Is the Chinese Anti-Corruption Campaign Effective?

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In December 2012 the Chinese government launched an anti-corruption campaign that we find has affected executives at 150 publicly traded firms as of December 2015. We examine whether the campaign was political, or actually focused on corruption by examining if the investigated firms were engaged in more dubious behaviors than matched-firm counterparts. Firms with investigated executives were typically state-owned enterprises with more related-party sales, higher sales growth than income growth, lower profit margins, and more corruption posting on the internet prior to their executives being investigated; The reform does seem focused on corrupt firms. We then use a variety of measures of potential corruption to examine if the reforms have lead to a market-wide improvement in corporate culture. Entertainment expenses decreased dramatically in 2013-2014, but earnings management, lack of stock-price responsiveness to earnings, and the presence of related-party sales and loans show no signs of improvement, indicating that the primary effect of the campaign is to make corruption less conspicuous. Overall, our findings suggest that the campaign is a step in the right direction, but a more comprehensive effort may be necessary to effect the corporate culture in China.

Academic evidence has increasingly linked corruption as a major impediment to economic growth.[1] Despite this strong academic evidence, it is rare that one sees countries with high levels of corruption make sweeping changes to reduce political and corporate thievery. Nevertheless, in December 2012, the new top leadership in China embarked on an Eight-point Regulation that purports to widely reduce political, military, and business corruption. The campaign raises two main questions that we examine: Is the corporate campaign a political one in disguise, or is there a genuine focus to remove firms that are the most corrupt? Has the campaign been effective at reducing corruption behavior in China's corporate environment?

China ranked 100 of 175 in the world on the Corruption Perception Index as of 2014, despite being the world's second largest and one of the fastest growing economies.[2] Pei (2007) estimates the direct costs to corruption at three percent of GDP per year. Yet, there is good reason to think that the indirect costs of corruption are likely much greater than their direct costs. Due to an excessive focus on rent-seeking, Murphy, Shleifer, and Vishny (1993) argue that corruption results in a low output equilibrium with low innovation, and Shleifer and Vishny (1993) argue that the secrecy of corruption leads to substantial distortionary incentives. With growth in China lagging considerably behind its past trajectory, the Eight-point Regulation is quite timely. The reform provides a unique laboratory to evaluate an effort to reduce corruption because it is both widespread and in a large market with many publicly traded firms that are commonly thought to exhibit substantial corruption.

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[1] Some theories [Leff 1964, Lui (1985), and Acemoglu and Verdier (2000)] argue that corruption is not necessarily problematic since bribery can be thought of as a tax. Shleifer and Vishny (1993) argue that this is incorrect since the distortionary effects associated with the uncertainty of bribery payments is more harmful than taxation. Empirical studies have largely found that corruption is harmful to economic growth due to channels such as a reduction in innovation and foreign direct investment [Mauro (1995), Wei (2000), Reinikka and Svensson (2004)]. For a more detailed discussion of corruption and its effects see Bardhan (1997) and Svensson (2003).

[2] The annual Corruption Preception Index published by Transparency International can be found at http://www.transparency.org/cpi2014.

By carefully searching a broad set of sources including databases of managerial turnovers of Chinese listed firms, disclosures by the Chinese Communist Party, corporate announcements, and news articles from over 300 Chinese financial newspapers, we construct a sample of Chinese listed firms where the corrupted CEOs or other top executives were investigated during the anti-corruption campaign. In all we reach a sample from December 2012 to December 2015 of 150 listed firms, 131 (or 87%) of which are state-owned-enterprises (SOEs). The sample firms have a total market capitalization of RMB 5.29 trillion (USD 805 billion), and account for 5.6 percent of China's listed firms in terms of number, and 18.1 percent in terms of market capitalization. The major listed charges are receiving bribes (82), illegally benefiting family members (29), embezzling funds (26), bribing others (21), and unspecified offenses (31).[3]

To answer whether the purge is purely politically motivated, or if the firms are seemingly corrupt, we turn to a matched-sample approach and a host of measures that indicate potential dubious behavior. None of our measures are perfect, but we believe that all have the potential to shed light on activities of a potentially questionable nature, and most have been linked to such activity in previous literature (as we will detail). The measures of potential corruption are grouped into four categories. For potential accounting manipulation, we first examine earnings discontinuity around zero as small positive earnings and lack of negative earnings can indicate manipulation. The incentive to manipulate earnings is high in China as consecutive years of negative earnings can lead to delisting. We also examine the absolute value of discretionary accruals. To account for illegal or unethical behavior to potentially exploit shareholders, we use three measures of related-party transactions which are related-party sales, related-party loans, and other receivables from the parent firm. We also examine a firm's regulation breaches identified by China's Security Regulatory

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[3] Note that these corruption behaviors are not mutually exclusive.

Commission and business entertainment expenditure. Since corruption leads to heightened costs and inefficient operation in a firm, we also examine two measures of profitability that include growth of sales minus growth of net income, and profit margin. Finally, we measure investors' discussions about corruption in a firm using posts on a popular online investor forum in China.

To control for firm-level characteristics, for each of our 150 sample firms we identify a matched firm in the same industry, with the same SOE status, and similar market capitalization and book-to-market ratio. We examine the corruption measures for sample firms before corruption investigations, and find that sample firms generally have higher measures of corruption than their matched firms. In a probit regression, we find that related-party sales, related-party loans, sales growth minus income growth, and corruption related posts are all positively related to the probability of an executive being investigated or dismissed for corruption at the five percent significance level. Overall, the evidence suggests that the anti-corruption campaign does appear to be genuine in that the subjects of investigation do appear to be engaged in more questionable activities.

We turn to stock return performance for the listed firms and find that the return on the firms investigated for performance are a negative two percent over the fifteen trading days following the public announcement of the investigation of an executive, and a further negative 20 percent over the 180 trading days following the announcement. This indicates that the investigations are meaningful events and typically have an adverse impact on the firms with investigated executives.

Next, we turn to investigating the broader question of whether the reform is having spillover effects on firm culture by examining the corruption measures for all Chinese listed firms over time. Using our ten measures of corruption, the measures which shows a large improvement or drop in 2013-2014 compared to 2011 is business entertainment expenditure. Discretionary accruals also decreased but the drop actually occurred in 2012 when the campaign was just getting started and accruals experienced no subsequent improvement, suggesting the campaign is not improving

discretionary accruals. Other receivables also decreased in 2013-14, but related-party loans which is similar in nature actually experienced a significant increase in 2014. We also divide all firms into subsamples according the levels of corruption in their provinces or according to SOE status, to see if the effects of the campaign have been more effective in a particular region. Overall, only entertainment expenditures exhibit a consistent downward trend. It is possible, that the other measures are poor corruption proxies, but recall that some of these measures did show that the firms investigated for corruption had larger corruption indicators despite a relatively small sample size. Additionally, many of the measures have strong intuitive underpinnings.

To further address the overall effects of corruption, we investigate earnings management by examining the earnings distribution around zero for all Chinese listed firms. The distribution of earnings around zero has a strong kink in the pre-campaign time period, where there are very few firms with negative earnings but many firms with small positive earnings. Yet, from 2013-2014 the patterns are extremely similar with few firms exhibiting small negative earnings, and a plethora of firms with small positive earnings. Earnings manipulation appears to be rampant and has exhibited little improvement. Additionally, to gauge the information content of earnings announcements, we examine the stock price volatility on earnings announcements days relative to other days. Earnings announcements do not become more informative in 2013-2014 as compared to their relative informativeness prior to the reform.

Overall, other than a drop in the highly visible business and entertainment expenditure, we find little evidence that there has been a widespread decrease in corruption indicators. The reform appears to be a step in the right direction, but has not yet led to widespread change. Svensson (2003) argues that most anti-corruption campaigns are ineffective because they rely on weak and corrupt legal and financial institutions. The arguments of Magnus (2015) seem persuasive that improvements

in the Chinese legal, institutional, press freedom, and civil environment may be needed to enact a more comprehensive and effective reform.

While there is a large literature examining corruption in various markets, there is relatively little academic research examining the anti-corruption campaign in China. Lin, Morck, Yeung, and Zhao (2015) use event study methodology across a variety of firms to examine the market's response to the announcement of the reformation plan on December 4, 2012. They find that the overall market reaction is quite positive and this is especially so for private firms, but for state enterprises and firms with high entertainment costs the reaction is negative. While their study provides an in-depth characterization of market expectations of the policy, our analysis focuses on the observed effects of the policy during the anti-corruption campaign. Qian and Wen (2015) find that the jewelry imports decreased by 55% percent over the first seven months after the reform which is consistent with our firm-level findings.

More broadly, there is a growing literature examining corruption globally [Mauro (1995)], in certain emerging economies [Fisman and Svensson (2007)], and even considerable research on corruption in China. Chen, et al. (2006) and Chen, et al. (2011) find a positive relationship between board and ownership concentration and fraud and political connections in China. Cheung, Rau, and Stouraitis (2007) and Jiang, Lee, and Yue (2010) examine tunneling through inter-company transactions and loans in Hong Kong and China. Liu and Lu (2007) links earnings management to tunneling. We hope to see additional research focusing on the effectiveness of corruption reduction efforts.

1. Background of the Anti-Corruption Campaign

Corruption in China has grown significantly since the economic reform in the early 1980s. Over the last four decades, the corruption culture has widely spread to China's political, military, and business

environment. In 2014, China ranked 100 of 175 in the world on the Corruption Perception Index; meaning that it is more corrupt than majority of countries in the world. As an illustration of China's corruption culture, Avon, the cosmetics company, admitted guilt and paid $135 million on December 17, 2014 to settle U.S. Justice Department charges for bribing Chinese government officials.[4]

On November 15, 2012, Xi Jinping took China's leadership and became the General Secretary of the Communist Party of China over the 18th National Congress of the Communist Party of China (CPC). Soon after taking office, Xi emphasized his determination to crack down corruption, targeting both "tigers and flies". On December 4, 2012, the Communist Party of China announced the "Eight-point Regulation" which provides a clear guidance for the party and government officials to eliminate corruption. Xi's taking leadership and the issuance of the "Eight-point Regulation" are generally regarded as the start of the anti-corruption campaign in China.

Since its start, the anti-corruption campaign has investigated and removed four national leaders and hundreds of high-ranking government officials and military officers. More than 100,000 people have been indicted for graft during the anti-corruption campaign [Economist, 2015]. The campaign has also targeted corrupt managers in China's corporate world. For example, Lin Song, former Board Chairman of the state-owned enterprise China Resources and one of the "50 Most Influential Business Leaders" according to *Fortune*, was investigated and dismissed for corruption in April 2014, and indicted on bribery and embezzlement. There is substantial controversy surrounding the genuineness of the campaign and whether it is a consolidation of power or a cleansing of political lineage [Economist, 2014]. Is it mainly for political reasons that certain people that posed a threat to the current power base were humiliated, removed, and jailed? Others argue that the

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[4] Avon admitted spending a total of $8 million in cash and gifts to Chinese government officials during 2004-2008. See http://fortune.com/2014/12/17/avon-bribery-probe-settlement/.

campaign is not a short-term political one as has been used in the past, but it is primarily focusing on those engaged in corruption [Li, 2014, Magnus, 2015]. Additionally, one wonders if the anti-corruption campaign cause positive changes to Chinese corporate world and corporate culture. Academic research is needed to address these questions of widespread practical importance.

2. Data, Summary Statistics, and Measures of Potential Corruption

2.1 Sample Selection

There are two parts of analysis and sample construction. First, we examine a sample of firms with corrupted managers investigated during the anti-corruption campaign (henceforth "sample firms" or "event firms"). Second, we examine corruption measure across all Chinese listed firms to study the impact of anti-corruption campaign on Chinese corporate world.

The sample firms include the listed firms in China whose top managers were investigated during the anti-corruption campaign for corruption behaviors. A firm should satisfy three conditions for sample inclusion. First, the firm is listed on either Shanghai Stock Exchange or Shenzhen Stock Exchange, the two stock exchanges in China. Second, its CEO or other top executives who are also internal directors were investigated for corruption behaviors. Third, the corruption investigations took place during anti-corruption campaign from December 4, 2012 to December 31st, 2015.

We identify firms with corrupted managers investigated using three approaches. First, we obtain information of CEOs of Chinese listed companies from the China Stock Market & Accounting Research (CSMAR) database, and identify a total of 2,862 CEO turnovers during the sample period of December 4th, 2012 to December 31st, 2015. For each CEO turnover, we manually search the news or biography on internet to find out the reasons of turnover, and identify events involving corruption behaviors.

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Next, to examine corruption cases of non-CEO top executives, we examine the disclosure by the Communist Party of China (CPC). As part of the disclosure about anti-corruption campaign, CPC's Central Committee's Commission of Discipline Inspection publicizes a list of high-level party members being investigated, including executives of large state-owned enterprises.[5] We manually read through the list of publications, and identify the investigations involving managers of listed firms. Most of the executives are CEOs, Chairman of the board, directors on the board, firm controller, Vice President, and CEO/Chairman or Vice President of the parent company.

Third, we conduct key word search on two large bodies of publications: a) More than 800,000 corporate announcements for all the listed companies in our sample period from the CNINFO dataset; and b) News articles Genius Finance, which is a widely-used database covering news articles form over 300 Chinese financial newspapers. Due to the large number of news articles, we first obtained the list of 35,353 director turnovers during our sample period from CSMAR, and narrow down the news sample to the 40,000 articles that mention the name of at least one of these directors.

To conduct the keyword search, we need to compose a list of corruption-related key words. To ensure the accuracy of key word identification, we manually read through the corporate announcements and news articles about the corruption cases from the first two sources (CEO turnovers and CPC disclosures), and compose a list of 34 keywords that are commonly used by the announcements and news articles to describe corruption behaviors and investigations. Examples of keywords (in Chinese) include "discipline violation", "under corruption investigation", "suspicion of bribery", and other key words which we detail in the Internet Appendix. We then use the list of key words to conduct the textual search for all the corporate announcements and news articles described

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[5] The disclosures can be found at http://www.ccdi.gov.cn/jlsc/.

above, and identify 1,049 corporate announcements and 2,236 new articles containing the key words. We manually read through these announcements and news articles to identify an additional sample of corruption cases.

We then combine the firms from the above three sources, and further read into the details of corruption behaviors of the managers.[6] We use a conservative approach and exclude a small number of events that fall into one of the four categories: 1) The manager's corruption behaviors took place before joining the company. We remove cases when a manager is investigated for activity as a government official before joining the firm; 2) The manager's corruption behaviors is unrelated to the firm. For example, a vice president of a listed firm represented a block holder and his corruption behavior occurred in the block holder firm instead of the listed firm; 3) One event where the manager was proved to be clean after the investigation; and 4) Two events where the listed firms experienced reverse merger or major asset restructuring within one year of the corruption investigations, in which case the top managers might not have full control of the listed firm.

When a firm experienced several events involving multiple executives during our sample period, we keep only one event per firm using the following criteria. First, if there is an obvious rank difference between the managers, we choose the most important manager (e.g., CEO versus other managers). Second, if the managers involved are of similar importance, we keep the earliest event. For each event, we carefully go through the corporate announcements and news articles and identify event date as the earliest day when the news of investigation became available. We also include in our sample the cases where the parent company's top managers engage in corruption behaviors,

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[6] Besides CEOs and top executives serving as internal directors, we also include a small number of events that we identified during the collection process where the corrupted managers are critical to the company but neither CEO nor internal director. In several cases, the investigated managers were vice presidents ("deputy general manager") but did not hold directorships.

because in China the parent company have very tight control of its subsidiaries, either directly manage them or influence their major decisions.

