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RESEARCH ARTICLE

Relationship investment and local corruption environment: Evidence from China

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Abstract

We examine how firms interact with government officials within a corruption environment. Using corruption convictions to measure the extent of political corruption at the province level and a sample of Chinese listed firms, we find that firms located in more corrupt provinces invest more in building connections than firms located in less corrupt provinces. These results are robust to the instrumental variable approach, adjacent province matching, propensity score matching and alternative measurement of political corruption. We also show that the effect of political corruption is more pronounced in non-state-owned enterprises (non-SOEs), smaller firms, firms with financial constraints and firms without political connections. Additionally, we find that those firms that invest more on connection building are less likely to restate financial reports and have lower financial statement comparability. Overall, the evidence from China is consistent with the political connection view that firms respond to political corruption by investing in relationship building, which contrasts with the evidence from the US.

KEYWORDS
China, ETC, political corruption, relationship

JEL CLASSIFICATION
G30, G38, D73

1 | INTRODUCTION

The government–firm nexus is critical to business success, especially in economies where the government policies have extensive impact on business operations (Faccio, 2006; Fang et al., 2022). Thus, firms might have strong incentives to cultivate and establish connections with governments, and the existing literature has shown the prevalence of political connections and the benefits of being connected to the government, such as accessing external finance at a lower cost, gaining more investment opportunities and receiving favourable treatment from the government in various forms (e.g., lower tax payments, less likely to be caught for fraud; Haveman et al., 2017; Li et al., 2008; Piotroski & Zhang, 2014).

It is therefore important to understand how firms invest to establish this nexus, in particular in those countries where political lobbying is less developed. Some studies have documented that firms invest in relationship building in exchange for government protection (Cai et al., 2011), access to more bank loans (Chen et al., 2013) and more government subsidies (Fang et al., 2018). Other studies show that such investment is associated with future stock price crash risks (Hu et al., 2020) and more earnings management (Hu, 2021). But, on top of that, it is essential to know firms' decisions regarding relationship investment in response to the political environment to which they are exposed. Though Fang et al. (2022) has found that firms invest more in relationship building following changes in local government officials, still little knowledge has been presented of how firms' relationship investment is determined by external institutions. Therefore, in this study, we aim to examine how firms spend on relationship building with governments with a particular focus on the influence of the local corruption culture, using a large sample of listed firms and manually collected data on local corruption in China.

The impact of local corruption culture on firms' relationship investment is debatable, due to the inconclusive evidence presented by recent studies. On the one hand, the political expropriation view contends that corrupt politicians can abuse their political power to extort firms for their private benefits. In response, firms operating in highly corrupt regions are more vulnerable to rent-seeking by corrupt politicians, and they have strong incentives to shield their assets by holding less cash and manifesting higher leverage (Bermpei et al., 2021; Smith, 2016). This view infers that firms are less likely to invest in relationship building. On the other hand, the political connection view argues that firms invest in relationship building to establish connections with local government officials for rent-seeking (Fang et al., 2022). It is admitted that such cultivation incurs substantial expense. Shleifer and Vishny (1994) set up a theoretical model to describe the mutual benefit transfers between corrupt politicians and firms, i.e., the subsidies from corrupt politicians to firms and the bribes from firms to corrupt politicians. This implies that firms headquartered in high corruption regions are likely to invest more in relationship building with government officials for political protection or economic benefits (Cai et al., 2011; Fang et al., 2022).

Overall, given this plausibly mixed evidence regarding the real impact of corruption on firm's decisions to spend on relationship investment, it is possible that firm managers will have diverse views on the impact of corruption. Therefore, we intend to examine whether firms will invest in relationship building within a corrupt culture, and how relationship investment varies across different groups of firms, aiming to shed some further light on the issue of how firms engage with corrupt politicians.

To answer the research question, we focus on the Chinese setting – the largest emerging market. Firstly, corruption and rent-seeking by government officials are prevalent in the Chinese market, and government officials usually shape firm behaviour through a number of channels, such as state ownership, social networks, regulations and licences (Piotroski & Zhang, 2014). The underdeveloped institutional environment and weak legal system further facilitate corrupt officials to expropriate or extort from firms for their private benefits. Firms thus rely on extensive connections with government officials to protect themselves from political expropriation to survive or

even grow, especially in China where political lobbying is under-developed. Secondly, using a single country sample, we can control for the variations in culture and institutional environments at the national level, thus providing direct inferences about the influence of local corruption on firm behaviour. We focus on China as we believe Chinese firms' responses to local political corruption are arguably different from what has been documented in the US, given their distinct institutions and legal systems. However, there is a lack of empirical evidence to support this prediction that can help us to understand firms' responses to political corruption in emerging markets. This study thus focuses on China and provides insightful evidence about relationship investment in China, which has had fast economic growth during recent decades.

This study is twofold. First, we examine the behaviours of firms headquartered in corrupt regions in response to rent-seeking by corrupt officials. In particular, US evidence shows that firms choose to shield their assets from political expropriation; we are interested in investigating whether Chinese firms have a similar tendency when facing corrupt officials. Second, we look at the consequence of local corrupt culture on firms' liquidity and accounting quality of financial reports. Given the importance of political connections, we predict that Chinese firms may choose to maintain liquidity and invest more in establishing relationships in exchange for benefits. Hence, we examine if firms hold excess cash to maintain the liquidity to invest in relationship building. Firms getting protection from local politicians may get less scrutiny from the market, so we examine if firms will produce different quality accounting reports when they spend more on relationship building.

To test our predictions, we choose a sample of listed firms in China, including a total of 3447 listed firms during the period 2003–2018. We use the number of corruption convictions of government officials at the department and bureau level and above in each province (and province-level municipal) published by the Central Commission for Discipline Inspection as the primary proxy for local corruption environment. We argue that a larger number of convictions in a province indicates a higher level of political corruption culture so firms located in that province are vulnerable to political extraction.[1] Our key variable of corruption environment is defined in the same way as in Butler et al. (2009) and Smith (2016), and the results are robust when we adopt various alternative measures of the corruption environment of cities where firms headquarter.

Overall, empirical evidence supports the political connection view. Specifically, we find that firms headquartered in more corrupt provinces invest more in building connections with corrupt officials. These results are robust to the instrumental variable approach, adjacent province matching analysis, propensity score matching and regressions with various fixed effects combinations. We also find that the results are more significant for firms with non-government controlling shareholders, for smaller firms, firms with financial constraints and firms without political connections.

To further support the main argument, we also provide evidence showing that firms headquartered in more corrupt provinces hold more cash to meet this requirement. From the accounting perspective, we find that those firms engaged in more relationship investment have poor financial statement comparability and are less likely to experience financial report restatement.

This study mainly contributes to the literature in law and finance. In particular, this study advances our knowledge about the real effect of political corruption on economic growth in emerging markets. The seminal works by La Porta et al. (1998, 2000, 2002) suggest that corruption and the risk of expropriation have significantly weakened law enforcement, corporate governance and investor protection, which results in lower firm valuation and slower economic growth (Mauro, 1995). However, as the largest emerging market and the second largest economy in the world, China is an exception and paradox that does not fit this framework. Given that there is no

[1]It could also be argued that the number of corruption convictions actually indicates the intensity of anti-corruption. We argue that the enforcement of anti-corruption in China is homogeneous across all provinces, and there is no direct evidence showing that some particular provinces are under more strict scrutiny of anti-corruption enforcement (Giannetti et al., 2021; Guo et al., 2021).

previous research that empirically measures the relationship investment with government officials, this study provides robust evidence that firms invest more on relationship building to entertain corrupt politicians. The results generally suggest that the view of managers in China is that corruption sets the rules of the business environment, which could expedite the provision of procurement contracts, enhance efficiency and reinforce the long-lasting bonds between government and firms, consistent with the view of Vial and Hanoteau (2010) and Mironov (2015).

Existing theoretical studies and empirical evidence from the US suggest that political corruption impedes market development and destroys the business environment, which encourages firms to shield assets and engage in less innovation (Ellis et al., 2019; Huang & Yuan, 2021; Smith, 2016). This study, however, supports the opposite political connection view that firms tend to establish relationships with politicians, which is true for China, the largest business partner of the US. Therefore, our study provides evidence to policymakers and managers to set firm policies when operating in China.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature and develops the main hypothesis. Section 3 describes the data for empirical analysis, and Section 4 presents the empirical results. Section 5 concludes the paper.

2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Maintaining a close relationship with the government is critical to business success, especially in those economies where government officials can affect firms' operations directly (Faccio, 2006). Existing literature has shown that firms connected with governments can receive preferential treatment, such as access to more bank loans, more procurement contracts and favourable tax treatment (Claessens et al., 2008; Faccio, 2006; Faccio & Hsu, 2017; Houston et al., 2014; Khwaja & Mian, 2005; Leuz & Oberholzer-Gee, 2006; Schoenherr, 2019), and thus have enhanced firm performance (Fisman, 2001; Goldman et al., 2009). In the Chinese setting, it has also been documented that maintaining ties with officials is an important form of political activity to ensure access to essential resources, which is key to business success in China (Berkman et al., 2010; Feng et al., 2015; Haveman et al., 2017; Jia et al., 2019; Li et al., 2008; Piotroski & Zhang, 2014; Wu et al., 2012). Therefore, Chinese firms have strong incentives to establish connections with politicians.

Admittedly, it is usually costly to maintain such a relationship to seek rents from governments. Current studies have started to note entertainment spending as a critical form of firms' investment in building this relationship, which usually takes the form of entertaining the politicians in exchange for protection from the government and even the overlooking of the regulatory commission (Cai et al., 2011; Chen et al., 2013; Fang et al., 2022; Hu, 2021). For example, firms with more relationship investment are able to experience better performance and have access to more bank loans (Cai et al., 2011; Chen et al., 2013), while conducting more earnings management but experiencing higher future stock crash risks (Hu, 2021; Hu et al., 2020). Fang et al. (2022) provides evidence that firms spend more in building relationship with newly appointed local government officials.

However, it is unclear how corrupt officials can impact local firms' relationship investment activities. Political corruption is pervasive around the world and costly to economic development (Shleifer & Vishny, 1993). It reflects the regulatory function of local governments and the political and business environment where firms operate, and thus directly impacts firm behaviours (Murphy et al., 1993). Generally, corrupt politicians can use the threat of regulation/licence and extortionate taxes to solicit firms' support and extort from firms for their private benefit and political objectives (McChesney, 1987; Piotroski & Zhang, 2014). To avoid rent-seeking extortion, firms tend to shield their resources and assets by holding less cash, taking

out more bank loans, reducing innovative activities and using income-decreasing discretionary accruals (Ellis et al., 2019; Huang & Yuan, 2021; Smith, 2016; Xu, Dao, & Wu, 2019; Zhang & Zhang, 2023). These studies are from the US market, while such an observation may not be generalisable to the emerging markets of China, given the significantly different institutional environment and legal system in China.

