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Local corruption and corporate cash holdings: Sheltering assets or agency conflict?

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ABSTRACT

This study investigates the impact of corruption on corporate cash holdings in China. The political extraction argument predicts that firms might shelter liquid assets to avoid extraction by corrupt officials. Using data on A-shared listed firms between 2007 and 2012, we find that firms located in more corrupt regions hold less cash, supporting this hypothesis. Political resources help to diminish the risk of exploitation, reducing the extent to which liquid assets are sheltered. We find that the negative association between corruption and cash holding is more significant for non-state-owned enterprises (Non-SOEs) than for state-owned enterprises (SOEs). Moreover, the cash holdings of Non-SOEs without political connections are more sensitive to corruption than those of Non-SOEs with political connections. These findings demonstrate that expropriation by corrupt officials is an important factor driving firms to manage liquidity.

1. Introduction

Corruption has always been an eye-catching issue in both emerging economics and developed countries. Corruption damages market institutions and business systems and is considered "the biggest obstacle of economic and social development" (World Bank, 2000). A report from the World Economic Forum in 2013 documented that the total cost of corruption is about 260 billion dollars, more than 5% of global GDP and resulting in a 10% increase in business costs.

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Many papers discuss the impact of corruption on economic growth and social inequity at the macro level (Shleifer and Vishny, 1993; Mo, 2001). However, studies linking corruption to firm-level activities are still rare. Corruption is an important dimension of the institutional environment, and it harms market competition and breeds distortionary political-business relations. Corruption plays a vital role in determining corporate governance and organization behaviors (La Porta et al., 2000). Dass et al. (2017) document that corrupt cultures influence firm decisions by shaping business rules and relations. Smith (2016) examines the impact of official corruption on corporate financial policy and finds that local corruption motivates firms to shelter liquid asset. Paunov (2016) shows that political corruption increases the costs of gaining government innovation services and saps firms' willingness to innovate. Sun (2014) states that government corruption greatly impacts firms' tax avoidance strategies.

This study investigates the impact of local corruption on corporate cash holdings in China. There are several reasons to do this. Firstly, firms are the foundation for economic vitality and high-quality economic growth. Asset structure plays a significant role in sustaining firm operation. Cash is the most valuable asset and cash allocation directly influences firm performance. Secondly, the effect of corruption on corporate cash holding is controversial. Some argue that corruption results in a higher risk of political extraction, motivating firms to shelter their liquidity assets and reduce their cash holdings (Caprio et al., 2013; Smith, 2016). Others argue that corruption damages market-based rules and institutional constraints, leading to poor corporate governance and serious agency conflicts (La Porta et al., 2000; Chen, 2011; Liu, 2016). Agency conflicts arise because management prefers to hoard more cash to satisfy its private interests (Jensen and Meckling, 1976). It is thus an empirical question how local corruption impacts corporate cash holdings. Thirdly, the huge differences in corruption between provinces in China provide an opportunity to explore this topic and the anti-corruption campaign launched by the Chinese government in 2012 offers a unique chance to execute an event study.

We begin by formulating two competing hypotheses. The political extraction argument predicts that firms located in more corrupt regions will shelter more liquid assets to avoid exploitation by officials. The agency hypothesis predicts that serious agency conflicts in more corrupt regions will lead firms to hoard more cash for private gain. Using data on A-shared listed firms between 2007 and 2012, we find evidence in favor of the cash sheltering motivation: firms located in more corrupt regions hold less cash. Further analysis shows that the effect of local corruption on corporate cash holding is more significant for non-state-owned enterprises (Non-SOEs) than for state-owned enterprises (SOEs). The cash policies of Non-SOEs without political connections are more sensitive to official corruption than those of Non-SOEs with political connections. In addition, we find that the increase in sheltering cash caused by corruption moves firms away from their optimal cash holding, harming firm value. These findings remain after considering the issue of endogeneity and a series of robustness tests.

This study contributes to the literature in several ways. Firstly, from the perspectives of both political extraction and agency cost, this study explores two different mechanisms for how corruption impacts corporate cash holdings. Empirical evidence supports the cash sheltering motivation for firms located in more corrupt regions shelter more cash to avoid political extraction. This extends the findings of Caprio et al. (2013) and adds to the studies of corporate cash holding in China's weak institutional environment.

Secondly, this study reveals that there is a relation-based preference for different kinds of firms when political extraction is a worry. Studies that discuss political extraction view firms as homogeneous individuals (Cheung et al., 2010; Caprio et al., 2013), neglecting the fact that firms can take different actions to avoid the risk of expropriation. Our study relates political resources to political extraction and finds that good relations with the government helps firms reduce their risk of being targeted by corrupt officials. This alleviates the need to shelter liquid assets. This result contributes to the literature on political extraction and political connection.

Thirdly, this study examines the consequences of official corruption at the firm level. Several studies discuss the impact of corruption on economic growth and social inequity at the macro level (Shleifer and Vishny, 1993; Mo, 2001). Some recent studies examine the impact of corruption on firm behaviors in western countries (Chen, 2011; Paunov, 2016; Smith, 2016). Our study explores the relation between corruption and corporate cash holding in China. This contributes to the literature linking weak institutional environments to firm behaviors.

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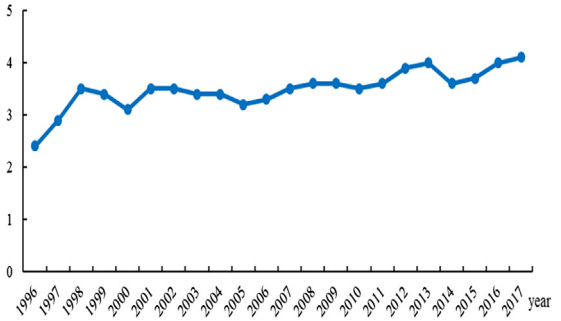

Fig. 1. Corruption Perception Index of China between 1996 and 2017. Note: Data for Fig. 1 obtained from http://www.transparency.org/. The corruption level decreases with the score. The score uses a 10-point system from 1995 to 2011 and a centesimal system after 2012. So scores after 2012 are divided by ten.