Our final sample includes 150 listed companies whose managers were investigated and dismissed during the anti-corruption campaign for corruption behaviors. The size of this sample indicates the widespread corruption behaviors in China's corporate world and the scale of the anti-corruption campaign, as the sample firms' total market capitalization is 5.29 trillion RMB (USD 805 billion). They account for 5.6 percent of China's listed firms in terms of number, and 18.1 percent in terms of market capitalization.[7]

2.2 Summary Statistics

Panel A of Figure 1 plots the distribution of sample firms by year, where firms are divided into state-owned enterprises (SOEs) and non-SOEs. A firms is classified as SOE if its controlling shareholder is affiliated with the Chinese government or its largest shareholder is affiliated with the Chinese government and holds at least 25% of the firm's outstanding shares. The data on SOE status are directly obtained from the CSMAR database. Panel A of Table 1 presents the corresponding numbers of firms. The anti-corruption campaign has accelerated since its start in December 2012, as the number for firms involved in corruption investigations increased from just one firm in 2012 (December) to 28 firms in 2013, 50 firms in 2014, and 71 firms in 2015. Additionally, 87.3 % of the firms are SOEs, which is consistent with managers of SOEs having greater conflict of interests and resources under control compared to non-SOEs. Panel B of Figure 1 plots the positions of corrupted managers for sample firms by year, and Panel A of Table 1 reports the corresponding numbers of firms. Out of the 150 sample firms, 66 have corrupted CEOs, 26

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[7] Since the corruption investigations took place from December 2012 to December 2015, we calculate these percentages on December 31, 2014.

firms have corrupted non-CEO executives, and 59 firms have corrupted top managers (CEOs or non-CEO executives) from parent company.

Panel C of Figure 1 plots the distribution of managerial corruption behaviors for sample SOEs and non-SOEs, which reveals a stark contrast between SOEs and non-SOEs in terms of managerial corruption behaviors. While the most common corruption behavior for SOE managers is receiving bribes, either from employees or other companies, non-SOE managers' corruption behaviors concentrate in bribing other parties to gain business.

Panel B of Table 1 presents the corresponding numbers of firms associated with different corruption behaviors (not mutually exclusive). We are able to identify detailed corruption behaviors of 102 out of the 131 SOEs in our sample, and the most common corruption behaviors are receiving bribes from employees (82 firms), embezzlement of company funds (25 firms), and illegally benefiting family members or relatives (29 firms). Managers of five SOEs, most of them financial firms, bribe government officials or other parties to obtain licenses or competing for underwriting business. The remaining 29 SOEs do not have detailed information about managerial corruption behaviors, where the sources such as corporate announcements or news articles simply mention "involvement in financial issues", "severe violations of law and disciplines", etc. All of these managers are non-CEO executives where media coverage is relatively sparse compared to CEOs. For non-SOEs, we are able to identify specific corruption behaviors for 17 out of the 19 non-SOEs in our sample, and 16 non-SOEs' managers were investigated due to bribing other parties. The remaining one firm's manager was investigated for embezzlement of company funds. The stark contrast between SOEs and non-SOEs sheds light on the vastly different incentives and forms of corruption behaviors across different ownership structures.

2.3   Measures of Potential Corruption

Motivated by the existing literature, we examine corruption measures from five aspects: accounting manipulations; related-party transactions; regulation breaches and business entertainment expenditure, profitability, and corruption-related postings from on a popular online investor forum. The detailed definitions of our corruption proxies and control variables are listed below.

2.3.1 Measures of Accounting Manipulation

Manipulating accounting information can be related to corruption as both are unethical behaviors that are likely associated with a lack of morality. We examine two measures of accounting manipulation that are widely used by the existing literature.

Our first measure of accounting manipulation is discretionary accruals, the most commonly used measure of earnings management. A number of studies also examined discretionary accruals of Chinese firms as manipulation behaviors (e.g., Liu and Lu 2007). We follow the literature and construct discretionary accruals using annual accounting variables. Specifically, we first define total accrual as the difference between net income (NI) and cash flows from operating activities (CFO) divided by total assets (AT), i.e. $\frac{NI_{i,t} - CFO_{i,t}}{AT_{i,t}}$. Next, we use the modified Jones' (1991) model to decompose firm level total accruals into normal accruals and discretionary accruals

$$\frac{\text{Accruals}_{i,t}}{AT_{i,t}} = a_1 \frac{1}{AT_{i,t}} + a_2 \frac{\Delta Rev_{i,t}}{AT_{i,t}} + a_3 \frac{PPE_{i,t}}{AT_{i,t}} + \varepsilon_{i,t}$$

Where ΔREV is change in revenue, and PPE is the gross property, plant, and equipment. The above model is estimated in cross-section for each industry-year. Discretionary accruals (DACC) are the residuals from the regressions. Since discretionary accruals reverse over time, we following the literature and use absolute value of discretionary accruals (ADACC) as the measure of accounting manipulation. A higher level of ADACC indicates a greater likelihood of corruption.

Our second measure of accounting manipulation is discontinuity in earnings distributions at zero, which have been widely cited as evidence of earnings management since proposed by Hayn

(1995) and Burgstahler and Dichev (1997). We follow the literature [Gilliam, Heflin and Paterson, 2015] and construct two measures of the earnings discontinuity, namely, standardized differences for small profit and small loss. The standardized difference for small profit (small loss) tests the hypotheses that the actual number of observations in the intervals just above (below) zero earnings are greater than (smaller than) expected.

We expect to observe earnings continuity around zero for Chinese firms, because the regulations of Chinese stock markets add to the incentives for Chinese firms to avoid negative earnings. Specifically, a Chinese listed firm with two years' losses in a row will be assigned a label "ST" (special treatment) prior to ticker, which sends out a negative signal to the market. Therefore, we expect the earnings discontinuity to be substantial for Chinese firms, especially those with one-year loss already.

2.3.2. Related Party Transactions

Existing literature suggests that related party transactions can be related to unethical or illegal behaviors of Chinese firms. We therefore examine three measures based on the existing literature on related party transactions.

The first measure we examine is related-party sales, as Jian and Wong (2010) find that Chinese firms use related party sales to prop up earnings to meet the exchanges' listing requirements for financial performance. Related-party sales for a firm are obtained from CSMAR's related party transaction database on the transaction level (available from annual report); and then aggregated and scaled by total asset (AT).

The second measure of related-party transaction is related-party loans. Jiang, Lee, and Yue (2010) reveal the "tunneling" behaviors in Chinese firms, where controlling shareholders taking advantage of the firm and other shareholders through large amount of borrowing from the company

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at very low or no costs. We obtain related-party loans from WIND database (available from annual report) and scaled by total asset (AT).

The third measure of related-party transaction is other receivable from parent, as Jiang et al (2010) suggests that other receivables from parent also reflect the "tunneling" behaviors when controlling shareholders obtain costless financing from the firm through trade credit. We obtain data on other receivables from parent firm WIND database (available from annual report) and scaled by total asset (AT).

2.3.3 Regulation Breaches and Business Entertainment Expenditure.

The third group of measures that we examine include regulation breaches and business entertainment expenditure, as both can be potentially associated with the degree of unethical/illegal behaviors in Chinese companies.

We obtain the number of regulation breaches of all Chinese listed firms from CSMAR's Enforcement Actions Research Database, and aggregate for firm-years. In counting the number of breaches, we exclude the type of "non-material accounting errors" because they are associated with common accounting mistakes which are unlikely to be caused by corruption.

The second measure, business entertainment expenditure (BEE), is widely considered by news media as associated with corruption behaviors as these funding are widely used by the firms as perks to employees and especially top executives, or establish relations with other parties to gain business. Cai, Fang, and Xu (2011) presents evidence that BEE is indeed related to corruption in China. We collect the data of business entertainment expenditure from the footnotes of firms' financial statements using the Python program. The item could be reported under three sections: "management expenses" and "sales expenses" in the income statement, and "other cash payments for the expenses related to operating activities" in the cash flow statement.

We follow the literature [Ou-Yang, Shu, and Wong, 2015] and construct the BEE measure as follows. First, if BEE is disclosed under both sections of "management expenses" and "sales expenses" in the income statement. We take their sum as BEE. Second, if BEE is only disclosed in either one of expenses accounts or "other cash payments" account, we take the reported BEE as the total BEE. Third, if BEE is disclosed only in the "other cash payments" section in the cash flow statement and one of the expense accounts in the income statement, we take the larger amount as BEE.

2.3.4. Profitability of Firms

Corruption behaviors of top managers, especially embezzlement and receiving bribes, can cause direct loss to the firm or suboptimal allocation of a firm's resources, therefore increasing a firm's expenses and lowering profitability. We therefore examine two measures of firms' profitability.

Our first measure of profitability is the difference between sales growth and net income growth, as the news articles about the events in our sample often mention that corruption behaviors caused much slower growth of profit than growth of revenue. We calculate the difference of growth rates simply as $\text{DIFSGNG}_{i,t} = \frac{\text{REV}_{i,t}}{REV_{i,t-1}} - \frac{\text{NI}_{i,t}}{NI_{i,t-1}}$

Our second measure of profitability is profit margin, calculated as the ratio between net income (NI) and total sales/revenue (REV), i.e. $\text{PM}_{i,t} = \frac{NI_{i,t}}{REV_{i,t}}$.

2.3.5. Corruption-Related Postings

We collect corruption-related postings from StockBar (http://guba.eastmoney.com/), one of the most popular online investment forums in China. Since its establishment on 2004, StockBar has accumulated over 10 million users. According to Alexa Internet, a subsidiary of Amazon, the number of new posts per day on StockBar (newly initiated posts and responses to existing posts) is

as high as six million. To construct the measure of corruption-related postings at firm level, we first download all posts discussing listed companies (about 100 million) in Stockbar using a Python program. A post is considered to be corruption-related if its title contains one of 34 keywords in our key word list (described in Section 2.1). We then calculate the measure of corruption postings as the ratio of the number of corruption-related posts to the total number of posts for a firm-year.

3. Are Firms Investigated for Corruption More Corrupt than Peer Firms?

As discussed in Section 1, people widely associate the anti-corruption campaign in Chinese corporate business with two possibilities. Some suggest that the investigations under the anti-corruption campaign target the firms with severe corruption problems, in which case we expect the event firms to have a greater degree of corruption than peer firms. Others claim that corruption is widely spread among Chinese companies, and investigations under the anti-corruption campaign are conducted for non-corruption-related reasons such as a tool of political struggle. In this case we expect to observe little difference in the degree of corruption between event firms and peer firms. To distinguish these two possibilities, we examine a broad set of corruption measures for event firms relative to peer firms before corruption investigation.

For each event firm, we identify a matched firm by first selecting a subsample of firms that are in the same industry as the event firm, having the same SOE status as the event firm, and having market capitulation within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm.

3.1. Earnings Discontinuity for Event Firms and Peer Firms.

We first study event firms' earnings discontinuity around zero, and then examine the firm-level corruption measures for them. Figure 2 plots the earnings distribution of event firms and peer

firms. The earnings sample for event firms include their two annual earnings announced before the event dates of corruption investigations. Panel A of Figure 2 plots the distribution of earnings for event firms, which shows a striking pattern of discontinuity around zero. Specifically, there is a sharp decline in the number of firms from small profit to small loss. We calculate the discontinuity statistics and find that the standardized difference for small profit is 2.12, which is about 21 times that of the U.S. firms in the same period [Gilliam, Heflin, and Paterson (2014)]. Additionally, the standardized difference for small loss is -2.33, also 2.4 times that of the U.S. firms. These results show an abnormally large number of firms with small profit and an abnormally low number of firms with small loss, indicating massive earnings management above zero for Chinese listed firms.

For a comparison, Panel B of Figure 2 plots the distribution of earnings for matched firms. The sample includes matched firms' two annual earnings announced before the event dates of their corresponding event firms. The earnings distribution for matched firms demonstrates a similar discontinuity of earnings around zero. We also calculate standardized differences for matched firms and find little evidence that the earnings discontinuity is stronger for event firms than matched firms.

3.2. Firm-Level Corruption Measures

Next, we turn to firm-level corruption measures and plot them in Figure 3 for event firms versus matched firms in years t-2, t-1, and t, where year t is the year of event (announcement of corruption investigation). Since we examine the level of corruption for event firms before corruption investigations, we focus on the corruption measures in years t-1 and t-2 but also report those in year t as it is at least partially before the investigation events.

Figure 3 shows that six of the nine firm-level corruption measures indicate greater degree of corruption in event firms than in matched firms. Specifically, in years t-1 and t-2, event firms relative to matched firms have much higher related-party sales, related-party loans, and other receivables

from parent. Event firms also have lower profitability than matched firms as their income growth is lower than sales growth, and they have low profit margin. Additionally, corruption postings are also higher for event firms than peer firms, indicating that investors more often discuss the corruption issue about event firms than peer firms. In addition to these six measures, event firms' number of regulation breaches is also slightly higher in t-1 and much higher in t than matched firms. Regarding the remaining two measures, event firms have similar absolute value of discretionary accruals as matched firms, which is consistent with earlier results of earnings discontinuity that accounting manipulation doesn't seem stronger for event firms. Finally, event firms have slightly lower business entertainment expenditure than matched firms.

Table 2 further reports values of corruption measures and their differences between event firms and matched firms with associated t-statistics. It is worth noting that the relatively small sample size makes it difficult to observe statistical significance due to the lack of power. Table 2 nevertheless shows that, despite the small sample size, the differences between event firms and matched firms are statistically significant for four measures, namely, related-party sales, sales growth minus income growth, profit margin, and corruption postings. Additionally, the difference in related-party loan is almost significant at the 0.10 level (t-stat 1.60). Therefore, the results in Figure 3 and Table 2 consistently show that event firms are significantly more corrupt than peer firms.

Since the corruption behaviors vastly differ between SOEs and non-SOEs, we report in Table 3 the corruption measures for the subsamples of SOEs and non-SOEs. Majority of the corruption measures are similar for SOEs and non-SOEs in the sample, although the non-SOE sample is very small and the t-statistics are generally small. The main difference between SOE and non-SOE sample firms is in business entertainment expenditure (BEE): SOE event firms have lower BEE than their peer firms, while non-SOEs have higher BEE than their peer firms. This is consistent with our previous finding that most non-SOE event firms were involved in bribing other

parties, and business entertainment expenditure is generally used for the purpose of improving relations with other parties.

We further estimate probit regressions of corruption investigation to examine all corruption measures at the same time, and report the results in Table 4. The sample includes event firms and their matched firms. The dependent variable is a binary variable that equals one if the firm is an event firm (investigated for corruption), and zero if the firm is a matched firm (not investigated for corruption). The major independent variables are firm-level corruption measures of the year prior to corruption investigation (year t-1). We further control for firm characteristics including size (natural log of market capitalization), SOE status, and two dummies for firms located in medium- and high-corruption provinces. High-corruption (medium-corruption) provinces refers to those in the top (medium) tercile of the provincial corruption index constructed in Ang, Bai and Zhou (2015). Their index is a ranking-weighted number of corrupt officials in each province, based on records published on the CCDI's website from Nov 2012 to Dec 2014.

Models (1) to (5) present probit regressions of corruption investigation on the five groups of firm-level corruption measures. Interestingly, the signs of coefficients on most corruption measures consistently indicate that degree of corruption positively predict corruption investigation. The only exception is business entertainment expenditure (BEE) where the coefficient is negative rather than positive, but the t-statistic is only -0.76, far from being statistically significant. Despite the small sample, the coefficients on related-party sales, related-party loans, sales growth minus income growth, and corruption postings are significantly positive, consistent with the univariate analysis. It is worth noting that Chinse firms disclose BEE on a voluntary basis, which could introduce noise as high BEE firms might choose not to disclose, causing missing values.

Model (6) in Table 4 includes all firm-level corruption measures into the same regression. The sample size is further reduced by over one-third because of the availability of BEE. The results are

similar as previous models except the related-party loan now becomes insignificant although the magnitude of coefficient only slightly drops from that in Model (2). To address the concern of reduced sample size, we repeat the regressions in Model (7) without including BEE, and the related-party loan becomes significant. For the control variables, size is significantly positive, indicating that larger firms ("tigers") are more likely to be investigated for corruption. Additionally, the dummy of high-corruption province is also significantly positive, indicating that a more corrupted political environment can boost the corruption behaviors in the corporate world. For robustness, we also estimate logit regressions instead of probit regressions and obtain similar results. Overall, the results of multivariate regressions are consistent with our univariate analysis that the majority of the corruption measures indicate more corruption in event firms than in peer firms. This finding indicates that China's anti-corruption campaign indeed targets event firms because they are more corrupt rather than non-corruption-related reasons.

