Contagion or Competitive Effects of Anti-corruption?

Evidence from China[1]

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Abstract

This paper investigates the effect of anti-corruption announcement on the financial policies of competitors in the same industry of corruption related firms. The peer firms did not experience decreases in abnormal returns in the 12 days surrounding the investigation announcement. We find that corruption case announcements are associated with increases in debt issuance and the amounts of bank loan financing. The effect is more pronounced for non-SOEs and firms operate in competitive industries, which suggests that in such industries competitors benefit from the disadvantage of corruption related firms. Further evidence suggests that peer firms capture larger market share and increase investment efficiency after the anti-corruption events. Our results suggest that the industry-specific competition dominates the industry-specific contagion surrounding anti-corruption announcements. Consequently, bank lenders re-allocate economic resources towards more efficient industry peers, which levels of playing fields for firms in China.

Keywords: Anti-corruption; Bank Financing; Competition; Contagion; Peer Firms; Governance.

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1. Introduction

The announcement of the anti-corruption agenda has brought attention on how to re-evaluate the fundamental value of firms that had previously received preferential treatment due to political connections. Goldman, Rocholl, and So (2009) document strong positive abnormal return stock returns following the announcement of the nomination of a political connected individual to the board using the hand-collected data on the connections between board members and Republican or Democratic Party in the U.S.

Rent seeking and corruption are thought to be pervasive around the world when the cost associated with political connection is not sufficiently high. For example, government officials would have incentive to help companies for private reasons instead of their fundamental value. Numerous empirical research identifies the economic costs associated with corruption and the channels through which corruption occurs. There is limited empirical work that studies the consequences of the announcements of anti-corruption cases on the rivals in the same industry of politically connected firms.

The pervasive investigation of government officials started from late 2012 and the number of Chinese institutions investigated in 2015 is more than four times as what it was back in 2013. A 2015 *Wall Street Journal* reports that "the campaign has also shifted from investigating local governments in 2013 and 2014 to focusing on state-owned enterprises this year—and most recently the financial sector." On another 2015 *Wall Street Journal* reports that "Chinese President Xi Jinping's corruption clean-up crew is taking the broom to allies of fallen former Chinese security czar Zhou Yongkang, in a house cleaning that could signal a coming lull in high-level graft investigations." The article goes on to claim that this phenomenon may not be random: "They needed to find out who were the most culpable. They couldn't just arrest everybody."

The announcement of investigation on government officials on corruption cases is considered as a negative event on the market value of political connected public firms. The stock price should fall because these announcements convey information about the true fundamental value of firms' assets given the

decline in expected value of their connections. Despite the fact that anti-corruption agenda is considered as a significant event, there is no evidence on whether and how other firms in the same industry is affected by the investigation of government officials of rivals. It is important to evaluate whether other firms in the same industry benefit from the loss of political connections. To address these questions, we study the effect of investigation announcements on the competitors of corruption related firms. In this paper, we attempt to fill this gap by analyzing intra-industry effects of anti-corruption events on firm market value in the short-run and financing decisions in the long-run.

This paper investigates the link between anti-corruption events and the industry rivals of corruption related firms. A firm is corruption related if CEOs have strong ties to with investigated government officials given the existence of prior working experience or personal relationships that can be searched through the media. In particular, we test the whether political disconnection implies more or less future firm-specific political rent towards the competitors in the same industry. We tests how creditors (e.g. banks) respond to the new information on political connection of industry rivals through debt issuance decisions.

On the one hand, the investigation of government officials can trigger contagion effects on peer firms within an industry. Investors are concerned about the future perspectives of peer firms which could be under the risk of investigation. For example, rival firms in the same industry may have a higher probability of being investigated in the future as anti-corruption cases often occur within the same industry (e.g., oil industry). Prior studies (Lang and Stulz, 1992; Hertzel and Officer, 2012) argue that bankruptcy filings can trigger significant industry-specific contagion effects in terms of stock prices and bank loan spreads. On the other hand, investigation of government officials need not convey negative information for competitors of corruption related firms. Potentially, it can lead to increase in the growth opportunities for others firms by redistributing the market share towards industry rivals. For example, the announcement of investigations could imply that corruption related firms have less competitive advantage comparing with industry rivals. We study the competition hypothesis by examining whether the new

issuance of debt increase and the incentive to hoard cash decrease for peer firms. In particular, we attempt to understand whether creditors allocate more credit towards the industry competitors of corruption related firms.

We test the contagion and competition hypothesis by exploiting a novel data set from the Central Commission Discipline Inspection (CCDI) from 2012 to 2015. Our results on stock price indicate that political disconnection generates negative cumulative abnormal returns for the corruption related firms. However, the industry rivals of corruption related firms are not adversely affected, which supports the competition effects instead of contagion effects. Our empirical results also suggest that industry peers experience increases in the issuance of both short-term debt and long-term debt. Finally, we conduct analyses based on the changes in equity issuance and our results suggest that investors increase the market's expectation of the profitability of the industry's peer firms. The intuition is that investigation of industry rivals reveals negative information about the corruption related firms given the loss of political connection and rent seeking opportunity. In contrast, the announcement of investigations reveals positive information about the efficiency and governance of industry peer firms. Furthermore, we find that the positive relation between corruption investigations and peer firm debt financing is stronger in less concentrated industries, reflecting firms with small market share in the same industry compete for lending as banks have relative more bargaining power.

These empirical results support the competition hypothesis which suggests that the industry peers benefit from anti-corruption events. Having established the positive relation between corruption investigations and peer firms' firm value, we conduct robustness tests by exploring whether these industry peers experience increases in market share after the investigation of corruption related firms. We find that the market share of the peer firms increases as their competitive position improve. We also attempt to pin down the channel through which the competition effects hold by exploiting the changes in investment efficiency of industry rivals. The results on investment efficiency are also consistent with the competition

effects, which indicates that industry rivals increase capital expenditure when the growth opportunity is high.

Our research is among the first to document the influence of anti-corruption events on the welfare of competitors within the same industry. It is not clear ex ante whether these industry peers are adversely affected based on the contagion hypothesis or positively affected based on the competition hypothesis. Our findings support the competition hypothesis and demonstrate that corruption investigations benefit industry rivals through increases in loans offered by banks and increases in market shares. Lang and Stulz (1992) first outline the contagion effects and the competitive effects among competitors surrounding bankruptcy announcements. Their findings support contagion effects are present among less concentrated industries and competition effects dominate in concentrated markets.

Our paper is closely related to Hertzel and Officer (2012), which documents a positive relation between loan spreads and the incidence of bankruptcy filings by industry rivals. Their results also reveal that the contagion effects is stronger in concentrated industries, which is consistent with Lang and Stulz (1992). Our paper is also related to Parsons, Sulaeman, and Titman (2014), which examines whether misconduct incentive of firms is related to the misconduct of neighboring firms. In particular, their paper direct evidence on spillover effects to local firms outside this sector in terms of the incentives to engage in fraud using non-local industry shocks to some of an area's firms. Cross-sectional regression estimates indicate that the spillover effect is stronger for firms with similar size and CEO age.