It has been documented extensively that the Chinese economy is dominated by state capitalism and the government maintains control over the key resources and how to allocate them (Chen et al., 2018; Jiang & Kim, 2020). Government officials can intervene in the corporate sector via either state ownership or soft channels, such as licences and taxes, to affect firms' operations (Piotroski & Zhang, 2014). In such an environment, corrupt officials may have even stronger incentives and more power to extract private benefits from firms, through bribery, for example. Shleifer and Vishny (1994) set up a theoretical model and clearly delineate the transfer of mutual benefits between businessmen and corrupt politicians, which requires continuous and long-lasting 'relationship expenses' in exchange for the favourable treatment by the corrupt politicians. In their model, one of the key inferences is that entertainment spending on politicians is materially meaningful when the local corruption level is higher. Failure to satisfy the corrupt officials may result in significant retaliation, such as being unable to access key resources or key personnel being sacked (Fang et al., 2022; Schoenherr, 2019).

Building on these studies, we argue that local corruption culture can be regarded as an informal institution in China with a 'greasing wheel' effect on firms' operations. In this environment, corruption can help relationship firms cut through bureaucratic rules and enhance efficiency by expediting the provision of government goods and services and the granting of permits and licences. Therefore, we conjecture that Chinese firms in more corrupt regions have no intention of shielding their assets, rather, they tend to purchase political favours by maintaining liquidity. We form our main hypothesis as follows:

> **H1.** Firms invest more in building relationships if they are located in more corrupt regions.

3 | DATA AND METHODOLOGY

3.1 | Data collection and sample

Our sample starts with all listed firms on the Shanghai and Shenzhen Stock Exchanges between 2003 and 2018. Following previous studies, we remove financial firms and firms flagged with ST and *ST (which stands for special treatment) because of irregularity in financial reporting and negative profits for two or more consecutive years. We also exclude observations with missing information for empirical analysis. Our final sample comprises 3447 listed firms and 26,571 firm-year observations. The variables used in the analysis are defined in Table A1.

Firm financial and corporate governance data used in this paper are obtained from the Chinese Stock Market and Accounting Research (CSMAR) database, a widely used commercial database on the Chinese capital market. To measure the corruption level, we manually collect the number of total convictions/indictments in each province from the information published by Central Commission for Discipline Inspection (CCDI) website. We scale the raw number of convictions by the population (in millions) as the proxy for local corruption, which is then assigned to the observations at the firm level when firms operate in a specific province. The measurement of political corruption is described in more detail in Section 3.2. Data on our alternative measure for corruption (*Official Corruption*) come from Procuratorial

Yearbook of China (2003–2017). Data on provincial GDP comes from the National Bureau of Statistics of China.

3.2 | Measurement of political corruption

We follow existing studies and use the number of official convictions in each province scaled by its population to measure the level of political corruption (Butler et al., 2009; Smith, 2016). In general, the Chinese political system has five administrative levels: state, province, municipal/city, township and county, and government officials have five layers of political position: state level (*guo ji*), province and ministry level (*shengbu ji*), department and bureau level (*tingju ji*), township and section level (*xianchu ji*) and county and division level (*xiangke ji*). Government officials at lower levels of the political hierarchy are responsible to those at higher levels.

To provide insightful evidence, we focus mainly on official convictions at the department and bureau level and above for the following reasons. First, these corruption cases usually have larger and more substantial impacts on the corporate sector and the regional economy than general corruption cases have. Secondly, these cases usually attract greater public attention, so that the disclosure of information about these cases is better. Thirdly, these cases may mitigate the potential endogeneity concern that corporate policies may cause these cases, because these cases are political and less likely to result from their interaction with local firms. Our identification of high-level corruption is consistent with existing studies on China (Pan & Tian, 2020; Piotroski & Zhang, 2014). The information on these corruption cases was hand-collected by searching information published on the website of the Central Commission for Discipline Inspection of the Communist Party of China (CCDI), supplemented by Baidu (www.baidu.com) and Google (www.google.com) web searches.

Overall, we collect a total of 2168 corruption cases involving government officials at the department and bureau level and above during the period 2003–2018. The summary average statistics of these cases by province are presented in Table A2. Figure 1 shows the corruption data summarised in Table A2. We use mean corruption cases per province and plot these data in the choropleth map with the four breaks shown in the key. Figure 1 highlights the geographic variation in corruption in China.

One concern with our yearly-based corruption measure is related to the corruption environment which is expected to be persistent during our sample period. Moreover, it could also be argued that the larger number of announced corruption cases in a particular year may actually capture the corruption activities during the previous years of the involved officials' career. To address this potential issue, we also construct another proxy for corruption, *Persistent corruption*, which is defined as the average of yearly announced corruption cases within each province over the entire sample period. This measurement is constructed at the province level for all firms and stacked across all years, which can better capture the persistent corruption environment.

We further divide the corrupt government officials into three categories based on their political level: state-level officials, provincial and ministry level officials, and department and bureau level officials, as shown in Figure 2. State-level corruption officials represent 0.8% of total corruption cases and provincial-level officials represent 11.6%. The most common corruption scenario involves department and bureau level officials, which account for 87.6% of corruption cases. We also use the total conviction cases at all levels of governments in each province to measure political corruption in the robustness tests. The numbers of the convictions are from the China Procuratorial Yearbook during the period 2003–2017. Therefore, the number of observations using this proxy is reduced.

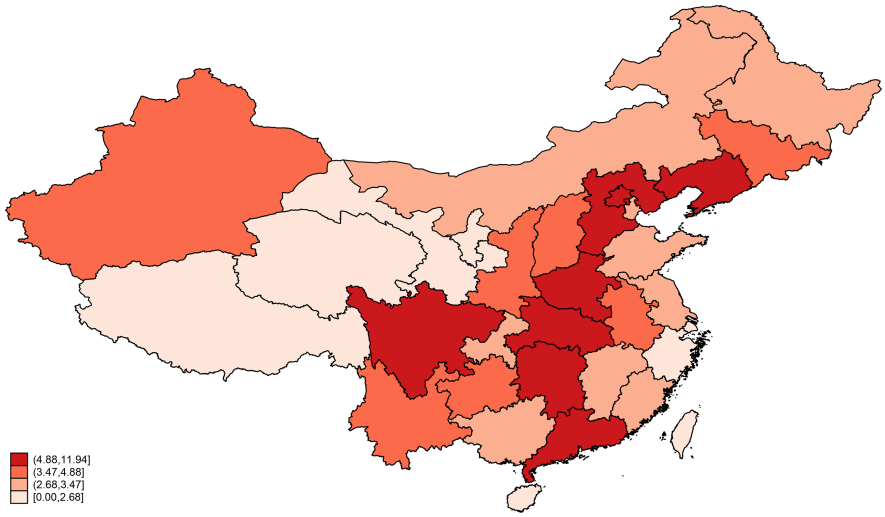

FIGURE 1 The distribution of corruption cases in China from 2003 to 2018. This figure is a map of the provincial mean corruption data from Table A2 from 2003 to 2018.

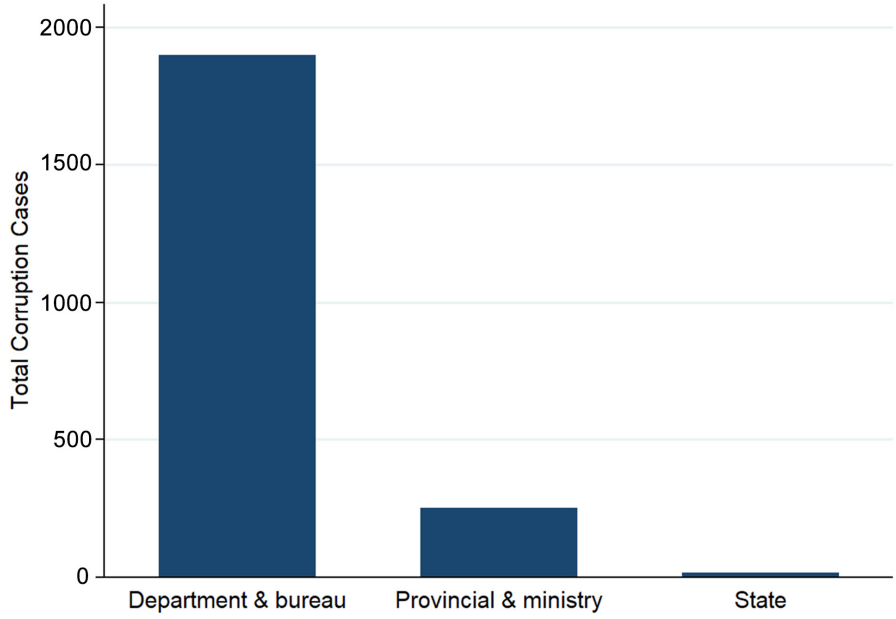

FIGURE 2 The types of corruption cases in China from 2003 to 2018. This figure shows the total corrupt cases at state level, provincial level, and department and bureau level from 2003 to 2018.

3.3 | Measurement of the relationship investment: Abnormal entertainment and travel costs

We acknowledge the difficulty of measuring the expenses in building connections with the government because no such item is disclosed by firms. However, the seminal paper by Cai et al. (2011) suggests that the figures for entertainment and travel costs (ETC) is an effective

proxy for the relationship building activity, so we use that as the proxy for investment in relationship building. Listed firms need to report ETC in the footnote to their annual statements. They argue that ETC is a standard expenditure item containing legitimate business expenses, but Chinese managers commonly use ETC to reimburse other expenditure. For example, managers use ETC to bribe government officials and entertain customers and suppliers with gifts, alcohol, cigarettes, banquets, tourism and entertainment expenses, or use fake or inflated invoices to reimburse corruptive expenses (Cai et al., 2011; Fang et al., 2018). The raw measure of ETC is useful but noisy because it covers expenses for both legitimate business and corruptive activities, and thus over-estimates corruption expenditure. To address this issue and distinguish corrupt payments from legitimate business expenses, we follow the method used in Fang et al. (2018). Fang et al. (2018) modify this measure by decomposing ETC to a normal component and an abnormal component based on the accounting literature on the treatment of discretionary accruals. We use their method to get the abnormal part of ETC to measure expenditure on building connections with government officials in China. We estimate the following cross-sectional regression for each industry-year sample:

$$ETC_{i,t} = \alpha_0 + \alpha_1 Size_{i,t} + \alpha_2 Business\ Region_{i,t} + \alpha_3 GDP_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *Size* is a firm's total assets; *Business Region* is the number of business regions in which a firm operates in a given year based on its self-defined regions; and *GDP* is the natural log of a firm's home province GDP in a given year. We use three control variables to estimate firms' predicted ETC, and take the residual from Equation (1) as the abnormal component of ETC. Specifically, *AETC/Sales* used in the multivariate analysis is measured as the residual from Equation (1) divided by a firm's total sales times 100.