4. Has the Anti-Corruption Campaign Improved Corporate Culture?

A key question about the anti-corruption campaign is whether or not it suffices its general purpose, i.e., brings positive changes and reduces corruption in China's corporate world. To answer this question, we examine the corruption measures for a broader sample of all public companies listed on Chinese stock exchanges, namely, Shanghai and Shenzhen stock exchanges.[8] As the second biggest economy in the world, China has also seen a rapid growth in stock markets in the past decade. In 2005, there were 1,352 listed companies as in our sample, which has a total free-float market capitalization of RMB 994 billion, or USD 151.3 billion. As of 2014, there are 2,631 listed

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[8] There are two types of shares in China's stock markets. A-shares are denominated in Chinese yuan and traded by only Chinese citizens. B-shares are denominated in either US dollar or Hong Kong dollar, and traded by foreign investors or domestic residents using foreign currency. We follow the literature and exclude from our sample the companies that issue only B shares but not A-shares.

companies in our sample, with a total free-float market capitalization of RMB 31.3 trillion, or USD 4.8 trillion.

4.1. Earnings Discontinuity for All Listed Firms: Before and after the Start of Anti-Corruption Campaign.

Before going to the firm-level corruption measures, we first examine earnings discontinuity around zero for Chinese firms. Figure 4 plots earnings distribution for all Chinese listed firms before anti-corruption campaign (2003-2011) and after the campaign (2013-2014). We exclude year 2012 as the fiscal year of 2012 is largely before the start of anti-corruption campaign (December 2012), but the 2012 earnings were summarized and announced in early 2013, after the start of the campaign.

Panel A of Figure 4 exhibits a strikingly strong earnings discontinuity around zero in Chinese corporate world during 2003-2011, as evidence by the sharp decline in the number of firms from small profit to small loss. This result indicates massive earnings management in China's corporate world before anti-corruption campaign. For a comparison, Panel B of Figure 4 plots the earnings distribution in 2013-2014, which shows that earnings discontinuity remains the similar magnitude after the start of anti-corruption campaign.

To formally test earnings discontinuity, we present in Panel A of Table 5 the statistics of earinings discontinuity by year from 2010 to 2014. The difference for small profit is significantly positive for each of the five years from 2010 to 2014, indicating an abnormally large number of firms reporting small profits during this period. Additionally, difference for small profit is significantly negative for all years, indicating an abnormally low number of firms reporting small loss. These numbers are consistent with Figure 4 in that earnings management is prevalent in China. We also compare the statistics between the two years before anti-corruption campaign (2010-11) to two years after anti-corruption campaign (2013-14). While the difference for small loss decreases slightly and the change is significant at the 0.10 level, the difference for small gain increases slightly. These results show that the anti-corruption campaign does not seem to reduce earnings

discontinuity for Chinese firms. More importantly, the kink is extremely severe indicating rampant earnings manipulation across the market.

We further examine discontinuity statistics for several subsamples in Panel B of Table 5. First, firms already with one-year loss have strong incentives to manipulate earnings to above zero because a second-year loss will result in a symbol "ST" (special treatment) before the ticker, thus sending a negative signal to the market. Panel B shows that firms with one-year loss have a much larger differences in small profit and small loss than the full sample, but there is no significant improvement after the anti-corruption campaign. Second, we examine the subsamples of firms located in high-, medium-, and low-corruption provinces separately. The subsample of firms located in high-corruption provinces generally have greater earnings discontinuity than those located in medium- and low-corruption provinces, but there is little change in earnings discontinuity after the anti-corruption campaign.

4.2. Firm-Level Corruption Measures for All Firms: Before and after the Start of Anti-Corruption Campaign.

Next, we turn to examining firm-level corruption measures for the universe of Chinese firms before and after the anti-corruption campaign. Figure 5 plots the annual averages of firm-level corruption measures for all Chinese listed companies from 2005 to 2014, and we focus on the changes around 2012 which is the start of anti-corruption campaign.

Figure 5 Panels A to D plot the four groups of corruption measures separately, which show that the improvement associated with the anti-corruption campaign seems to concentrate in the two most observable aspects: business entertainment expenses (BEE) and regulation breaches. On one hand, Panel C of Figure 5 shows that both measures experienced a large decline after 2012. It is worth noting that the dramatic decline in business entertainment expenditure provides formal support for the intense media coverage of China's efforts to eliminate expensive social events and

luxury gifts as part of the anti-corruption movement.[9] On the other hand, the other three groups of corruption measures do not see a significant improvement after anti-corruption campaign. Specifically, Panel A of Figure 5 shows just a slight decline in absolute discretionary accruals, but the decrease happens in 2012 when the campaign is just beginning. Furthermore, there is no further reduction in accruals in 2013 and 2014. Additionally, Panels B and D shows that the measures of related-party transactions and those of profitability largely remain little changed after 2012 despite the anti-corruption campaign.

Since the impact of the anti-corruption campaign can vary across different subsamples of Chinse firms, we further conduct subsample analyses for firms located in the high- and low-corruption provinces. Figure 6 shows that results of corruption measures for these subsamples are generally similar to those in Figure 5. For both subsamples, the only category of corruption measures with significant improvement are business entertainment expenditure and regulation breaches. These patterns also remain for the subsamples of state-owned enterprises (SOEs) and non-SOEs in Figure 7.

For a formal analysis, we report in Table 6 the annual averages of corruption measures for all Chinese listed firms from 2008-2014. To assess the statistical significance of changes after the anti-corruption campaign, we calculate the difference for each measure between 2011, the year before anti-corruption campaign, and the average of 2013-2014, the two years after the campaign, together with the associated t-statistics. We exclude 2012 because the accounting figures of 2012 (mostly before campaign) were composed and announced in early 2013 (after campaign), so the inference of the measure in 2012 is not clear.

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[9] For example, see a Forbes article about how the anti-corruption campaign hurt a luxury Chinese liquor company due to negative shocks to demand: http://www.forbes.com/sites/hengshao/2013/09/03/tumbling-stock-of-luxury-chinese-liquor-company-reflects-strength-of-corruption-clamp-down/#122227165da2.

Table 6 shows that, consistent with Figure 5, there is a statistically significant decrease in business entertainment expenditure after the start of anti-corruption campaign. However, the change in regulation breaches becomes significantly positive, suggesting that decrease shown in Figure 5 is entirely driven by the jump in regulation breaches during 2012.[10] Additionally, the change in absolute value of discretionary accruals is also significantly negative, although the drop started in 2012 which is largely before the anti-corruption campaign. Among the related-party transaction variables, there is a significant decrease in other receivables but a significant increase in related-party loans, and the change in related-party sales is insignificant. Additionally, both profitability measures suggest a deterioration in profitability after anti-corruption movement, although the change in sales growth – income growth is statistically insignificant. Therefore, the results in Table 6, together with Figures 5-7, show that while the anti-corruption campaign successfully reduced business entertainment expenditure and to a lesser degree, regulation breaches, for Chinese firms, it does not significantly alter China's corporate world along other dimensions of corruption.

4.3. Does Anti-Corruption Campaign Improve the Information Environment of China's Financial Markets?

While our analyses so far focus on the impact of the anti-corruption campaign on the corporate world, an important question is how the anti-corruption campaign impacts the financial markets environment in China. Specifically, we are interested in if the campaign reduces leakage of inside information and the corresponding insider trading in Chinese financial markets.

Our test design is based on Griffin, Hirschey, and Kelly (2011) who show that information leakage can result in a lack of stock price response to information disclosure, and therefore lower return volatility around news events. Follow Griffin, Hirschey and Kelly, we examine the abnormal

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[10] Since the vast majority of regulation breaches in 2012 occurred before the start of anti-corruption campaign, we also calculate the difference in regulation breaches between 2013-14 and 2012, and find that the change is negative and marginally significant (t-stat -1.83).

stock price volatility on earnings announcement days relative to other days. A lower stock price volatility indicates fewer price movements upon announcement and therefore a greater degree of information leakage or insider trading. We consider annual earnigns annoucements for all Chinese listed firms and construct two measures of volatilities around earnings announcements. We first define stock return volatility in a window as the mean absolute daily abnormal return (in excess of market return) in this window, and calculate normalized volatility as the return volatility during the 4-day window [-1, +2] divided by the return volatility during the [-56, -2] window (55 days before the announcement window) and the [+3, +57] window (55 days after the announcement window). Day 0 refers to the earnings announcement day. We further calculate differenced volatility as the return volatility during the 4-day window [-1, +2] minus the return volatility during the [-56, -2] window (55 days before the announcement window) and the [+3, +57] window (55 days after the announcement window). To calculate stock return volatility around an announcement, we require at least 4 days of consecutive trading around the announcement.

Figure 8 plots the annual averages of volatility measures for all Chinese listed firms from 2005 to 2014. Note that the volatility measures of 2012 are measured after the start of anti-corruption campaign (December 2012), as the earnings of 2012 are announced in the first quarter of 2013. The volatility measures generally decrease instead of increase from 2012 onwards, suggesting that there is little evidence of reduced information leakage or insider trading after the start of anti-corruption movement. Table 7 reports the annual averages of volatility measures for all Chinese listed firms from 2009 to 2014, as well as the changes in the volatility measure after the start of anti-corruption campaign. The results also show that, consistent with Figure 8, the volatility measures slightly decrease after the anti-corruption compaign, and the changes are statistically significant. Overall, these results suggest that the anti-corruption movement does not seem to improve the information environment of China's financial markets.

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4.4. How Do Corruption Investigations Impact the Event Firms?

Besides the impact of the anti-corruption campaign to China's corporate world, it is also of interest to investigate how the anti-corruption campaign affects the event firms involved in corruption investigations. We examine event firms' stock returns on and after the corruption investigations, as well as the change in their corruption measures after the corruption investigations.

4.4.1 Event Firms' Stock Returns on and after Corruption Investigations.

We plot in Panel A of Figure 9 the cumulative abnormal returns (CARs) of event firms in the [-15, +15] window surrounding the corruption investigation events, where day 0 is the announcement date of investigation. Daily abnormal return is constructed using Fame-French three-factor model. Panel A shows an obvious decline in stock price upon the announcement of corruption investigation, and the decline persists into the two weeks after event. Since the corruption behaviors vastly differ between state-owned enterprises (SOEs) and non-SOEs, Panel B of Figure 9 further plots CARs for SOEs and non-SOEs separately, where the price decline is much larger for non-SOEs than SOEs.

Panel A of Table 8 reports CARs in the [-1, +1] window and associated t-statistics. The announcement returns in the [-1, +1] window are significantly negative, especially for non-SOEs. For example, the CARs constructed using Fama-French three-Factor model is -1.06% for the full sample, -2.53% for non-SOEs, and -0.86% for SOEs. Panel B of Table 8 further shows that event firms' CARs in the [-1, +15] window becomes even more negative, suggesting a continued price decline in two weeks after the event.

The results on announcement return shed light on the two opposite effects of corruption investigations on firm value. First, eliminating corruption makes a firm's operations more efficient in the long-run and therefore increases firm value. Second, the investigation and managerial turnovers could hurt a firm by interrupting a firm's operations or depriving the firm of its profitable

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opportunities gained through bribing. The larger negative return for non-SOEs suggest that the negative effect dominates in non-SOEs as corruption behaviors in them are mostly bribing other parties to gain business.

We further examine long-term returns of event firms after corruption investigations. Buy-and-hold returns are used in the tests because CARs can introduce potential bias in the long-term window. Panel C of Figure 9 plots long-term buy-and-hold abnormal returns for event firms in the [-15, +360] window, and Panel C of Table 8 reports the values of long-term returns and associated t-statistics. These results show a continued price decline for event firms, whether SOEs or non-SOEs, in the long-term window after corruption investigations.

4.4.2 Change in Corruption Measures for Event Firms after Corruption Investigations.

In addition to stock returns, we further analyze changes in corruption measures for event firms after corruption investigations. However, a big issue about this analysis is that the most recent year of accounting variables is 2014 due to data constraint. Thus only firms with corruption investigations in 2012 (December) and 2013 have available accounting data in the year after investigations, causing a very small sample and low power for this tests.

We nevertheless report in Table 9 the corruption measures for event firms relative to matched firms in years t-1 and t+1, where year t is the year of corruption investigation. The differences between t-1 to t+1 and associated t-statistics are also reported. The samples for firm-level corruption measures are as large as 26 firms, and not surprisingly, most of the changes are insignificant. Therefore, we focus on the signs and magnitude of the changes. The results show that out of all corruption measures, the only measure that sees a substantial improvement is related-party sales. The measure of sales growth minus income growth also improves slightly. In contrast, the remaining measures either remain little changed or even deteriorate after corruption investigations.

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In addition to the firm-level measures, we also report earnings discontinuity measures for firms before and after corruption investigations, and they do not exhibit material improvement either.

5. Conclusion

It is widely agreed that corruption is costly to an economy but rarely do economists see widespread efforts at reform in countries with high levels of corruption. The "Eight-point Regulation" stands in contrast to the norm as it is a widespread effort that has led to investigations of top executives at 150 Chinese firms that represent over 18% of the market capitalization in slightly over three years. We find that the firms that have been investigated do exhibit more indications of corruption than their matched-firm counterparts and the investigations are associated with both short-term and long-term negative returns. The corruption investigations are meaningful and appear to be focused on corruption rather than pure political motivations.

For Chinese firms as a whole, with the exception of large decrease in highly visible business entertainment expenditures, we find that the less conspicuous corruption indicators exhibit little decrease in 2013-14. This lack of improvement is present in provinces with both high and low levels of corruption. Most notably, earnings management in 2013-2014 is rampant with most firms exhibiting small positive earnings, but very few firms exhibiting negative earnings. Overall, our findings suggest that the biggest changes to corporate culture is reduced business entertainment expenditure, but there is no improvement in earnings quality and questionable dealings through intercompany sales and loans.

While more time may be necessary to assess the full impact of this expanding campaign, our findings suggest that the reforms are a step in the right direction but may not accomplish the broader changes that are intended to spur economic growth. Given the historical experience from other corruption campaigns as surveyed by Svensson (2003), we wonder whether the impact of the

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reform will continue to be limited without an extensive reformation of the legal, institutional, and press freedom environment in China.

