

Is the Chinese Anti-Corruption Campaign Effective?

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Chinese firms with characteristics commonly associated with corporate self-dealing are more likely to have executives investigated by the anti-corruption campaign. University affiliations with the top current leaders are associated with a reduced probability of investigation, but general political affiliations are associated with more investigations. We then assess the campaign's effect on Chinese firms more broadly, and find that with the exception of entertainment expenditure there has been little overall decrease in measures of potential corporate self-dealing. Overall, our findings suggest that the campaign is targeting corrupt managers, could contain a political component, and has yet to change Chinese corporate culture.

Academic evidence has increasingly linked corruption as a major impediment to economic growth.¹ Despite this strong academic evidence, it is rare to see countries with high levels of corruption making 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 surprisingly far-reaching campaign that has already investigated more than 200,000 people raises three primary questions: Is the corporate campaign actually targeting individuals from more corrupt firms? Does the campaign contain political favoritism? Is the campaign effective at reducing corporate corruption?

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 the 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 campaign provides a unique laboratory to evaluate an effort to reduce corruption because it is both widespread and in the world's second-largest economy where firms are commonly thought to exhibit substantial fraud [Chen, Firth, Gao, and Rui (2006), Chen, Li, Su, and Sun (2011)], self-dealing [Jiang, Lee, and Yue (2010)] and earnings management related to political corruption [Fan, Guan, Li, and Yang (2014)].

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 are 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), Kaufman and Wei (2001), Wei (2001), Reinikka and Svensson (2004)]. For a more detailed discussion of corruption and its effects, see Bardhan (1997) and Svensson (2003).

² The annual Corruption Perception 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, disclosure 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 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, 130 (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 against the executives are receiving bribes (82), illegally benefiting family members (29), embezzling funds (26), bribing others (21), and unspecified offenses (31).³

We first examine whether the campaign is targeting executives from corrupt firms. We use a matched-sample approach and a host of measures that indicate potential self-dealing and other dubious behavior. Our measures are all noisy indicators, but we believe that all have potential to shed light on activities of questionable nature, and most have been linked to self-dealing and accounting manipulation in previous literature (as we will detail). The measures of potential corruption are grouped into five categories: related-party transactions; regulation breaches and entertainment expenditure; profitability; corruption-related postings; and accounting manipulations. To account for illegal or unethical behavior to potentially exploit shareholders, we follow the literature and 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 Commission and business entertainment expenditure. Since corruption leads to heightened costs and inefficient operation, we also examine two measures of profitability, which are growth of sales minus growth of net income, and profit margin. We measure investors' discussions

³ Note that these corrupt behaviors are not mutually exclusive.

about corruption in a firm using posts on a popular Chinese online investor forum. For potential accounting manipulation, we first examine earnings discontinuity around zero, as a dramatic decrease in the frequency of small positive earnings to small negative earnings can indicate manipulation. We also examine the absolute value of discretionary accruals, a widely used measure of earnings management.⁴

To control for firm-level characteristics, for each of the 150 sample firms we identify a matched firm in the same industry, with the same SOE status, 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 positive and significantly related to the probability of an executive being investigated for corruption.

We do not know the underlying political motivations that lead to the investigations of corrupt firms. It may be that the motivation is purely corruption focused, or it could be that the subjects of political targeting are more likely to be corrupt. We examine if political connections are also associated with the probability of being investigated. We find that firms with general government connections, as identified by managers' past government working experience, are more likely to be investigated. This result is consistent with the campaign targeting firms benefiting from their political connections. We further examine three measures of political connection with the current top national leaders through workplace relation, hometown relation, and university affiliation. We find that university

⁴ A number of papers, such as Dass, Nanda, and Xiao (2014), Fan, Guan, Li, and Yang (2014), and Huang (2016), find strong evidence with both U.S. and China data that corrupt firms engage in more accounting manipulation.

affiliations, where company executives attended the same universities as national leaders, are associated with a decreased probability of investigation.⁵

Overall, the evidence suggests that the anti-corruption campaign does appear to target corruption, in that the subjects of investigation do appear to be engaged in more questionable activities, but the effect of university affiliation suggests that the targeting could involve favoritism. We note that our empirical tests are mainly descriptive and not tests for causality; Like with most empirical exercises there may be omitted variables which can link our findings.

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. Out of our ten firm-level measures of corruption, the only one that shows a large improvement or drop in 2013-2014 compared to 2011 is business entertainment expenditure.⁶ We also divide all firms into subsamples of SOEs and non-SOEs to see if the effects of the campaign have been more effective in a particular group. Overall, only business and entertainment expenditure exhibits a consistent downward trend. It is possible, that the other measures are poor proxies for questionable firm behavior, but these measures have strong intuitive underpinnings and empirical support from prior literature. Additionally, many of these measures show that the firms investigated for corruption had larger corruption indicators despite a relatively small sample size.

To the extent that our measures are affected by macroeconomic conditions instead of just corruption, we conduct benchmarking analysis using Hong Kong firms. The economies of Mainland China and Hong Kong are closely linked, yet there is no anti-corruption campaign in Hong Kong

⁵ The university affiliation effect is driven by the two most prestigious universities in China: Tsinghua University and Peking University. It is also possible that affiliated managers from these schools are less corrupt than their peers because their graduates may have better self-discipline with their greater career potentials in mind.

⁶ Discretionary accruals also decreased but the drop actually occurred in 2012 when the campaign was just getting started, and accruals experienced no subsequent improvement after 2012.

during this period. A difference-in-difference approach for comparing Chinese listed firms to their matched Hong Kong counterparts shows little improvement for Chinese firms.