Our study contributes to the growing literature on the relation between political connections and firm value. Fisman (2001) estimates the value of political connections in Indonesia where connectedness was considered as a primary determinant of firm value. The paper uses an event study approach by exploiting a string of rumors about former Indonesian President Suharto's health during his final years in office. The event study results indicate that the market value of politically dependent firms were considerably lower than the market value of less-dependent firms. Faccio (2006) conducts a comprehensive

study based on 47 countries and demonstrates that connections are common in countries with higher levels of corruption, and countries imposing restrictions on foreign investments. Furthermore, the paper exploit the differences in value added by business people and politicians and demonstrates that significant value enhancing effect is present only when a businessperson enters politics. Goldman, Rocholl, and So (2009) indicate that S&P 500 companies that are classified as having a Republican board significantly outperform S&P 500 companies classified as having a Democratic board after the 2000 presidential election. In particular, information about the political background of board members is used to sort companies into those that are connected to the Democrats and those that are connected to the Republicans.

Another strand of the literature explores the relationship between political connection and bank lending especially in emerging economies. Khwaja and Mian (2005) examine whether politically connected firms in banking in Parkistan are more likely to conduct rent seeking activities. Their results indicate that politically-connected firms borrower 45 percent more and have 50 percent higher default rates if directors of firms participates in an election. The political rents also increase with the strength of the firm's politicians. Claessens, Feijen, and Laeven (2008) study the impact of political connection on stock returns using campaign contribution data from Brazil. They demonstrate that firms that provided contributions to elected federal deputies experienced higher stock returns than firms that did not around the 1998 and 2002 elections. Moreover, politically connections have real impacts on firms as lenders increased bank financing during the four years following each election. Leuz and Oberholzer-Gee (2006) examine the connection to the Suharto regime and the trade-off between domestic and global financing. Suharto firms are more likely to issue publicly traded foreign securities after Wahid's election to mitigate the political uncertainty. Johnson and Mitton (2003) analyze the value losses to firms during different phases of the Asian crisis.

The next section of this paper describes our data and provides summary statistics. Section 3 presents our methodology and the empirical findings in terms of short-run stock market reactions and the long-run

effects on the financing decision of peer firms. Section 4 discusses robustness of our empirical results using bank loan data while Section 5 concludes the paper.

2. Data Sample and Summary Statistics

A. Corruption Case Sample

We first draw our sample of corruption cases by searching the investigation of government officials between 2012 and 2015 from the Central Commission Discipline Inspection (CCDI) website. Since the year 2012, the government required the disclosure of corruption related officials to the public with the goal of improving the transparency of governance. For each announcement of corruption case, the website discloses the name of the government official, the current position before the investigation, the previous position served as government officials or as CEOs of public firms, the type of corruption and the degree of corruption (measured by the estimated monetary and non-monetary amounts of rent seeking activities).[2] Second, we search the existence of any connection between investigated senior government officials and public firms that were listed in the Shanghai and Shenzhen stock Exchange. In particular, we use an algorithm that allows us to manually search whether a relationship exists and identify the type of connection using the media Baidu news.[3] This search method yields a total of 78 officials that have establish relationship with public firms and a total of 61 public firms that have prior connections with investigated officials (also refer to as corruption related firms in later sections).

For the purpose of our research that examines the implication of anti-corruption on peer firms, we keep only the first announcement that reveals information about corruption related firms in an industry as our final sample. This filtering approach reflects the arrival of new information on corruption related firms and the industry peers. This search method yields a total of 30 corruption related public firms that have prior connections with investigated officials. We further classify the type of connection between

[2] The announcement sometimes may not include the whole curriculum of the government official, and we manually search all the previous positions served by the official.

[3] We conduct robustness tests by searching through Google and the connection remains robust given the consistency in media disclosure.

government officials and CEOs into two broad categories: the first type of connection through previous job appointments and the second type of connection through personal network. Finally, we search the industry peer firms of the corruption related firms based on the WIND data, which is extensively used in the market competition research and is frequently used by practitioners in China. Finally, after merging the industry peer firm sample with the CAMAR annual files, we obtain our final sample of 4,550 public firms in the same industry as the corruption related firms.

B. Control Variables

In our regressions, we control for determinants of stock price and debt issuance that have been used in previous studies. The firm characteristics include the firm size (the logarithm of total assets in millions of dollars), the book leverage ratio (total debt over total assets) to measure a firm's debt capacity. We measure the growth opportunities using the Tobin's Q and measure profitability using return on assets (ROA). The Herfindahl index of industry concentration HHI captures the degree of industry competition, and a dummy variable that indicates whether the industry peer firm is an SOE. Since larger and more profitable firms may be better able to obtain external financing, we expect these variables to be positively related to stock prices and new debt and equity issuance. In contrast, the existing leverage of the company is expected to be negatively associated to debt capacity.

C. Sample Overview

Table 1 presents the summary statistics of our sample of investigation of government officials, corruption related firms, and industry peer firms from 2012-2015. Panel A tabulates the number of investigations by quarter and year. The corruption related firms (their industry peers) with 32% (47%) occurring within the period 2012-2013 and the remaining 68% (53%) occurring from 2014 to 2015. Panel B shows that the distribution of the industries for peer firms. The investigation events are more likely to affect industries such as equipment, chemical, real estate, and pharmaceutical.

Table 2 provides summary statistics of the dependent variables and borrower characteristics. We find that peer firms in our sample experience the cumulative abnormal return of -0.62% from the 10 trading

days prior to the investigation event to 2 trading days after the event. Finally, our sample firms are fairly large, reflecting the fact that anti-corruption events tend to occur for firms with significant assets. Further, our sample firms have high leverage, are more likely to hoard cash and operate in competitive industries.

3. Market Reaction to Investigations

We estimate daily abnormal stock returns using the Fama-French three factor model, which includes the Fama and French (1993) factors:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + s_i SMB_t + h_i HML_t + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ is the return to a firm on Day *t* ; $R_{M,t}$ is the return to the value-weighted CRSP market index on Day *t*; SMB_t and HML_t are the returns to the small-minus-big (SMB) and high-minus-low (HML) portfolios that captures size and book-to-market effects on Day *t*. For each firm in the sample, we estimate the parameters in the three-factor model over the 180 days in the pre-event period (Day -210 to Day -30). We use the three-factor model instead of the market model as in Liao, Liu, and Wang (2014) to capture the systematic effect associated with firm size. The three-factor model therefore reduces the likelihood that our results might be contaminated by anomalous factors.