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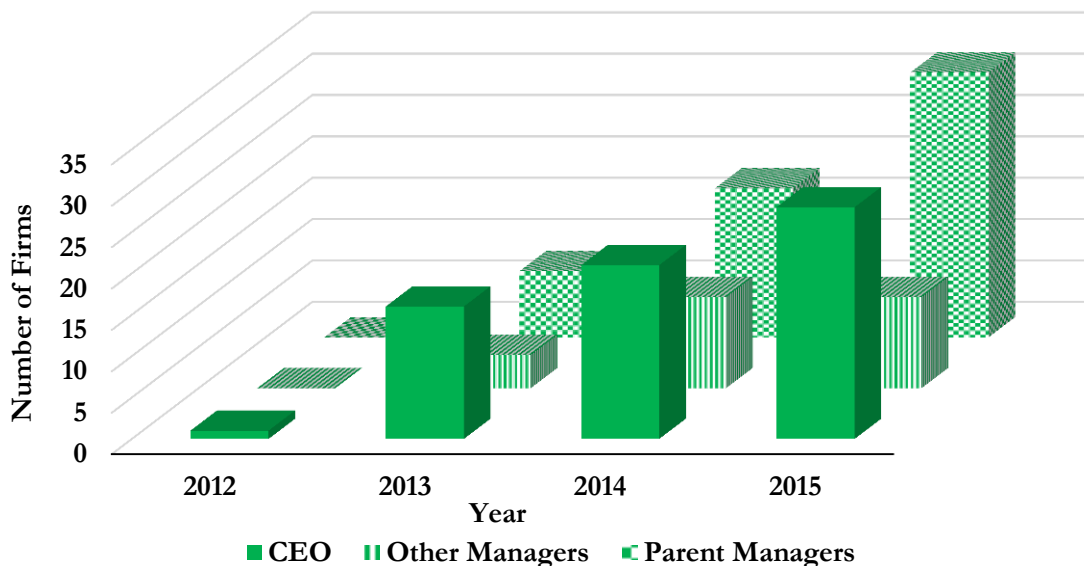
Figure 1
Description of Sample Firms

This figure plots the distribution of 150 sample firms with corrupted managers investigated during China's anti-corruption campaign. The sample period starts from the beginning of anti-corruption campaign on December 4, 2012 to December 31, 2015. Panel A plots the distributions of state-owned enterprises (SOEs) and Non-SOEs by year. Panel B plots the distribution of firms with different positions of corrupted managers by year. The corrupted managers in the sample are CEOs, other top managers who also serve as internal directors, and top managers of parent company. Panel C plots the distribution of firms involved in different specific corruption behaviors for SOEs and Non-SOEs. These corruption behaviors are the most common ones among sample firms, and they are not mutually exclusive.
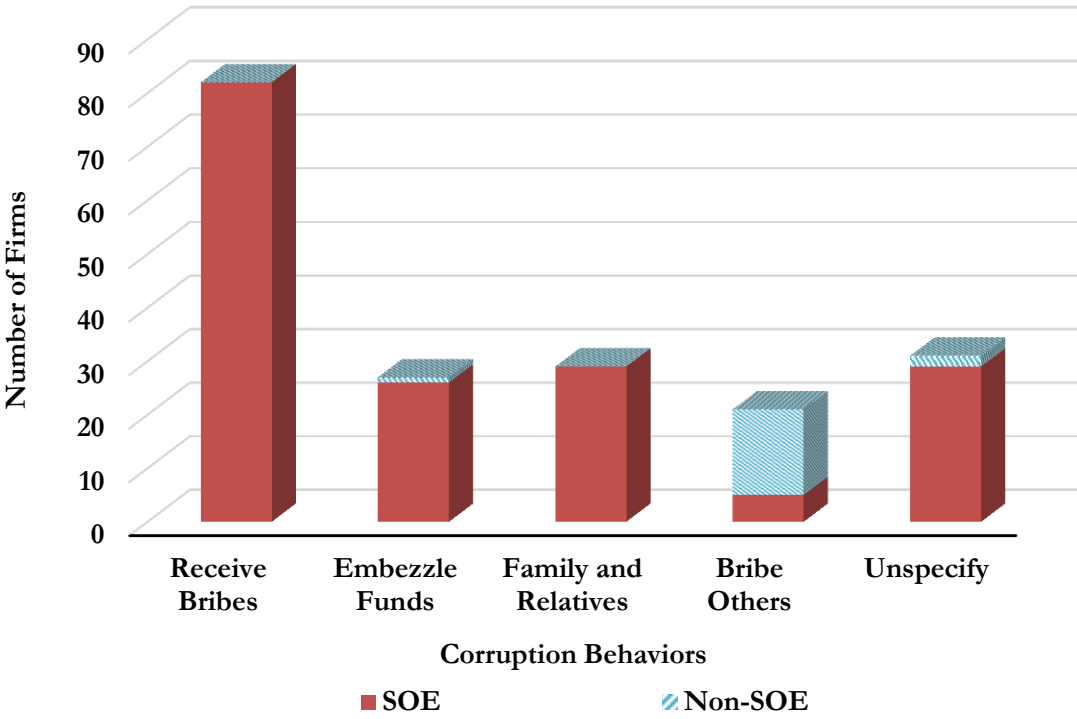
Panel A: State-owned enterprises (SOEs) and Non-SOEs across years
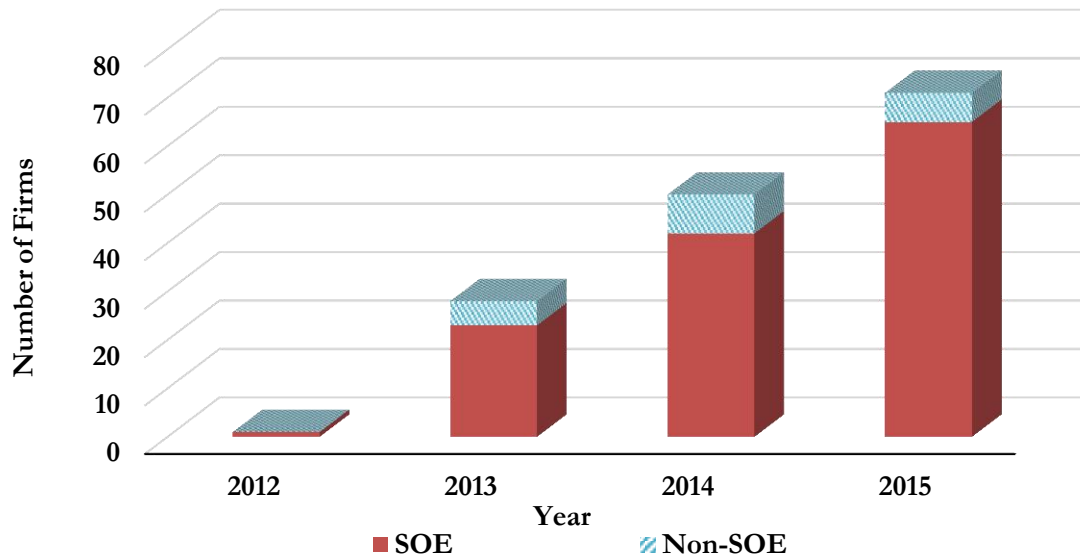
Panel B: Distribution of firms with different manager positions across years

Panel C: Distribution of firms with different corruption behaviors for SOEs and Non-SOEs
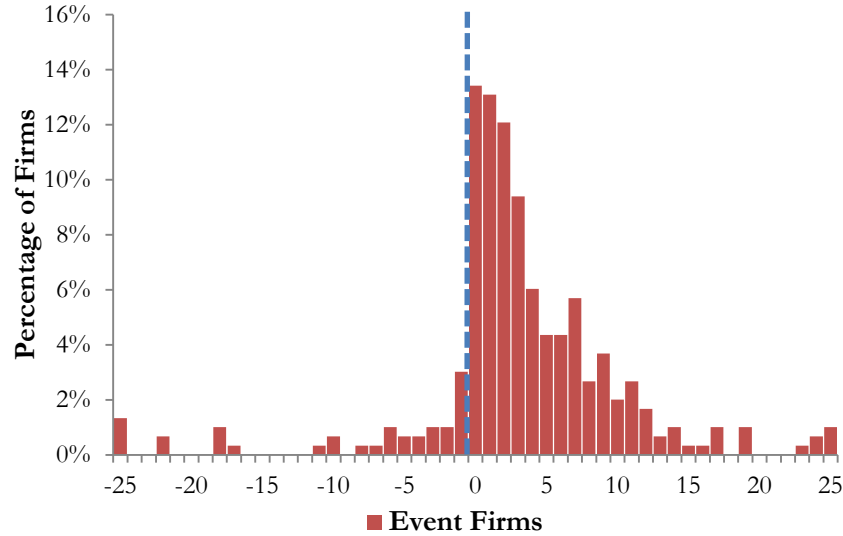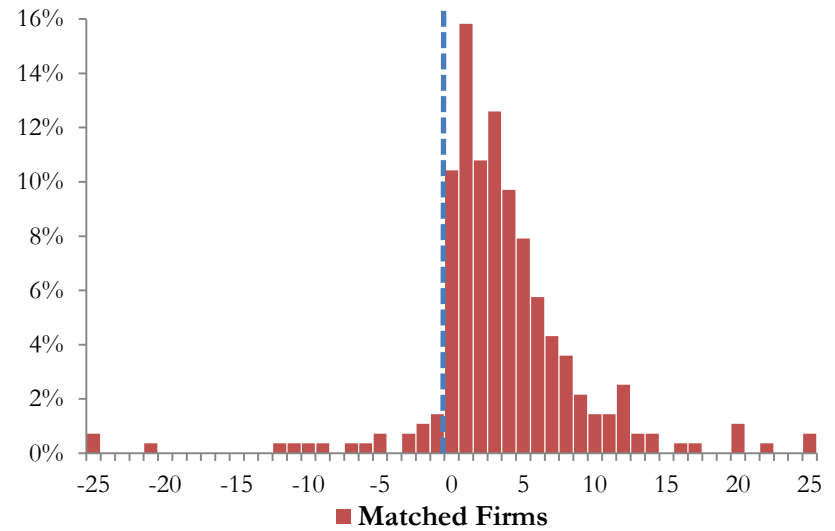
Figure 2
Distribution of Earnings for Event Firms and Matched Firms

This figure plots the distribution of earnings for event firms and matched firms separately. The event firms include 150 listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. Earnings is defined as the net income ($NI_{i,t}$) scaled by the market value of equity in the previous year end ($ME_{i,t-1}$). Panel A plots the distribution of earnings for event firms, and the sample includes event firms' two annual earnings announced before the event dates of corruption investigations. Panel B plots the distribution of earnings for matched firms. For each event firm, we identify a matched firm by first selecting a subsample of firms satisfying the following conditions: 1) In the same industry as the event firm; 2) Have the same SOE status as the event firm; and 3) Market cap is within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm. For matched firms, we also take their two annual earnings announced before the event dates of their corresponding event firms.
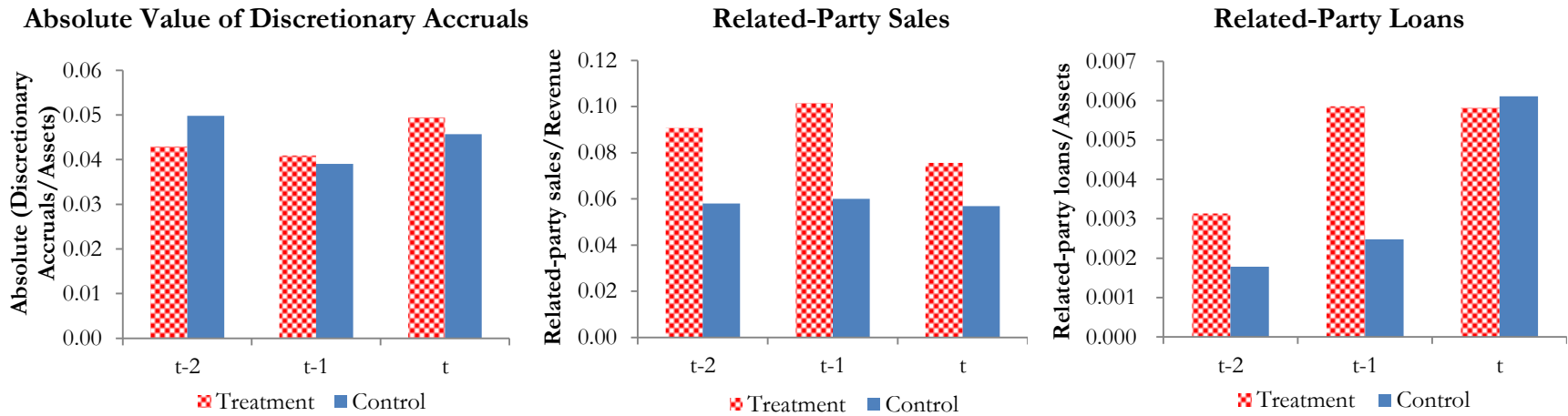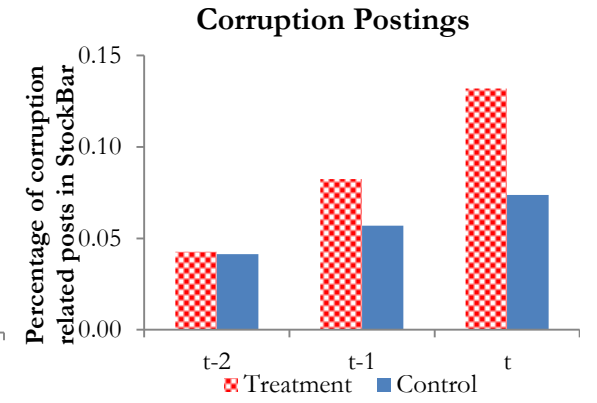
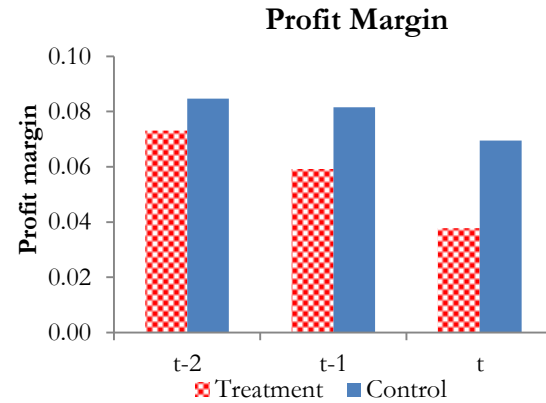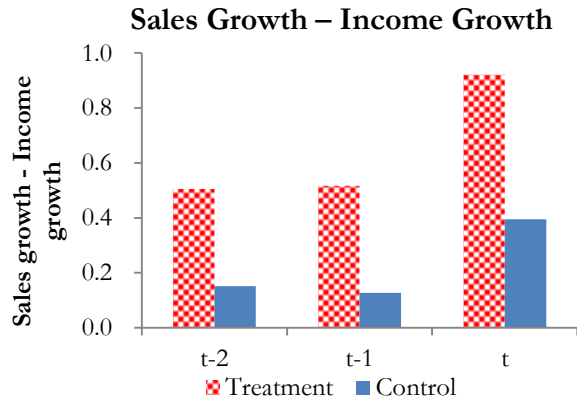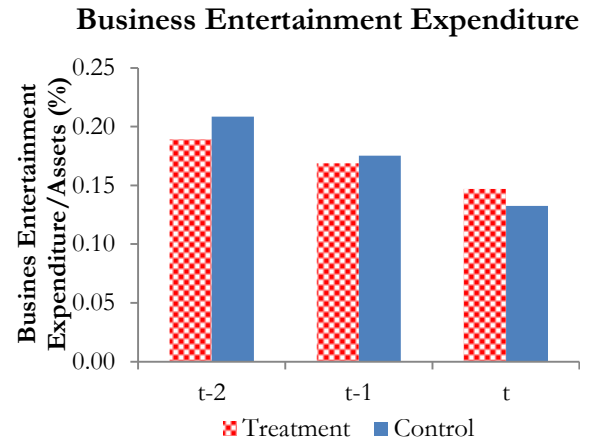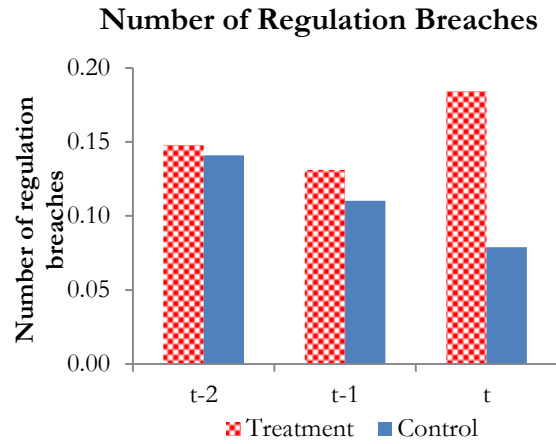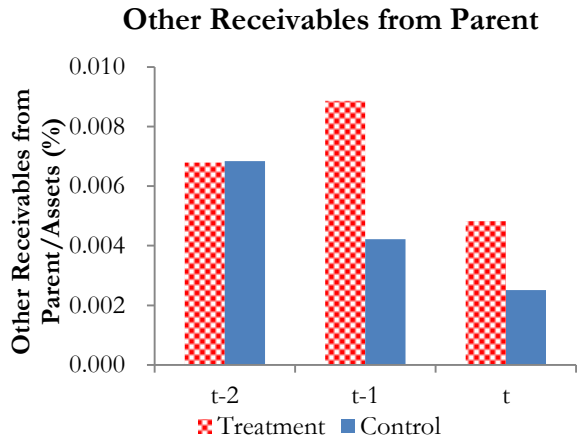**Panel A: Earnings Distribution for Event Firms**

Panel B: Earnings Distribution of Matched Firms

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Figure 3: Firm-Level Corruption Measures before Corruption Investigation Events for Event Firms and Matched Firms

This figure presents nine corruption measures for event firms and matched firms. The sample includes 150 Chinese listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. For each event firm, we identify a matched firm by first selecting a subsample of firms satisfying the following conditions: 1) In the same industry as the event firm; 2) Have the same SOE status as the event firm; and 3) Market cap is within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm. The figures plot the corruption measures in the years t-2, t-1 and t where t is the year of corruption investigation. All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. The firm-level corruption measures include: 1) Absolute value of discretionary accruals, scaled by total assets; 2) Related-party sales, scaled by revenue; 3) Related-party loans, scaled by total assets; 4) Other receivables from parent firm, scaled by total assets; 5) Number of regulation breaches in a year; 6) Business entertainment expenditure, scaled by total assets; 7) Growth of sales minus growth of net income; 8) Profit margin, calculated as net income divided by revenue; and 9) Corruption postings, measured as percentage of posts that discussed corruption in the total posts for a firm on StockBar, a popular online investor-forum. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches and corruption postings, are winsorized at the 1% and 99% levels for each year. We exclude seven financial firms for the following measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin.