3.4 | Other variables

We control for several firm and corporate governance measures shown by prior literature to affect firms' ETC spending and/or excess cash levels. In particular, we include board size (*Board Size*), capital expenditure (*Capital Expenditure*), cash flow (*Cash Flow*), CEO education level (*CEO Education*), dividend (*Dividend Dummy*), firm size (*Firm Real Size*), market-to-book ratio (*Market-to-book ratio*), negative net income dummy (*Negative NI*), net working capital ratio (*Net Working Capital ratio*), R&D capital (*R&D*), missing R&D dummy (*R&D Missing*), and KZ index (*KZ Index*) based on the model of Kaplan and Zingales (1997). The definitions of these variables are summarised in Table A1.

4 | EMPIRICAL RESULTS

4.1 | Descriptive statistics and univariate test

Table 1 presents the summary statistics of all variables in our study. Continuous variables are winsorised at 1st and 99th percentiles. On average, there are eight corrupt cases detected by the CCDI each year in each province, with a minimum of zero and a maximum of 64. Firms spent resources on ETC, averaging 1% of annual sales. This is slightly higher than the figure in Fang et al. (2018), who report ETC as 0.6% of annual sales for Chinese firms from 2007 to 2015. Our median value (0.003) is very similar to Fang et al.'s (2018) number (0.004). Our mean value of *AETC/Sales* (−0.01) is also similar to that in Fang et al. (2018) (0). Our cash ratio is

TABLE 1 Descriptive statistics.

Variable	Observations	Mean	Median	Standard deviation	Minimum	Maximum
Corruption (raw)	26,571	8.05	2.000	12.54	0.000	64.000
Corruption	26,571	0.19	0.05	0.39	0	6
ETC/Sales	26,571	0.01	0.003	0.02	0.000	0.755
AETC/Sales	26,571	−0.01	−0.002	0.04	−1.514	0.821
Cash Ratio	26,571	0.19	0.152	0.14	0.012	0.692
Excess cash	26,571	−1.68	−1.722	0.99	−5.041	0.841
Cash Flow	26,571	0.06	0.063	0.06	−0.318	0.236
Market-to-book ratio	26,571	2.06	1.494	1.92	0.000	11.608
Net Working Capital ratio	26,571	0.22	0.205	0.26	−2.743	0.972
Capital Expenditure	26,571	0.06	0.042	0.06	0.000	0.642
Firm Size	26,571	21.79	21.625	1.24	18.957	25.728
R&D	26,571	0.00	0.000	0.02	0.000	1.198
Dividend Dummy	26,571	0.67	1.000	0.47	0.000	1.000
R&D Missing	26,571	0.84	1.000	0.36	0.000	1.000
Negative NI	26,571	0.09	0.000	0.28	0.000	1.000
KZ Index	26,571	0.51	0.409	0.57	−2.584	9.453
Board Size	26,571	9.68	9.000	4.59	0.000	36.000
PC board	26,571	1.40	1.000	1.77	0.000	18.000

Note: This table displays the summary statistics for the main variables of interest and controls. The sample contains all listed firms on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2018. We exclude financial firms and firms with ST (special treatment) and *ST status. This is an unbalanced panel of 26,571 firm-year observations for 3447 listed firms. All continuous variables are winsorised at the 1st and 99th percentiles. Variable definitions are provided in Table A1.

0.19, suggesting that an average Chinese firm has cash equal to approximately 19% of total assets. This is very similar to Opler et al.'s (1999) report that the cash-to-asset ratio is 0.17 for US firms from 1971 to 1994.

Table 2 presents the univariate tests of all variables between firms from the low-corruption and high-corruption provinces. Firms are coded as having headquarters in a high-corruption (low-corruption) province if the number of corruption cases in the province equals or is above (below) the median of corruption cases in the year. The results indicate that the number of corruption cases is five times higher in high-corruption provinces than in low-corruption provinces. *ETC*, *AETC/Sales* and the cash ratio are significantly higher in high-corruption provinces. Firms in high-corruption regions are typically larger, more financially constrained (having higher KZ index), and have more politically connected directors than firms in the low-corruption areas. The results are generally consistent with Hypothesis 1 that firms spend more on ETCs to build political connections in a high corruption province. Table 2 also indicates that many control variables are significantly different between high-corruption and low-corruption regions. They include: *Market-to-book ratio*, *Net Working Capital ratio*, *Capital Expenditure*, *Firm Real Size*, *R&D* and *Board Size*. Though these differences in the control variables can be driven by corruption, they could also be driven by unobserved factors. In Section 4.2.2, we use a matched sample of adjacent provinces to control for unobserved factors. In Section 4.2.3, we use an instrumental variable approach and in Section 4.2.4 we use propensity score matching to control for observable differences.

TABLE 2 Univariate test by high-corruption and low-corruption provinces.

	High-corruption provinces	Low-corruption provinces	*t*-statistic difference in means high vs. low
	(1)	(2)	(3)
Corruption (raw)	16.578	3.148	13.430***
Corruption	3.737	0.797	62.83***
ETC/Sales	0.011	0.009	0.002***
AETC/Sales	−0.009	−0.007	−0.002**
Cash Ratio	0.202	0.189	0.012***
Excess cash	−1.627	−1.718	0.091***
Cash Flow	0.064	0.064	0.000
Market-to-book ratio	2.236	1.959	0.278***
Net Working Capital ratio	0.238	0.209	0.030***
Capital Expenditure	0.054	0.061	−0.007***
Firm Size	21.924	21.715	0.209***
R&D	0.006	0.003	0.003***
Dividend Dummy	0.700	0.650	0.050***
R&D Missing	0.797	0.872	−0.075***
Negative NI	0.083	0.090	−0.007
KZ Index	0.556	0.477	0.079***
Board Size	9.331	9.882	−0.551***
PC board	1.443	1.372	0.071**

Note: This table reports average values in high and low corruption provinces for the full sample. Firms are coded as having headquarters in a high-corruption (low-corruption) province if their province is equal to or above (below) the median of corruption cases. Column (3) contains the *t*-statistic from the difference of means test. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.2 | Multivariate analysis of *AETC/Sales*

In this section, we examine how corruption affects firms' abnormal ETC. We first analyse the baseline result, then examine the effect of corruption in high (low) corruption regions in a sample of adjacent provinces. We next estimate the relationship with an instrumental variable approach and a matching sample. Finally, we provide results along with the subsamples of firms by firm size, nature of ownership, financial constraints and political connections.

4.2.1 | Baseline regression

We perform regression analysis to examine how abnormal ETC varies with corruption in the following model:

$$AETC/Sales_{i,t} = \mu_0 + \mu_1 Corruption_{i,t} + \gamma' X_{i,t} + \varphi_t + \psi_t + \nu_{i,t} \quad (2)$$

where *AETC/Sales* is a firm's abnormal entertainment and travel cost scaled by total sales (we enter the percentage value into the regressions); *Corruption* is the total number of corruption cases at the department and bureau level and above in year *t* for the province where firms are headquartered, then scaled by the population (in millions); *X* is a vector of firm

characteristics for the abnormal ETC equation. We include year fixed effects (φ) and industry fixed effects (ψ) (or firm fixed effects and year-industry effects) in various specifications. In all regressions, we report in parentheses the robust standard errors clustered at the firm level.

The results are presented in Table 3. The coefficients for *Corruption* are positive and statistically significant at the conventional levels in both columns (1) and (2) with the different specifications of including year fixed effects, industry effects and year-industry effects. To assess the economic significance, we take the difference between firms headquartered in the most corrupt province and firms headquartered in the least corrupt province. As shown in Table A2, Chongqing has the lowest mean *Corruption* (0.10) and Guangdong has the highest mean *Corruption* (3.31). We use coefficients in column (1) as the main model for interpretation. The firms headquartered in Guangdong province have *AETC*/*Sales* 6.42 percentage points higher than firms headquartered in Chongqing, holding other factors constant. This difference is equal to 6.42% (32.1%) of the sample average (median) *AETC*/*Sales* ratio. Given the average ETC expenditure is 17.3 million RMB, this difference translates into 1.11 million RMB. This is consistent with Hypothesis 1 that firms in high-corruption provinces spend more on abnormal ETC to build political connections, a form of purchasing political favour.

The control variables are based on the literature (Cai et al., 2011; Fang et al., 2018; Smith, 2016). They have the expected signs: *Cash Flow*, *Firm Size*, *Dividend Dummy* and *Board Size* are all positively related to abnormal ETC. The *Market-to-book ratio*, *Capital Expenditure*, *R&D* and *R&D Missing* are negatively associated with abnormal ETC. The overall results are robust to the inclusion of year fixed effects, industry fixed effects, firm fixed effect and various combinations.

4.2.2 | Matched sample for adjacent provinces

Although we have controlled for observable firm characteristics, year, industry and firm fixed effects in the regressions of Table 3, some unobservable local economic conditions may be associated with both corruption and abnormal ETC. For example, China's provinces/regions differ substantially in terms of economic and institutional development. In this subsection, we difference away unobservable local conditions by focusing on firms that are on one side of a high-corruption province border and close-by matched firms on the other side of the same border but in a low-corruption province. To do so, we examine the effect of the difference in corruption across the provincial border on corporate abnormal ETC in the subsample of adjacent provinces. The basic rationale for this analysis is as follows. Suppose that corruption activities are driven by unobservable differences in local economic conditions that affect abnormal ETC. Then both firms in high-corruption provinces and others in adjacent low-corruption provinces should not show any effect on abnormal ETC because local economic conditions tend to spread across provincial borders.

To examine this possibility, we define a low-corruption region as provinces where corruption cases are below the median of corruption cases. For each low-corruption province, we manually identify its adjacent provinces. We define a high-corruption region as a matched adjacent province to the low corruption region when it has the highest number of corruption cases among all adjacent provinces and its number is above the corruption case median.

Then, we repeat the main equation estimation and report the results in Table 4. We find that the coefficient on *Corruption* is still positive and significant for the high-corruption region, but not significant for the low-corruption region. Our findings suggest that any unobservable local economic conditions do not drive the observed impact of corruption on abnormal ETC.

TABLE 3 Corruption and relationship investment.