Panel A of Table 3 presents the abnormal returns for both the corruption related firms and the industry peer firms using the Fama-French three factor model. Corruption related firms experience a significant mean three-factor adjusted cumulative abnormal return (CAR) of -3.03% over the period [-10, +2] using the equal-weighted approach. Corruption related firm's industry peers experience a smaller mean three-factor adjusted abnormal return of -0.58% over the period [-10, +2]. The 2.45% difference in mean CARs between industry peer firms and corruption related firms is statistically significant, indicating that anti-corruption investigations had a relatively less adverse effect on the industry peer firms. Over the 9-day period [-10,-2] that includes the week before the investigation announcement, the difference in mean CAR between industry peer firms and corruption related firms is statistically insignificant, which suggests that the information on investigation is less likely to be realized by the market in the pre-event period. We further

examine the market reaction after the investigation announcement over the period [+2, +10] for both types of firms and their difference in mean CAR. The difference in mean CARs between industry peer firms and corruption related firms is statistically insignificant. In summary, the evidence from Panel A of Table 3 demonstrates that corruption related firms respond more negatively to the investigation announcement comparing to peer firms in the same industry.

Panel B and Panel C report the CARs estimated for the corruption related firms and peer firms in the sub-sample characterized by the type of political connections between investigated officials and corruption related firms. In particular, we divide the sample corruption related firms and peer firms into following two groups: the group of job related connection equals one if the government official has served as a CEO of corruption related firms and equals zero otherwise. The non-job related group includes personal connections established between government officials and the corruption related firms. For example, the officials' family member can serve as the CEO of a corruption related firm. We report the Fama-French three factor CARs for both samples. Panel B reports the 23 firms that had formal job related connection with investigated officials and the 1,827 peer firms in the same industry as the corruption related firms. We do not find statistically significant CARs over the [-10,-2], [-10, +2], [-1, +1], and [+2, +10] windows for the corruption related firms. However, industry peer firms experience significant negative CARs over the [-10,-2], [-10, +2], [-1, +1], and [+2, +10] windows, which reflects the potential spillover effects to peer firms in the same industry and the potential investigation for peer firms. For example, given peer firms CEOs have had significant interactions with corruption related firms in terms of previous job appointment, investors expect that peer firms is less efficient and may also have substantial rent seeking activities in the past. Therefore, the investigation of officials also reveal negative information about the peer firms in the same industry as corruption related firms. The difference in mean CARs between industry peer firms and corruption related firms is statistically insignificant.

Panel C displays the CARs for both corruption related firms and peer firms if there is a non-job related political connections. Corruption related firms experience mean CARs of -2.42% and -4.15% over

the [-10,-2] and [-10, +2] windows respectively and is statistically significant at the 5% level or better. For the industry peer firms, we only find a smaller (in magnitude) median CARs of -0.78% and -1.02% over the [-10,-2] and [-10, +2] windows respectively. The 3.94% differences over the period [-10, +2] in mean CAR between industry peer firms and corruption related firms is statistically significant at the 1% level, indicating that the investigation of officials only had a substantial adverse effect on corruption related firms.

The cross-sectional analyses indicates that the market responds differently to job-related and non-job related political connection. The nature of political connection provides an additional perspective to examine whether the contagion or competition effect dominates for the peer firms in the same industry. To understand the long-run effects of anti-corruption on corporate policies, the later sections studies the changes in debt issuance, equity issuance, and market share for the industry peers firms after the investigation of officials.

3. The Corporate Response to Investigations Cases

A. Methodology

In this section, we explore the real impact of anti-corruption events by examining changes in firm debt issuance, equity issuance, and market shares around the investigation event. In particular, we test whether there is any change in corporate financing decisions after the investigation event. For each announcement of investigation in an industry, we focus on the period eight quarters prior to announcement to eight quarters after the event. Our regression specification is as follows:

$$y_{i,t+4} - y_{i,t} = \beta_1 Investigation_{i,t} + \beta_2 Investigation_{i,t} * SOE_i + \beta_3 InvestigationAft_{i,t} +$$

$$\beta_4 InvestigationAft_{i,t} * SOE_i + Firm\ Controls_{i,t} + Industry_i + Quarter_{i,t} + \varepsilon_{i,t} \quad (2)$$

where $Investigation_{i,t}$ is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable $InvestigationAft_{i,t}$ is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The set of *Firm Controls* are included to

account for firm characteristics that might affect the corporate financing decision. These control variables include the following: the ROA, the firm size (the logarithm of total assets), the Tobin's Q, the leverage, the Herfindahl-Hirschman (HHI) concentration index is based on market share (which is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset), and the SOE dummy captures whether a peer firm is state-owned. The industry concentration index is included because it is a powerful predictor of debt policy according to the industrial organization literature. In the later cross-sectional analysis, we provide robustness tests on how industry concentration affect the contagion and competition effects and the subsequent allocation of credit to rival firms.

B. The Impact of Investigation on Net Debt Issuance

We begin by exploiting the debt issuance consequences of anti-corruption investigations. Table 4 presents the estimation results for the sample consisting of peer firms in an industry if a public firm has a previous established connection with the investigated official. All specifications include the industry and quarter fixed effects. The dependent variable in Columns (1) and (2) is the changes of total debt divided by the lag of total assets in percentage points, and the dependent variable in Columns (3) and (4) is the new equity issuance divided by the lag of total assets in percentage points.

In Column (2), the coefficient on $InvestigationAft_{i,t}$ is positive and is statistically significant at the 1% level, which suggests that the net debt issuance increases following the investigation of government officials. The results demonstrate that, on average, net debt issuance increases from 20 basis points above the mean ($Investigation_{i,t}$) to 46 basis points above in the eight quarters after the investigation ($InvestigationAft_{i,t}$), which consists of an increase of 26 basis points. Column (2) also adds an interaction term between $InvestigationAft_{i,t}$ and the *SOE* dummy to analyze whether *SOE* and *non-SOE* peer firms respond differently to the investigation of corruption related firm in their industry. The coefficient on the interaction term is negative and statistically significant at the 1% level. This implies that, among the peer firms of anti-corruption affected industry, banks have incentive to re-allocate resource towards non-SOEs.

One possible interpretation is that SOE peer firms could also have connections with the corruption related firms which are more likely to be SOEs. To reduce the risk of investigations and the probability of default, banks have incentive to provide external financing to non-SOE peer firms, which is associated with increases in net debt issuance.

In Columns (3) and (4), we further examine the impact of anti-corruption investigations on peer firm equity issuances. The analysis on equity issuance allows us to examine how investors respond to the investigation events and evaluate the political uncertainty associated with corruption related firms and peer firms respectively. The coefficient on $InvestigationAft_{i,t}$ indicates that peer firms experience increases in equity issuance by 13 basis points after the investigation of government officials. The magnitude of increase is smaller for equity issuance comparing with the net debt issuance, which suggests that banks are sensitive to changes in political environment and can re-allocate resources at a faster speed than the equity market. In the robustness tests, we provide more evidence on how bank lending terms (e.g., loan amounts, loan maturity, or the requirement of collateral) change after the anti-corruption event for industry rivals.

We further examine the impact of anti-corruption on the long-term and short-term debt issuance. In particular, we test whether the investigation events have significant implications on the short-term lending or the long-term lending. An unreported figure shows that during the eight quarters after the investigation of corruption related firm in an industry, the peer firms experience substantial increases in long-term debt issuance. The dependent variable in Columns (1) and (2) of Table 5 is the changes in short-term debt divided by the lag of total assets in percentage points, and the dependent variable in Columns (3) and (4) is the changes in long-term debt divided by the lag of total assets in percentage points.