In addition to the firm-level measures, we further examine the earnings discontinuity 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 is a dramatic decrease in number of firms with small positive earnings to those with small negative 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. Therefore, earnings manipulation appears to be rampant in China with little improvement. We also examine if the anti-corruption campaign improves the information environment of Chinese financial markets and reduces trading on inside information using volatility ratios previously constructed in the literature. Earnings announcements do not become more informative in 2013-2014 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 decrease in potential corporate corruption indicators. The targeting of more corrupt firms appears to be a step in the right direction, but it has not, at least yet, led to changes in indicators of transparency and accounting manipulation. 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 international markets, there is relatively little academic research examining the anti-corruption campaign in China. Lin, Morck, Yeung, and Zhao (2016) examine the market's response across firms to the announcement of the Eight-point Regulation on December 4, 2012. They find that the overall market reaction was quite positive, and

especially so for SOEs and non-SOEs located in developed provinces or with lower business and entertainment expenditures. While their study provides an in-depth characterization of market expectation of the policy, our analysis focuses on the observed effects of the policy during the anti-corruption campaign. Qian and Wen (2015) find that jewelry imports decreased by 55% percent over the first seven months after the anti-corruption campaign, which is consistent with our firm-level findings.⁷ Ang, Bai, and Zhou (2015) find that corruption as measured by investigations of government officials in a province is reflected in local bond spreads.

More broadly, there is growing literature examining corruption globally [Mauro (1995)], in certain emerging economies [e.g., Fisman and Svensson (2007)], and even considerable research on corruption in China.⁸ We hope to see additional research focusing on the effectiveness of corruption reduction efforts.

1. The Anti-Corruption Campaign Background

Corruption in China has grown significantly since economic reforms 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, indicating more corruption than the majority of countries in the world. The knabbing of top U.S. firms for bribery in China by U.S. regulators also gives glimpses into the extent of the bribery problem using U.S. standards. For example, Avon, the cosmetics company, admitted guilt and paid \$135 million on December 17, 2014 to settle U.S. Department of Justice charges for bribing Chinese government

⁷ Qian and Wen (2015) also document that, in contrast to the dramatic drop in import of the luxury goods that are easily observed by the public, there is no effect on goods that can be consumed away from public view.

⁸ For example, Chen, Firth, Gao, and Rui (2006) and Chen, Li, Su, and Sun (2011) find a positive relationship between board and ownership concentration with fraud and political connections in China. Cheung, Rau, and Stouraitis (2006) and Jiang, Lee, and Yue (2010) examine tunneling through inter-company transactions and loans in Hong Kong and China. Liu and Lu (2007) link earnings management to tunneling.

officials. J.P. Morgan was reported to be under investigation by U.S. officials for improperly influencing top Chinese officials by hiring their children.⁹

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

Although previous Chinese leaders had repeatedly criticized the severe corruption problems and made anti-corruption efforts, their effects were relatively small, and top government officials were rarely touched. Xi, the son of a top communist veteran, emphasized that corruption has become a big threat to the survival of Chinese Communist Party, and put this as perhaps his central platform. The intensive and extensive anti-corruption campaign has been "more prolonged and far-reaching than anyone anticipated" [The Guardian (2015)].

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 200,000 people have been investigated during the anti-corruption campaign, with a 99% rate of conviction [Forbes (2016)]. 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 indicted on bribery and embezzlement in 2014.

⁹ 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/>. For U.S. investigation of J.P. Morgan, see <http://www.wsj.com/articles/j-p-morgan-was-aware-of-overseas-hiring-concerns-before-u-s-probe-1413998056>.

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 who posed a threat to the current power base were humiliated, removed, and jailed? Others argue that the campaign is not a short-term political one as has been used in the past, but is primarily focusing on those engaged in corruption [Li, Cheng, and McElveen(2014), Magnus (2015)]. Additionally, one wonders if the anti-corruption campaign caused positive changes to Chinese corporate world and corporate culture. Academic research is needed to address these questions of both academic and 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 corrupt managers investigated during the anti-corruption campaign (henceforth “sample firms” or “event firms”). Second, we examine corruption measures across all Chinese listed firms to study the impact of anti-corruption campaign on the Chinese corporate world.

The sample firms include the listed firms in China whose top managers were investigated during the anti-corruption campaign for corrupt behaviors. A firm should satisfy three conditions for sample inclusion. First, the firm is listed on either Shanghai Stock Exchange or Shenzhen Stock Exchange. Second, its CEO or other top executives who are also internal directors were investigated for corrupt behaviors.¹⁰ Third, the corruption investigations took place during the anti-corruption campaign from December 4, 2012 to December 31, 2015.¹¹

¹⁰ The executives include CEOs, Chairman of the board, directors on the board, firm controller, and Vice President, and CEO/Chairman or Vice President of the parent company. See Table 1 for distribution of manager types.

¹¹ The anti-corruption campaign is still continuing, and December 31, 2015 is when our sample construction ends.

We identify firms with corrupt 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 4, 2012 to December 31, 2015. For each CEO turnover, we manually search the news or biography on internet for the reasons of turnover, and identify the events involving corrupt behaviors.

Next, to examine corruption cases of non-CEO top executives, we examine disclosures by the Communist Party of China (CPC). As part of the disclosure about the anti-corruption campaign, Commission of Discipline Inspection of CPC's Central Committee publicizes a list of high-level party members being investigated, including executives of large state-owned enterprises.¹² We manually read through the list of publications, and identify the investigations involving managers of listed firms.