	AETC/Sales			
Dependent variable	**(1)**	**(2)**	**(3)**	**(4)**
Corruption	0.020**	0.018*		
	(0.009)	(0.010)		
Persistent corruption			0.033***	0.032***
			(0.012)	(0.012)
Market-to-book ratio	−0.270***	−0.279***	−0.269***	−0.279***
	(0.044)	(0.045)	(0.044)	(0.045)
Cash Flow	7.142***	7.353***	7.145***	7.356***
	(1.215)	(1.239)	(1.215)	(1.239)
Net Working Capital ratio	0.189	0.258	0.171	0.241
	(0.207)	(0.209)	(0.207)	(0.210)
Capital Expenditure	−1.073*	−1.078*	−1.111*	−1.115*
	(0.601)	(0.605)	(0.599)	(0.604)
Firm Size	0.602***	0.601***	0.602***	0.602***
	(0.033)	(0.033)	(0.033)	(0.033)
R&D	−7.091***	−6.701***	−7.126***	−6.738***
	(1.640)	(1.610)	(1.642)	(1.613)
Dividend Dummy	0.264***	0.274***	0.264***	0.274***
	(0.054)	(0.054)	(0.054)	(0.054)
R&D Missing	−0.664***	−0.650***	−0.663***	−0.649***
	(0.061)	(0.063)	(0.061)	(0.063)
Negative NI	−0.163	−0.145	−0.165	−0.147
	(0.185)	(0.186)	(0.185)	(0.186)
Board Size	0.023***	0.024***	0.023***	0.024***
	(0.008)	(0.008)	(0.008)	(0.008)
CEO Education	0.051*	0.050*	0.047*	0.047*
	(0.027)	(0.027)	(0.027)	(0.027)
Constant	−11.754***	−12.512***	−11.797***	−12.556***
	(0.696)	(0.730)	(0.697)	(0.731)
Year fixed effects	Yes	No	Yes	No
Industry fixed effects	Yes	No	Yes	No
Year-industry fixed effects	No	Yes	No	Yes
Observations	26,571	26,571	26,571	26,571
R^2	0.092	0.101	0.0909	0.0914

Note: This table presents the ordinary least squares result of the effect of corruption on corporate abnormal ETC. The sample contains all listed firms on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2018. We exclude financial firms and firms with ST (special treatment) and *ST status. The dependent variable is *AETC/Sales*. *Corruption* is the total corrupt cases in year *t* for the province where the headquarters of a firm are located, then scaled by the population (in millions). *Persistent corruption* is the average of single-year corruption measures (*Corruption*) for each province over the entire sample period. All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

TABLE 4 Corruption and relationship investment: Adjacent provinces sample.

	AETC/Sales		
	High-corrupt region	**Low-corrupt region**	**All sample**
Dependent variable	**(1)**	**(2)**	**(3)**
Corruption	0.030**	−0.065*	0.020**
	(0.012)	(0.036)	(0.009)
Market-to-book ratio	−0.190***	−0.362***	−0.275***
	(0.054)	(0.058)	(0.039)
Cash Flow	3.803***	9.761***	7.005***
	(1.456)	(1.997)	(1.272)
Net Working Capital ratio	−0.050	0.823***	0.396*
	(0.319)	(0.299)	(0.215)
Capital Expenditure	−2.385**	−0.057	−1.128*
	(1.099)	(0.609)	(0.605)
Firm Real Size	0.507***	0.679***	0.590***
	(0.055)	(0.043)	(0.034)
R&D	−6.980***	−5.367	−7.023***
	(1.557)	(4.471)	(1.499)
Dividend Dummy	0.418***	0.149**	0.276***
	(0.082)	(0.070)	(0.053)
R&D Missing	−0.676***	−0.723***	−0.691***
	(0.080)	(0.097)	(0.060)
Negative NI	−0.005	0.048	−0.006
	(0.285)	(0.248)	(0.186)
Board Size	0.028**	−0.004	0.011
	(0.011)	(0.010)	(0.008)
CEO Education	0.054	0.048	0.049*
	(0.049)	(0.030)	(0.026)
Constant	−9.906***	−13.106***	−11.450***
	(1.230)	(0.925)	(0.754)
Observations	10,281	12,697	22,978
R^2	0.096	0.127	0.106
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

Note: This table presents the ordinary least squares result of the effect of corruption on corporate abnormal ETC in high (low) corruption regions in the sample of adjacent provinces. We define a *low-corruption region* as provinces where the number of corruption cases is below the median of corruption cases. For each low-corruption province, we examine its adjacent provinces. We define the *high-corruption region* as a matched adjacent province to a low corruption region when it has the highest number of corruption cases among all adjacent provinces and its number is above the median of corruption cases. The dependent variable is *AETC/Sales*. *Corruption* is the total corruption cases in year *t* for the province where the headquarters of a firm are located, then scaled by the population (in millions). All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.2.3 | Instrumental variable approach estimation

A potential concern with our findings is that an omitted variable or other unobservable characteristic could drive the association between corruption and abnormal ETC. Another concern is that more corporate relationship spending could also trigger corruption activities, leading to a reverse causality issue. To address these endogeneity concerns, we use instrumental variable regression. An ideal instrument should be correlated with *Corruption* but uncorrelated with *AETC/Sales*. Geographic distance is used in the literature as a proxy for information acquisition (Opie et al., 2019) and the role of government involvement in firm outcomes (Duchin et al., 2020). It is related to information transmission and affects the costs of acquiring information. CCDI is located in Beijing. The farther away from Beijing, the more information on local officials is opaque to CCDI. Hence, local officials in distant provinces are more likely to be corrupt. Therefore, distance to Beijing is positively related to corruption, but has no direct effect on corporate abnormal ETC unless via local corruption level. Our selection of the instrumental variable also draws on the study by Campante and Do (2014) who provide insight into the relationship between the geographical isolation of capital cities and corruption levels. Campante and Do (2014) argue that isolated capital cities tend to have higher levels of corruption due to reduced monitoring and accountability. We thus also argue that provinces closer to Beijing face increased scrutiny and monitoring, which in turn might reduce the incentives of local officials to engage in corrupt practices. We use *Distance to Beijing* as an instrument variable. It measures the kilometre distance from the capital to the headquarters' location of a listed company in a given province.[2]

Table 5 presents the results of the IV estimation. We report the first-stage regression with *Corruption* as the dependent variable and the IV, *Distance to Beijing*, as the main independent variable. The coefficient estimate on *Distance to Beijing* is positive and significant at the 1% level, suggesting that the *Distance to Beijing* is positively associated with *Corruption*. Additionally, the *F*-test of the IV is 278.2, which is highly significant. Based on the rule of thumb of one instrument for one endogenous variable plus control variables, we therefore reject the null hypothesis that our IV is weak. In the second stage, we regress the *AETC/Sales* on *Fitted Corruption* from the first stage. The coefficient on *Fitted Corruption*, 0.068, is positive and significant at the 1% level, consistent with Hypothesis 1. These results confirm the robustness of our main findings.

4.2.4 | Propensity score matching estimation

Propensity score matching (PSM) is a non-parametric estimator that requires no particular functional form. It matches treated and non-treated (control) observations based on covariates using logistic regression. The balancing scores from the logistic regression allow us to match treated observations to control observations based on similar characteristics. Any difference in the outcome can be attributed to the treatment. We define treatment (control) firm-years as those having headquarters in high-corruption (low-corruption) province if their province is equal to or above (below) the median number of corruption cases in the same industry and year. Matched firms are chosen using a 1:1 nearest-neighbour propensity score match. Covariates include firm-year control variables used in the previous

[2]It could also be argued that firms may have access to more policy information if they are closer to Beijing, so that they may have less incentive to invest in relationship building. However, we argue that within China's top-down political system, how policies are implemented at the provincial level largely depends on the local government officials. In other words, local firms still need to maintain a long-lasting relationship with local government officials in order to be favoured by the policies. Thus, the distance to Beijing is a valid instrumental variable.

TABLE 5 Corruption and relationship investment: Instrumental variable estimation.

	First stage	Second stage
	Corruption	*AETC/Sales*
	(1)	(2)
Distance to Beijing	1.053***	
	(0.0253)	
Fitted Corruption		0.068***
		(0.026)
Market-to-book ratio	0.0780***	−0.274***
	(0.022)	(0.045)
Cash Flow	−0.822*	7.186***
	(0.453)	(1.218)
Net Working Capital ratio	−0.176*	0.202
	(0.148)	(0.210)
Capital Expenditure	−0.169	−1.090*
	(0.343)	(0.601)
Firm Real Size	0.0467**	0.605***
	(0.052)	(0.033)
R&D	−1.824*	−7.017***
	(0.914)	(1.646)
Dividend Dummy	0.0500	0.263***
	(0.047)	(0.054)
R&D Missing	−0.244***	−0.654***
	(0.074)	(0.061)
Negative NI	−0.201**	−0.155
	(0.096)	(0.185)
Board Size	−0.00792	0.024***
	(0.007)	(0.008)
CEO Education	−0.00491	0.051*
	(0.025)	(0.027)
Constant	−2.786***	−11.822***
	(0.545)	(0.695)
Observations	26,571	26,571
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
R^2	0.316	0.091
F-test	278.2	

Note: This table presents two-stage least squares regression (IV) results of the effect of corruption on corporate abnormal ETC. The sample contains all listed firms on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2018. Then we exclude financial firms and firms with ST (special treatment) and *ST status. The dependent variable is *AETC/Sales*. *Corruption* is the total corrupt cases in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). The instrument variable is *Distance to Beijing*, which measures the kilometre distance from the capital city of the headquarters' location of a listed company in a given province to Beijing. All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

TABLE 6 Corruption and relationship investment: Propensity score matching analysis.

	Before matching			After PSM matching		
Variable	Mean treatment (1)	Mean unmatched control (2)	Difference (3)	Mean treatment (4)	Mean matched control (5)	Difference (6)
Panel A: Descriptive statistics before and after propensity score matching						
Cash Flow	0.075	0.076	−0.001	0.075	0.076	−0.001
Net Working Capital ratio	0.253	0.228	0.025***	0.253	0.253	0.000
Capital Expenditure	0.055	0.063	−0.007***	0.055	0.055	0.000
Firm Real Size	21.940	21.737	0.203***	21.940	21.919	0.021
R&D	0.006	0.003	0.003***	0.006	0.005	0.000
PPE ratio	0.208	0.243	−0.035***	0.208	0.211	−0.003
Sales	21.294	21.143	0.151***	21.294	21.280	0.014
EBITDA ratio	0.076	0.075	0.001	0.076	0.075	0.001
	Mean treatment	**Mean matched control**		**Difference**		***t*-statistic**
	(1)	**(2)**		**(3) = (1)–(2)**		**(4)**
Panel B: Average treatment effect of the treated for AETC/Sales						
Outcome variable is *AETC/Sales*	−0.722	−0.606		−0.116		−2.13**

Note: This table reports results using propensity score matching. The sample includes headquarters' location data, positive book value of assets and net profit. Financial firms and firms with ST (special treatment) and *ST status are excluded. When performing propensity score matching, we define treatment (control) firm-years as those having headquarters in a high-corruption (low-corruption) province if their province is equal to or above (below) the median number of corruption cases in the same industry and year. Matched firms are chosen using a 1:1 nearest-neighbour propensity score match. Covariates include firm-year control variables used in the previous analyses and location level variables, such as *Cash Flow*, *Net Working Capital ratio*, *Capital Expenditure*, *R&D ratio*, *Sales* and *GDP per capita*. Panel A reports the mean of treatment and (unmatched and matched) control sample, and the mean difference between treatment and control sample. Panel B reports the average treatment effect of the treated for *AETC/Sales*. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

analyses and location-level variables, such as *Cash Flow*, *Net Working Capital ratio*, *Capital Expenditure*, *R&D*, *Sales* and *GDP per capita*. Table 6, Panel A, reports the means of treatment and (unmatched and matched) control samples, and the mean difference between treatment and control. After matching, differences between the treatment and matched control samples become statistically insignificant. This suggests that our PSM sample successfully eliminated differences in the firm characteristics of the two groups, so our matching is valid. Table 6, Panel B, reports the average treatment effect for *AETC/Sales*. The results suggest that firms in high-corruption provinces hold more abnormal ETC. The result is consistent with our main results. The differences between matched samples are statistically significant at the 1% level.