From the regression results shown in Columns (1) and (2) of Table 5, we do not observe significant increases in short-term debt issuance during the quarter of investigation and after the investigation. However, the non-SOE firms experience sharp increases in short-term debt issuance. This results is consistent with the previous findings that banks are reluctant to offer new loans to SOE peer firms as they may have political connections with investigated government officials. Columns (3) and (4) display the regression results on

the long-term debt issuance. The results demonstrate that, on average, long-term debt issuance increases from 9 basis points above the mean ($Investigation_{i,t}$) to 30 basis points above in the eight quarters after the investigation ($InvestigationAft_{i,t}$), which consists of an increase of 21 basis points. The evidence on increases in long-term debt issuance for industry rivals suggest that banks have incentive to provide lending with longer maturity to peer firms after the information on political uncertainty is revealed. The interaction term on $InvestigationAft_{i,t} * SOE_i$ is also negative and statistically significant at the 1% level, which confirms that banks treat SOE peer firms and non-SOE peer firms differently after the investigation of officials. The re-allocation of resources towards non-SOE peer firms is in contrast with existing literature on the advantage of SOEs where SOEs obtain bank loans at lower costs and are less likely subject to stringent covenant requirements. In the later section, we provide further evidence on whether this re-allocation of economic resources towards non-SOEs constitutes a socially efficient outcome by examining the investment efficiency of non-SOE peer firms.

C. The Cross-sectional Tests on Industry Concentration

The announcement of investigation of officials conveys information about the growth prospectus of the corruption related firms regarding the decline of future cash flow and loss of political connections. The investigation events can affect the industry peers through the following two channels. First, the announcement of investigations of officials reveals negative information to investors on the whole industry. For example, ex-ante peer firms could also have an existing political connection with the investigated officials or other officials. The investigation of officials reveal to investors that the peer firms also experience the loss of political connection and is less efficient than anticipated. This negative impact of anti-corruption events on peer firm is referred to as the contagion effect.

Second, the investigation events can convey information to investors on the competitive position of peer firms in the same industry. For example, the industry peers firms are more efficient and may not need to seek political rents from bureaucrats. Consequently, the announcement of investigation reveals that the

market value of peer firms is not affected by changes in political environment. This positive implication of anti-corruption events on peer firms is referred to as the competition effect. In this section, we analyze whether the contagion or the competition effects dominate upon the announcement of investigations.

We use the Herfindahl-Hirschman (HHI) concentration index based on each firm's market share (defined as the sum of the square of each firm's sales in an industry). We then divide the sample into peer firms into those in concentrated industries (above median HHI relative to all industries in the fiscal quarter of data) and those in competitive industries (below median HHI relative to all industries in the fiscal quarter). Lang and Stulz (1992) demonstrate that bankruptcy announcements can have negative impact on the stock returns of competitors as the contagion effect dominates. They also document that industry rivals can experience positive stock price reactions to competitor's bankruptcy announcement in highly concentrated industries of low leverage as the competition effect dominates. In this section, we investigate whether the competitive effects dominate the potential contagion effects in credit markets. In unreported t-tests, we examine whether the peer firm characteristics differ substantially for the high and low industry concentration. We find that the average leverage, ROA, Tobin's Q, and rating are not statistically different for peer firms in competitive or concentrated industries.

Table 6 contains the results of ordinary least squares (OLS) regressions estimating the effects of industry anti-corruption events on peer firms' net debt issuance, equity issuance, and cash holdings for the sub-sample of high and low industry concentration. The control variables remain the same as in the main regression on net debt issuance as shown in Table 4. The regression results indicate evidence of competitive credit market effects of anti-corruption in less concentrated industries. The coefficients on $InvestigationAft_{i,t}$ are larger in magnitude in Columns (1) and (3) for competitive industries comparing to the coefficients in Columns (2) and (4) for concentrated industries. The stronger results in competitive industries seems to be inconsistent with the findings shown in Lang and Stulz (1992), where industry rivals are able to capture market share in concentrated industries. In our framework, creditors can also significantly affect a peer firm's ex-post competitive advantage in terms of providing external financing.

For example, banks could have more bargaining power in competitive industries because firms with similar size in the same industry compete for lending. In addition, banks could have relative more bargaining power in competitive industries because those firms are more likely to be bank dependent as they may not be able to fully raise financing from the equity market. Consequently, how banks re-allocate economic resources play a dominant role in determining a firm's competitive position after the investigation events. Peer firms may not be able to capture the growth opportunity in the product market if banks are reluctant to offer loans. Different form the existing research that focuses only on the product market prospectus for peer firms, our analyses incorporate both the product market conditions and creditors' lending decisions. [4]

The results shown in Columns (5) and (6) on equity issuance are consistent with that in Lang and Stulz (1992), where peer firms are able to issue equity less costly in concentrated industries given the loss of political connection of corruption related firms. In Column (7), we observe significant reduction in cash holdings by peer firms in competitive industries, which is consistent with the increases in the amounts of debt issuance shown in Columns (1) and (3).

D. The Peer Firm Market Share

The previous sections demonstrate that how the financing decision of peer firms change after the investigation of corruption related firms in the same industry. In this section, we attempt to study how the anti-corruption events affect the performance of peer firms by examining the changes in the market share in the period before and after the investigation of officials. The market share is defined as fraction of a firm's sales to the total sales by all firms in the same two-digit SIC industry classified by WIND China.

Table 7 reports the OLS regressions examining the effects of corruption investigations on the market share of peer firms. The dependent variables in all regressions are the market share of peer firms.

[4] In the next section on the changes in market share following the investigations, both the product market opportunity and creditors' decision on lending can lead to increases in market share. We do not attempt to pin down which channel may dominate.

Table 7 shows that corruption investigation is positively related to the peer firm market share from the coefficient on $InvestigationAft_{i,t}$. Regression (2) suggests that the market share of peer firms in an industry with corruption investigations is 5 percentage points higher in the eight quarters following the investigation, compared with the set of control firms in other industries without investigation of officials. This represents about a 14% increase in the market share as compared to the median level of market share of all CSMAR firms (0.359%). The increase in market share for peer firms indicates that investigation of officials in that industry generates economically and statistically significant competition effects. For example, peer firms are able to capture the growth opportunity due to the loss of political connections by corruption related firms. In an unreported figure, we observe that the increase in market share is a not short-lived phenomenon and the increase persists even eight quarters after the investigation events.

Columns (3) and (4) display the regression results for the sub-sample analysis of high and low industry concentration. The estimated positive relation between investigation events and the market share for peer firms becomes economically larger in less concentrated industries. Similar the previous findings on the differential impact on SOEs and non-SOEs, the industry rivals that are SOEs experience sharp declines in the market share after the investigation of corruption related firms. This evidence for suggests that the contagion effects arising from anti-corruption dominate for the SOE peer firms. The coefficient estimates for control variables are generally similar in direction and statistical significance across both sub-samples. The evidence further suggests that the observed relation are more likely to be due to the investigation events rather than the underlying credit quality of the firm between the high and low industry concentration. This is because the characteristics of firms issue debt and equity have not changed dramatically during the eight quarters before and after the anti-corruption event.