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

For the searches, we compose a list of corruption-related keywords. Specifically, to select the appropriate keywords, we manually read through the corporate announcements and news articles about corruption cases from the first two sources (CEO turnovers and CPC disclosure), and compose a list of 34 keywords that are commonly used by the announcements and news articles to describe corrupt behaviors and investigations. Examples of keywords (in Chinese) include “discipline

¹² The disclosures can be found at <http://www.ccdi.gov.cn/jlsc/>.

violation”, “under corruption investigation”, “suspicion of bribery”, and other key words which we detail in Section A.2 of the Appendix. We then use the list of keywords to conduct the textual search for all corporate announcements and news articles described above, and identify 1,049 corporate announcements and 2,236 news 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 managers’ corrupt behaviors. We use a conservative approach and exclude a small number of events that fall into one of the four categories: 1) The manager’s corrupt behaviors took place before joining the company. We remove cases when a manager was investigated for activity as a government official before joining the firm; 2) The manager’s corrupt behaviors are unrelated to the firm. For example, a vice president of a listed firm represented a block holder and his behaviors occurred in the block holder firm instead of the listed firm; 3) One event where the manager was found 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 investigation, in which case the top manager might not have had full control of the firm.

When a firm experienced several investigations involving multiple executives during our sample period, we keep only one event per firm. In particular, we chose the most important manager if there is an obvious rank difference between the managers (e.g., CEO versus other managers). If the managers involved are of similar importance, we keep the earliest event. For each event, we carefully go through announcements and news articles, and identify the 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 corrupt behaviors, as in China parent companies have very tight control of its subsidiaries, either by directly managing them or through influencing their major decisions.

Our final sample includes 150 listed companies whose managers were investigated and dismissed during the anti-corruption campaign for corrupt behaviors. The size of this sample indicates the widespread corruption in China's corporate world, as well as 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.¹³

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 firm 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, and we manually check and correct misclassifications. Panel A of Table 1 presents the corresponding numbers. The anti-corruption campaign has accelerated since its start in December 2012, as the number of 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, 86.7% 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 corrupt managers for sample firms by year, and Panel A of Table 1 reports the corresponding numbers. Out of the 150 sample firms, 67 have corrupt CEOs, 25 firms have corrupt non-CEO executives, and 58 firms have corrupt top managers (CEOs or Vice Chairmans) from parent company.

¹³ Since the corruption investigations took place from December 2012 to December 2015 with an accelerated speed, we calculate these percentages on December 31, 2014.

Panel C of Figure 1 plots the distribution of managerial corrupt behaviors (not mutually exclusive) for sample SOEs and non-SOEs, which reveals a stark contrast between SOEs and non-SOEs. While the most common corrupt behavior for SOE managers is receiving bribes, either from employees or other companies, non-SOE managers' corrupt behaviors concentrate in bribing other parties to gain business.

Panel B of Table 1 presents the corresponding numbers of firms associated with different corrupt behaviors. We are able to identify detailed corrupt behaviors of 101 out of the 130 SOEs in our sample, and the most common corrupt behaviors are receiving bribes (82 firms), embezzling company funds (25 firms), and illegally benefiting family members or relatives (29 firms). Managers of four SOEs, all financial firms, bribe government officials or other parties to obtain licenses or compete for underwriting business. The remaining 29 SOEs do not have detailed information about managerial corrupt 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 corrupt behaviors for 18 out of the 20 non-SOEs in our sample, and 17 non-SOEs' managers were investigated due to bribing other parties. The remaining firm's manager was investigated for embezzling company funds. The stark contrast between SOEs and non-SOEs sheds light on the vastly different incentives and forms of corruption across different ownership structures.

2.3 Measures of Potential Corruption

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

2.3.1 Measures of Accounting Manipulation

Manipulating accounting information can be associated with corruption as both are unethical behaviors. For example, existing studies document a greater tendency to manage earnings for U.S. firms that are located in more corrupt areas [Dass, Nanda, and Xiao (2014)] or prosecuted for violations of the Foreign Corrupt Practice Act [Huang (2016)]. Additionally, Fan, Guan, Li, and Yang (2014) document a positive relation between corruption and earnings management for a sample of Chinese firms. We therefore examine two measures of accounting manipulation that are widely used in the existing literature.

Our first measure of accounting manipulation is discontinuity in earnings distribution around zero, which has been widely cited as evidence of earnings management since proposed by Hayn (1995) and Burgstahler and Dichev (1997). Specifically, a much higher number of firms with small positive earnings than that of firms with small negative earnings indicates the manipulation of earnings above zero. The regulation of Chinese stock markets adds 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 its ticker, which is considered a negative signal to the market. Therefore, we expect the earnings discontinuity to be substantial for Chinese firms, especially those with one-year losses already. We follow the literature [Gilliam, Heflin, and Paterson (2015)] and construct two measures of earnings discontinuity, namely, standardized differences for small profit and small loss. The standardized difference for small profit tests if the actual number of firms with earnings just above zero is greater than expected, and the standardized difference for small loss tests if the actual number of firms just below zero is smaller than expected. We describe their construction in Section A.4 of Appendix for brevity.

Our second measure of accounting manipulation is discretionary accruals. It is the most commonly used measure of earnings management, and several studies also examine discretionary

accruals of Chinese firms as manipulation behaviors [e.g., Liu and Lu (2007)]. We follow the literature and construct annual discretionary accruals using the modified Jones' (1991) model. Since discretionary accruals reverse over time, we follow the literature and use the absolute value of discretionary accruals as a measure of accounting manipulation. A higher value of absolute discretionary accruals indicates a greater likelihood of corruption. We describe the details of construction in Section A.4 of Appendix for brevity.

2.3.2. Related Party Transactions

Existing literature suggests that related-party transactions can be associated with unethical or illegal behaviors of Chinese firms. We therefore examine three measures based on the existing literature on related party transactions: 1) Related-party sales (scaled by revenue), 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; 2) Related-party loans (scaled by total assets), as Jiang, Lee, and Yue (2010) reveal the "tunneling" behaviors in Chinese firms, where controlling shareholders take advantage of the firm and other shareholders through large amount of borrowing from the company at very low or no costs; 3) Other receivables from parent (scaled by total assets), as Jiang, Lee, and Yue (2010) suggest that other receivables from parent also reflects the "tunneling" behaviors, where controlling shareholders obtain costless financing from the firm through trade credit. We describe the sources of data in Section A.4 of the appendix for brevity.