The paper proceeds as follows. Section 2 presents institutional background and develops our hypotheses. Section 3 describes the research design and Section 4 reports the empirical results. Section 5 considers some robustness tests, and we present our conclusions in Section 6.

2. Institutional background and hypothesis development

2.1. Corruption in China

China has experienced problems with corruption in recent years, although the economy has continued to grow rapidly. A report by Transparency International indicates the severity of corruption by showing that China's Corruption Perceptions Index (CPI) between 1998 and 2017 ranked about 80 out of 170 nations. Fig. 1 shows that the CPI is between 3 and 4 across these years. Corruption reduces the efficiency of social resources, distorts the investment environment, impedes economic growth and endangers political stability. To control the spread of corruption, the Chinese government launched an anti-corruption war to reduce endemic graft and malfeasance after the Eighteenth National Congress of China in 2012. According to an official report, more than 220 provincial and ministerial level officials and more than 1,119,000 officials overall have been investigated for corrupt behavior (See Fig. 2). The large number of corrupt officials highlights the extent of corruption in China and the government's determination to fight corruption.

Shleifer and Vishny (1993) define corruption as officials illegally using public power for private gain. Allen and Qian (2007) suggest that corruption is grabbing behavior by government officials which destroys the efficiency of resource allocation. In this study, we consider corruption as criminal behavior related to public officials abusing their power to intervene and exploit resources in the pursuit of personal interests (e.g. political achievements, career promotion, rent-seeking and bribe-taking).[1] Aidt (2003) argues that there are at least three necessary conditions for corruption to arise and persist. Firstly, public officials must possess discretionary power to design regulations and policies as they see fit. Secondly, there must be economic rents that can be extracted. Thirdly, institutions must be weak and offer officials chances to use their discretionary power to extract rents.

Corruption in China has been greatly influenced by China's special political system and business culture. The reformation of the Chinese economy, which began in the 1980s, involved extensive governmental decentralization, giving local governments lots of discretionary power over economic development. Local governments can intervene to ensure economic growth and political stability or to provide a public service. Guriev (2004) points out that the powers of discretion and intervention left officials with the ability to seek rents. Fan et al. (2011) argue that corruption would not be effectively controlled if governments at all levels still dominate

[1] For example, government officials often force corporations in their jurisdiction to acquire bankrupt firms to ensure employment, tax income and social stability. Sometimes, the government charges firms for the construction of major municipal project or asks for donations from firms to help rebuild disaster areas.

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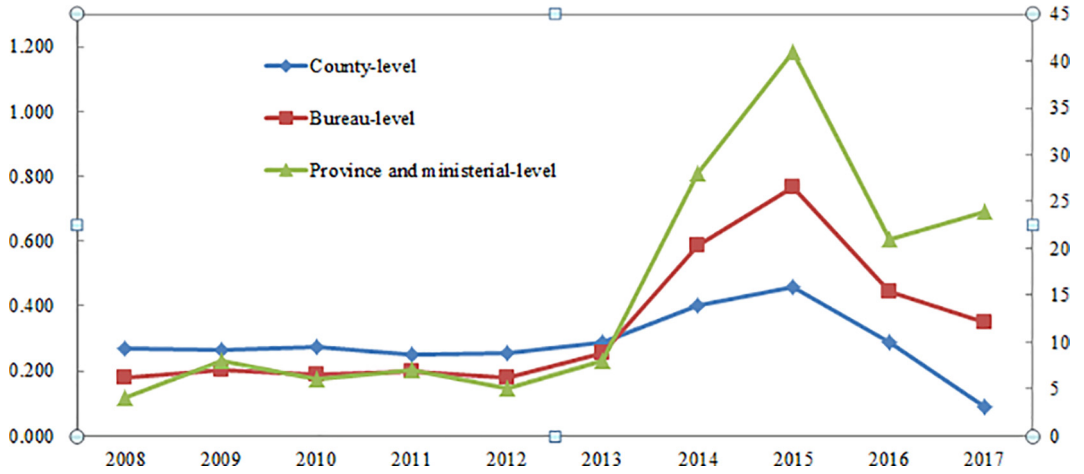

Fig. 2. The number of corrupt officials being investigated. Data for Fig. 2 obtained from the reports of The Supreme People's Procuratorate of China (http://www.spp.gov.cn/gzbg/). The left Y-axis presents the number of corrupt officials at the county level (scaled by ten thousand) and bureau-level (scaled by thousand). The right Y-axis presents the number of corrupt officials at the province and ministerial level.

resource allocation and can intervene in business. Yao (2002) states that privileged politicians abusing their power for grabbing is the source of rent-seeking. The weak legal institutions accelerate the spread of corruption.

2.2. Local corruption and corporate cash holdings: shielding hypothesis

Political extraction exists in every country and is especially prevalent in emerging economies (Shleifer and Vishny, 1998; Caprio et al., 2013). For example, public officials may use threats of regulation to solicit bribes (McChesney, 1988) or delay administrative approval deliberately to extort firms (Kusnadi et al., 2015). Government officials extract rents through operation licenses, export permissions, government contracts and even the nationalization of companies or industries.[2] A report by the World Bank shows that 20% of firms around the world have experienced a request for a bribe from officials at least once between 2005 and 2014.[3]

In the middle of an economic transition, China has poor market-based regulations, an inefficient legal system and extensive government intervention (Allen, 2005; Fan et al., 2011). Such a weak institutional environment, in which the government controls labor, land, energy, infrastructure and resources, makes political extraction possible. In China, a political tournament based on regional GDP performance motivates government officials to develop the local economy. However, the pressure of political competition also forces the government to abuse its unchecked power to exploit firms for private interests (Frye and Shleifer, 1997; Li and Zhou, 2005). These intentions lead officials to exploit firms to ensure employment, political stability and public services and result in strong incentives for officials to gain personally through targeted taxation, resource misallocation and illegal penalties. Djankov et al. (2003) demonstrate that corruption undermines the constraints of institutions and social norms in which firms operate. This in turn leads to abnormal political-business relationships. Kusnadi et al. (2015) argue that a corrupt environment offers government officials more discretionary power and rent-seeking chances, leading to more severe political deprivation. Paunov (2016) suggests that corruption increases the costs of obtaining government services and weakens protections for firm property.