E. The Channel through Investment Efficiency

Our previous evidence suggests that firms benefit from the loss of political connection by competitors in the same industry. In this section, we seek to understand the economic mechanisms through which anti-corruption events could affect the increases in net debt issuance, equity issuance, and market

share. There are two potential channels that drives the positive relation between anti-corruption and subsequent improvement in performance. The first channel is due to competition where industry rival are able to obtain financing and capture market share due to the disadvantage of corruption related firms. In this case, peer firms may not be efficient and just benefit from the increase in demand for their products. The second channel is due to efficiency of peer firms which did not seek political rent by bribing government officials. Upon the investigation of officials, the corruption related firms are in a disadvantage position comparing to industry rivals. The second channel represents an efficient re-allocation of economic resources from corruption related firms to the competitors in an industry.

In this section, we attempt to distinguish these two channels by examining whether the industry peers operate efficiently in the product market. We conduct regression analysis with the logarithm of one plus capital expenditure as the dependent variables. To analyze the changes in investment efficiency, we measure the sensitivity of investment to Tobin's Q. Hence, the key independent variable is the interaction of $InvestigationAft_{i,t}$ and the Tobin' Q, which captures how firms adjust the capital expenditure with respect to the growth opportunity. The investment efficiency measure follows Gertner, Powers and Scharfstein (2002) which studies investment efficiency in corporate spinoffs and Cao, Julio, Leng, and Zhou (2015) which examines firm investment efficiency around political turnover. All specifications also control for the same set of firm characteristics as in the regression in Table 4.

The regression estimates on the interaction term between the post investigation dummy and the Tobin's Q in Columns (3) and (4) of Table 8 are positive and statistically significant at the 1% level. This evidence indicates that peer firms increase the amount of capital structure when the growth opportunity is high. Consequently, creditors are more likely to shift the resources from the corruption related firms to competitors in the same industry as shown in the previous section on debt issuance. Columns (5) and (6) display the regression results for the sub-sample of high and low industry concentration respectively. Consistent with previous cross-sectional tests on industry characteristics, anti-corruption events are associated with efficiency in operating performance for peer firms in competitive industries. The evidence

shown in this table provides a validation to the previous findings on the competition effects arising from anti-corruption, which demonstrates that peer firms attract external financing due to efficiency rather than the loss of political connections by other firms.

4. Robustness tests on bank loans

We check the robustness of our results concerning the relation between anti-corruption and debt financing using bank loan data from the CSMAR database. If the competition effects indeed dominate the contagion effects upon the investigation of officials, we should observe banks choose to re-allocate resource towards the industry rivals. We merge the bank loan issuance data for our sample of peer firms with the quarterly data used in all previous analyses. The CSMAR bank loan data contains detailed information on loan issuance amount, the maturity of each loan, the spreads, and the inclusion of collateral or not. Our loan sample includes 16,846 observations on bank loan issuance with non-missing loan amounts.

The results from regressing the loan amounts (in logarithm) on the post investigation dummy controlling for firm characteristics are reported in Column (1) of Table 9. The coefficient estimates suggests that anti-corruption investigations are associated with increases in the amount of bank loans offered by banks. Consistent with the findings in the previous sections on increases in net debt issuance, we find similar results on the competition effects arising from anti-corruption using the bank loan issuance data. The marginal effect of anti-corruption is larger in magnitude in Column (2) after controlling for the interaction between SOE dummy and the post investigation dummy. Taken together, the positive association between improvement in corporate governance and increases in external financing remains for the sample of bank loans.

5. Conclusion

Prior research demonstrates how the stock price respond to political turnover or election outcomes. Anti-corruption can potentially has both a contagion effect and a competitive effect on other firms in the same industry. In this paper, we study how the stock returns and financing decisions of peer firms in the same industry are affected by the loss of political connection of rivals as a result of anti-corruption events.

In particular, we test whether the intra-industry contagion and competition effects dominates after the investigation of government officials.

First, our stock price evidence suggests that corruption related firms experience substantial decreases in stock returns as the announcements convey negative information to investors on the loss of political connection and inefficient rent seeking in the past. However, we do not find evidence that peer firms experience declines in stock price surrounding the announcement of investigations. Second, we show that anti-corruption events are associated with large and persistent increases in debt and equity issuance for industry rivals. Consequently, peer firms in the investigated affected industry also exhibit increases in market share relative to firms in other industries without the investigations. The evidence on the increase in competitive position of peer firms relative to corruption related firms supports that the competition effects dominate the contagion effects.

We further analyze one potential channel through which peer firms could benefit from the anti-corruption agenda. Our empirical results show that competitors operate more efficiently compared to corruption related firms and subsequently capture the growth opportunities arising from the loss of political connections of rivals. We also demonstrate that the competition effect is more pronounced for in less concentrated industries. Our interpretation is that peer firms are more likely to be bank-dependent in less concentrated industries and banks play dominant roles in allocating economic resources. Our results are robust to the sample of bank loan issuance where firms obtain larger amounts of bank loans in respond to the loss of political connection by rivals.

In addition to providing novel evidence on the lending channel through intra-industry competition effects exists, our study contribute to the literature on how lenders respond to changes in political uncertainty by re-allocating resources towards peer firms. Furthermore, we examine both the short-run effects on stock prices and the long-run effects on changes in financing decisions surrounding the investigation events. One open question to be studied is whether banks have superior information on the competitive position of corruption related firms and their peer firms in an industry. If banks have insider

information on the political uncertainty and are sensitive to the changes in political connections, how investors would react to banks' loan issuance decisions is a fruitful area to be explored to better understand how information in transmitted across markets.

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Table 1

Distribution of Anti-corruption Cases by Year Quarter and Industry

This table displays the distribution of the sample of investigation of senior government officials and peer firms in each investigated industries. Panel A shows the number of announcement of investigations of government officials, the number of industries are politically connected, and the number of peer firms in the same industry. We keep only the first announcement that affects corruption related firm in an industry in the sample. The year-quater refers to the calendar year and quarter that the investigation occured. Panel B displays the number of peer firms in each of the industries that are affected by the anti-corruption cases, which is classified using the WIND China two-digit SIC codes.

