *DirAge* (the average age of the independent directors), *Male* (the number of male independent directors divided by the number of all the independent directors), *Education* (the number of independent directors with graduate degrees divided by the number of all the independent directors), *Busyness* (the number of independent directors with multiple positions divided by the number of all the independent directors), and *Absence* (the number of the board meetings from which any independent director is absent divided by the number of board meetings), in OLS regressions from Column 1 to Column 5, respectively. The dependent variable is *Dissent* (an indicator variable that equals one if an independent director dissents from a management proposal) in the logit regression in Column 6. In Panel B the dependent variables are Ln(*BdSize*), *IndBd* and Ln(*IndBdPay*) in the OLS regressions from Column 1 to Column 3, respectively. Ln(*BdSize*) is the natural logarithm of the number of board members. *IndBd* is the number of independent directors divided by the number of all the board members. Ln(*IndBdPay*) is the natural logarithm of average pay of independent directors. In Panel C the dependent variables are *LEV* (total liability divided by total assets), *CurrentRatio* (current assets divided by current liability), *Cash* (cash divided by total assets), *CAPEX* (capital expenditure divided by total assets) and *R&D* (research and development expenditure divided by total assets) in the OLS regressions from Column 1 to Column 5, respectively. In Panel D the dependent variables are Ln*(# of employees)* (the natural logarithm of the number of employees), Ln*(ProfitPerEmployee)* (the natural logarithm of net profit per employee), *ROA* (earnings before interest and taxes, divided by total assets) and *AssetTurnover* (sales divided by total assets) in the OLS regressions from Column 1 to Column 4, respectively. *Treat* is an indicator variable that equals one if a firm has at least one independent director with a bureaucratic background before the announcement of anticorruption regulation. *Post* is an indicator variable that equals one for observations since 2013. The definitions for the other variables are reported in Panel A of Table 1. All the regressions include firm and year fixed effects. The absolute values of t-statistics based on errors clustered by firm are shown in brackets for all the OLS regressions. The absolute values of z-statistics for Column 6 in Panel A are also shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for two-tailed tests.

Figure 1: Distribution of independent director resignations

This figure shows the distribution of independent director resignations one year before and after the anticorruption regulation. The resignations in October 2013, when the anticorruption regulation was launched, were excluded. The lower part of the bar after November 2013 represents the resignations that specifically state that independent directors resign due to the anticorruption regulation.