2.3.3 Regulation Breaches and Business Entertainment Expenditure

The third group of measures that we examine includes regulation breaches and entertainment expenditure, as both can be potentially associated with the degree of unethical or 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 that are unlikely to be associated with corruption. Section A.4 of the Appendix provides a complete list of regulation breach categories.

The second measure, business entertainment expenditure (BEE), is widely considered by news media as associated with corruption, as this funding is often used by firms as perks to employees and especially top executives, or to establish relations with other parties to gain business. Cai, Fang, and Xu (2011) presents evidence that BEE is indeed related to corruption in China. Section A.4 of the Appendix provides details of the construction.

2.3.4. Profitability of Firms

Corruption in top managers, especially embezzling fund and receiving bribes, can cause direct loss to the firm or indirect loss from misallocation of the firm’s resources. As a result, corruption can increase a firm’s expenses and decrease its profitability. We therefore examine two measures of firms’ profitability: 1) Difference between sales growth and net income growth, as news articles about sample firms often mention that corruption caused these firms to have much slower growth of profit than their growth of revenue. We calculate the difference of growth rates simply as $DIFSGNG_{i,t} = \frac{REV_{i,t}}{REV_{i,t-1}} - \frac{NI_{i,t}}{NI_{i,t-1}}$. Everything else equal, a larger difference between sales growth and net income growth indicates a greater degree of corruption; 2) Profit margin, calculated as the ratio between net income (NI) and total sales/revenue (REV), i.e. $PM_{i,t} = \frac{NI_{i,t}}{REV_{i,t}}$. Everything else equal, a lower profit margin indicates a greater degree of corruption.

2.3.5. Corruption-Related Postings

We collect corruption-related postings from “GuBa” (“StockBar” in English, <http://guba.eastmoney.com/>), one of the most popular online investment forums in China. Since its establishment on 2004, Guba has accumulated over 10 million users. According to Alexa Internet, a

subsidiary of Amazon, the number of new posts per day on Guba (including newly initiated posts and responses to existing posts) is as high as six million. To construct the measure of corruption-related postings at the firm level, we first download all the posts discussing listed companies (about 100 million) in Stockbar using a Python program. We manually read a sample of the “Guba” posts and find that posters normally use simple and casual language to discuss corruption rather than the formal language in the list of 34 key words for our news search. Therefore, we construct a list of 7 keywords based on our manual reading of the subsample of “Guba” posts that discuss corruption (provided in Section A.3 of the Appendix). A post is considered to be corruption-related if its title contains one of 7 keywords. We then calculate the measure of corruption postings for a firm-year as the ratio of the number of corruption-related posts to the total number of posts of the firm-year.

3. Is the Anti-Corruption Campaign Targeting More Corrupt Firms or Politically Driven?

As discussed in Section 1, the anti-corruption campaign has been widely associated with two possibilities. Some suggest that the campaign is a sincere effort to reduce corruption. In this case we expect that event firms will have a greater degree of corruption than peer firms. Others claim that the campaign is politically driven. In this case we should observe political connections being related to the probability of investigation. It is worth noting that the two explanations are not mutually exclusive, and we design tests below to examine both explanations.

3.1. Analysis of Corruption Measures for Event Firms

3.1.1. Univariate Analysis

For each event firm, we identify a matched firm by first selecting a subsample of firms that are in the same industry, have the same SOE status as the event firm, and have market capitalization

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.¹⁴

We plot firm-level corruption measures in Figure 2 for event firms and matched firms in years $t-2$, $t-1$, and t , where t is the year of event (announcement of corruption investigation). Since we examine the level of corruption before investigations, we focus on the corruption measures in years $t-1$ and $t-2$ but also report those in year t which is partially before investigation.

Figure 2 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 have low profit margin. Additionally, corruption postings are also higher for event firms than peer firms, indicating that investors more often discuss corruption issues about event firms than peer firms. In addition to these six measures, event firms' number of regulation breaches are 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, suggesting that accounting manipulation doesn't seem stronger for event firms. Finally, event firms have higher business entertainment expenditure than matched firms, but the difference is very small.

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

¹⁴ Firms are divided into 19 industries using the first-digit of China Securities Regulatory Commission's 2012 industry classification codes. For five event firms there are no other firms in the same industry with close enough market capitalization. We therefore identify their matched firms as those having the closest market capitalization among firms in the same industry and with the same SOE status. We repeat all the event firm analyses in this paper by excluding these five event firms, and the results are unchanged. We report these robustness tables in Section A.5 of the Appendix for brevity.

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 1.58). Therefore, the results in Figure 3 and Table 2 consistently show that event firms are significantly more corrupt than peer firms.

Since the corrupt behaviors vastly differ between SOEs and non-SOEs, we report in Table 3 the corruption measures for the subsamples of SOEs and non-SOEs. A 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 low. The main differences between SOE and non-SOE sample firms is related-party sales: SOE event firms have higher related-party sales than their peer firms, while non-SOEs have lower related-party sales than their peer firms. Additionally, SOE event firms have more regulation breaches than their peer firms, but non-SOEs have fewer regulation breaches than their peer firms.

We also study event firms' earnings discontinuity, and Figure 3 plots the earnings distribution of event firms and peer firms. The earnings sample for event firms include their two annual earnings announced before the dates of corruption investigations. Panel A shows a striking pattern of discontinuity around zero for event firms. 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 U.S. firms in the same period [Gilliam, Heflin, and Paterson (2014), page 122], indicating an abnormally high number of firms with small profit. Additionally, the standardized difference for small loss is -2.33, also 2.4 times that of the U.S. firms, indicating an abnormally low number of firms with small loss. These results suggest massive earnings management by Chinese listed firms to turn their earnings positive.