Panel A: The number of investigations

Year-quarter	Number of investigations	Number of affected industries	Number of peer firms
2012-4	1	3	209
2013-1	1	0	0
2013-2	6	8	646
2013-3	6	0	0
2013-4	11	2	74
2014-1	4	0	0
2014-2	14	7	605
2014-3	15	2	52
2014-4	9	6	303
2015-1	11	2	76
Total	78	30	1965

Panel B: Number of peer firms across industries

Industry	Number of peer firms
Semiconductor products and semiconductor devices	46
Electric power	45
Electrical equipment	126
Electronic equipment, instruments and components	148
Independent power producer and energy	7
Real estate and development	136
Aerospace and defense	19
Internet software and services	19
Chemical industry	213
Mechanics	209
Household consumer durables	62
Building material	43
Building products	31
Construction and engineering	52
Mining	151
Media	54
Automobile	23
Auto parts	69
Software	37
Business services and supplies	34
Commercial bank	14
Oil and natural gas	45
Food	102
Water	14
Information technology services	53
Medical and health care equipment and supplies	18
Paper products	31
Pharmacy	119
Financial services	23
Other	22
Total	1,965

Table 2

Summary Statistics

This table presents the summary statistics of the abnormal returns and firm control variables. The CAR[-10,+2] is calculated using the Fama-French three factor model. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. The net debt issuance equals the total debt at year t minus the total debt at year t-1, divided by the total assets at year t in percentage points. The short-term debt issuance equals the short-term debt at year t minus the short-term debt at year t-1, divided by the total assets at year t in percentage points. The long-term debt issuance equals the long-term debt at year t minus the long-term debt at year t-1, divided by the total assets at year t in percentage points. The equity issuance equals the number of shares outstanding at year t minus the number of shares outstanding at year t-1, divided by the total assets at year t in percentage points. The capital expenditure is defined as the logarithm of one plus capital expenditures. The market share (in percentage points) is a firm's total sales divided by the total sales of all firms in a two-digit SIC industry by WIND China. Panel B displays the differences in firm characteristics between corruption related firms and peer firms.

Panel A: Sample of peer firms

Variables	N	Mean	P25	P50	P75	SD
CAR(%)[-10, +2]	5025	-0.620	-5.262	-1.349	2.809	8.518
ROA	28415	0.009	0.002	0.008	0.017	0.017
Size	28419	21.949	20.968	21.746	22.681	1.408
Tobin's Q	28255	2.545	1.353	1.905	2.937	1.978
Leverage	28586	0.450	0.252	0.445	0.630	0.239
HHI	28369	0.073	0.034	0.052	0.083	0.070
SOE	28586	0.445	0.000	0.000	1.000	0.497
Ln(1+ST debt+ LT debt)	28586	16.811	17.371	19.690	21.098	7.600
Ln(1+ST debt)	28586	15.455	16.282	19.168	20.467	8.202
Ln(1+LT debt)	28586	11.751	0.000	17.217	19.960	9.647
Net debt issuance	28369	0.660	-0.654	0.000	1.755	4.040
Short-term debt issuance	28369	0.408	-0.506	0.000	1.284	3.299
Long-term debt issuance	28369	0.239	-0.023	0.000	0.000	2.081
Equity issuance	28369	0.435	0.000	0.000	0.000	2.900
Capital expenditure	27845	16.725	15.715	17.014	18.158	2.714
Market share	28586	1.497	0.118	0.359	1.205	3.761

Panel B: Corruption-related firms and peer firms

	Peer firms		Corrupt frims			
	N	Mean	N	Mean	Diff	P value for difference
CAR(%)[-10, 1]	4964	-0.590	61	-3.030	2.439	0.026
ROA	4964	0.008	61	0.010	-0.002	0.382
Size	4964	22.040	61	23.060	-1.019	0.000
Tobin's Q	4964	2.338	61	2.096	0.241	0.284
Leverage	4964	0.446	61	0.498	-0.052	0.076
HHI	4964	0.061	61	0.102	-0.041	0.000
SOE	4964	0.459	61	0.541	-0.082	0.203

Table 3
Events Surrounding Anti-corruption Investigations and Abnormal Returns

This table reports the stock returns associated with events surrounding anti-corruption investigations for corrupt firms and peer firms respectively. The sample consist of peer firms in an industry where corruption related firms were investigated between 2012 and 2015. Cumulative abnormal returns (CARs) are calculated with the Fama-French three factor model over the 180 days estimation window in the pre-event period (Day -210 to Day -30) and over the event windows of [-10,-2], [-10,+2], [-1,+1], and [+2, +10] respectively. The p-value for statistical significance is shown below the value of CARs. Panel B displays the stock returns for the sub-sample of job-related connections and non-job related connections between corrupt firms and the investigated officials.

Panel A: Market reactions of corrupt firms and their peer firms

	Corrupt firms			Peer firms			Mean T-test	Median T-test
Event window	N	Mean	Median	N	Mean	Median	Peer-Corrupt	Peer-Corrupt
[-10,-2]	61	-1.77	-2.62	4964	-0.43	-0.99	1.33	1.57
		0.01	0.02		0.00	0.00	0.14	0.12
[-10,+2]	61	-3.03	-3.61	4960	-0.58	-1.32	2.45	2.51
		0.00	0.00		0.00	0.00	0.03	0.01
[-1,+1]	61	-0.53	-1.35	4960	-0.11	-0.53	0.42	1.20
		0.38	0.07		0.06	0.00	0.44	0.23
[+2, +10]	61	0.99	-0.17	4960	0.46	-0.31	-0.53	-0.35
		0.26	0.44		0.00	0.00	0.56	0.73

Panel B: Market reactions of corrupt firms and their peer firms by connection types

	Corrupt firms			Peer firms			Mean T-test	Median T-test
Event window	N	Mean	Median	N	Mean	Median	Peer-Corrupt	Peer-Corrupt
Job related								
[-10,-2]	23	-0.69	-0.86	1827	-0.88	-1.40	-0.20	-0.64
		0.46	0.40		0.00	0.00	0.90	0.53
[-10, +2]	23	-1.18	-2.69	1823	-1.22	-1.87	-0.05	0.12
		0.41	0.40		0.00	0.00	0.98	0.90
[-1, +1]	23	0.22	-0.21	1823	-0.22	-0.70	-0.44	-0.77
		0.83	1.00		0.03	0.00	0.61	0.44
[+2, +10]	23	0.24	-1.00	1823	0.51	-0.28	0.27	0.12
		0.84	0.40		0.00	0.08	0.87	0.91
Non-job related								
[-10,-2]	38	-2.42	-3.37	3137	-0.17	-0.78	2.25	2.44
		0.02	0.03		0.16	0.00	0.05	0.01
[-10, +2]	38	-4.15	-4.26	3137	-0.21	-1.02	3.94	2.98
		0.00	0.00		0.17	0.00	0.00	0.00
[-1, +1]	38	-0.99	-2.10	3137	-0.05	-0.42	0.94	2.12
		0.19	0.03		0.53	0.00	0.17	0.03
[+2, +10]	38	1.44	-0.15	3137	0.43	-0.32	-1.01	-0.57
		0.23	0.87		0.00	0.00	0.36	0.57

Table 4
The Changes in Debt Issuance Surrounding Investigations for Peer Firms

This table presents the OLS regression of net debt issuance on the anti-corruption investigation events. The *investigation* is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable *InvestigationAft* is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. The net debt issuance equals the total debt at year t minus the total debt at year t-1, divided by the total assets at year t in percentage points. The equity issuance equals the number of shares outstanding at year t minus the number of shares outstanding at year t-1, divided by the total assets at year t in percentage points. All regressions have standard errors clustered by the peer firm, which is shown in the parentheses. ***, **, or * indicates that the regression coefficient is statistically significant from zero at the 1%, 5%, and 10% level respectively.