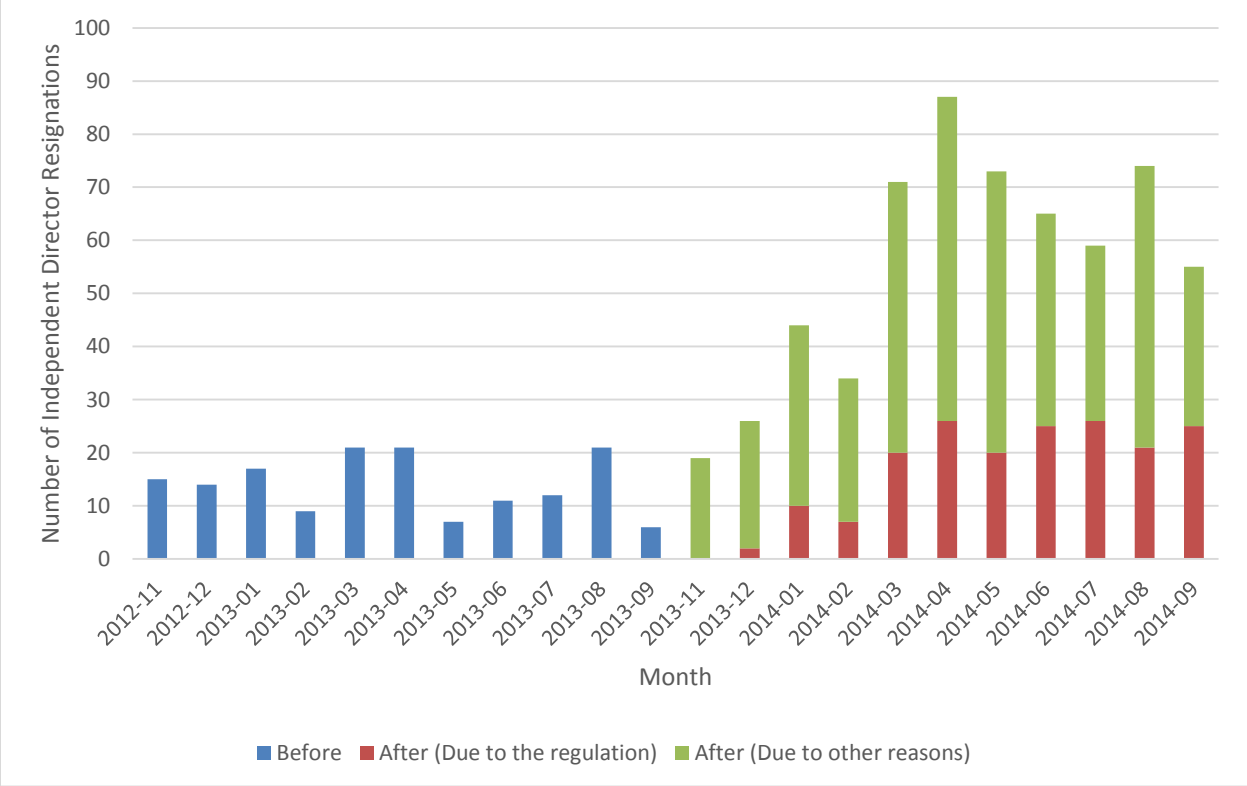

Figure 2: Firm value dynamics around the anticorruption regulation

This figure shows the distribution of firm value measured by Tobin's Q for treatment firms and control firms from two years before (year 2011 and year 2012) to two years after (year 2013 and year 2014) the commencement of anticorruption regulation. T_75, T_50 and T_25 (C_75, C_50 and C_25) are the seventy-fifth percentile, fiftieth percentile, and twenty-fifth percentile of Tobin's Q for treatment firms (control firms), respectively.

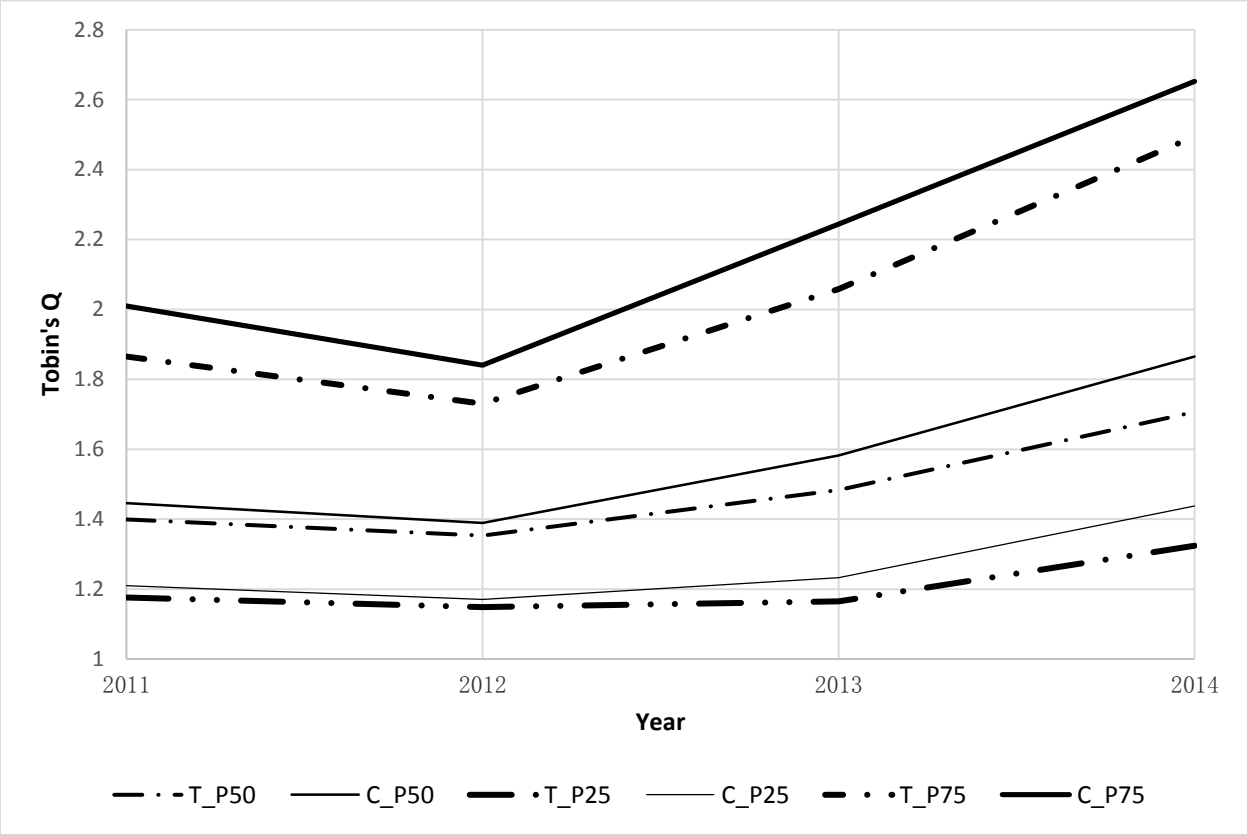

Figure 3: Market reaction around the commencement of anticorruption regulation

This figure shows the market reaction around the commencement of anticorruption regulation, from 10 days beforehand to 250 days afterwards. The vertical axis represents the market reaction, measured by the cumulative market-adjusted stock return. The market return is measured by the value-weighted A share return. The horizontal axis represents the days around the announcement. Day 0 is the first trading day after the anticorruption regulation.