4.2.5 | Alternative measures of corruption

In this section, we use various alternative measures of corruption. *Corruption (raw)* is the raw number of convictions without scale. *Tiger* measures the total number of corruption cases for senior government officials in year *t* for the province where the headquarters of a firm

TABLE 7 Corruption and relationship investment: Alternative measures of corruption.

	AETC/Sales			
Dependent variable	**(1)**	**(2)**	**(3)**	**(4)**
Corruption (raw)	0.007**			
	(0.003)			
Tiger		−0.156		
		(0.124)		
Male			0.023**	
			(0.010)	
Native				0.043**
				(0.017)
Market-to-book ratio	−0.287***	−0.267***	−0.270***	−0.270***
	(0.041)	(0.044)	(0.044)	(0.044)
Cash Flow	7.736***	7.114***	7.145***	7.136***
	(1.222)	(1.214)	(1.215)	(1.214)
Net Working Capital ratio	0.172	0.185	0.189	0.189
	(0.203)	(0.206)	(0.207)	(0.207)
Capital Expenditure	−1.094*	−1.087*	−1.074*	−1.086*
	(0.599)	(0.601)	(0.600)	(0.600)
Firm Real Size	0.610***	0.604***	0.602***	0.603***
	(0.033)	(0.033)	(0.033)	(0.033)
R&D	−7.839***	−7.121***	−7.088***	−7.074***
	(1.864)	(1.639)	(1.640)	(1.642)
Dividend Dummy	0.237***	0.265***	0.264***	0.264***
	(0.054)	(0.054)	(0.054)	(0.054)
R&D Missing	−0.655***	−0.678***	−0.664***	−0.667***
	(0.062)	(0.062)	(0.061)	(0.061)
Negative NI	−0.076	−0.168	−0.163	−0.163
	(0.189)	(0.186)	(0.185)	(0.185)
Board Size	0.020***	0.023***	0.023***	0.024***
	(0.008)	(0.008)	(0.008)	(0.008)
CEO Education	0.044	0.051*	0.051*	0.051*
	(0.027)	(0.027)	(0.027)	(0.027)
Constant	−11.806***	−11.772***	−11.758***	−11.776***
	(0.703)	(0.702)	(0.696)	(0.696)
Observations	26,571	26,571	26,571	26,571
R^2	0.099	0.092	0.092	0.093
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes

Note: This table presents the ordinary least squares results of the effect of corruption on corporate abnormal ETC using alternative measures of corruption. The sample contains all listed firms on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2018. We exclude financial firms and firms with ST (special treatment) and *ST status. The dependent variable is *AETC/Sales*. *Corruption (raw)* is the raw number of convictions without scale. *Tiger* measures the total number of corruption cases for senior government officials in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). *Male* measures the total number of corruption cases conducted by male government officials in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). *Native* measures the total number of corruption cases for government officials in year *t* in their province of birth where the headquarters of a firm is located, then scaled by the population (in millions). All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

is located, then scaled by the population (in millions). *Male* measures the total number of corruption cases by male government officials in year *t* for the province where a firm is headquartered, then scaled by the population (in millions). *Native* measures the total number of corruption cases for government officials in year *t* in their province of birth where a firm is headquartered, then scaled by the population (in millions) of cities Table 7 reports the results for *AETC*/*Sales*. The estimated coefficients on *Corruption (raw)*, *Male* and *Native* are positive and statistically significant at the 5% level; the coefficient on *Tiger* is not statistically significant. It indicates that male officials and native officials have a significant impact on corruption activities.

Next, we obtained data from the Procuratorial Yearbook of China for 2003–2017 to construct another alternative measure of corruption – *Official Corruption*. This measures the number of filed corruption cases against public officials in each province in year *t*. This measure represents the general corruption activities in a province. We repeat the ordinary least squares (OLS) and instrumental variable approach using *Official Corruption* as an alternative measure and report results in Table 8.

In Table 8, Panel A, column (1), the coefficient on *Official Corruption* is 0.01 and statistically significant at the 1% level. This suggests that the local corruption level increases firms' abnormal ETC. Table 8, columns (2) and (3) report the results from the instrumental variable approach. In the first stage, the coefficient of *Distance to Beijing* is positive and statistically significant at the 1% level. The *F*-test of IV is 112.2. We reject the null hypothesis that our IV is weak. In the second stage, we regress *AETC*/*Sales* on *Fitted Official Corruption*. The coefficient is positive and significant at the 1% level, consistent with our main results. In Table 8, Panel B, using a matched sample of adjacent provinces to control for unobservable local economic conditions, the coefficient on *Official Corruption* is positive and significant for both high-corruption regions and low-corruption regions. This finding rules out the possibility that unobservable local conditions drive the observed association between corruption and abnormal ETC.

4.3 | Additional analysis

4.3.1 | Cross-sectional variations of the effect of corruption on relationship investment

To investigate whether corruption has different impacts on abnormal ETC according to different ownership, we divide the sample into subsamples of state-owned enterprises (SOEs) and non-SOEs. A firm is classified as an SOE if the largest shareholder is the government or a nominal agent controlled by the government. Table 9, columns (1) and (2) report the results for SOEs and non-SOEs. The coefficient of *Corruption* is positive and significant for non-SOEs, but not significant for SOEs, indicating that non-SOEs use abnormal ETC to build relationship. SOEs have natural links to government officials via state ownership, hence have no incentive to use abnormal ETC.

Next, we divide the sample into subsamples according to firm size. A firm is coded as a small firm if the total assets are equal to or less than the median value of total assets, and is coded as a big firm otherwise. Table 9, columns (3) and (4) report the results for small and big firms. The coefficient of *Corruption* is positive and significant for small firms but not significant for big firms, suggesting small firms are sensitive to corruption and use abnormal ETC to build connections.

Then we examine how the financial constraints on a firm affect the demand to build political connections. We use the KZ index to measure financial constraint (Kaplan & Zingales, 1997). Companies with higher KZ scores are more likely to experience difficulties when financial

TABLE 8 Alternative measure of corruption: Official corruption (2003–2017).

		2SLS	
	OLS	First stage	Second stage
	AETC\Sales	*Official Corruption*	*AETC\Sales*
Variable	**(1)**	**(2)**	**(3)**
Panel A: Abnormal ETC equation			
Distance to Beijing		0.800***	
		(0.045)	
Fitted Official Corruption			0.082**
			(0.036)
Official Corruption	0.010***		
	(0.003)		
Market-to-book ratio	−0.263***	−0.0698**	−0.258***
	(0.045)	(0.0255)	(0.044)
Cash Flow	6.913***	4.054***	6.623***
	(1.250)	(0.972)	(1.226)
Net Working Capital ratio	0.046	−0.897***	0.115
	(0.204)	(0.211)	(0.211)
Capital Expenditure	−1.409**	7.096***	−1.940***
	(0.633)	(1.036)	(0.703)
Firm Real Size	0.570***	−0.230***	0.592***
	(0.029)	(0.043)	(0.030)
R&D	−7.625***	−1.603	−7.523***
	(1.743)	(1.20)	(1.757)
Dividend Dummy	0.223***	0.0869	0.218***
	(0.055)	(1.004)	(0.056)
R&D Missing	−0.664***	0.542***	−0.704***
	(0.066)	(0.095)	(0.069)
Negative NI	−0.209	0.470**	−0.243
	(0.188)	(0.201)	(0.190)
Board Size	0.023***	−0.0101	0.024***
	(0.008)	(0.012)	(0.008)
CEO Education	0.036	−0.340***	0.060*
	(0.028)	(0.051)	(0.031)
Constant	−11.089***	13.13***	−12.263***
	(0.596)	(1.050)	(0.771)
Observations	23,847	23,847	23,847
R^2	0.095	0.169	0.082
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
F-test		112.2	

(Continues)

TABLE 8 (Continued)

Variable	High-corruption region (1)	Low-corruption region (2)	Full sample (3)
Panel B: Matched sample based on adjacent provinces			
Official Corruption	0.013***	0.012***	0.012***
	(0.005)	(0.004)	(0.003)
Market-to-book ratio	−0.195***	−0.346***	−0.269***
	(0.053)	(0.057)	(0.039)
Cash Flow	3.730**	9.515***	6.883***
	(1.687)	(1.819)	(1.261)
Net Working Capital ratio	−0.075	0.602**	0.253
	(0.326)	(0.276)	(0.207)
Capital Expenditure	−2.550**	−0.428	−1.477**
	(1.168)	(0.605)	(0.635)
Firm Real Size	0.471***	0.643***	0.556***
	(0.039)	(0.043)	(0.029)
R&D	−7.163***	−6.852	−7.351***
	(1.649)	(5.090)	(1.590)
Dividend Dummy	0.371***	0.124*	0.235***
	(0.081)	(0.073)	(0.054)
R&D Missing	−0.653***	−0.729***	−0.685***
	(0.088)	(0.106)	(0.064)
Negative NI	0.026	0.036	−0.003
	(0.254)	(0.253)	(0.181)
Board Size	0.027**	−0.004	0.011
	(0.011)	(0.011)	(0.008)
CEO Education	0.023	0.045	0.033
	(0.045)	(0.032)	(0.026)
Constant	−9.143***	−12.476***	−10.782***
	(0.873)	(0.912)	(0.629)
Observations	9191	11,372	20,563
R^2	0.108	0.136	0.116
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

Note: This table presents results of the effect of corruption on corporate abnormal ETC using an alternative measure of corruption. Panel A presents the ordinary least squares and two-stage least squares (IV) results. The dependent variable is *AETC/Sales*. The independent variable is *Official Corruption*, which is the number of filed corruption cases of public officials in each province in year *t*, then scaled by the population (in millions) of cities. Data are from Procuratorial Yearbook of China from 2003 to 2017. The instrument variable is *Distance to Beijing*, which measures the kilometre distance from the capital to the headquarters' location of a listed company in a given province. Panel B presents the ordinary least squares results of the effect of *Official Corruption* on corporate abnormal ETC in high (low) corruption regions in the sample of adjacent provinces. We define the *low corruption region* as provinces where the number of corruption cases is below the median of corruption cases. Then, for each low-corruption province, we examine its adjacent provinces. We define a *high corruption region* as a matched adjacent province to a low corruption region when it has the highest number of corruption cases among all the adjacent provinces and its number is above the median of corruption cases. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

conditions tighten. A firm is coded as a high KZ index firm when its KZ index is equal to or less than the median KZ index, and coded as low KZ index firm otherwise. Table 9, columns (5) and (6) show that the local corruption level causes firms with a high KZ index to use abnormal ETC to build political connections.

Lastly, we partition our sample into groups of connected firms and less connected firms based on the number of politically connected (PC) board members. In particular, a politically connected board member is identified if the director is (was) a current (former) government official, member of the National People's Congress (NPC), or member of the Chinese People's Political Consultative Conference (CPPCC). A high PC firm is coded as having more politically connected directors than the median level of PC board members and coded as a low PC firm otherwise. Table 9, columns (7) and (8) show the coefficient of *Corruption* for low PC firms is positive and significant at the 10% level whereas the coefficient of *Corruption* for high PC firms is not significant, indicating that low PC firms are more prone to the impact of corruption.