	(1)	(2)	(3)	(4)
Variables	Net Debt Issuance		Net Equity Issuance	
Investigation	0.131	0.217	0.129	0.096
	(1.164)	(1.548)	(1.548)	(0.925)
Investigation*SOE		-0.211		0.072
		(-1.082)		(0.496)
InvestigationAft	0.246**	0.462***	0.144*	0.222**
	(2.243)	(3.885)	(1.771)	(2.519)
InvestigationAft*SOE		-0.492***		-0.179**
		(-4.639)		(-2.285)
ROA	-2.787	-2.981	6.658***	6.594***
	(-1.431)	(-1.531)	(4.617)	(4.571)
Size	-0.828***	-0.876***	-0.164**	-0.182**
	(-7.749)	(-8.164)	(-2.070)	(-2.289)
Tobin's Q	0.234***	0.215***	0.065***	0.058***
	(8.792)	(7.981)	(3.309)	(2.917)
Leverage	-5.644***	-5.758***	3.632***	3.594***
	(-16.637)	(-16.934)	(14.457)	(14.268)
HHI	-0.974	-0.632	0.659	0.762
	(-0.445)	(-0.289)	(0.407)	(0.470)
SOE	0.404	0.592**	-0.342*	-0.281
	(1.449)	(2.100)	(-1.655)	(-1.348)
Firm fixed effects	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
Observations	27,432	27,432	27,432	27,432
R-squared	0.026	0.027	0.014	0.014

Table 5
The Changes in Short and Long-term Debt Issuance Surrounding Investigations for Peer Firms

This table presents the OLS regression of short-term and long-term debt issuance on the anti-corruption investigation events. The *investigation* is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable *InvestigationAft* is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. The short-term debt issuance equals the short-term debt at year t minus the short-term debt at year t-1, divided by the total assets at year t in percentage points. The long-term debt issuance equals the long-term debt at year t minus the long-term debt at year t-1, divided by the total assets at year t in percentage points. All regressions have standard errors clustered by the peer firm, which is shown in the parentheses. ***, **, or * indicates that the regression coefficient is statistically significant from zero at the 1%, 5%, and 10% level respectively.

	(1)	(2)	(3)	(4)
Variables	Short-term Debt Issuance		Long-term Debt Issuance	
Investigation	0.044	0.100	0.067	0.089
	(0.474)	(0.857)	(1.177)	(1.246)
Investigation*SOE		-0.136		-0.054
		(-0.839)		(-0.543)
InvestigationAft	-0.001	0.138	0.226***	0.298***
	(-0.013)	(1.396)	(4.055)	(4.913)
InvestigationAft*SOE		-0.317***		-0.163***
		(-3.588)		(-3.016)
ROA	-1.634	-1.759	-0.931	-0.995
	(-1.008)	(-1.085)	(-0.937)	(-1.001)
Size	-0.612***	-0.643***	-0.315***	-0.331***
	(-6.878)	(-7.194)	(-5.769)	(-6.036)
Tobin's Q	0.184***	0.172***	0.046***	0.039***
	(8.300)	(7.654)	(3.365)	(2.863)
Leverage	-4.377***	-4.451***	-1.025***	-1.063***
	(-15.498)	(-15.719)	(-5.923)	(-6.124)
HHI	-0.413	-0.193	-0.635	-0.524
	(-0.227)	(-0.106)	(-0.569)	(-0.469)
SOE	0.386*	0.508**	-0.019	0.043
	(1.665)	(2.163)	(-0.132)	(0.297)
Firm fixed effects	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
Observations	27,432	27,432	27,432	27,432
R-squared	0.024	0.024	0.007	0.008

Table 6
The Cross-sectional Tests on Industry Concentration

This table presents the cross-sectional tests on the impact of anti-corruption investigation events of corporate policies. The sample of peer firms is divided into those in concentrated industries (above median HHI relative to all industries in the fiscal quarter of data) and those in competitive industries (below median HHI relative to all industries in the fiscal quarter). The *investigation* is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable *InvestigationAft* is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. The net debt issuance equals the total debt at year t minus the total debt at year t-1, divided by the total assets at year t in percentage points. The long-term debt issuance equals the long-term debt at year t minus the long-term debt at year t-1, divided by the total assets at year t in percentage points. The equity issuance equals the number of shares outstanding at year t minus the number of shares outstanding at year t-1, divided by the total assets at year t in percentage points. The cash holdings is the logarithm of one plus the level of cash holdings. All regressions have standard errors clustered by the peer firm, which is shown in the parentheses. ***, **, or * indicates that the regression coefficient is statistically significant from zero at the 1%, 5%, and 10% level respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Net Debt Issuance		Long-term Debt Issuance		Net Equity Issuance		Ln(1+cash Holdings)	
	Low HHI	High HHI	Low HHI	High HHI	Low HHI	High HHI	Low HHI	High HHI
Investigation	0.226	0.172	0.083	0.219	0.044	1.025**	-0.075***	-0.128
	(1.571)	(0.268)	(1.131)	(0.658)	(0.413)	(2.364)	(-2.860)	(-0.670)
Investigation*SOE	-0.204	-0.467	-0.046	-0.306	0.140	-0.985**	0.098***	0.225
	(-1.007)	(-0.627)	(-0.445)	(-0.797)	(0.924)	(-1.966)	(2.646)	(1.021)
InvestigationAft	0.474***	0.234	0.319***	0.028	0.174*	0.971***	-0.115***	-0.238
	(3.848)	(0.460)	(5.084)	(0.105)	(1.889)	(2.839)	(-5.089)	(-1.587)
InvestigationAft*SOE	-0.454***	-0.844**	-0.156***	-0.266	-0.181**	-0.149	0.222***	0.365***
	(-4.094)	(-2.154)	(-2.765)	(-1.312)	(-2.186)	(-0.566)	(10.946)	(3.151)
ROA	-3.248	0.243	-0.473	-7.354**	6.830***	2.367	2.993***	2.433
	(-1.604)	(0.034)	(-0.459)	(-1.963)	(4.524)	(0.485)	(8.085)	(1.135)
Size	-0.828***	-1.625***	-0.276***	-0.992***	-0.128	-1.019***	0.955***	0.655***
	(-7.365)	(-4.335)	(-4.822)	(-5.117)	(-1.526)	(-4.034)	(46.459)	(5.903)
Tobin's Q	0.217***	0.209**	0.039***	0.070	0.059***	0.083	0.000	0.022
	(7.670)	(2.373)	(2.714)	(1.537)	(2.783)	(1.397)	(0.055)	(0.826)
Leverage	-5.887***	-2.714*	-1.082***	-0.016	3.482***	6.376***	-1.512***	-0.899**
	(-16.790)	(-1.857)	(-6.055)	(-0.021)	(13.321)	(6.481)	(-23.580)	(-2.081)
SOE	0.553*	1.373	0.058	0.063	-0.281	0.147	-0.462***	0.238
	(1.887)	(1.304)	(0.385)	(0.116)	(-1.289)	(0.207)	(-8.617)	(0.766)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,343	2,089	25,343	2,089	25,343	2,089	25,323	2,089
R-squared	0.028	0.034	0.007	0.034	0.014	0.037	0.124	0.040

Table 7
The Changes in Market Share After the Investigation for Peer Firms

This table presents the OLS regression of market share on the anti-corruption investigation events. The market share (in percentage points) is a firm's total sales divided by the total sales of all firms in a two-digit SIC industry by WIND China. The *investigation* is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable *InvestigationAft* is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. The sample of peer firms is divided into those in concentrated industries (above median HHI relative to all industries in the fiscal quarter of data) and those in competitive industries (below median HHI relative to all industries in the fiscal quarter). All regressions have standard errors clustered by the peer firm, which is shown in the parentheses. ***, **, or * indicates that the regression coefficient is statistically significant from zero at the 1%, 5%, and 10% level respectively.