For a comparison, Panel B of Figure 3 plots the distribution of earnings for matched firms. The sample includes matched firms' two annual earnings announced before the corruption

investigations of corresponding event firms, i.e., earnings in the same periods as event firms'. Matched firms' earnings distribution demonstrates a similar earnings discontinuity as event firms. We also calculate standardized differences for matched firms and find little difference from event firms. Therefore, the results of earnings discontinuity is consistent with those of accruals in that event firms do not exhibit more earnings management than matched firms.

Overall, in the univariate analyses, the majority of the corruption measures examined indicate that event firms are significantly more corrupt than peer firms.

3.1.2. Probit Regressions of Investigation on Corruption Measures

To control for correlations across corruption measures and to jointly investigate relations between the various corruption measures and investigation, we estimate probit regressions. The sample includes event firms and their matched firms. The dependent variable is a binary variable that equals one if the firm is investigated for corruption, and zero if the firm is not investigated for corruption. The major independent variables are firm-level corruption measures of the year prior to the 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. Medium-corruption (high-corruption) provinces refers to those in the medium (top) 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 by Chinese Communist Party's Central Commission for Discipline Inspection (CCDI) from November 2012 to December 2014.

Models (1) to (5) in Table 4 present probit regressions of corruption investigation on the five groups of firm-level corruption measures, respectively. Consistent with the univariate analysis, the signs of coefficients on most corruption measures indicate that degree of corruption positively predicts corruption investigation. The only exception is business entertainment expenditure (BEE),

where the coefficient is negative rather than positive, but the t-statistic is only -0.52, far from being statistically significant. It is worth noting that Chinese firms disclose BEE on a voluntary basis, which could introduce noise as high BEE firms might choose not to disclose, causing missing values. 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.

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 corruption postings become insignificant, although the sign of coefficient remain unchanged. To address the concern of reduced sample size, we repeat the regressions in Model (7) without including BEE, and the corruption postings becomes significant at the 0.05 level. Regarding economic significance, the measure of sales growth minus income growth has the largest impact, where one standard deviation increase in this measure is associated with a 8.3 percentage points increase in the probability of investigation. The marginal effects are also large for other corruption measures such as other receivables from parents, corruption postings, related-party loans, and related party sales , which are 8.0 percentage points, 6.4 percentage points, 6.4 percentage points, and 5.6 percentage points, respectively.

For the control variables, size is significantly positive, indicating that larger firms are more likely to be investigated for corruption. Additionally, the dummy of high-corruption province is also significantly positive, indicating that a more corrupt political environment can boost corrupt behaviors in the corporate world. The coefficient in model (7) suggests that, everything else equal, the probability of investigation is 13.9 percentage points higher for firms located in high-corruption provinces than those in low corruption provinces.¹⁵ For robustness, we also estimate logit regressions instead of

¹⁵ One concern about the provincial corruption index is look-ahead bias, as the index is constructed during 2012-2014. For robustness, we repeat the regression analyses without controlling for the provincial corruption index, and all our results hold. We report these results in Section A.6 of the Appendix for brevity.

probit regressions and obtain similar results. Overall, our results indicate that investigated managers are from firms that are generally more corrupt than their peers.

3.2. Are Political Factors Related to Investigations?

While our results are consistent with the corruption investigations affecting more corrupt firms, it is also possible that political factors could influence corruption investigations and corrupt firms are targeted for political reasons. We therefore examine the relation between firms' political connections and the investigation events. On the one hand, political connections can increase the probability of investigation if the anti-corruption campaign targets firms that are benefiting from their political connections. In fact, the campaign began with a targeting of politicians and later spread to the business world ("spillover effect"). On the other hand, political connections can decrease the probability of investigation if the connections serve as protection to the firms ("protection effect"). While the spillover effect is likely associated with general political connection, the protection effect is likely associated with specific political connections between firms and those in power.

We therefore examine two measures of political connections: a measure of general government connection, and a measure of specific affiliation with the current leadership. To measure general political connections between firms and government, we follow the existing literature [e.g., Fan, Wong, and Zhang (2007), Fisman and Wang (2015)] and construct the measure as a dummy variable that equals to one if a C-Suite executive of the company previously served as high-ranking government official.¹⁶

Following Cohen, Frazzini, and Malloy (2010) who examine school-tie connections based on University affiliations between U.S. firms and analysts, we measure specific political connections based

¹⁶ The Chinese political system has five ranks: 1) Nation ("Guo Ji" in Chinese, e.g., President, Vice President, Premier, Vice Premier); 2) Province/Ministry ("Sheng/Bu Ji", e.g., Provincial Governor, Deputy Provincial Governor, Minister, Deputy Minister); 3) Prefecture/City ("Ting/Ju Ji", e.g., Mayor and Deputy Mayor of prefecture-level cities); 4) County ("Xian/Chu Ji" e.g., county's chiefs); 5) Township ("Xiang/Zhen Ji", e.g., Town Mayor). We follow Fisman and Wang (2015) and identify executives that held a Prefecture/City or higher position before joining the company.

on affiliation with the universities attended by the seven current members of the Politburo Standing Committee (PSC) of CPC's Central Committee, the most powerful decision-making body in China. The university affiliation measure is a dummy variable that equals to one if a C-Suite executive of the company graduated from the same university as one of PSC members.¹⁷ For both event firms and matched firms, we manually read their managers' biographies (most from CSMAR and some from online search) and collect the university data.¹⁸

For the analysis of general government connection, we first examine simple univariate results which show that 43.3 percent of the event firms have general government connections, over twice as that of matched firms (18.7 percent). More formally, we estimate similar probit regressions as in Table 4 but on the general government connection measure. In Panel A of Table 5, the coefficient on the general government connection measure is significantly positive, suggesting that firms that have closer relations to government are more likely to be investigated. The coefficient remains significant after adding controls for the firm-level corruption measures. These results are consistent with the spillover effect, namely, that firms with political connections are more likely to be an anti-corruption target.