Taken together, the results suggest that the corruption effects on abnormal ETC vary by firm characteristics. Non-SOEs, small firms, firms with more financial constraints and firms with low PC connections are more sensitive to the impact of corruption.

4.3.2 | Effect of corruption on excess cash holding

According to the political connection view, firms should have precautionary motives to choose cash policies that favour liquidity or flexibility to meet the request for spending on relationship building. This is a natural extension that firms should keep sufficient liquidity by holding enough cash, for the motive of trading cash for political favours. Therefore, we further examine whether Chinese firms tend to hold more cash in more corrupt provinces, to be able to solicit corrupt officials' favours of access to key resources for growth. In this section, we test the relationship between corruption and excess cash holding.

Our measure of excess cash is the residual of Opler's model (Opler et al., 1999) of normal levels of cash holdings, which we argue can measure the surplus cash for political trading in addition to the requirement for normal business operations. To obtain the measure of excess cash holding, we first run the following equation for each industry-year subsample:

$$\begin{aligned}\ln(Cash\ Ratio)_{i,t} = \quad & \beta_0 + \beta_1 Firm\ size_{i,t} + \beta_{02} Market-to-book\ ratio_{i,t} \\ & + \beta_3 Cash\ flow_{i,t} + \beta_4 Net\ working\ capital_{i,t} + \beta_5 Leverage_{i,t} \\ & + \beta_6 Dividend\ dummy_{i,t} + \beta_7 R\&D_{i,t} + \beta_8 Capital\ expenditure_{i,t} + \pi_{i,t}\end{aligned} \tag{3}$$

where the dependent variable is the natural logarithm of the ratio of total cash holding to total assets. The independent variables are the determinants of cash holdings used in Opler et al. (1999). The definitions of these variables are summarised in Table A1. We define the residual from estimation Equation (3) as the measure of excess cash holding. Specifically, *Excess cash* in the following multivariate analysis is defined as the residual from Equation (3) times 100. This method is consistent with Faleye (2004) and Simutin (2010).

Then, we perform regression analysis to examine how excess cash holding varies with corruption using the following model:

$$Excess\ cash_{i,t} = \theta_0 + \theta_1 Corruption_{i,t} + \lambda' Z_{i,t} + \varphi_t + \psi_t + \kappa_{i,t} \tag{4}$$

where *Excess cash* is the excess cash of firm *i* in year *t* as defined above; *Corruption* is the same variable as seen in Equation (2); and Z is a vector of firm characteristics for excess cash. We

TABLE 9 Corruption and relationship investment: Subsample analysis.

	SOEs	Non-SOEs	Small firms	Big firms	High KZ index firms	Low KZ index firms	High PC firms	Low PC firms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corruption	0.003	0.023**	0.029**	0.012	0.029*	0.012	0.040*	0.013
	(0.013)	(0.010)	(0.012)	(0.014)	(0.015)	(0.008)	(0.023)	(0.009)
Market-to-book ratio	−0.070	−0.277***	−0.162***	0.040*	−0.367***	0.060	−0.259**	−0.280***
	(0.076)	(0.048)	(0.049)	(0.021)	(0.070)	(0.046)	(0.112)	(0.045)
Cash Flow	0.106	8.775***	8.558***	1.936***	8.291***	4.459***	11.796***	5.872***
	(0.896)	(1.487)	(1.815)	(0.611)	(1.912)	(0.983)	(3.212)	(1.279)
Net Working Capital ratio	0.090	0.261	0.535*	0.144	1.130***	−1.005***	−0.070	0.313
	(0.164)	(0.251)	(0.312)	(0.125)	(0.380)	(0.158)	(0.391)	(0.243)
Capital Expenditure	−0.964***	−0.652	1.260	−1.794**	0.318	−3.329***	−1.690*	−0.829
	(0.295)	(0.827)	(0.914)	(0.720)	(0.776)	(1.054)	(0.864)	(0.747)
Firm Real Size	0.187***	0.784***	2.730***	0.017*	0.607***	0.544***	0.486***	0.661***
	(0.027)	(0.044)	(0.170)	(0.010)	(0.043)	(0.053)	(0.048)	(0.043)
R&D	−1.323	−7.113***	−10.111***	−0.585	−2.868	−12.570***	1.281	−7.970***
	(2.144)	(1.689)	(1.842)	(1.770)	(1.803)	(3.164)	(4.613)	(1.720)
Dividend Dummy	0.053	0.394***	0.175*	0.131***	0.220**	0.221***	0.349***	0.228***
	(0.038)	(0.071)	(0.091)	(0.033)	(0.092)	(0.054)	(0.093)	(0.065)
R&D Missing	−0.325***	−0.701***	−0.671***	−0.346***	−0.886***	−0.410***	−0.478***	−0.701***
	(0.073)	(0.071)	(0.104)	(0.045)	(0.094)	(0.080)	(0.105)	(0.075)
Negative NI	−0.175	−0.184	−0.169	−0.007	0.073	−0.322*	0.010	−0.212
	(0.125)	(0.244)	(0.327)	(0.086)	(0.306)	(0.185)	(0.324)	(0.221)
Board Size	0.001	0.040***	0.050***	−0.000	0.035***	0.014*	0.010	0.027***
	(0.006)	(0.010)	(0.013)	(0.004)	(0.013)	(0.008)	(0.015)	(0.009)
CEO Education	0.011	0.070**	0.107**	0.027	0.085*	0.028	0.157***	0.013
	(0.023)	(0.033)	(0.045)	(0.019)	(0.047)	(0.029)	(0.052)	(0.032)

TABLE 9 (Continued)

	SOEs	Non-SOEs	Small firms	Big firms	High KZ index firms	Low KZ index firms	High PC firms	Low PC firms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	−3.256***	−15.601***	−55.864***	−0.104	−11.822***	−10.561***	−9.956***	−13.069***
	(0.571)	(0.936)	(3.506)	(0.308)	(0.913)	(1.162)	(1.068)	(0.912)
Obs	6362	20,209	13,838	12,733	13,103	13,468	7214	19,357
R^2	0.055	0.102	0.135	0.031	0.098	0.100	0.106	0.094
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table presents the ordinary least squares results of the effect of corruption on corporate abnormal ETC across subsamples. Columns (1) and (2) report results for state-owned enterprises (SOEs) and non-SOEs. A firm is classified as an SOE if the government is the largest shareholder or a nominal agent controlled by the government is, and is coded as a non-SOE otherwise. Columns (3) and (4) report results for small and big firms. A firm is coded as a small firm if the total assets are equal to or less than median value of total assets, and coded as a big firm otherwise. Columns (5) and (6) present results for firms with a high KZ index and firms with a low KZ index. A firm is categorised as having a low KZ index when its KZ index is equal to or less than the median of KZ indexes, and coded as high KZ index otherwise. Columns (7) and (8) show results for firms with a more politically connected board of directors and firms with less politically connected board of directors. A high PC firm is coded as having more politically connected directors than the median value of PC board members and coded as a low PC firm otherwise. The dependent variable is *AETC/Sales*. *Corruption* is the total corruption cases in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

include year fixed effects (φ) and industry fixed effects (ψ). In all regressions, we report in parentheses the robust standard errors clustered at the firm level.

Column (1) of Table 10 gives the regression results using *Excess cash* as the dependent variable. The coefficient on *Corruption* is positive (0.596) and statistically significant at the 1% level. This suggests that the local corruption level affects firms' excess cash level positively. In terms of economic significance, firms headquartered in a high corruption province (i.e., Guangdong) hold 1.913 times higher excess cash/asset ratio than firms in low-corruption provinces (i.e., Chongqing) to build political connections, holding other factors constant. This result also supports our key hypothesis that firms choose to keep liquidity in response to corruption.[3]

Columns (2) and (3) of Table 10, report the results from the instrumental variable approach. As the determinants of *Excess cash* are different from those of abnormal ETC, we report the first stage result. The coefficient of *Distance to Beijing*, our instrumental variable, is positive and statistically significant at the 1% level. The *F*-test of IV is 278.6. We reject the null hypothesis that our IV is weak. In the second stage, we regress *Excess cash* on *Fitted Corruption*. The coefficient is still positive and significant at the 1% level.

4.3.3 | Effect of corruption on accounting comparability and restatement

Our main argument is that firms choose to establish connections with the local government in exchange for protection, which is more pronounced in regions having a higher level of corruption. In this section, we provide further evidence if those firms with more ETC spending are actually associated with better protection. The agency theory posits that spending on relationship establishment reveals managerial opportunistic behaviours at the overall cost to shareholders, leading to information asymmetry and accounting manipulation (Hu et al., 2020). However, such behaviours are subject to severe market scrutiny and potential loss of market value. If relationship spending can protect firms from market punishment, we conjecture that firms having spent more on relationship establishment are less likely to restate their financial reports, and they have weaker incentives to produce their financial reports compared with their peers. In empirical analysis, we run Equation (5) in OLS and Equation (6) in Probit:

$$Comparability_{i,t} = \delta_0 + \delta_1 Corruption_{i,t} * \frac{\widehat{AETC}}{Sales} + \delta_2 \frac{\widehat{AETC}}{Sales} + \delta_3 Corruption + \lambda' Z_{i,t} + \varphi_t + \psi_t + \kappa_{i,t} \quad (5)$$

$$Restatement_{i,t} = \gamma_0 + \gamma_1 Corruption_{i,t} * \frac{\widehat{AETC}}{Sales} + \gamma_2 \frac{\widehat{AETC}}{Sales} + \gamma_3 Corruption + \lambda' Z_{i,t} + \varphi_t + \psi_t + \kappa_{i,t} \quad (6)$$

where *Comparability* is estimated using the model of De Franco et al. (2011). It measures the average comparability score of the top 4 comparable firms. *Restatement* is a dummy variable that equals 1 if the financial statement is restated, and 0 otherwise. All other variables are the same as defined in the previous equations. In all regressions, we report in parentheses the robust standard errors clustered at the firm level. The results are reported in Table 11. We find that coefficients of

[3]A firm with headquarters in Guangdong, which has a high corruption level (3.31 from Table A2), and a firm in Chongqing, which has a low corruption level (0.10 from Table A2). The coefficient on *Corruption* is 0.596 (Table 7, column (1)), so the calculation is: (3.31–0.10)*0.596 = 1.913.

TABLE 10 Corruption and excess cash (OLS and IV estimation).