	(1)	(2)	(3)	(4)
Variables	Market share(%)			
	Whole sample		Low HHI	High HHI
Investigation	-0.022	0.025	0.018	0.226
	(-0.919)	(0.820)	(0.738)	(0.673)
Investigation*SOE		-0.112***	-0.098***	-0.412
		(-2.642)	(-2.847)	(-1.060)
InvestigationAft	0.007	0.050*	0.035*	0.312
	(0.303)	(1.937)	(1.667)	(1.177)
InvestigationAft*SOE		-0.097***	-0.078***	-0.357*
		(-4.200)	(-4.122)	(-1.749)
ROA	-1.077**	-1.117***	-0.848**	-5.634
	(-2.547)	(-2.644)	(-2.465)	(-1.489)
Size	0.380***	0.371***	0.272***	1.313***
	(16.388)	(15.922)	(14.243)	(6.710)
Tobin's Q	0.030***	0.026***	0.026***	-0.009
	(5.182)	(4.483)	(5.393)	(-0.193)
Leverage	0.505***	0.481***	0.300***	3.113***
	(6.863)	(6.519)	(5.039)	(4.082)
HHI	-0.221	-0.143		
	(-0.466)	(-0.302)		
SOE	-0.026	0.015	-0.038	0.965*
	(-0.422)	(0.251)	(-0.761)	(1.756)
Firm fixed effects	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
Observations	27,432	27,432	25,343	2,089
R-squared	0.016	0.016	0.014	0.057

Table 8
The Investment Efficiency of Peer Firms

This table presents the OLS regression of capital expenditures on the anti-corruption investigation events. The capital expenditure is defined as the logarithm of one plus capital expenditures. The *investigation* is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable *InvestigationAft* is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. The sample of peer firms is divided into those in concentrated industries (above median HHI relative to all industries in the fiscal quarter of data) and those in competitive industries (below median HHI relative to all industries in the fiscal quarter). All regressions have standard errors clustered by the peer firm, which is shown in the parentheses. ***, **, or * indicates that the regression coefficient is statistically significant from zero at the 1%, 5%, and 10% level respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Ln(1+capital expenditure)					
	Whole sample				Low HHI	High HHI
Investigation	0.020	0.006	0.030	0.024	-0.005	0.041
	(0.464)	(0.109)	(0.711)	(0.452)	(-0.094)	(0.179)
Investigation*SOE		0.031		0.015	0.006	0.024
		(0.419)		(0.209)	(0.076)	(0.091)
InvestigationAft	0.001	0.017	-0.195***	-0.212***	-0.244***	-0.083
	(0.025)	(0.386)	(-4.009)	(-3.915)	(-4.330)	(-0.361)
InvestigationAft*SOE		-0.037		0.030	0.026	0.104
		(-0.935)		(0.727)	(0.610)	(0.722)
InvestigationAft*Tobin's Q			0.080***	0.082***	0.090***	-0.008
			(7.492)	(7.440)	(7.790)	(-0.224)
ROA	0.871	0.858	0.793	0.804	0.081	10.287***
	(1.194)	(1.176)	(1.089)	(1.103)	(0.107)	(3.917)
Size	1.576***	1.572***	1.516***	1.517***	1.556***	0.983***
	(39.073)	(38.800)	(36.903)	(36.889)	(35.992)	(7.096)
Tobin's Q	0.009	0.008	-0.051***	-0.051***	-0.059***	0.015
	(0.906)	(0.750)	(-3.958)	(-3.962)	(-4.323)	(0.368)
Leverage	-1.996***	-2.003***	-1.918***	-1.909***	-1.959***	-0.388
	(-15.613)	(-15.627)	(-14.966)	(-14.835)	(-14.712)	(-0.730)
HHI	-4.061***	-4.043***	-4.183***	-4.206***		
	(-4.974)	(-4.949)	(-5.128)	(-5.151)		
SOE	0.040	0.052	0.058	0.047	0.040	0.224
	(0.383)	(0.487)	(0.549)	(0.439)	(0.365)	(0.592)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26,712	26,712	26,712	26,712	24,659	2,053
R-squared	0.102	0.102	0.104	0.104	0.105	0.098

Table 9
Bank Loan Issuance Surrounding Investigations

This table presents the OLS regression of the amounts of bank loan issued on the anti-corruption investigation events. The dependent variable is the logarithm of the loan amounts from the CSMAR bank loan data. The investigation is an indicator variable that equals one if the investigation of an official occurs within the fiscal quarter end date for a peer firm, and equals zero for all other quarters. The variable InvestigationAft is a dummy that equals one for all quarters after the investigation of an official, and equals zero for all other quarters prior to the investigation event. The ROA is operating income before depreciation divided by total assets. Size is the logarithm of total assets. Tobin's Q is the ratio of the market value of assets to total assets. Leverage is long-term debt plus short-term debt divided by total assets. Market Herfindahl-Hirschman (HHI) concentration index is defined as the sum of the square of each firm's share in the same two-digit SIC classification from WIND China dataset. SOE is a dummy that equal one if a peer firm is state-owned and equals zero otherwise. All regressions have standard errors clustered by the peer firm, which is shown in the parentheses. ***, **, or * indicates that the regression coefficient is statistically significant from zero at the 1%, 5%, and 10% level respectively.

	(1)	(2)
Variables	Ln(loan amounts)	
Investigation	0.017	-0.018
	(0.424)	(-0.332)
Investigation*SOE		0.063
		(0.895)
InvestigationAft	0.077**	0.085**
	(2.147)	(2.096)
InvestigationAft*SOE		-0.019
		(-0.461)
ROA	1.700**	1.695**
	(1.976)	(1.970)
Size	0.154***	0.149***
	(3.176)	(3.017)
Tobin's Q	0.033**	0.031**
	(2.405)	(2.222)
Leverage	-0.653***	-0.654***
	(-4.203)	(-4.201)
HHI	-2.089**	-2.086**
	(-2.362)	(-2.358)
SOE	0.064	0.066
	(0.369)	(0.380)
Firm fixed effects	Yes	Yes
Quarter fixed effects	Yes	Yes
Bank fixed effects	Yes	Yes
Observations	16,846	16,846
R-squared	0.542	0.542