The institution-based view suggests that the institutional environment affects firms' strategic decisions and resource allocations (Peng, 2002, 2003). In cases of political corruption, rational firms adjust their strategies to

[2] For example, in 2008 and 2009, the government of Shanxi introduced several regulations meant to reform mining enterprises that resulted in the nationalization of more than 2840 private mining firms through mergers and acquisitions by state-owned mining groups. However, this government-controlled behavior has been questioned and its legality challenged by the public.

[3] Data Source: the Doing Business group of the World Bank investigated 130,000 firms in more than 135 countries between 2005 and 2014.

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avoid the risk of their profits being extracted. For example, Uhlenbruck et al. (2006) find that multinational corporations often respond to corruption in a host country by changing their selection between equity and non-equity financing. Smarzynska and Wei (2002) show that corruption in a country increases risk for foreign investors, reduce investors' enthusiasm for fully-financed acquisitions. In particular, because governments extort firms according to the firms' perceived payment ability, the more a firm can pay, the more it must pay (Svensson, 2003). Spiller and Savedoff (1999) find that state-owned enterprises often employ excess staff to consume firm resources and then evade government deprivation. Durnev and Fauver (2008) argue that firms prefer to disclose information in a vague way to protect firm assets if firms are challenged by higher political extraction risks. Thus, firms might reduce their capacity to pay public officials by shielding assets to limit the scope for political exploitation.

Liquid assets are more likely to be extracted by corrupt officials than non-liquid assets because non-liquid assets can be more easily traced. Myers and Rajan (1998) emphasize that liquid assets such as cash and bonds are easier to steal than fixed assets. Using a sample of multinational countries, Caprio et al. (2013) find that firms hold significantly less cash and more fixed assets (property, plant, equipment and inventory) in more corrupt regions. Smith (2016) shows that firms located in more corrupt regions hold less cash and are more leveraged. Based on this, we predict that firms headquartered in areas with more corruption are more likely to reduce their asset liquidity and hold less cash. The first hypothesis is formulated as follows:

Hypothesis 1. Firms headquartered in more corrupt regions hold less cash than firms located in less corrupt areas.

2.3. Local corruption and corporate cash holdings: agency hypothesis

Corruption destroys market-based rules and the competitive environment. This significantly influences corporate governance. Firstly, corruption is an important factor impacting the institutions and social norms under which firms operate (Djankov et al., 2003). A corrupt environment aggravates firms' agency conflicts by weakening the institutional constraints on large shareholders and management. La Porta et al. (2000) suggest that firms located in more corrupt regions usually have worse corporate governance. Secondly, the culture of corruption is highly contagious. This means that it is very easy for bureaucratic corruption to permeate into firms and influence firm behavior. Dass et al. (2017) argue that local public corruption, viewed as illegal social norms, causes greater agency problems in companies and hurts shareholder value. Thirdly, the collusion between politicians and businesses impairs the monitoring role of external governance in the long run. This results in worse agency behavior by corporate managers. Liu (2016) finds that firms located in more corrupt areas take significantly more opportunistic actions such as earning management, financial fraud and insider trading.

The self-interest motivation for cash holdings posits that firms' agency conflicts will lead management to hoard more cash to pursue perk consumption, career advancement, emperor building and other self-service behaviors (Jensen and Meckling, 1976). Corruption harms corporate governance and aggravates agent conflicts, leading to increased corporate cash holdings. Examining data from 47 countries, Chen (2011) finds that firms located in more corrupt countries have significantly higher asset liquidity. Thus, the second hypothesis is formulated as follows:

Hypothesis 2. Firms headquartered in more corrupt regions hold more cash than firms located in less corrupt areas.

3. Research design

3.1. Sample selection and data source

This section describes the data collection process. The initial sample consists of A-share listed firms on the Shanghai and Shenzhen Stock Exchange over the period 2007 to 2012. Because the Chinese government launched an anti-corruption war after the Eighteenth National Congress of China in November 2012, the

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number of officials investigated for corruption increased rapidly in 2013. To avoid any influence of this policy, we limit the sample to 2012. We drop financial firms as their capital structure differs systematically. Special Treatment (ST) firms are also excluded. Then, we delete any firm observations for which the registration address and office address are inconsistent. Observations with missing values are also deleted. This results in a sample that is an unbalanced panel of 6721 firm-year observations. To mitigate the effect of outliers, all continuous firm-level observations are winsorized at the 1st and 99th percentiles.

Data for this study are obtained from several sources. The data on corruption is hand collected from the report of the People's Procuratorate of China, which reports officials' criminal acts such as bribery, pirating and fraud. These reports are extracted from the China Procuratorial Yearbook before 2009 and from the official website of the People's Procuratorate of each province after 2009. For each firm, we use the corruption level of the province where the firm is headquartered as the local corruption measure. The data on cash holdings and other firm-level variables are taken from China Stock Market and Accounting Research (CSMAR), which collects detailed accounting and financial information on companies listed on the Shanghai and Shenzhen Stock Exchange. Firms' ultimate controllers are obtained from the WIND Financial Database. The amount of loans provided by financial institutions in each province comes from the China's Regional Financial Operation Report, published by the People's Bank of China. Other provincial data comes from the China Statistical Yearbook.

3.2. Model specification

To estimate the relationship between local corruption and firm cash holdings, we construct the following model:

$$Cash = \alpha + \beta_1 Corrupt + \beta_2 SOE + \beta_3 Size + \beta_4 Lev + \beta_5 MB + \beta_6 NWC + \beta_7 CF + \beta_8 Capital + \beta_9 Div + \beta_{10} \text{Zindex} + Year + Ind + \varepsilon \quad (1)$$

Cash is the dependent variable representing a firm's cash ratio. *Corrupt* is the independent variable of interest which measures the level of local corruption. The remaining variables are controls. Year and industry fixed effects are captured by *Year* and *Ind* and ε is a random error term. Standard errors are all heteroskedasticity-robust and are clustered both by province and year to account for potential within-province-year correlation of residuals. We predict a negative sign for β_1 if hypothesis 1 is correct and a positive sign if hypothesis 2 is supported.