		2SLS	
	OLS	**First stage**	**Second stage**
	Excess Cash	***Corruption***	***Excess Cash***
	(1)	**(2)**	**(3)**
Distance to Beijing		1.054***	
		(0.025)	
Fitted Corruption			1.822***
			(0.401)
Corruption	0.596***		
	(0.124)		
Market-to-book ratio	20.243***	0.136***	20.085***
	(1.061)	(0.027)	(1.061)
Net Working Capital ratio	78.169***	−0.354***	78.691***
	(2.978)	(0.164)	(2.941)
Capital Expenditure	42.275***	−0.123	41.829***
	(10.058)	(0.347)	(10.044)
Firm Real Size	13.479***	0.0604***	13.539***
	(0.707)	(0.026)	(0.706)
R&D	59.889***	−1.746*	61.689***
	(15.917)	(0.905)	(16.328)
Dividend Dummy	−11.351***	0.0351	−11.373***
	(1.024)	(0.048)	(1.024)
R&D Missing	−2.165*	−0.250***	−1.887
	(1.160)	(0.074)	(1.170)
Negative NI	31.863***	−0.0548	31.904***
	(1.987)	(0.076)	(1.986)
KZ Index	−95.534***	−0.241***	−95.287***
	(4.150)	(0.061)	(4.145)
Board Size	1.733***	−0.00931	1.745***
	(0.136)	(0.007)	(0.136)
CEO Education	2.317***	−0.00287	2.322***
	(0.493)	(0.025)	(0.495)
Constant	−312.048***	−3.084***	−313.504***
	(15.559)	(0.550)	(15.544)
Observations	26,571	26,571	26,571
R^2	0.300	0.316	0.297
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
F-test		278.6	

Note: This table presents the regression results of the effect of corruption on corporate excess cash. Column (1) reports the ordinary least square result and columns (2) and (3) report the two-stage least squares (IV) regression results. The sample contains all listed firms on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2018. We exclude financial firms and firms with ST (special treatment) and *ST status. The dependent variable is *Excess Cash*. *Corruption* is the total corruption cases in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). The instrument variable is *Distance to Beijing*, which measures the kilometre distance from the capital to the headquarters' location of a listed company in a given province. All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

TABLE 11 Effect of corruption on accounting comparability and restatement conditional on ETC spending.

	Comparability	*Restatement*
	(1)	**(2)**
$\frac{\widehat{AETC}}{Sales} \times Corruption$	−0.005***	−0.00295**
	(0.001)	(0.00142)
$\frac{\widehat{AETC}}{Sales}$	0.007	−0.0574***
	(0.007)	(0.00810)
Corruption	−0.004***	0.00690***
	(0.001)	(0.00261)
Constant	−0.640***	−0.402***
	(0.049)	(0.0739)
Observations	11,744	26,571
Adjusted R^2	0.0356	
Pseudo R^2		0.0424
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes

Note: This table presents the effect of corruption on accounting comparability and restatement probability conditional on firm ETC spending. $\frac{\widehat{AETC}}{Sales}$ is the fitted value from Equation (2). *Corruption* is the total corrupt cases in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). *Comparability* is the comparability measure from the model of De Franco et al. (2011). It measures the average comparability score of the top 4 comparable firms. *Restatement* is a dummy variable that equals 1 if the financial statement is restated, and 0 otherwise. All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

the interaction term are negative and statistically significant at both the 5% and 1% levels, respectively. These results suggest that firms are less likely to have comparable financial reports and less likely to restate their financial reports if they have spent more on relationship investment in corrupt regions. This is consistent with our conjecture and supports our main hypothesis.

4.3.4 | Anti-corruption campaign

The anti-corruption campaign initiated in China since 2012 has led to more corruption investigations. It has brought down a large number of Communist Party officials due to corruption. We explore whether companies spend less in abnormal ETC and excess cash after the anti-corruption campaign by implementing a difference-in-differences test. The results reported in Table 12 show that this is not the case, reflected by the insignificant coefficients of the interaction term. This is somewhat counter-intuitive but also understandable. After the corruption prosecution, the stood-down officials will be replaced by new officials. But the corruption culture still persists, though weakened. Companies who used to build political connections may continue to build a new relationship with the new officials, hence we do not observe a significantly weakened effect of corruption on relationship investment and cash holding after the anti-corruption campaign.

5 | CONCLUSIONS

Political corruption has been documented as prevalent all over the world. Existing studies have shown the influence of local political corruption on firm policies in the United States, but little

TABLE 12 Regression results from anti-corruption campaign.

	AETC/Sales	*Excess cash*
Dependent variable	**(1)**	**(2)**
Corruption	0.014	1.632
	(0.054)	(1.112)
Post 2012	−1.463***	2.079
	(0.172)	(3.078)
Corruption_Post 2012	0.005	−1.048
	(0.055)	(1.118)
Controls	Yes	Yes
Constant	−11.753***	−312.299***
	(0.696)	(15.553)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	26,571	26,571
R^2	0.091	0.300

Note: This table presents the ordinary least squares results of the effect of anti-corruption campaign on corporate abnormal ETC. The sample contains all listed firms on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2018. We exclude financial firms and firms with ST (special treatment) and *ST status. The dependent variable is *AETC/Sales* in column (1) and *Excess cash* in column (2). *Corruption* is the total corrupt cases in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). *Post* is a dummy variable that equals 1 if the observations occurs after the implementation of an anti-corruption campaign. All the other variables are defined in Table A1. All continuous variables are winsorised at the 1st and 99th percentiles. Robust standard errors in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

is known about the issue in China, which has a significantly different institutional and political system. Thus, we examine the issue in China and focus mainly on how firms respond to local political corruption by investing in relationships.

Using a sample of listed firms in China between 2003 and 2018, we investigate the effect of political corruption on firms' relationship investment. We use the number of convictions of government officials at the department and bureau level and above to measure the level of political corruption, and use the abnormal ETC to measure the level of relationship investment. The empirical results show that political corruption has a positive effect on relationship investment, which is consistent with the view that ties with officials are essential for Chinese firms so they have a strong incentive to trade cash for political favours. Additional analysis reinforces our main results that firms have a higher level of excess cash if they locate in high corruption provinces, to respond to extortion and political extraction and bribing opportunities. These results are robust to various fixed effects inclusions, the instrumental variable approach and alternative subsamples. Firms that choose to establish connections with local government have better protection in terms of less restatement and lower comparability in financial reports.

Our study shows in a different business environment in China the rules to be successful. However, our results should be interpreted cautiously. In particular, we contend that corruption should be redefined in China as an informal institution having a 'greasing wheel' effect on relationship firms. In this environment, corruption can help firms cut through bureaucratic rules and enhance efficiency by expediting the provision of government goods and services and the granting of permits and licences. Our study also implies that the essence for business success should be different under different institutional and political systems. It is also critical for policymakers and businessmen to notice such differences when dealing with business partners from another country.

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DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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REFERENCES

Berkman, H., Cole, R. & Fu, J. (2010) Political connections and minority-shareholder protection: evidence from securities-market regulation in China. *Journal of Financial and Quantitative Analysis*, 45(6), 1391–1417.
Bermpei, T., Kalyvas, A. & Leonida, L. (2021) Local public corruption and bank lending activity in the United States. *Journal of Business Ethics*, 171, 73–98.
Butler, A.W., Fauver, L. & Mortal, S. (2009) Corruption, political connections, and municipal finance. *The Review of Financial Studies*, 22, 2873–2905.
Cai, H., Fang, H. & Xu, L.C. (2011) Eat, drink, firms, government: an investigation of corruption from the entertainment and travel costs of Chinese firms. *Journal of Law and Economics*, 54, 55–78.
Campante, F.R. & Do, Q.-A. (2014) Isolated Capital Cities, Accountability, and Corruption: Evidence from US States. *The American Economic Review*, 104(8), 2456–2481.
Chen, D., Kim, J., Li, Z. & Liang, S. (2018) China's closed pyramidal managerial labor market and the stock price crash risk. *The Accounting Review*, 93(3), 105–131.
Chen, Y., Liu, M. & Su, J. (2013) Greasing the wheels of bank lending: evidence from private firms in China. *Journal of Banking and Finance*, 37(7), 2533–2545.
Claessens, S., Feijen, E. & Laeven, L. (2008) Political connections and preferential access to finance: the role of campaign contributions. *Journal of Financial Economics*, 88, 554–580.
De Franco, G., Kothari, S.P. & Verdi, R.S. (2011) The benefits of financial statement comparability. *Journal of Accounting Research*, 49, 895–931.
Duchin, R., Gao, Z. & Shu, H. (2020) The role of government in firm outcomes. *The Review of Financial Studies*, 33, 5555–5593.
Ellis, J., Smith, J. & White, R. (2019) Corruption and corporate innovation. *Journal of Financial and Quantitative Analysis*, 55(7), 2124–2149.
Faccio, M. (2006) Politically connected firms. *American Economic Review*, 96(1), 369–386.
Faccio, M. & Hsu, H. (2017) Politically connected private equity and employment. *The Journal of Finance*, 72(2), 539–574.
Faleye, O. (2004) Cash and corporate control. *The Journal of Finance*, 59(5), 2041–2060.
Fang, H., Li, Z., Xu, N. & Yan, H. (2022) Firms and local governments: relationship building during political turnovers. *Review of Finance*, 27(2), 739–762.
Fang, L., Lerner, J., Wu, C. & Zhang, Q. (2018) *Corruption, government subsidies, and innovation: evidence from China*. NBER working paper no. 25098.
Feng, X., Johanson, A. & Zhang, T. (2015) Mixing business with politics: political participation by entrepreneurs in China. *Journal of Banking and Finance*, 59, 220–235.
Fisman, R. (2001) Estimating the value of political connections. *American Economic Review*, 91(4), 1095–1102.
Giannetti, M., Liao, G., You, J. & Yu, X. (2021) The externalities of corruption: evidence from entrepreneurial firms in China. *Review of Finance*, 25(3), 629–667.
Goldman, E., Rocholl, J. & So, J. (2009) Do political connected boards affect firm value? *The Review of Financial Studies*, 22(6), 2331–2360.
Guo, J., Wang, Y. & Yang, W. (2021) China's anti-corruption shock and resource reallocation in the energy industry. *Energy Economics*, 96, 105182.
Haveman, H., Jia, N., Shi, J. & Wang, Y. (2017) The dynamics of political enbeddedness in China. *Administrative Science Quarterly*, 62(1), 67–104.