For the analysis of university affiliation, we also examine univariate results as a starting point (shown in Table A7 of the Appendix). Among the 150 investigated firms, just 12 (or 8.0%) firms have the same university affiliations as existing leadership. This is considerably lower than the 27 (18.0%) affiliated firms among the matched sample. The two most prestigious universities in China, Tsinghua University (school of Xi, Jinping) and Peking University (PKU, school of the Prime Minister Li,

¹⁷ As discussed in Section 2, for some event firms, the managers investigated are top managers of parent company. For consistency, in these cases we construct the political connection measures using the managers of the company's parent firm.

¹⁸ We also considered a school-tie measure where leaders and managers within a two- or four-year period at a university would be linked. However, possibly because of mandatory retirement requirements, there is little intersection between firm managers and national leaders at universities. Managers of state-owned enterprises are required to retire at 60, whereas the average age for PSC members is 67.

Keqiang), account for majority of the university affiliations. Top managers of 10 out of the 12 affiliated event firms, as well as 24 out of the 27 affiliated matched firms, went to Tsinghua or PKU.¹⁹

Panel A of Table 5 presents probit regressions of investigation on the university affiliation measure. The coefficient on university affiliation is significantly negative (t-stat -3.10), suggesting that executives with degrees from the same universities as the existing leadership are associated with a reduced probability of being investigated. The coefficient remains significantly negative when we further include the general political connection measure and the firm-level corruption measures. Additionally, the coefficients on the corruption measures are also similar to those in Table 4. For a robustness test, we repeat the regressions in Panel B of Table 5 using an alternative university-affiliation measure based on a firm's number of affiliated managers rather than dummy variable. The university-affiliation effect is also highly significant (t-stat -2.66) with this alternative measure.²⁰

There seem to be three likely explanations for the importance of the university affiliation. First, it is possible that managers who graduated from the schools, especially Tsinghua and PKU, are less corrupt than their peers. Both universities are highly selective in terms of admission and well known for producing China's political leaders, so their graduates may have better self-discipline with greater career potentials in mind. Second, managers with direct relations with national leaders through school affiliation may face a lower probability of investigation. Third, everything else equal, investigators may avoid targeting managers from firms with a Tsinghua or PKU affiliation as they may fear that doing so

¹⁹ Note that a firm can be affiliated with more than one universities. Among the affiliated event firms, 6 are affiliated with Tsinghua, 5 with PKU, and 2 with Xiamen University. Among the affiliated matched firms, 18 are affiliated with Tsinghua, 10 with PKU, and 4 with Xiamen University.

²⁰ The university affiliation measure excludes the Party School of the Central Committee of CPC, which is the university of a current PSC member. The Party School differs from Chinese universities in that it is a unit under the Central Committee of CPC specializing in training (high-rank) government and party officials. For robustness, we repeat the regression analysis using the university affiliation measures that include the Party School and the overall results remain similar. The results and discussions are in Section A.8 of the Appendix.

could be considered challenging the current leadership. Although we would like to disentangle these explanations, it is difficult to find out the motives of parties in corruption investigations.

However, for a comparison and better understanding of possible motivations, we examine university affiliations with the past leadership that are not in common with the current leadership.²¹ Interestingly, university affiliations with past leadership are more common in investigated firms (9.3%) than matched firms (1.3%), a pattern contrary to university affiliations with current leadership. Table 5 Panel B (Models 3 and 4) repeats the probit regressions but with the past-leadership affiliation, and the coefficient is significantly positive, suggesting that university affiliation with past leadership seems to increase the probability of being investigated.²²

To further understand the positive relation between past-leadership university affiliation and the probability of investigation, we examine such affiliation across specific schools and find that the investigated firms' higher affiliation measure is mainly driven by the China University of Petroleum (Panel B of Table A7 in Appendix). This university was attended by Zhou Yongkang, the highest-ranking national leader who was indicted in the anti-corruption campaign. We repeat the test of past-leader university affiliation but excluding the China University of Petroleum, and the coefficient becomes insignificant, indicating that the result is possibly driven by managers linked to the indicted national leader Zhou, Yongkang.

In addition to university affiliation, we also examine two other measures of connections with the existing leadership, including: 1) Workplace connection, which is a dummy variable that equals to one if the company is located in a province where at least one of the PSC members had worked before becoming national leader; 2) Birthplace connection, which is a dummy variable that equals to one if

²¹ There were nine members of the previous PSC, among which seven are not on the current PSC. These former members went to China University of Geosciences, Hebei University of Technology, Harbin Institute of Technology, Beijing University of Chemical Technology, and China University of Petroleum. Additionally, two former members went to Tsinghua, which we do not consider since it overlaps with current PSC members.

²² For robustness test, we also examine past-leader university affiliation using a firm's number of affiliated managers instead of dummy variable, and the coefficient remains significantly positive (reported in Table A8 of Appendix for brevity).

the company is located in the home province of a PSC member. The potential problem with these measures is that they are not as specific and there may not be much affiliation to a province or birthplace – China’s provinces are large and populated, and hence the manager may not have overlapped with national leaders in their workplaces or birthplaces. The regression analyses (reported in Table A10 of Appendix for brevity) show that the workplace and birthplace connections with the existing leadership does not affect the probability of being investigated.

Overall, we believe the descriptive nature of our findings is interesting but note that they have limitations. None of our tests are causal and it is difficult to find out the precise causal driver of the relationships we document or motivation of the politicians. Our results provide evidence that general political connection and specific political connection to former leaders are associated with an increased probability of investigation, while university affiliation with Tsinghua and PKU is associated with a decreased probability of investigation.