3.3. Variable construction

3.3.1. Corporate cash holdings

Following Ozkan and Ozkan (2004), corporate cash holding (*Cash*) is defined as cash and cash equivalents divided by total assets net of cash and cash equivalents at the end of year. In a robustness test, we also use the ratio of cash and cash equivalents to total assets to measure corporate cash holdings ($Cash_1$).

3.3.2. Local corruption

Corruption is usually secret behavior, making it difficult to measure precisely. Inspired by Del Monte and Papagni (2007) and Smith (2016), we use the average number of registered cases of corruption per 10 thousand residents in each province as a proxy of corruption level (*Corrupt*). Registered cases mainly include accusations of extorting and accepting bribes, abusing power and dereliction. We also use the average number of registered cases of corruption per 10 thousand public servants in each province as an alternative proxy of corruption ($Corrupt_2$).

3.3.3. Other variables

Two variables are used to measure a firm's political resources. Firstly, SOEs have more political resources than Non-SOEs. Thus, a binary variable named *SOE* is constructed, equal to 1 if the ultimate controlling shareholder is a state-owned entity and 0 otherwise. Secondly, the political connections of Non-SOEs also

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relate to political resources. Accordingly, a dummy variable (*Political*) is constructed, equal to 1 if the chairman or CEO has a political identity and 0 otherwise. Political identity refers to the chairman or CEO being a member of the Chinese People's Political Consultative Conference, being a member of the People's Congress or holding a position in a government department.

In addition, following the literature on corporate cash holdings (Opler et al., 1999; Caprio et al., 2013; Chen et al., 2015; Smith, 2016), we include a series of control variables that might affect cash holdings, including the firm's assets (*Size*), leverage (*Lev*), book-to-market ratio (*MB*), net working capital (*NWC*), cash flow (*CF*), capital expenditure (*Capital*), dividend payout (*Div*) and ownership concentration (*Zindex*). The detailed definitions of all variables are presented in Table 1.

4. Empirical results

4.1. Descriptive statistics

Table 2 provides descriptive statistics for the variables used in our empirical analysis. The average of corporate cash holdings (*Cash*) in our sample is 0.463 and its standard deviation is 0.628. This suggests a large cross-firm variation in the cash ratio. The value of local corruption (*Corrupt*) varies from 0.112 to 0.525, with an average value of 0.233 and a median value of 0.219.

Table 3 presents the differences in corporate cash holdings between two subsamples. The two groups of samples contain firm-year observations with different corruption levels. A firm is included in the less-corrupt group if its corruption level is lower than the sample median and included in the more-corrupt group otherwise. Results in Table 3 indicate that the cash holdings of the less-corrupt group are significantly higher than the cash holdings of the more-corrupt group. The average cash ratio for the more-corrupt group is 0.364, while the figure is 0.530 for the less-corrupt group. These differences are also significant for SOEs and Non-SOEs. These results suggest that local corruption is negatively related to corporate cash holdings.

4.2. The effect of local corruption on corporate cash holdings

We examine the relation between local corruption and corporate cash holdings using Eq. (1). Results are presented in Table 4. The standard errors are all heteroskedasticity robust and areclustered both by province and year. Column I presents the results without control variables, while Column II presents the results with a full set of control variables. Column II shows that the coefficient on *Corrupt* is negative and statistically significant at the 1% level (coefficient is −0.384 with a t-statistic of −3.80), suggesting that local corruption is negatively associated with the corporate cash ratio. These results support the shielding hypothesis that firms located in more corrupt provinces tend to hold less cash to avoid the political extraction.

The results for control variables are as follows. The coefficient of *SOE* is significantly negative, suggesting that SOEs hold less cash than Non-SOEs. The results also show a negative association between *Cash* and firm

Table 1
Variable definitions.

Variable	Definition
Cash	Cash and cash equivalents /(total assets − cash and cash equivalents)
Corrupt	Average number of registered cases of corruption per 10 thousand residents
SOE	A binary variable equal to 1 if the ultimate controlling shareholder is a state-owned entity and 0 otherwise
Political	A dummy variable equal to 1 if the chairman or CEO of a Non-SOE has a political identity and 0 otherwise
Size	Natural logarithm of total assets
Lev	(Long-term debt + debt in current liabilities)/total assets
MB	Total assets/market value of the stock
NWC	(Working capital − cash and cash equivalents)/(total assets − cash and cash equivalents)
CF	(Net cash flow from operating activities/total assets) * 100
Capital	Capital expenditures/(total assets − cash and cash equivalents)
Div	A dummy equal to 1 if a firm paid a cash dividend in a year and 0 otherwise
Zindex	Shareholdings of largest shareholder/shareholdings of second shareholder

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Table 2
Descriptive statistics.

Variables	N	Mean	SD.	Min	25th	Median	75th	Max
Cash	6721	0.463	0.628	0.012	0.117	0.228	0.514	3.592
Corrupt	6721	0.233	0.058	0.112	0.193	0.219	0.264	0.525
SOE	6721	0.433	0.495	0	0	0	1	1
Size	6721	21.622	1.239	19.531	20.757	21.397	22.213	25.878
Lev	6721	0.419	0.221	0.034	0.242	0.415	0.589	0.940
MB	6721	0.834	0.770	0.108	0.363	0.593	0.998	4.949
NWC	6721	0.004	0.273	−0.900	−0.157	0.007	0.185	0.615
CF	6721	0.042	0.077	−0.184	0.001	0.043	0.087	0.248
Capital	6721	0.098	0.081	0	0.035	0.076	0.141	0.365
Div	6721	0.714	0.452	0	0	1	1	1
Zindex	6721	1.339	2.479	0.100	0.194	0.425	1.229	15.449

Note: Descriptive statistics of the main variables used in the empirical analysis. Variable definitions are provided in Table 1.

Table 3
Differences in corporate cash holdings between two subsamples.