Houston, J., Jiang, L., Lin, C. & Ma, Y. (2014) Political connections and the cost of bank loans. *Journal of Accounting Research*, 52(1), 193–243.
Hu, J. (2021) Do facilitation payments affect earnings management? Evidence from China. *Journal of Corporate Finance*, 68, 101936.
Hu, J., Li, X., Duncan, K. & Xu, J. (2020) Corporate relationship spending and stock price crash risk: evidence from China's anti-corruption campaign. *Journal of Banking and Finance*, 113, 105758.
Huang, Q. & Yuan, T. (2021) Does political corruption impede firm innovation? Evidence from the United States. *Journal of Financial and Quantitative Analysis*, 56(1), 213–248.
Jia, M., Xiang, Y. & Zhang, Z. (2019) Indirect reciprocity and corporate philanthropic giving: how visiting officials influence investment in privately owned Chinese firms. *Journal of Management Studies*, 56(2), 372–407.
Jiang, F. & Kim, K. (2020) Corporate governance in China: a survey. *Review of Finance*, 24(4), 733–772.
Kaplan, S.N. & Zingales, L. (1997) Do investment-cash flow sensitivities provide useful measures of financing constraints? *The Quarterly Journal of Economics*, 112(1), 169–215.
Khwaja, A.I. & Mian, A. (2005) Do lenders favour politically connected firms? Rent provision in an emerging financial market. *The Quarterly Journal of Economics*, 120(4), 1371–1411.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R.W. (1998) Law and finance. *Journal of Political Economy*, 106(6), 1113–1155.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R.W. (2000) Agency problems and dividend policies around the world. *The Journal of Finance*, 55(1), 1–33.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. (2002) Protection for investors and corporate valuation. *The Journal of Finance*, 57(3), 1147–1170.
Leuz, C. & Oberholzer-Gee, F. (2006) Political relationships, global financing, and corporate transparency: evidence from Indonesia. *Journal of Financial Economics*, 81, 411–439.
Li, H., Meng, L., Wang, Q. & Zhou, L.A. (2008) Political connections, financing and firm performance: evidence from Chinese private firms. *Journal of Development Economics*, 87(2), 283–299.
Mauro, P. (1995) Corruption and growth. *The Quarterly Journal of Economics*, 110(3), 681–712.
McChesney, F. (1987) Rent extraction and rent creation in the economic theory of regulation. *The Journal of Legal Studies*, 16(1), 101–118.
Mironov, M. (2015) Should one hire a corrupt CEO in a corrupt country? *Journal of Financial Economics*, 117, 29–42.
Murphy, K., Shleifer, A. & Vishny, R. (1993) Why is rent-seeking so costly to growth? *American Economic Review*, 83, 409–414.
Opie, W., Tian, G.G. & Zhang, H.F. (2019) Corporate pyramids, geographical distance, and investment efficiency of Chinese state-owned enterprises. *Journal of Banking and Finance*, 99, 95–120.
Opler, T.O., Pinkowitz, L., Stulz, R. & Williamson, R. (1999) The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52, 3–46.
Pan, X. & Tian, G. (2020) Political connections and corporate investments: Evidence from the recent anti-corruption campaign in China. *Journal of Banking and Finance*, 119, 105108.
Piotroski, J.D. & Zhang, T. (2014) Politicians and the IPO decision: the impact of impending political promotions on IPO activity in China. *Journal of Financial Economics*, 111(1), 111–136.
Schoenherr, D. (2019) Political connections and allocative distortions. *The Journal of Finance*, 74(2), 543–586.
Shleifer, A. & Vishny, R. (1993) Corruption. *The Quarterly Journal of Economics*, 108(3), 599–617.
Shleifer, A. & Vishny, R. (1994) Politicians and firms. *The Quarterly Journal of Economics*, 109(4), 995–1025.
Simutin, M. (2010) Excess cash and stock returns. *Financial Management*, 39, 1197–1222.
Smith, J. (2016) US political corruption and firm financial policies. *Journal of Financial Economics*, 121, 350–367.
Vial, V. & Hanoteau, J. (2010) Corruption, manufacturing plant growth and the Asian paradox: Indonesian evidence. *World Development*, 38(5), 693–705.
Wu, W., Wu, C. & Rui, O. (2012) Ownership and the value of political connections: evidence from China. *European Financial Management*, 18(4), 695–729.
Xu, H., Dao, M. & Wu, J. (2019) The effect of local political corruption on earnings quality. *Review of Quantitative Finance and Accounting*, 53, 551–574.
Zhang, H. & Zhang, J. (2023) Political corruption and accounting choice. *Journal of Business Finance and Accounting*, 50(3–4), 443–481.

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APPENDIX 1

TABLE A1 Variable definitions.

Variable	Definition
AETC/Sales	The *AETC* is the residual from Equation (A1) for each industry-year subsample, divided by total sales, times 100 $ETC_{i,t} = \alpha_0 + \alpha_1 Size_{i,t} + \alpha_2 Business\ Region_{i,t} + \alpha_3 GDP_{i,t} + \varepsilon_{i,t}$ (A1)
Board Size	ln(total number of board directors)
Business Region	The number of regions within which a firm derives revenue in year *t*. The regions are a firm's self-defined regions
Capital Expenditure	Capital expenditure
Cash Flow	(Net income + Depreciation)/Total assets
Cash Ratio	Cash and cash equivalents/Total assets
CEO Education	This is a category variable to show the highest education of the CEO. 1: Secondary School; 2: Graduate Diploma; 3: Bachelor's degree; 4: Master's degree; 5: PhD; 6: Other
Comparability	Comparability measure from the model of De Franco et al. (2011). It measures the average comparability score of the top 4 comparable firms
Corruption (raw)	*Corruption (raw)* is the total number of corruption cases in year *t* for the province where the headquarters of a firm is located. Data are hand collected from the Central Commission for Discipline Inspection (CCDI) website
Corruption	*Corruption (raw)* scaled by the population (in millions) where the headquarters of a firm is located
Dividend Dummy	A dummy variable equal to one if firm *i* paid a dividend in year *t*, and 0 otherwise
Distance to Beijing	It is the kilometre distance from the capital to the headquarters' location of a listed company
EBITDA Ratio	EBITDA/Total assets
ETC/Sales	ETC stands for firms' entertainment and travel costs, reported in firm's annual statements. *ETC/Sales* is a firm's amount of ETC spending, divided by its annual revenue
Excess cash	Excess cash is the residual of a regression for each industry-year subsample. Then we divide the residual from Equation (A2) by sales, times 100 $ln(Cash\ Ratio)_{i,t} = \beta_0 + \beta_1 Firm\ real\ size_{i,t} + \beta_2 Market\text{-}to\text{-}book\ ratio_{i,t} + \beta_3\ Cash\ flow_{i,t} + \beta_4\ Net\ working\ capital_{i,t} + \beta_5 Leverage_{i,t} + \beta_6\ Dividend\ dummy_{i,t} + \beta_7\ R\&D_{i,t} + \beta_8\ Capital\ expenditure_{i,t} + \pi_{i,t}$ (A2)
Firm Size	Total assets for firm *i* in year *t* adjusted for annual CPI
GDP	Ln(GDP of a firm's home province in year *t*)
KZ Index	KZ index = −1.002*(Cash flow/Total assets) + 3.139*(Total liabilities − Total Current Liabilities)/Total assets) − 39.368*(Dividend/Total assets) − 1.315*(Cash/Total assets) + 0.283*Market-to-book ratio
Leverage	Total liabilities − Total assets
Male	Corruption cases conducted by male government officials in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). It is an alternative measure of corruption. Data are hand collected from the Central Commission for Discipline Inspection (CCDI) website

TABLE A1 (Continued)

Variable	Definition
Market-to-book ratio	Market capitalisation/Total assets. Market capitalisation is calculated as the number of A shares*closing price of A share + number of B shares*closing price of B share converted to Chinese yuan
Native	Corruption cases for government officials in year *t* in their province of birth where the headquarters of a firm is located, then scaled by the population (in millions). It is an alternative measure for corruption. Data are hand collected from the Central Commission for Discipline Inspection (CCDI) website
Negative NI	A dummy variable equal to one if the net income of firm *i* in year *t* is negative and zero otherwise
Net Working Capital	Total current assets − Total current liabilities
Net Working Capital ratio	(Total current assets − Total current liabilities)/Total assets
Official Corruption	The number of filed corruption cases of public officials in each province in year *t*, scaled by the population (in millions) where the headquarters of a firm is located. Data are from the Procuratorial Yearbook of China from 2003 to 2017
PC board	Ln(number of board directors that have political connections). In particular, political connection is identified if the director is (was) a current (former) government official, member of the National People's Congress (NPC), or member of the Chinese People's Political Consultative Conference (CPPCC)
Persistent corruption	The average of single-year corruption measures (*Corruption*) for each province over the entire 16-year period (2003–2018)
PPE Ratio	Net fixed assets/Total assets of firm *i* in year *t*
R&D	Capitalised research & development expenditure of firm *i* in year *t*
R&D Missing	A dummy variable equal to 1 if there is a missing R&D observation and 0 otherwise
R&D Ratio	Capitalised research & development expenditure as a proportion of total revenue of firm *i* in year *t*
Restatement	A dummy variable equal to 1 if the financial statement is restated, and 0 otherwise
SOE	A dummy variable equal to one if the government is the largest shareholder or a nominal agent controlled by the government is, and 0 otherwise
Tiger	Corruption cases for senior government officials in year *t* for the province where the headquarters of a firm is located, then scaled by the population (in millions). It is an alternative measure for corruption. Data are hand collected from the Central Commission for Discipline Inspection (CCDI) website

TABLE A2 Summary statistics for corruption cases by province.

Province	Mean (1)	Median (2)	Standard deviation (3)	Minimum (4)	Maximum (5)	Mean (per 1,000,000)
Anhui	3.82	0.00	5.48	0.00	16.00	1.18
Beijing	10.65	1.00	16.80	0.00	56.00	0.89
Chongqing	2.88	0.00	4.03	0.00	11.00	0.10
Fujian	3.18	0.00	6.45	0.00	23.00	0.90
Gansu	2.47	0.00	4.23	0.00	12.00	0.86
Guangdong	11.94	1.00	18.92	0.00	64.00	3.31
Guangxi	3.18	0.00	5.64	0.00	17.00	1.38
Guizhou	4.18	0.00	7.85	0.00	28.00	1.07
Hainan	1.59	0.00	2.65	0.00	10.00	1.07
Hebei	5.29	1.00	7.97	0.00	23.00	0.68
Heilongjiang	3.24	0.00	5.92	0.00	22.00	1.09
Henan	6.47	1.00	10.92	0.00	37.00	1.21
Hubei	7.24	0.00	12.85	0.00	47.00	1.15
Hunan	5.53	0.00	8.03	0.00	23.00	1.02
Inner Mongolia	3.06	0.00	4.92	0.00	16.00	1.51
Jiangsu	3.47	1.00	5.46	0.00	17.00	0.83
Jiangxi	3.12	0.00	5.99	0.00	22.00	1.72
Jilin	3.76	0.00	6.08	0.00	16.00	1.28
Liaoning	5.29	0.00	8.21	0.00	24.00	1.08
Ningxia	2.29	0.00	3.89	0.00	10.00	1.71
Qinghai	0.88	0.00	1.73	0.00	6.00	0.48
Shaanxi	3.53	0.00	7.00	0.00	27.00	0.50
Shandong	3.47	1.00	5.65	0.00	19.00	1.01
Shanghai	1.76	1.00	2.59	0.00	10.00	0.13
Shanxi	4.47	0.00	10.62	0.00	41.00	1.31
Sichuan	6.71	2.00	10.32	0.00	37.00	1.03
Tianjin	3.00	0.00	5.49	0.00	18.00	0.32
Tibet	0.76	0.00	1.60	0.00	5.00	1.47
Xinjiang	4.41	0.00	7.43	0.00	21.00	1.80
Yunnan	3.59	0.00	6.26	0.00	21.00	0.82
Zhejiang	2.29	1.00	4.19	0.00	16.00	0.44