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Other Receivables from Parent

Number of Regulation Breaches

Business Entertainment Expenditure

Sales Growth – Income Growth



Profit Margin

Corruption Postings

Figure 4
Distribution of Earnings for All Firms before and after Anti-Corruption Campaign Started

This figure plots the distribution of earnings for all Chinese listed firms before and after the start of anti-corruption campaign on December 4, 2012. The sample includes all firms listed on Shanghai and Shenzhen stock exchanges (A shares), and earnings is defined as the net income ($NI_{i,t}$) scaled by market value of equity in the previous year end ($ME_{i,t-1}$). All Chinese firms' fiscal years end in December so their fiscal year coincides with calendar year. Panel A presents the distribution of earnings of all firms from year 2003 to 2011, and Panel B presents the distribution of earnings for all firms from 2013 to 2014. We exclude earnings of 2012 because its indication is not clear: Most of 2012 is before anti-corruption, but the 2012 earnings figures were composed and announced after the anti-corruption campaign.

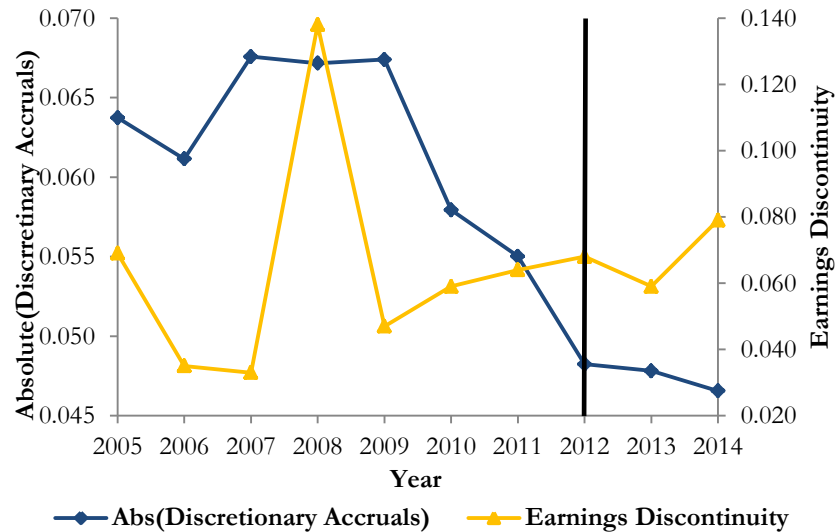**Panel A: Distribution of earnings for all listed firms: 2003-2011**
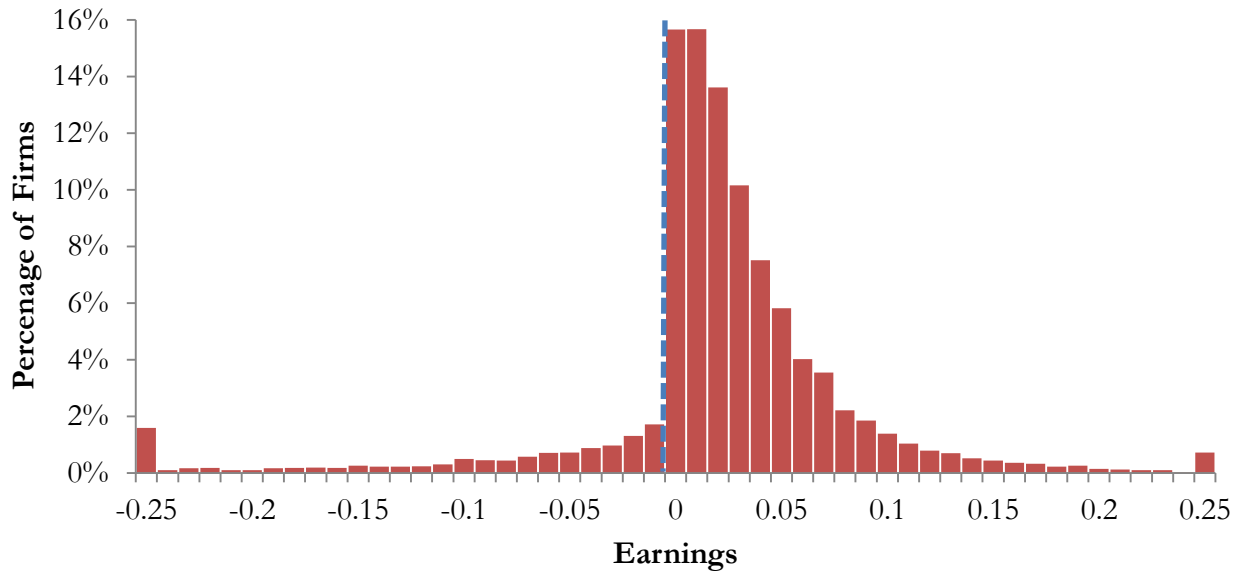
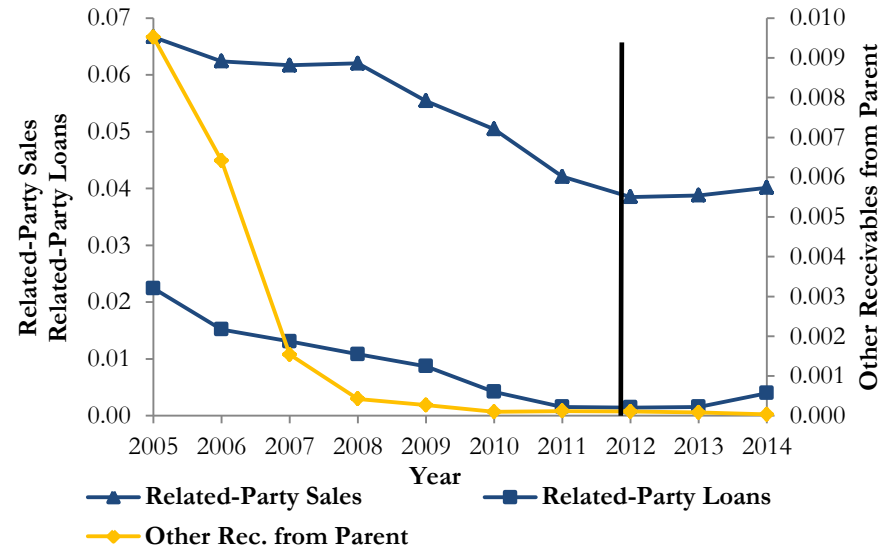**Panel B: Distribution of earnings for all listed firms: 2013-2014**
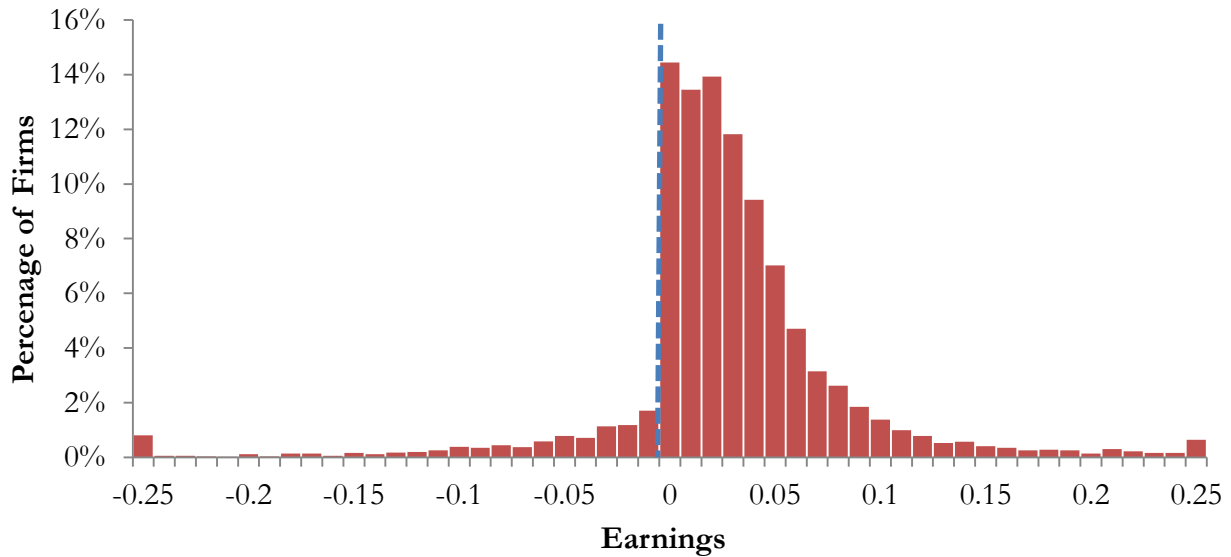
Figure 5
Corruption Measures for All Firms: 2005-2014

This figure plots the annual averages of nine corruption measures for Chinese listed companies from 2005 to 2014. The sample includes all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with calendar year. The corruption measures are grouped into four categories and plotted in four figures. The two measures of accounting manipulation include: 1) Absolute value of discretionary accruals, scaled by total assets; and 2) Earnings discontinuity around zero, measured by the difference for small profit. The three measures of related-party transactions include: 1) Related-party sales, scaled by revenue; 2) Related-party loans, scaled by total assets; and 3) Other receivables from parent firm, scaled by total assets. The two measures of illegal/unethical behaviors include: 1) Number of regulation breaches; and 2) Business entertainment expenditure, scaled by total assets. The two measures of profitability include: 1) Growth of sales minus growth of net income; and 2) Profit margin, calculated as net income divided by revenue. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches, are winsorized at the 1% and 99% levels for each year. We exclude financial companies for six measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin.

Panel A: Accounting Manipulation

Panel B: Related-Party Transactions

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Panel C: Entertainment Expenditure & Regulation Breaches

Panel D: Profitability

Figure 6
Corruption Measures for Firms in the High vs Low Corruption Provinces

This figure plots the annual averages of nine corruption measures for Chinese listed companies in high-corruption provinces and low-corruption provinces from 2005 to 2014. The sample includes all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. We classify Chinese provinces into terciles based on the provincial corruption index from Ang, Bai and Zhou (2015) and plot the measures for firms in the high- (top tercile) and low-corruption provinces (bottom tercile) separately. The corruption measures are grouped into four categories and plotted in four figures. The two measures of accounting manipulation include: 1) Absolute value of discretionary accruals, scaled by total assets; and 2) Earnings discontinuity around zero, measured by the difference for small profit. The three measures of related-party transactions include: 1) Related-party sales, scaled by revenue; 2) Related-party loans, scaled by total assets; and 3) Other receivables from parent firm, scaled by total assets. The two measures of illegal/unethical behaviors include: 1) Number of regulation breaches in a year; and 2) Business entertainment expenditure, scaled by total assets. The two measures of profitability include: 1) Growth of sales minus growth of net income; and 2) Profit margin, calculated as net income divided by revenue. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches, are winsorized at the 1% and 99% levels for each year. We exclude financial firms for six measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin.
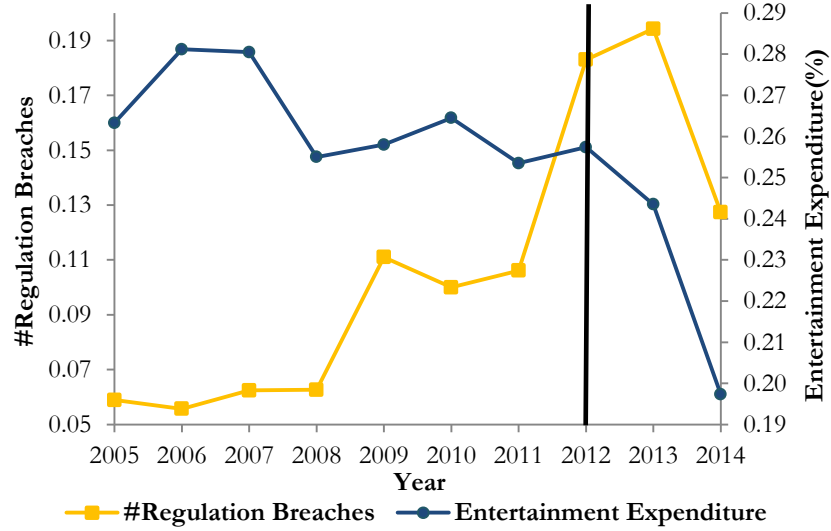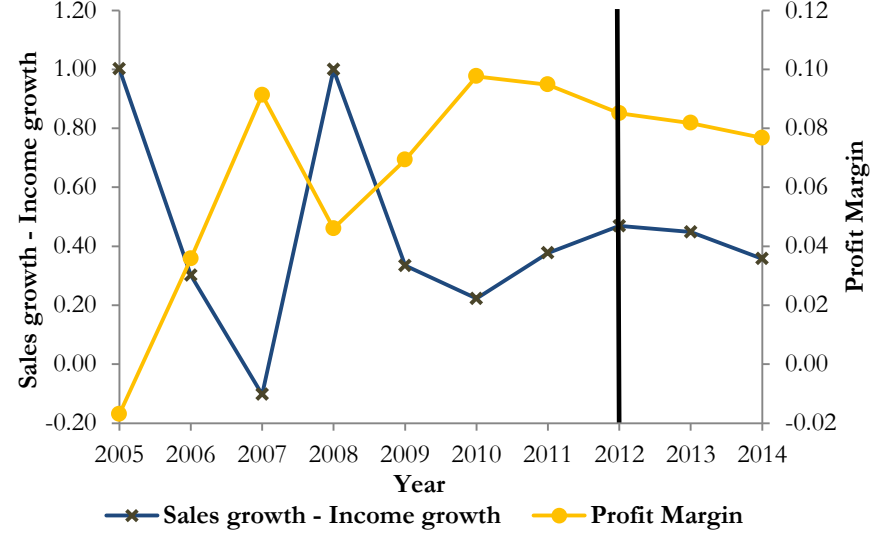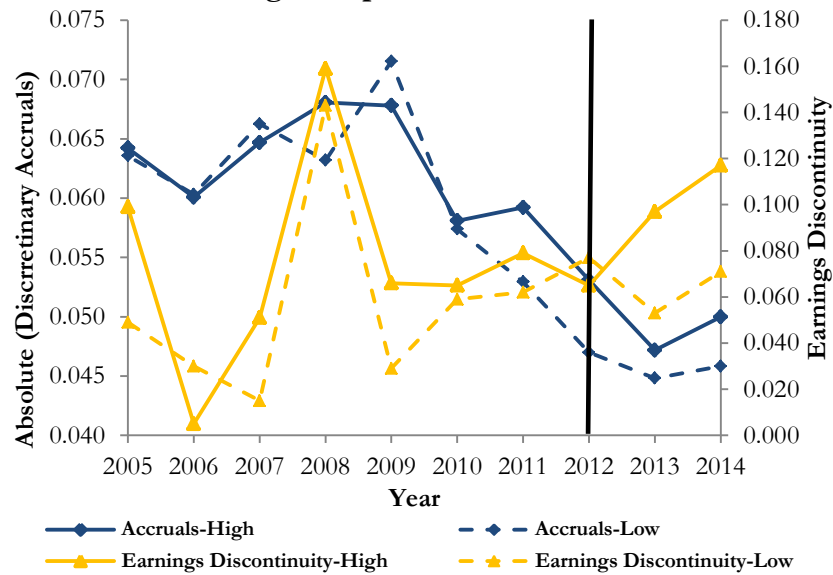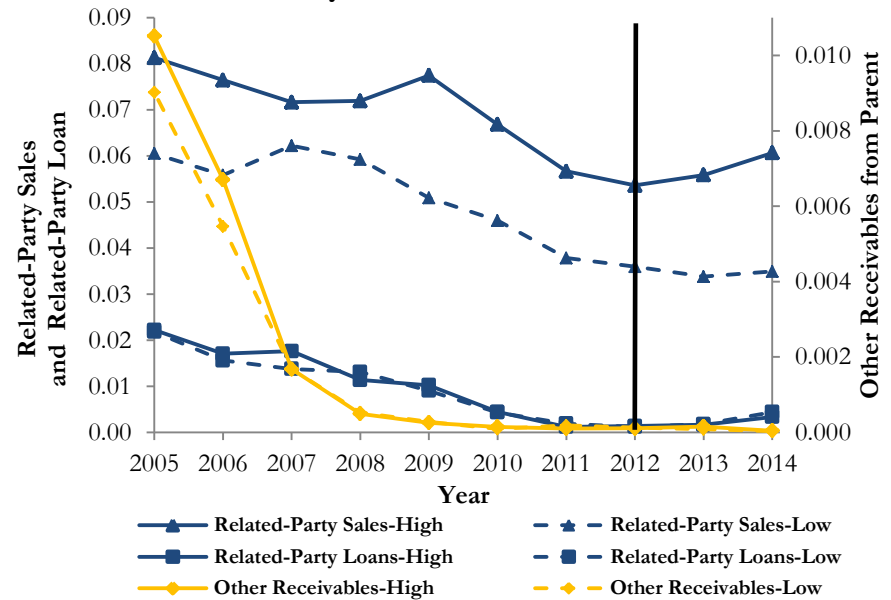
Panel A: Accounting Manipulation