	Less corrupt	More corrupt	Test of difference	
			Dif.	t
Total sample	0.530	0.364	0.166***	10.57
SOE	0.311	0.225	0.086***	6.48
Non-SOE	0.674	0.506	0.168***	6.62
Non-SOEs with political connections	0.491	0.398	0.094***	3.12
Non-SOEs without political connections	0.733	0.511	0.223***	8.12

Note: T-statistics for the differences in the means of corporate cash holdings between less corrupt and more corrupt groups. The number of firm-year observations in the less corrupt and more corrupt groups is equal. The observations in each group are 3360 for the total sample, 1454 for the SOE sample, 1906 for the Non-SOE sample, 516 for the Non-SOEs with political connections sample and 1390 for the Non-SOEs without political connections sample. Variable definitions are provided in Table 1.
*Indicates significance at the 10% level.
**Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

size (*Size*), leverage (*Lev*), ownership concentration (*Zindex*) and net working capital (*NWC*). By contrast, firms with a higher market-to-book ratio (*MB*) hold significantly more cash. Dividend-paying (*Div*) firms also hold more cash, indicating that Chinese firms may hold more cash to pay dividends.

4.3. Local corruption and corporate cash holdings: the role of political resources

Firms can take measures other than lowering their asset liquidity to prevent political grabbing. The culture of *Guanxi* in China has strong business implications. Firms are keen to keep close relationships with the government (commonly known as wearing a "red hat") to seek political asylum or favorable treatment. Allen et al. (2005) argue that Non-SOEs' lack of inherent political ties makes them more exposed to governmental exploitation. Voss et al. (2008) argue that a firm's political resources reflect its ability to deal with threats in certain circumstances. Political connections provide the advantages of lobbying local governments, reducing the threat of being encroached upon (Boubakri et al., 2013). As such, firms without political resources are at a higher risk of having their assets extracted and hence will have a stronger motive to shelter cash than firms with political resources.

Studies also document that firms with more political resources are entrusted more social responsibilities such as maintaining low unemployment (Fan et al., 2007). Lin and Li (2008) argue that SOEs are burdened with the tasks of ensuring economic growth, political stability and public services while enjoying the benefits of political relation. For example, when the government faces financial troubles or resource scarcity, officials are more likely to shift their financial burden to SOEs. Moreover, the inherent responsibility of SOEs to provide

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Table 4
Results for the impact of local corruption on corporate cash holdings.

	Cash	
	I	II
Constant	0.519***	1.429***
	(7.31)	(10.56)
Corrupt	−1.053***	−0.384***
	(−5.66)	(−3.80)
SOE		−0.080***
		(−4.88)
Size		−0.013**
		(−2.20)
Lev		−1.914***
		(−19.19)
MB		0.086***
		(9.00)
NWC		−0.664***
		(−12.79)
CF		0.070
		(0.71)
Capital		−0.095
		(−1.03)
Div		0.091***
		(7.84)
Zindex		−0.001***
		(−6.28)
Year	Yes	Yes
Ind	Yes	Yes
Adj-R^2	0.169	0.427
N	6721	6721

Note: Regression results for the impact of local corruption on corporate cash holdings. T-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.
*Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

social services gives more opportunity for political grabbing. Thus, firms with more political resources may suffer more political exploitation than firms without political resources.

What role, then, do political resources play when a firm encounters the possibility of political exploitation? To explore this question, we investigate whether political resources influence the association between political corruption and corporate cash holdings by including an interaction term of corruption and political resources ($Corrupt^*PR$) in Eq. (1). Political resources (PR) are measured by whether the firm is a state-owned enterprise (SOE) and, if the firm is a Non-SOE, whether it is politically connected ($Political$). The model is as follows:

$$Cash = \alpha + \beta_1 Corrupt + \beta_2 PR + \beta_3 Corrupt \times PR + \beta_4 Size + \beta_5 Lev + \beta_6 MB + \beta_7 NWC + \beta_8 CF + \beta_9 Capital + \beta_{10} Div + \beta_{11} Zindex + Year + Ind + \varepsilon \quad (2)$$

Results are presented in Table 5. Column I shows that the coefficient of $Corrupt$ is −0.714 (t = −3.26) and is significant at the 1% level. The coefficient of SOE is significantly negative at the 1% level, indicating that SOEs hold less cash than Non-SOEs. More importantly, the coefficient on $Corrupt^*SOE$ is positive and significant at the 5% level (coefficient of 0.605 and t-statistic of 2.12). This result demonstrates that the negative effect of local corruption on corporate cash holdings is more prominent in Non-SOEs.

Column II in Table 5 shows that the coefficient on $Corrupt^*Political$ is also positive and significant at the 10% level (coefficient of 0.959 and t-statistic of 1.89). These results indicate that political connections lower the motivation of Non-SOEs to shelter cash in corrupt environments. We also examine the relationship in sub-samples. We divided the Non-SOEs into two groups according to whether they have a political connection.

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Table 5
Results for the role of political resources.

	Cash			
	I Total sample	II Non-SOEs	III Non-SOEs with political connections	IV Non-SOEs without political connections
Constant	1.491***	1.272***	0.782*	1.495***
	(10.82)	(4.53)	(1.97)	(4.41)
Corrupt	−0.714***	−0.665**	0.094	−0.583**
	(−3.26)	(−2.49)	(0.26)	(−2.20)
SOE	−0.222***			
	(−3.13)			
Corrupt*SOE	0.605**			
	(2.12)			
Political		−0.318**		
		(−2.59)		
Corrupt*Political		0.959*		
		(1.89)		
Size	−0.013**	0.005	0.024	−0.012
	(−2.06)	(0.33)	(1.15)	(−0.62)
Lev	−1.912***	−2.546***	−2.267***	−2.614***
	(−19.27)	(−17.06)	(−11.50)	(−14.92)
MB	0.085***	0.080***	0.027	0.096***
	(9.07)	(3.51)	(0.85)	(3.87)
NWC	−0.665***	−0.873***	−0.537***	−0.956***
	(−12.81)	(−11.83)	(−4.66)	(−10.94)
CF	0.074	0.104	0.033	0.155
	(0.76)	(0.60)	(0.17)	(0.76)
Capital	−0.103	−0.415***	−0.572**	−0.390**
	(−1.11)	(−3.19)	(−2.45)	(−2.34)
Div	0.091***	0.127***	0.059*	0.136***
	(7.86)	(6.53)	(1.77)	(5.36)
Zindex	−0.001***	−0.001***	−0.002**	−0.001*
	(−6.47)	(−3.12)	(−2.48)	(−1.79)
Year	Yes	Yes	Yes	Yes
Ind	Yes	Yes	Yes	Yes
Adj-R^2	0.427	0.438	0.371	0.456
N	6721	3813	1033	2780

Note: Results for the role of political resources in influencing the relation between political corruption and corporate cash holdings. T-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.
* Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

Columns III and IV in Table 5 show that the coefficient on *Corrupt* is significantly negative when firms are not politically connected and insignificant when firms are politically connected. These results suggest that the negative effect of corruption on corporate cash holdings is more prominent in Non-SOEs without political connections.