3.3. How Do Corruption Investigations Impact the Event Firms?

We examine how the investigations affect the event firms in terms of stock returns and changes in corruption measures. To examine market reaction to the corruption investigations, we plot in Panel A of Figure 4 the cumulative abnormal returns (CARs) of event firms in the [-15, +15] window surrounding investigation, where day 0 is the announcement date of investigation. Daily abnormal return is constructed using Fama-French three-factor model. Panel A shows a sharp decline in stock price upon the announcement of corruption investigations, and the decline persists into the two weeks after the event.²³

We further examine long-term returns of event firms after corruption investigations. Buy-and-hold abnormal returns (BHAR) are used in the tests because cumulative returns can introduce

²³ Since corruption vastly differs between state-owned enterprises (SOEs) and non-SOEs, we further plots SOEs and non-SOEs separately, where the price decline is much larger for non-SOEs than SOEs. The figures are presented in Section A.10 of the Appendix for brevity.

potential bias in the long-term window. Panel B of Figure 4 plots long-term buy-and-hold abnormal returns for event firms in the [-15, +360] window, showing a continued price decline for event firms in the long-term window after corruption investigations. Table 6 reports CARs in the event windows and BHARs in the long-term windows. Consistent with Figure 4, the event firms' returns are significantly negative both on and after the events.

In addition to stock returns, we further analyze changes in corruption measures for event firms after investigations. However, a big issue about this analysis is that the accounting variables end in 2014, thus only firms investigated in December 2012 and 2013 have accounting data in the year after investigations, causing a very small sample and low power. We nevertheless report in Table 7 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 and t+1 are also reported with associated t-statistics. The samples for firm-level corruption measures are as large as 28 firms, and not surprisingly, most of the changes are insignificant. Therefore, we focus on the sign and magnitude of a change. The results show that out of all corruption measures, only one measure, related-party sales, sees a substantial improvement. The measure of sales growth minus income growth also improves slightly. The remaining measures, however, either remain little changed or even deteriorate after corruption investigations. In addition to the firm-level measures, we also report earnings discontinuity measures before and after corruption investigations which do not exhibit material improvement either.

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., to bring positive changes to China's corporate world. To answer this question, we examine the corruption measures for all companies listed on Chinese stock exchanges, namely, Shanghai and

Shenzhen stock exchanges.²⁴ As the second biggest economy in the world, China has seen a rapid growth in stock markets in the past decade. In 2005, there were 1,352 listed companies in our sample, with a total free-float market capitalization of RMB 994 billion, or USD 151.3 billion. As of 2014, there are 2,631 listed 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 going to the firm-level corruption measures, we first examine earnings discontinuity in the ten-year period of 2005-2014. Figure 5 plots earnings distribution for all Chinese listed firms before the anti-corruption campaign (2005-2011) and after the campaign (2013-2014) separately. We exclude year 2012 as the year is largely before the start of anti-corruption campaign (December 2012), but the earnings were summarized and announced in early 2013, after the start of the campaign.

Panel A of Figure 5 exhibits a strong earnings discontinuity around zero for Chinese firms overall during 2005-2011, as evidenced by a 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 the anti-corruption campaign. For a comparison, Panel B of Figure 5 plots the earnings distribution in 2013-2014, which shows that earnings discontinuity remains similar after the start of the anti-corruption campaign.

To formally test earnings discontinuity, we present in Panel A of Table 8 the statistics of earnings discontinuity by year from 2005 to 2014. The difference for small profit is significantly positive for all years, indicating an abnormally large number of firms reporting small profits during this period. Additionally, the difference for small loss is significantly negative for all years, indicating

²⁴ 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.

an abnormally low number of firms reporting small loss. These numbers are consistent with Figure 4 in that earnings management is prevalent for Chinese firms in general. We also compare the statistics between the year before the anti-corruption campaign (2011) and the two years after the anti-corruption campaign (2013-14). The difference for small loss is positive and significant at the 0.10 level, and the difference for small gain is insignificant. We further examine discontinuity statistics for firms already with one-year losses in the bottom panel of Table 8. These firms 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. The bottom panel shows that these firms indeed exhibit greater earnings discontinuity as having much larger differences of small profit and small loss than the full sample, but there is no significant improvement after the anti-corruption campaign. Overall, the results in Table 8 show that the anti-corruption campaign does not seem to reduce earnings discontinuity for Chinese firms.

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 6 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, the start of the anti-corruption campaign.

Panels A to D of Figure 6 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 expenditure (BEE) and regulation breaches. On one hand, Panel C of Figure 6 shows that both measures experienced a large decline after 2012. The dramatic decline in business entertainment expenditure provides formal support for the intense media

coverage of China's efforts to eliminate luxury gifts and social events with the campaign.²⁵ On the other hand, the other three groups of corruption measures do not see a significant improvement after the start of campaign. Specifically, Panel A of Figure 6 shows just a slight decline in absolute discretionary accruals, but the decrease took place in 2012 when the campaign was just beginning. Furthermore, there is no further reduction in accruals in 2013 and 2014. Additionally, Panels B and D show that the measures of related-party transactions and profitability remain little changed after 2012, despite the anti-corruption campaign.²⁶

For a formal analysis, we report in Table 9 the annual averages of corruption measures for all Chinese listed firms from 2005-2014. To assess the statistical significance of changes after the anti-corruption campaign, we calculate the difference for each measure between 2011 (the year before the anti-corruption campaign) and the average of 2013-2014 (the two years after the campaign), together with the associated t-statistic. 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.

Table 9 shows that, consistent with Figure 6, there is a statistically significant decrease in business entertainment expenditure after the start of the anti-corruption campaign. However, the change in regulation breaches becomes significantly positive, suggesting that the decrease shown in Figure 6 is entirely driven by the jump in regulation breaches during 2012.²⁷ Additionally, the change in absolute value of discretionary accruals is also significantly negative, although the drop started in

²⁵ For an example, see the 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>.