Panel B: Related Party Transactions

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Panel C: Entertainment Expenditure & Regulation Breaches

Panel D: Profitability

Legend Panel C:
- Regulation Breaches-High
- Regulation Breaches-Low
- Entertainment Expenditure-High
- Entertainment Expenditure-Low

Legend Panel D:
- Sales Growth - Income Growth-High
- Sales Growth - Income Growth-Low
- Profit Margin-High
- Profit Margin-Low

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Figure 7
Evolution of Average Corruption Measures: SOE vs. Non-SOE

This figure plots the annual averages of nine corruption measures for state-owned enterprises (SOEs) and non-SOEs from 2005 to 2014. The sample includes all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. The corruption measures are grouped into four categories and plotted in four figures. The two measures of accounting manipulation include: 1) Absolute value of discretionary accruals, scaled by total assets; and 2) Earnings discontinuity around zero, measured by the difference for small profit. The three measures of related-party transactions include: 1) Related-party sales, scaled by revenue; 2) Related-party loans, scaled by total assets; and 3) Other receivables from parent firm, scaled by total assets. The two measures of illegal/unethical behaviors include: 1) Number of regulation breaches in a year; and 2) Business entertainment expenditure, scaled by total assets. The two measures of profitability include: 1) Growth of sales minus growth of net income; and 2) Profit margin, calculated as net income divided by revenue. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches, are winsorized at the 1% and 99% levels for each year. We exclude financial companies for six measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin.
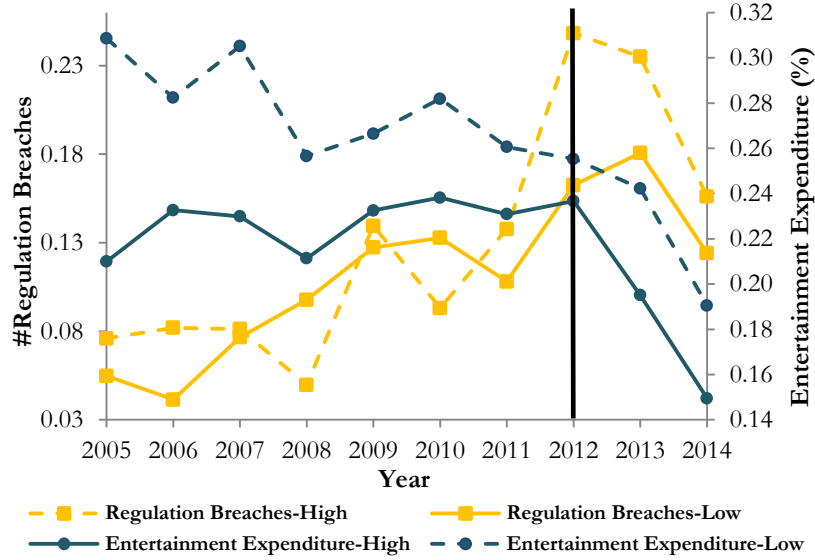
Panel A: Accounting Manipulation

Panel B: Related Party Transactions
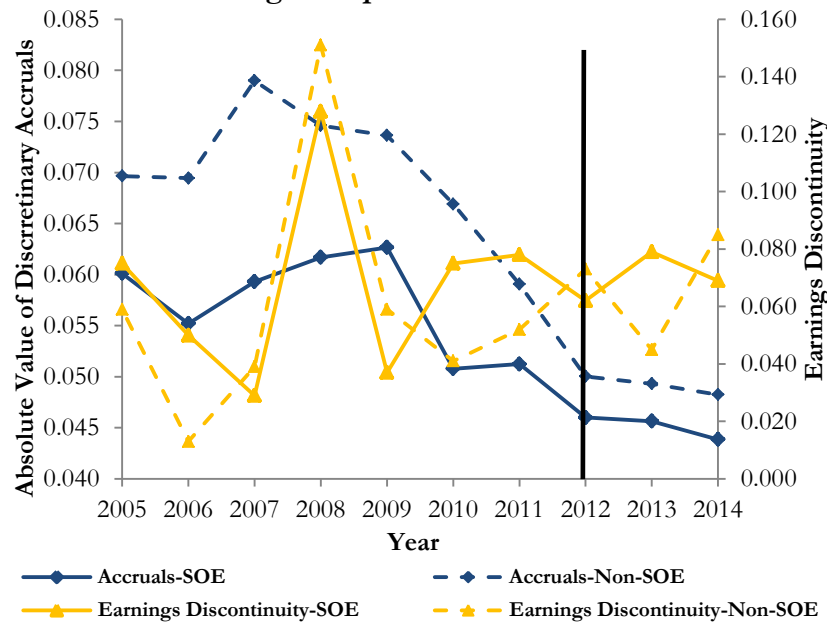
Panel C: Entertainment Expenses & Regulation Breaches

Panel D: Profitability
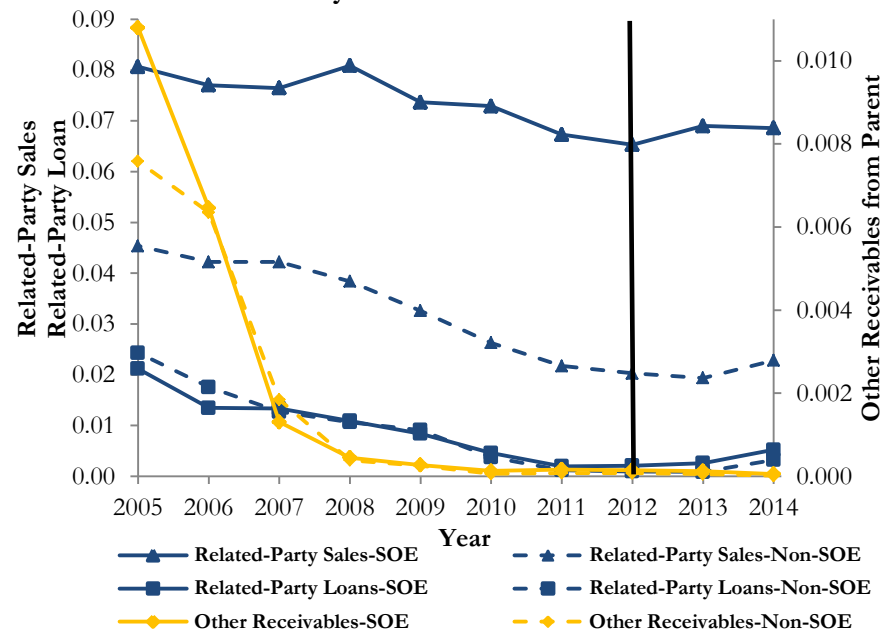

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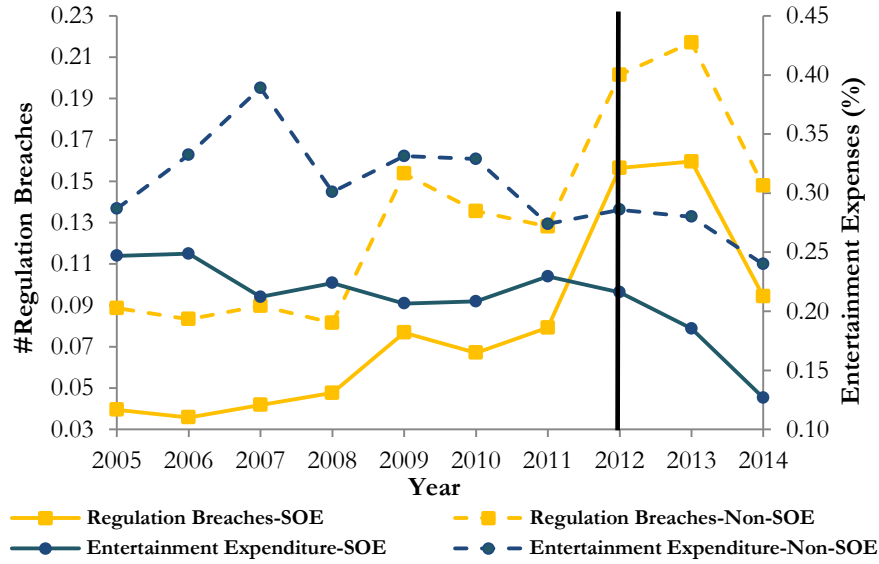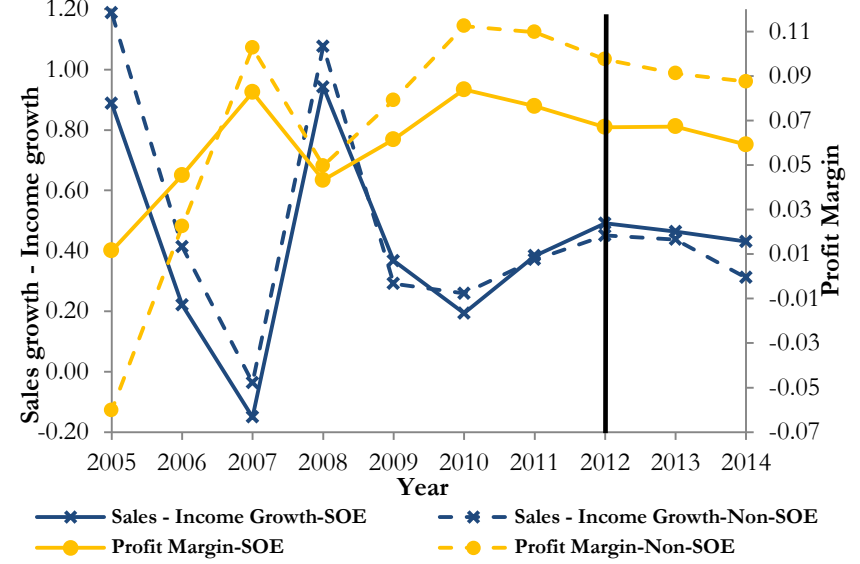
Figure 8
Stock Return Volatilities around Earnings Announcements for All Firms: 2005-2014

This figure plots stock return volatilities around earnings announcements for all Chinese listed firms from 2005 to 2014. The sample includes announcement of annual earnings for all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year, and year t refers to the fiscal year of the earnings. Stock return volatility is defined as the mean absolute abnormal returns in excess of market return around event window. Normalized volatility is the average abnormal volatility during the 4-day window [-1,+2] divided by the average abnormal volatility during the [-56,-2] window (55 days before the announcement window) and the [+3,+57] window (55 days after the announcement window), then minus one. Day 0 refers to the earnings announcement day. Differenced volatility is the average abnormal event volatility minus the average abnormal volatility during the [-56,-2] window (55 days before the announcement window) and the [+3,+57] window (55 days after the announcement window). To calculate stock return volatility around an announcement, we require at least 4 days of consecutive trading around the announcement. We first calculate normalized volatility and differenced volatility for each of the Chinese listed firms, and then plot the annual averages. Differenced volatility is measured in percentage to ease reading.
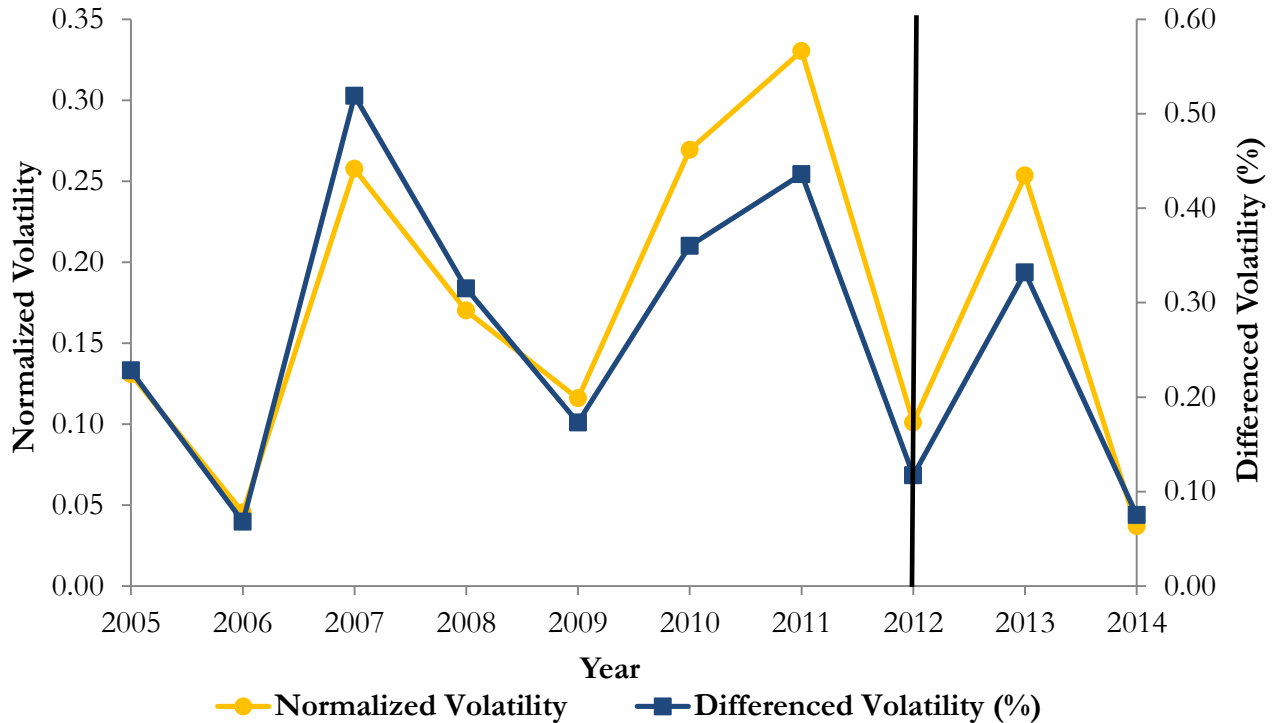
Figure 9
Stock Returns on and after Corruption Investigation Events
This figure plots stock returns of sample firms in the short window surrounding the corruption investigation events, and in the long-term window after the events. The sample includes 150 Chinese listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. Panel A plots cumulative abnormal return (CAR) for all firms in the [-15,+15] window and the 95% confidence intervals, where day 0 is the date of investigation announcement. Daily abnormal return is constructed using Fama-French three-factor model. Panel B plots CAR in the [-15,+15] window for SOEs and non-SOEs separately. Panel C plots long-term buy-and-hold abnormal return in the [-15,+360] window. We first calculate daily abnormal returns using Fama-French three-factor model, and then calculate buy-and-hold abnormal returns for event firms.