Overall, these findings suggest that firms with political resources have the privilege of political protection, making them less likely to shelter their cash assets. However, firms without political resources have a greater incentive to decrease their ratio of cash holdings to avoid extraction. The government presents a relation-based preference for different kinds of firms when extracting rents.

4.4. Does local corruption lead to shortage of corporate cash holdings?

In this section, we address the issue of whether shielding assets causes a shortage of corporate cash holdings by investigating the relation between corruption and negative excess cash holdings. Following Zhang and Wu

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Table 6
Results for relation between local corruption and shortage of cash holdings.

	Under-cash		
	I	II	III
Constant	0.680***	−0.126***	−0.038
	(4.77)	(−3.22)	(−0.05)
Corrupt	−0.223**	−0.091***	1.090*
	(−2.28)	(−2.87)	(1.77)
SOE	−0.055***	−0.006*	0.300***
	(−3.70)	(−1.69)	(3.79)
Size	0.0004	−0.001	−0.089**
	(0.07)	(−0.72)	(−2.48)
Lev	−1.899***	−0.286***	8.797***
	(−19.01)	(−13.52)	(23.64)
MB	0.113***	0.012***	−0.357***
	(11.07)	(4.87)	(−4.35)
NWC	−0.718***	−0.051***	3.018***
	(−13.72)	(−3.76)	(15.48)
CF	0.010	−0.004	−0.875
	(0.10)	(−0.13)	(−1.42)
Capital	−0.044	0.140***	−0.520
	(−0.45)	(5.12)	(−1.19)
Div	0.083***	0.026***	−0.520***
	(7.04)	(6.25)	(−6.42)
Zindex	−0.001***	−0.0001**	0.002
	(−3.96)	(−2.20)	(1.17)
Year	Yes	Yes	Yes
Ind	Yes	Yes	Yes
Adj-R^2	0.307	0.662	–
Pseudo R^2	–	–	0.248
N	6721	4611	6721

Note: Results for the relation between local corruption and shortages of cash holdings. T/Z-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.
* Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

(2012), we first calculate the mean of corporate cash holdings in each industry and use the differences between a firm's cash holding and the mean value to measure the firm's shortage of cash holdings (*Under-cash*). If the difference is negative, the firm lacks cash holdings. Column I of Table 6 reports the relation between *Under-cash* and *Corrupt* in the total sample, while Column II presents the results for the sample of observations with a negative value of *Under-cash*. The coefficients of *Corrupt* are significantly negative, suggesting that the degree of cash shortage increases with local corruption. In Column III, we measure *Under-cash* with a dummy variable equal to 1 if *Under-cash* is less than zero and 0 otherwise.[4] The coefficient of *Corrupt* is positive and significant at the 10% level, indicating that firms located in more corrupt regions are more likely to have shortages of cash holdings. Therefore, political corruption leads firms to shelter cash assets and results in a shortage of corporate cash holdings.

4.5. Local corruption and firm value: the mediating role of cash holdings

Corporate cash holding is an important factor impacting firm value. In this section, we explore whether corruption harms firm value because of the increase in sheltered assets. Using the mediating effect model of

[4] In Column III of Table 6, we use the Logit model.

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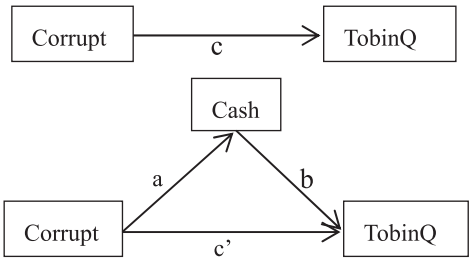

$$TobinQ = \alpha + cCorrupt + Control + e \quad (1)$$

$$Cash = \alpha + aCorrupt + Control + e \quad (2)$$

$$TobinQ = \alpha + c'Corrupt + bCash + Control + e \quad (3)$$

Fig. 3. Mediating effect model.

Table 7
Local corruption and corporate value: the mediating effect of cash holding.

	TobinQ					
	I		II		III	
		Total sample		SOEs		Non-SOEs
Constant	13.51***	12.95***	10.69***	10.12***	19.29***	18.73***
	(23.44)	(24.00)	(18.70)	(17.89)	(16.18)	(16.93)
Corrupt	−0.892***	−0.706**	−0.916***	−0.772***	−0.683*	−0.471
	(−2.89)	(−2.38)	(−3.17)	(−2.68)	(−1.78)	(−1.27)
Cash		0.374***		0.451***		0.373***
		(9.12)		(5.18)		(8.39)
SOE	0.050	0.052				
	(1.33)	(1.39)				
Size	−0.418***	−0.406***	−0.282***	−0.273***	−0.702***	−0.688***
	(−15.64)	(−15.65)	(−10.07)	(−9.80)	(−12.78)	(−13.35)
Age	−0.102***	−0.045	−0.146***	−0.094***	−0.034	0.017
	(−3.31)	(−1.52)	(−4.30)	(−2.76)	(−0.90)	(0.46)
Lev	−1.834***	−1.537***	−1.945***	−1.729***	−1.715***	−1.332***
	(−12.56)	(−10.95)	(−11.07)	(−9.79)	(−8.47)	(−6.77)
ROA	3.114**	3.130**	5.500***	5.429***	0.606	0.650
	(2.26)	(2.31)	(3.91)	(3.78)	(0.32)	(0.35)
Zindex	−0.002***	−0.002***	−0.001**	−0.001**	−0.002**	−0.003**
	(−3.79)	(−4.05)	(−2.29)	(−2.08)	(−1.99)	(−2.27)
APS	−0.173***	−0.192***	−0.128***	−0.134***	−0.212***	−0.236***
	(−10.56)	(−11.34)	(−7.21)	(−7.66)	(−8.81)	(−9.40)
EPS	0.941***	0.941***	0.445***	0.417***	1.613***	1.617***
	(5.91)	(6.03)	(3.31)	(3.05)	(6.15)	(6.38)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Ind	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.507	0.517	0.527	0.535	0.514	0.528
N	6721	6721	2908	2908	3813	3813

Note: Results for the mediating role of corporate cash holdings on the relation between corruption and firm value. T-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.