²⁶ We also conduct subsample analyses for state-owned enterprises (SOEs) and non-SOEs, and the results of corruption measures for the subsamples are generally similar to those in Figure 6. We present the figure in Section A.11 of the Appendix for brevity.

²⁷ 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).

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 the anti-corruption campaign, although the change in sales growth – income growth is statistically insignificant. Therefore, the results in Figure 6 and Table 9 show that while the anti-corruption campaign successfully reduced business entertainment expenditure for Chinese firms, it has not significantly altered 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 examine the changes in corporate world, an important question is how the anti-corruption campaign impacts the financial market environment in China. We therefore examine if the campaign reduced leakage of inside information and inside trading, important indicators of the financial market environment.

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. Following Griffin, Hirschey and Kelly (2011), we measure abnormal stock return volatility on earnings announcement days relative to other days. A lower stock return volatility indicates fewer price movements upon announcement and therefore more information leakage or insider trading. We consider annual earnings announcements for all Chinese listed firms and construct two measures of volatility around earnings announcement. We first define stock return volatility in a window as the mean of 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). We require at least four days of consecutive trading around the announcement to calculate the volatility measures.

Figure 7 plots the annual averages of volatility measures for all Chinese listed firms from 2005 to 2014. The volatility measures generally decrease rather than increase from 2012 onwards, providing little evidence of reduced information leakage or insider trading after the start of the anti-corruption campaign.²⁸ Table 10 reports the volatility measures from 2005 to 2014, as well as the changes after the start of the anti-corruption campaign. The results also show that, consistent with Figure 7, the volatility measures decrease rather than increase after the anti-corruption campaign, and changes are statistically significant. These results suggest that the anti-corruption campaign does not seem to improve the information environment of China's financial markets.

4.4. Benchmarking Corruption Measures of Chinese Firms to Hong Kong Firms

The changes in corruption measures of all Chinese listed firms, especially those based on financial variables, can be affected by varying macroeconomic condition instead of just the overall degree of corruption. We attempt to address this issue using Hong Kong firms as benchmark. Since the economies of Mainland China and Hong Kong are closely related, Hong Kong firms share similar economic condition with Chinese firms but there is no anti-corruption campaign in Hong Kong during the same period. Therefore, using Hong Kong firms as benchmark can alleviate the impact of varying economic condition and single out the impact of China's anti-corruption campaign.

²⁸ Note that the volatility measures of 2012 are measured after the start of the anti-corruption campaign (December 2012), as the earnings of 2012 are announced in the first quarter of 2013.

We first screen Hong Kong listed firms to identify Hong Kong local firms instead of foreign or Mainland Chinese firms listed in Hong Kong. Among the 1,869 Hong Kong listed firms, we first exclude Mainland Chinese firms, namely, H shares, Red Chips, and Chinese private enterprises, which in total account for 947 Hong Kong listed firms. Next, we exclude 49 foreign firms using three sources: World Federation of Exchanges Database, constituents of Hang Seng Foreign Companies Composite Index, and a manual reading of company tickers and names. In the end, we are left with 873 Hong Kong local firms. Additionally, Chinese firms have December fiscal year ends but Hong Kong firms' fiscal year ends may vary. To avoid misalignment of accounting periods, we further require Hong Kong firms to have fiscal year ends between September and March, which left us with 741 Hong Kong local firms.

Then we use the matched-firm procedure in the paper to match Chinese listed firms with Hong Kong firms. Specifically, for each Chinese listed firm, we identify a group of Hong Kong firms in the same industry as the Chinese firm and with market cap between of 50% and 150% of the Chinese firm. We then choose from this group a matched Hong Kong firm that has the closest book-to-market ratio to the Chinese firm.

Due to data availability of Hong Kong firms, we are able to examine six of the measures for the benchmark analyses: 1) Earnings discontinuity; 2) Absolute value of discretionary accruals; 3) Regulation breaches; 4) Growth of sales minus growth of net income; 5) Profit margin; and 6) Return volatility around earnings announcement. For each measure, we first calculate the difference between Chinese firms and matched Hong Kong firms, and then difference-in-difference before and after the anti-corruption campaign (average of years 2013 and 2014 minus 2011). Table 11 presents the results, where the signs and significances of the changes are similar to those without the benchmarking approach (Tables 9 and 10), with the only exception of absolute discretionary accruals, which becomes

significantly positive, indicating more earnings management. Therefore, the benchmarking analysis confirms that there is little improvement in the corruption measures of Chinese firms overall.

5. Conclusion

It is widely agreed that corruption is costly to an economy, but rarely do corruption levels in a country decrease dramatically. The “Eight-point Regulation” is a widespread effort that we find has led to investigations of top executives at 150 Chinese firms that represent over 18% of the market capitalization in slightly over three years. The investigated firms do exhibit more indications of self-dealing than their matched-firm counterparts, and the investigations are associated with both short-term and long-term negative returns. Managers with the same university affiliations as China’s top leaders are less likely to be investigated, while managers with past political careers or university affiliations to past leaders are more likely to be investigated. Hence while corruption investigations ensnare executives from more corrupt companies, there may be an element of political favoritism.

For Chinese firms as a whole, while there is a large decrease in highly visible business entertainment expenditures in 2013-2014, less conspicuous but important indicators of self-dealing and accounting manipulation exhibit no improvement. This lack of improvement is present for both SOEs and non-SOEs, and after alternative benchmarking with Hong Kong firms. Most notably, earnings management in 2013-2014 is rampant with an extremely large number of firms exhibiting small positive earnings, but very few firms exhibiting negative earnings. Overall, our findings suggest that any decreases in corruption indicators appear to be largely limited to conspicuous consumption.

While more time may be necessary to assess the full impact of this expanding campaign, our findings suggest that the reforms may be 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), it seems that an extensive commitment

to reform of the legal, institutional, and press freedom environment in China may be necessary to achieve substantial reductions in corruption.

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