Panel A: Cumulative Abnormal Return of All Event Firms in the [-15,+15] window
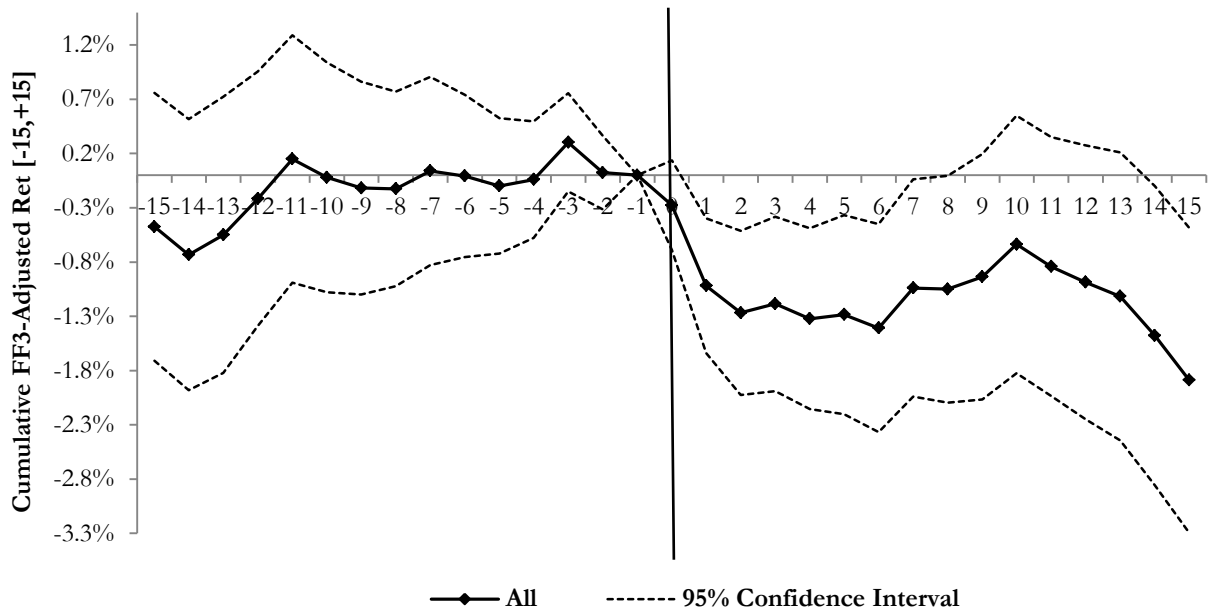
Panel B: Cumulative Abnormal Returns of SOEs and non-SOEs in the [-15, +15] window
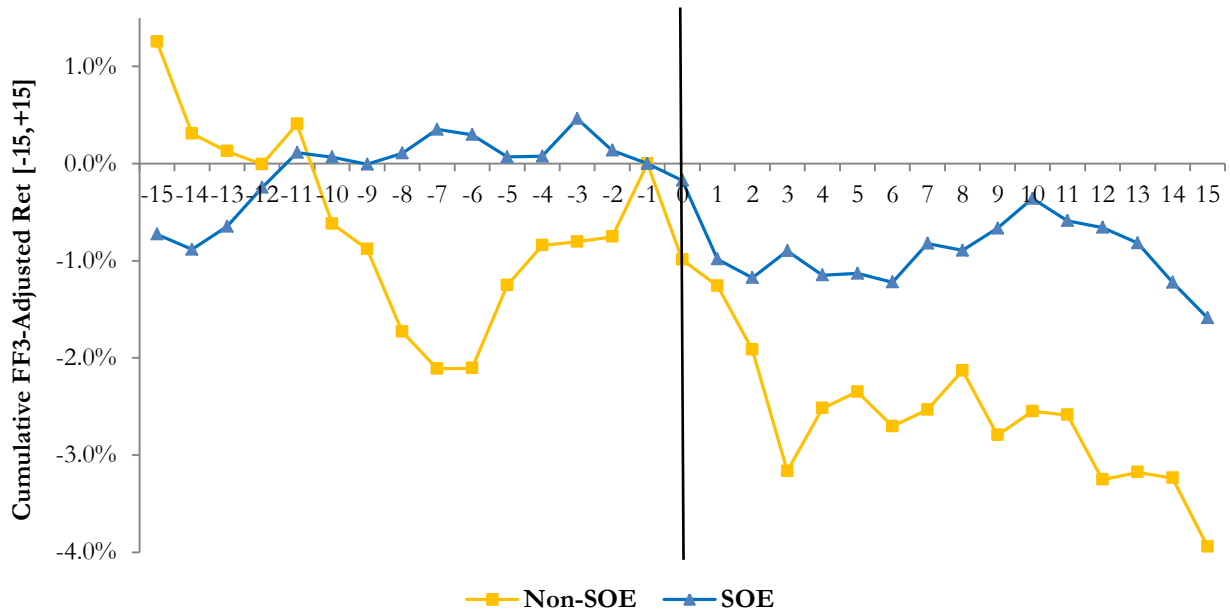
Panel C: Buy and Hold Abnormal Returns of All Event Firms in the [-15,+360] window
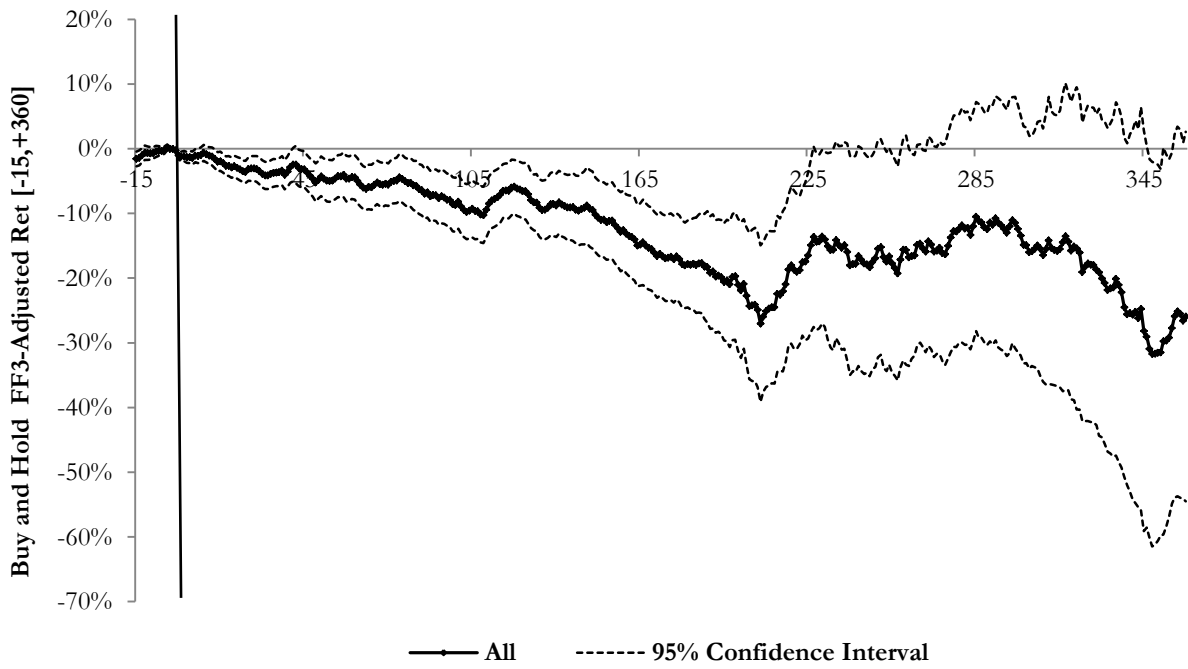
Table 1: Distribution of Corruption Investigation Events

This table presents the distribution of 150 sample firms with corrupted managers investigated during China's anti-corruption campaign. The sample period starts from the beginning of anti-corruption campaign on December 4, 2012 to December 31, 2015. Panel A presents the distribution of sample firms across year, and distribution of positions of corrupted managers. The corrupted managers in the sample are CEOs, other top managers who also serve as internal directors, and top managers of parent company. Panel B presents the distribution of specific corruption behaviors for state-owned enterprises (SOEs) and non-SOEs separately. These corruption behaviors are the most common ones among sample firms, and they are not mutually exclusive.

Panel A: Characteristics of Event Firms			
Categories of Event Firms	# Firms	# SOEs	# Non-SOEs
Year of Events			
2012	1	1	0
2013	28	23	5
2014	50	42	8
2015	71	65	6
Positions of Corrupted Managers			
CEO/Chairman	66	49	17
Other Top Managers	26	24	2
Managers of Parent Firms	58	58	0
Total #Firms	150	131	19
Panel B: Distribution of Specific Corruption Behaviors			
Main Corruption Behaviors	# of Firms	# SOEs	# Non-SOEs
Receive Bribes	82	82	0
Embezzle Company Funds	26	25	1
Illegally Benefiting Family Members	29	29	0
Bribe Other Parties	21	5	16
Unspecified	31	29	2
Total #Firms	150	131	19

Table 2: Corruption Measures of Event Firms before Corruption Investigations

This table presents corruption measures for event firms in the years before corruption investigations. The sample includes 150 Chinese listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. For each event firm, we identify a matched firm by first selecting a subsample of firms satisfying the following conditions: 1) In the same industry as the event firm; 2) Have the same SOE status as the event firm; and 3) Market cap is within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm. The table presents the corruption measures in the years t-2, t-1, and t, where t is the year of corruption investigation. The firm-level corruption measures include: 1) Absolute value of discretionary accruals, scaled by total assets; 2) Related-party sales, scaled by revenue; 3) Related-party loans, scaled by total assets; 4) Other receivables from parent firm, scaled by total assets; 5) Number of regulation breaches in a year; 6) Business entertainment expenditure, scaled by total assets; 7) Growth of sales minus growth of net income; 8) Profit margin, calculated as net income divided by revenue; and 9) Corruption postings, measured as percentage of posts that discussed corruption in the total posts for a firm on StockBar, a popular online investor-forum. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches and corruption postings, are winsorized at the 1% and 99% levels for each year. We exclude seven financial companies for six measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin. T-statistics associated with the differences in corruption measures between event firms and matched firms are also reported.

	Years with respect to Event Year		
	t-2	t-1	t
Absolute Value of Discretionary Accruals			
Event Firm	0.043	0.041	0.049
Matched Firm	0.050	0.039	0.046
Diff.	-0.007	0.002	0.004
t-stat	-1.34	0.44	0.43
Related-Party Sales			
Event Firm	0.091	0.101	0.076
Matched Firm	0.058	0.060	0.057
Diff.	**0.033**	**0.041**	0.019
t-stat	**1.87**	**2.32**	0.80
Related-Party Loans			
Event Firm	0.003	0.006	0.006
Matched Firm	0.002	0.002	0.006
Diff.	0.001	0.003	0.000
t-stat	1.09	1.60	-0.09
Other Receivables from Parent (%)			
Event Firm	0.007	0.009	0.005
Matched Firm	0.007	0.004	0.003
Diff.	0.000	0.005	0.002
t-stat	-0.01	1.01	0.75

	Years with respect to Event Year		
	t-2	t-1	t
# Regulation Breaches			
Event Firm	0.148	0.131	0.184
Matched Firm	0.141	0.110	0.079
Diff.	0.007	0.021	**0.105**
t-stat	0.13	0.54	**1.65**
Business Entertainment Expenditure (%)			
Event Firm	0.189	0.169	0.147
Matched Firm	0.209	0.175	0.133
Diff.	-0.019	-0.007	0.014
t-stat	-0.60	-0.15	0.37
Sales Growth - Income Growth			
Event Firm	0.505	0.518	0.921
Matched Firm	0.152	0.127	0.395
Diff.	**0.354**	**0.391**	**0.527**
t-stat	**2.62**	**2.37**	**1.83**
Profit Margin			
Event Firm	0.073	0.059	0.038
Matched Firm	0.085	0.082	0.069
Diff.	-0.012	**-0.022**	**-0.032**
t-stat	-1.15	**-2.20**	**-2.34**
Corruption Postings			
Event Firm	0.043	0.082	0.132
Matched Firm	0.041	0.057	0.074
Diff.	0.001	**0.025**	**0.058**
t-stat	0.17	**2.82**	**3.31**

Table 3: Corruption Measures of Event Firms before Corruption Investigations: Subsample Analysis

This table presents the difference in corruption measures between event firms and matched firms for state-owned enterprises (SOEs) and non-SOEs in the sample. The sample includes 150 Chinese listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. For each event firm, we identify a matched firm by first selecting a subsample of firms satisfying the following conditions: 1) In the same industry as event firm; 2) Have the same SOE status as event firm; and 3) Market cap is within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm. The table presents the corruption measures in the years t-2, t-1, and t, where t is the year of corruption investigation. The firm-level corruption measures include: 1) Absolute value of discretionary accruals, scaled by total assets; 2) Related-party sales, scaled by revenue; 3) Related-party loans, scaled by total assets; 4) Other receivables from parent firm, scaled by total assets; 5) Number of regulation breaches in a year; 6) Business entertainment expenditure, scaled by total assets; 7) Growth of sales minus growth of net income; 8) Profit margin, calculated as net income divided by revenue; and 9) Corruption postings, measured as percentage of posts that discussed corruption in the total posts for a firm on StockBar, a popular online investor-forum. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches and corruption postings, are winsorized at the 1% and 99% levels for each year. We exclude seven financial companies for six measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin. T-statistics associated with the corruption measures are also reported.

| | Corruption Measures: Event Firm – Matched Firm | | | | | |
| | SOEs | | | Non-SOEs | | |
Measure	t-2	t-1	t	t-2	t-1	t
Abs. Discretionary Accruals	-0.006	0.003	0.001	-0.011	-0.016	0.019
	-1.17	0.54	0.07	-0.70	-0.54	1.17
Related-Party Sales	**0.042**	**0.051**	0.025	-0.043	-0.028	-0.012
	2.25	**2.62**	0.93	-0.99	-0.72	-0.27
Related-Party Loans	0.002	0.003	0.000	0.000	0.005	-0.003
	1.08	1.36	0.07	0.91	1.03	-0.60
Other Rec. from Parent (%)	0.000	0.007	0.003	0.000	-0.014	0.000
	-0.01	1.62	0.74	0.00	-0.77	1.00
# Regulation Breaches	0.016	0.032	0.094	-0.063	-0.056	0.167
	0.27	0.75	1.29	-0.44	-0.57	1.48
Bus. & Ent. Expenditure (%)	-0.026	-0.011	-0.005	0.015	0.016	0.103
	-0.71	-0.21	-0.21	0.28	0.16	0.54
Sales Growth - Income Growth	**0.343**	**0.374**	**0.632**	**0.436**	0.521	-0.010
	2.29	**2.13**	**2.03**	**2.03**	1.09	-0.01
Profit Margin	-0.014	**-0.023**	**-0.034**	0.003	-0.018	-0.021
	-1.28	**-2.00**	**-2.19**	0.10	-1.28	-0.80
Corruption Postings	0.002	**0.025**	**0.059**	0.000	0.027	**0.054**
	0.17	**2.52**	**2.92**	0.02	1.47	**1.76**

Table 4: Probit Regressions of Investigation on Corruption Measures

This table presents probit regressions of corruption investigation on corruption measures. The sample includes Chinese listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31m 2015, as well as their matched firms. For each event firm, we identify a matched firm by first selecting a subsample of firms satisfying the following conditions: 1) In the same industry as the event firm; 2) Have the same SOE status as the event firm; and 3) Market cap is within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm. The dependent variable is a dummy variable that equals one if the firm is an event firm (experienced corruption investigation), and zero if the firm is a matching firm (did not experience corruption investigation). The major independent variables are firm-level corruption measures of the year prior to corruption investigation (year t-1), including: 1) Absolute value of discretionary accruals, scaled by total assets; 2) Related-party sales, scaled by revenue; 3) Related-party loans, scaled by total assets; 4) Other receivables from parent firm, scaled by total assets; 5) Number of regulation breaches in a year; 6) Business entertainment expenditure, scaled by total assets; 7) Growth of sales minus growth of net income; 8) Profit margin, calculated as net income divided by revenue; and 9) Corruption postings, measured as percentage of posts that discussed corruption in the total posts for a firm on StockBar, a popular online investor-forum. The regressions also control for firm characteristics including natural log of market capitalization, a dummy variable for state-owned enterprises (SOE), and two dummy variables for firms located in medium- and high-corruption provinces. High-corruption (medium-corruption) province refers to those in the top (medium) tercile of the provincial corruption index constructed in Ang, Bai and Zhou (2015). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. All models include year fixed effects, and t-statistics associated with coefficients are reported in the parentheses. The coefficients on other receivables and business entertainment expenditure are divided by 1,000 to ease reading. ***, **, and * represent statistical significance at the 0.01, 0.05, and 0.10 levels.