* Indicates significance at the 10% level.

** Indicates significance at the 5% level.

*** Indicates significance at the 1% level.

Baron and Kenny (1986), we run the regressions accompanying Fig. 3.[5] Firstly, we examine the effect of corruption on firm value using Eq. (1). Column I of Table 7 shows that the coefficient of *Corrupt* is significantly negative at the 1% level. Secondly, the results of Eq. (2), presented in Table 4, suggest a significantly negative

[5] In Eqs. (1) and (3), firm value is measured with TobinQ. The control variables are *SOE*, firm size (*Size*), firm age (*Age*), firm leverage (*Lev*), return of asset (*ROA*), ownership concentration (*Zindex*), Net asset of per share (*APS*) and earnings per share (*EPS*). Year (*Year*) and industry (*Ind*) fixed effects are included.

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relation between local corruption and corporate cash holding. Thirdly, we run Eq. (3) and find that the coefficient of *Cash* is positive and significant after controlling for corruption. In addition, the coefficient of *Corrupt* is still negative and significant. These results show that corporate cash holdings play a mediating role between corruption and firm value. The results of the SOE and Non-SOE subsamples in Columns II and III also support a mediating effect.

5. Robustness test

We conduct various tests to confirm the robustness of our findings.

5.1. Omitted variables

In the main model, we control for the major firm-level variables. However, the corporate cash holdings are also influenced by economical and financial conditions. Considering the unequal economic development and institutions across provinces, we add variables measuring economic development (*GDP*), financial institutions (*Finance*) and the legal system (*Law*) into the main model[6] and then run the regression again. Results in Table 8 show that the main findings are qualitatively unchanged after controlling for these economic and financial factors.

5.2. The influence of external financial institutions

Corporate cash holdings are constrained by external financial institutions. Bates et al. (2009) find that firms headquartered in regions with weak financial institutions usually hold more cash. As such, the relationship between local corruption and corporate cash holdings may be affected by external financing institutions. We address this concern by using monetary policy as a proxy for the external financial environment. Monetary policy can be classified as either loose or tight. Looser monetary policy makes it easier for firms to gain financial support, allowing firms to hold less cash.

Monetary policy is measured as the growth rate of Generalized Currency in each year. Monetary policy is considered loose if the annual growth is higher than the median across all years and considered tight otherwise. A dummy variable (*Monetary*) is created, equal to 1 if the policy is loose and 0 otherwise. Column I in Table 9 presents the results. The coefficient of *Corrupt* is negatively significant in both subsamples. While the coefficient is −0.317 (t-statistic: −2.83) for the subsample with tight monetary policy, the coefficient is −0.410 (t-statistic: −2.88) for subsample with loose monetary policy. The Chow Test finds no obvious difference in the coefficient of corruption between the two subsamples. These findings suggest that our hypothesis is not influenced by external financial institutions.

5.3. The influence of firm risks

Operational risks may affect our results. Firms in industries with more overall risk may hold more cash assets, a concern if these firms also do business in less corrupt regions. For example, high-tech firms usually need more cash reserves to deal with higher innovation risks and innovation activities are more likely to succeed in less corrupt areas. To address this issue, we measure firm risks as the standard deviation of cash flow. We first calculate the standard deviation of cash flow for each firm over the sample window. Then, we create a dummy variable (*CFrisk*) equal to 1 if the firm's operation risk is larger than the median across all firms and 0 otherwise. Column II in Table 9 shows that the coefficient of *Corrupt* in both subsamples is significantly negative. The Chow Test finds no statistically significant difference between the two subsamples. These findings suggest that our hypothesis is not influenced by firms' operation risks.

[6] *GDP* is measured as the natural logarithm of GDP per capital in each province. *Finance* is defined as the amount of loans divided by GDP in each province. The measurement of *Law* comes from the Report of Marketing Index provided by Fan et al. (2011). We use their Intermediary Organization and Legal Environment index as the proxy of legal system.

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Table 8
Results for controlling for economic conditions.

	Cash		
	I	II	III
Constant	0.969***	1.008***	−0.010
	(4.51)	(4.73)	(−0.02)
Corrupt	−0.364***	−0.724***	−0.481**
	(−3.16)	(−3.35)	(−1.97)
SOE	−0.085***	−0.240***	
	(−5.04)	(−3.48)	
Corrupt*SOE		0.661**	
		(2.39)	
Political			−0.296***
			(−3.01)
Corrupt*Political			0.907**
			(2.31)
Size	−0.019***	−0.018***	0.005
	(−2.84)	(−2.74)	(0.34)
Lev	−1.905***	−1.902***	−2.365***
	(−18.74)	(−18.85)	(−16.19)
MB	0.089***	0.088***	0.098***
	(9.09)	(9.17)	(4.54)
NWC	−0.667***	−0.668***	−0.852***
	(−12.67)	(−12.69)	(−12.06)
CF	0.066	0.071	0.091
	(0.68)	(0.74)	(0.63)
Capital	−0.097	−0.106	−0.308**
	(−1.04)	(−1.13)	(−2.50)
Div	0.094***	0.094***	0.107***
	(7.74)	(7.77)	(6.62)
Zindex	−0.001***	−0.001***	−0.001***
	(−6.06)	(−6.25)	(−3.87)
GDP	0.058**	0.061***	0.123***
	(2.60)	(2.79)	(3.09)
Finance	0.053***	0.054***	0.054**
	(3.53)	(3.74)	(2.31)
Law	−0.005**	−0.006**	−0.009**
	(−2.05)	(−2.23)	(−2.49)
Year	Yes	Yes	Yes
Ind	Yes	Yes	Yes
Adj-R^2	0.429	0.430	0.425
N	6665	6665	4752

Note: Results for the effect of local corruption on corporate cash holdings after controlling for economic conditions. T-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.
*Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

5.4. Difference-in-differences model

The Chinese government launched an anti-corruption campaign to crack down on endemic graft and malfeasance after the Eighteenth National Congress of China in 2012. We regard this anti-corruption war as an exogenous event to do a quasi-natural experiment to explore the relation between anti-corruption and firm's motivations for shielding assets. Since the anticorruption war began in late 2012, 2013 to 2015 is classified as the after-event window and 2010 to 2012 is considered as the before-event window. In the difference-in-differences model, *Post* is a binary variable equals to 1 for the after-event window and 0 for

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Table 9
Results for the influence of external financial institutions and firm risks.

	Cash			
	I		II	
	Monetary = 1	Monetary = 0	CFrisk = 1	CFrisk = 0
Constant	1.446***	1.276***	0.900***	1.843***
	(8.90)	(5.89)	(4.81)	(11.15)
Corrupt	−0.410***	−0.317***	−0.372***	−0.344**
	(−2.88)	(−2.83)	(−3.71)	(−1.99)
Control	Yes			
Year	Y	Y	Y	Y
Ind	Y	Y	Y	Y
Adj-R^2	0.445	0.379	0.373	0.484
N	4399	2322	3692	3029
Chi^2 (p)	0.27		0.02	
	(0.602)		(0.880)	

Note: Results for the effect of local corruption on corporate cash holdings after considering external financial institutions and firm risks. T-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.
*Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

the before-event window. Then, we use a dummy variable to represent the control and treatment group. A binary variable (*Corrupt*) equals 1 if the firm falls into the treatment group and equals 0 if it falls into the control group. Firms located in provinces with corruption above the median form the treatment group and firms located in the other provinces form the control group.

Column I of Table 10 shows that the coefficient of *Corrupt* is significantly negative at the 1% level, suggesting that firms located in more corrupt regions hold less cash. More importantly, the coefficient of *Corrupt*Post* is positive and significant at the 1% level. This indicates that the effect of anti-corruption on cash holdings is more significant in more corrupt regions than in less corrupt regions. These findings support the

Table 10
Results of the difference-in-differences estimation.

	Cash	
	I	II
Constant	1.450***	1.566***
	(14.76)	(11.71)
Post	−0.313***	−0.344***
	(−9.49)	(−8.81)
Corrupt	−0.049***	−0.081***
	(−2.76)	(−3.57)
Corrupt*Post	0.081***	0.109***
	(3.78)	(4.23)
Control	Yes	
Year	Y	Y
Ind	Y	Y
Adj-R^2	0.371	0.384
N	10,424	6484

Note: Results of the difference-in-differences estimation. T-statistics are presented in parentheses. Standard errors are all heteroskedasticity-robust and are clustered both by province and year. Variable definitions are provided in Table 1.
*Indicates significance at the 10% level.
**Indicates significance at the 5% level.
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argument that the anti-corruption war helps to curb political extraction and reduce firms' cash sheltering motivation. This effect is especially significant in more corrupt regions. As a robustness check, we redefine the treatment and control groups. Firms located in provinces with corruption in the upper quartiles form the treatment group and firms located in the lower quartiles form the control group otherwise. Column II in Table 10 shows that our findings are robust.

5.5. Alternative measurements

In this section, we consider alternative measurements of our main variables. Firstly, we measure corporate cash holdings as the ratio of cash and cash equivalents to total assets ($Cash_1$). All of the above control variables are included. Secondly, we apply another corruption measurement, the registered cases of corruption scaled by the number of public servants ($Corrupt_1$). The untabulated results are identical to our previous results that corporate cash holdings are negatively related to both alternative measures.

6. Conclusions

The political environment plays a significant role in influencing corporate governance and firm behavior. This study investigates the effect of local corruption on corporate cash holdings in China. Based on the view of political extraction and agency conflicts, we formulate two competing hypotheses. Using data on A-shared listed firms between 2007 and 2012, we find evidence in favor of a cash sheltering motivation. Firms located in more corrupt regions hold less cash. Further study shows that political resources help to avoid the risk of being exploited, alleviating the motivation to shield liquid assets. Our results indicate that the effect of local corruption on corporate cash holding is more significant in non-state-owned enterprises than in state-owned enterprises. Compared to Non-SOEs with political connections, the cash policies of Non-SOEs without political connections are more sensitive to local corruption. In addition, we find that sheltering cash in corrupt environments causes firms to move away from their optimal cash holdings, harming firm value. These findings are robust to a series of robustness tests.

Overall, our findings have several implications. Firstly, firm behavior is affected by the institutional environment. This study adds to the literature by relating corruption to corporate cash holdings. Most of the literature on corruption either focuses on developed economics or across-country settings (Mo, 2001; Anderson and Tverdova, 2003; Méndez and Sepúlveda, 2006; Aidt, 2009; Wu and Zhu, 2011). Some recent studies do discuss the impact of corruption on corporate governance and firm decision (De Rosa, 2015; Paunov, 2016; Dass et al., 2017). However, these studies ignore the relation between corruption and firms' basic capital raising activity, corporate cash holdings. Our findings address this gap and highlight the importance of fighting corruption in China.

Our findings contribute to the research on corporate cash holdings in China's weak institutional environment. Our results suggest that official corruption exacerbates the risks of political extraction and increases firms' motivation to shield liquid assets. These results help us to understand firms' assets allocation and imply that anti-corruption activities help firms to optimize their asset structure. This in turn promotes the healthy development of business.

This study also sheds light on the role that political resources play in business. In China, the inherent political connections of SOEs function as a risk-aversion mechanism, giving SOEs an advantage in seeking political protection. This phenomenon results in more serious political grabbing in firms without political resources. This finding provides insight into the issue of how property rights and business relationships affect corporate decisions. It is also strongly supports the guidelines for building friendly government-business relationships in China.

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