Independent Variables (t-1)	Dependent Variable: Dummy of Corruption Investigation						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Abs. (Discretionary Accrual)	0.802					3.330	1.151
	(0.40)					(1.19)	(0.56)
Related-Party Sales		1.202**				1.290*	1.135**
		(2.25)				(1.89)	(2.05)
Related-Party Loans		9.507*				8.265	10.360**
		(1.96)				(1.33)	(2.11)
Other Receivables from Parent		0.233				1.008	0.181
		(0.97)				(1.30)	(0.64)
# Regulation Breaches			0.028			-0.069	0.073
			(0.12)			(-0.27)	(0.35)
Bus. Ent. Expenditure			-0.326			-0.179	
			(-0.76)			(-0.39)	
Sales Growth - Income Growth				0.296***		0.364**	0.312***
				(2.86)		(2.50)	(2.86)
Profit Margin				-0.331		-0.777	-0.438
				(-0.39)		(-0.63)	(-0.50)
Corruption Postings					2.245**	2.243*	2.278**
					(2.48)	(1.78)	(2.44)
Ln(ME)	0.134**	0.146**	0.234**	0.164**	0.102	0.287***	0.155**
	(2.06)	(2.22)	(2.25)	(2.45)	(1.54)	(2.58)	(2.20)
SOE Dummy	-0.043	-0.097	-0.012	-0.104	-0.131	-0.314	-0.282
	(-0.21)	(-0.48)	(-0.05)	(-0.50)	(-0.64)	(-1.11)	(-1.30)
Provincial Corruption: Medium	0.164	0.217	0.164	0.197	0.148	0.192	0.223
	(0.87)	(1.14)	(0.66)	(1.02)	(0.78)	(0.73)	(1.13)
Provincial Corruption: High	0.393*	0.456**	0.352	0.426**	0.320	0.348	0.393*
	(1.87)	(2.15)	(1.37)	(2.00)	(1.51)	(1.26)	(1.78)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nobs	290	293	179	290	293	179	290

Table 5: Earnings Discontinuity around Zero for All Firms

This table reports annual earnings discontinuity around zero for all Chinese listed firms from 2010 to 2014 and the change of it between 2010-2011 (before anti-corruption campaign) and 2013-2014 (after the start of anti-corruption campaign). The sample includes all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. The statistics reported are annual standardized differences of small profit (small loss), which measures discontinuity of earnings distribution and test for hypotheses of that the actual number of observations in the intervals just above (below) zero earnings are greater than (smaller than) expected. Earnings is calculated as net income ($NI_{i,t}$) scaled by market value of equity at the previous year end ($ME_{i,t-1}$). Year t refers to earnings of fiscal year t. Panel A reports results for all Chinese listed firms. Panel B reports results for four sub-samples: Firms with one-year loss (negative net income) in previous year, and firms located in high-, medium-, and low-corruption provinces. High-, medium- and low-corruption provinces refer to the top, medium, and bottom terciles of the provincial corruption index constructed by Ang, Bai and Zhou (2015). T-statistics associated with differences are also reported.

Panel A: Standardized Differences for All Firms					
Year	Small Profit	t-stat		Small Loss	t-stat
2010	0.059	5.01		-0.070	-9.01
2011	0.064	5.69		-0.078	-10.44
2012	0.068	7.53		-0.063	-10.14
2013	0.059	6.89		-0.054	-9.49
2014	0.079	8.53		-0.068	-10.78
2010-2011	0.062	7.58		-0.074	-13.79
2013-2014	0.069	10.93		-0.061	-14.35
Diff.	0.007	0.65		0.013	1.91
Panel B: Standardized Differences for Subsamples of Firms					
Sub-sample	Small Profit	t-stat		Small Loss	t-stat
Firms with One-Year Loss					
2010-2011	0.333	8.49		-0.175	-5.27
2013-2014	0.274	9.09		-0.138	-5.78
Diff.	-0.059	-1.19		0.037	0.89
Firms in High-Corruption Provinces					
2010-2011	0.072	3.92		-0.077	-6.05
2013-2014	0.107	6.89		-0.079	-7.19
Diff.	0.035	1.85		-0.002	-0.14
Firms in Medium-Corruption Provinces					
2010-2011	0.059	5.09		-0.075	-10.08
2013-2014	0.059	6.94		-0.056	-9.90
Diff.	0.000	-0.03		0.019	2.07
Firms in Low-Corruption Provinces					
2010-2011	0.061	4.11		-0.072	-7.32
2013-2014	0.062	5.33		-0.059	-7.55
Diff.	0.001	0.05		0.012	0.99

Table 6: Corruption Measures of All Listed Firms: 2008-2014

This table will present annual average of corruption measures for all Chinese listed firms from 2008 to 2014. The sample includes all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. The firm-level corruption measures include: 1) Absolute value of discretionary accruals, scaled by total assets; 2) Related-party sales, scaled by revenue; 3) Related-party loans, scaled by total assets; 4) Other receivables from parent firm, scaled by total assets; 5) Number of regulation breaches in a year; 6) Business entertainment expenditure, scaled by total assets; 7) Growth of sales minus growth of net income; 8) Profit margin, calculated as net income divided by revenue; and 9) Corruption postings, measured as percentage of posts that discussed corruption in the total posts for a firm on StockBar, a popular online investor-forum. Growth of sales minus growth of net income, and profit margin are winsorized at 5% and 95% for each year because of the large number of outliers. All the other firm-level corruption measures, except number of regulation breaches and corruption postings, are winsorized at the 1% and 99% levels for each year. We exclude financial firms for six measures: absolute value of discretionary accruals, related-party sales, related-party loans, other receivables from parent firm, growth of sales minus growth of net income, and profit margin. We also calculate differences of corruption measures before and after the anti-corruption campaign. Diff. is calculated as the average of years 2013 and 2014 minus the value of year 2011. %Diff. reports Diff. as percentage of the value before anti-corruption campaign. T-statistics associated with Diff. are also reported.

| | Corruption Measures | | | | | | | |
Year	Abs. (DACC)	Related Sales	Related Loans (%)	Other Receivable (%)	Regulation Breaches	Entertain Exp. (%)	Sales Growth - Income Growth	Profit Margin
2008	0.067	0.062	1.081	0.042	0.063	0.255	0.999	0.046
2009	0.067	0.055	0.872	0.027	0.111	0.258	0.335	0.069
2010	0.058	0.050	0.420	0.010	0.100	0.265	0.222	0.098
2011	0.055	0.042	0.156	0.012	0.106	0.254	0.377	0.095
2012	0.048	0.039	0.144	0.011	0.183	0.257	0.469	0.085
2013	0.048	0.039	0.155	0.008	0.194	0.244	0.448	0.082
2014	0.047	0.040	0.399	0.003	0.127	0.197	0.357	0.077
2013~2014 - 2011 Diff.	**-0.008**	-0.003	**0.121**	**-0.006**	**0.055**	**-0.033**	0.026	**-0.016**
t-stat	**-5.76**	-0.93	**3.66**	**-4.02**	**4.58**	**-3.95**	0.61	**-5.95**
% Diff.	-14.24%	-6.23%	78.10%	-51.97%	51.56%	-13.06%	6.79%	-16.38%

Table 7: Return Volatilities around Earnings Announcements for All Firms: 2009-2014

This table presents volatilities around earnings announcements for all Chinese listed firms from 2009 to 2014. The sample includes annual earnings announcements of all firms listed on Shanghai and Shenzhen stock exchanges (A shares). All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year, and year t refers to earnings of fiscal year t. Stock return volatility is defined as the mean absolute abnormal returns in excess of market return around event window. Normalized volatility is the average abnormal volatility during the 4-day window [-1,+2] divided by the average abnormal volatility during the [-56,-2] window (55 days before the announcement window) and the [+3,+57] window (55 days after the announcement window), then minus one. Day 0 refers to the earnings announcement day. Differenced volatility is the average abnormal event volatility minus the average abnormal volatility during the [-56,-2] window (55 days before the announcement window) and the [+3,+57] window (55 days after the announcement window). To calculate stock return volatility around an announcement, we require at least 4 days of consecutive trading around the announcement. We first calculate normalized volatility and differenced volatility for each of the Chinese listed firms, and then calculate the annual averages. In additional to all firms, we also report volatilities for firms in high-corruption provinces and low-corruption provinces separately. High- and low-corruption provinces refer to the top and bottom terciles of the provincial corruption index constructed by Ang, Bai and Zhou (2015), respectively. We also report the differences in volatility measures between the three years 2012-2014 and the three years 2009-2011 and associated t-statistics.

Year	All Firms			Firms in High Corruption Provinces			Firms in Low Corruption Provinces	
	Normalized Volatility	Differenced Volatility		Normalized Volatility	Differenced Volatility		Normalized Volatility	Differenced Volatility
2009	0.12	0.17		0.10	0.14		0.16	0.26
2010	0.27	0.36		0.22	0.31		0.27	0.39
2011	0.33	0.44		0.34	0.46		0.32	0.43
2012	0.10	0.12		0.13	0.15		0.08	0.09
2013	0.25	0.33		0.15	0.18		0.27	0.36
2014	0.04	0.08		0.03	0.07		0.05	0.11
2009-11	0.25	0.34		0.23	0.32		0.26	0.37
2012-14	0.13	0.17		0.11	0.14		0.13	0.19
Diff.	**-0.12**	**-0.16**		**-0.12**	**-0.18**		**-0.13**	**-0.18**
t-stat	**-10.52**	**-8.63**		**-4.91**	**-4.38**		**-6.05**	**-5.23**

Table 8: Stock Returns of Sample Firms on and after Corruption Investigation Events
This table presents sample firms' short-term returns around corruption investigation events and long-term returns after events. The sample includes 150 Chinese listed firms with corrupted managers investigated/dismissed since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. Panel A plots cumulative abnormal return (CAR) for all firms in the [-1,+1] window, where day 0 is the earliest date of investigation announcement. Daily abnormal return is constructed using one of the three approaches: 1) Daily return in excess of market return; 2) Size-adjusted return by subtracting return of the firm's size decile portfolio; 3) Fama-French three-factor model. CARs for state-owned enterprises (SOEs) and non-SOEs in the sample are also reported separately. Panel B is similar to Panel A but presents CAR in the [-1,+15] window. Panel C plots long-term buy-and-hold abnormal return in the [-15,+90], the [-15,+180], and, the [-15,+360] windows. We first calculate daily abnormal returns using Fama-French three-factor model, and then calculate buy-and-hold abnormal returns for event firms. T-statistics associated with returns are also reported.

Panel A: Return on the Announcement Date of Corruption Investigation: CAR [-1,+1]						
	Market-Adj. Ret.		**Size-Adj. Ret.**		**FF3-Adj. Ret.**	
	CAR	t-stat	CAR	t-stat	CAR	t-stat
All Events	**-1.17%**	**-2.21**	-0.70%	-1.42	**-1.06%**	**-2.16**
SOE	**-1.13%**	**-1.99**	-0.55%	-1.04	**-0.86%**	**-1.66**
Non-SOE	-1.45%	-0.95	-1.82%	-1.25	**-2.53%**	**-1.65**

Panel B: Returns on and after the Announcement Date of Corruption Investigation: CAR [-1, +15]						
	Market-Adj. Ret.		**Size-Adj. Ret.**		**FF3-Adj. Ret.**	
	CAR	t-stat	CAR	t-stat	CAR	t-stat
All Events	-0.80%	-0.91	**-2.01%**	**-2.46**	**-1.85%**	**-2.08**
SOE	-0.61%	-0.63	**-1.64%**	**-1.83**	-1.45%	-1.49
Non-SOE	-2.09%	-1.30	**-4.62%**	**-2.55**	**-4.69%**	**-2.39**

Panel C: Long-Term Buy-and-Hold Abnormal Returns after the Announcement Date of Corruption Investigation						
	[-15,+90]		**[-15,+180]**		**[-15,+360]**	
	BHAR	t-stat	BHAR	t-stat	BHAR	t-stat
All Events	**-9.74%**	**-3.16**	**-21.92%**	**-3.92**	**-19.23%**	**-2.25**
SOE	**-9.08%**	**-2.79**	**-22.44%**	**-3.60**	**-20.39%**	**-2.15**
Non-SOE	-14.25%	-1.50	**-18.32%**	**-1.79**	-11.24%	-0.66

Table 9: Change in Corruption Measures for Firms after Corruption Investigation Events

This table presents changes in corruption measures for sample firms after corruption investigation events. The initial sample includes 150 Chinese listed firms with corrupted managers investigated since China's anti-corruption campaign from December 4, 2012 to December 31, 2015. We further require firms to have corresponding measures available for both years t-1 and t+1, where year t is the year of corruption investigation. Since accounting data of sample firms are available only through 2014, only some of the firms are included in the samples. All Chinese firms' fiscal years end in December so their fiscal year coincides with the calendar year. For each event firm, we identify a matched firm by first selecting a subsample of firms satisfying the following conditions: 1) In the same industry as the event firm; 2) Have the same SOE status as the event firm; and 3) Market cap is within the range of 50% and 150% of the event firm. We then choose from this subgroup a matched firm that has the closest book-to-market ratio to the event firm. We report differences of corruption measures between event firms and matched firms for year t-1 and t, and then difference-in-difference. The firm-level corruption measures include: 1) Absolute value of discretionary accruals, scaled by total assets; 2) Related-party sales, scaled by revenue; 3) Related-party loans, scaled by total assets; 4) Other receivables from parent firm, scaled by total assets; 5) Number of regulation breaches in a year; 6) Business entertainment expenditure, scaled by total assets; 7) Growth of sales minus growth of net income; 8) Profit margin, calculated as net income divided by revenue; and 9) Corruption postings, measured as percentage of posts that discussed corruption in the total posts for a firm on StockBar, a popular online investor-forum. In addition to the firm-level corruption measures, we also report the differences in two earnings discontinuity measures, namely, differences of small profit and differences of small loss. For these two earnings discontinuity variables, the sample of t-1 includes two annual earnings of event firms announced before the event dates of corruption investigations, and the sample of t+1 includes the two earnings of matched firms after the event dates. Related-party loans, other receivables, and business entertainment expenditure are expressed in percentages to ease reading. T-statistics associated with diff-in-diff. are also reported.

| | Event Firm – Matched Firm | | | | |
Measures	t-1	t+1	diff-in-diff.	t-stat	#Obs
Abs. (DACC)	0.018	0.033	0.015	1.04	25
Related-Party Sales	0.013	-0.008	-0.021	-1.14	26
Related-Party Loans (%)	-0.129	0.117	0.246	0.45	26
Regulation Breaches	-0.077	0.000	0.077	0.43	26
Other Receivables (%)	0.006	0.005	-0.001	-0.15	26
Bus. Ent. Expenditure (%)	0.005	0.078	**0.073**	**1.71**	9
Sales Growth - Income growth	0.502	0.485	-0.017	-0.03	25
Profit Margin	-0.039	-0.053	-0.014	-0.52	26
Corruption Postings	0.020	0.030	0.010	0.38	26
Normalized Volatility	-0.178	-0.089	0.088	0.31	21
Discontinuity: Small Profit	0.018	0.033	-0.082	-1.30	298
Discontinuity: Small Loss	-0.024	-0.035	0.011	0.26	137