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Can government intervention be both a curse and a blessing? Evidence from China's finance sector

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ABSTRACT

Earlier work views government intervention as a "grabbing hand," whereas more recent studies report that it acts as a "helping hand." Can government intervention be both a curse and a blessing? This paper investigates this issue by investigating the impact of government intervention on firm financing and financial corruption in China, using the 2005 World Bank Investment Climate survey data. To do so, we first use instrumental variable estimations to confirm that government intervention promotes financial access and encourage corruption. Next, we adopt a mediator model to document that government intervention promotes firms' access to finance through informal payment. The mediation effect is significant for split samples that capture different type of political and economic climate. The policy implications of the findings are discussed.

1. Introduction

Anglo-American countries call their institutions the Global Standard Institutions that "are seen as maximizing market freedom and protect private property rights most strongly" (Chang, 2011: 474). Thus, the traditional institutional theories view government intervention as a "grabbing hand" so that the Washington Consensus almost equates government intervention with corruption (see, e.g., IMF, 2002; World Bank, 1997, 2004). At the same time, the governments in most countries directly or indirectly control the financial system (Ayyagari, Demirguc-Kunt, & Maksimovic, 2012; Hart & Moore, 1999); thus, firms tend to seek government intervention to act as a "helping hand" via formal or informal connections (e.g., Faccio, McConnell, & Masulis, 2006). The literature suggests that government intervention can involve different functions based on different aspects of firm performance. However, it cannot explain the micro-foundations of government intervention as they address only one side of the coin (i.e., either a grabbing hand or a curse—a helping hand or a blessing). Using the Chinese investment climate survey data in 2005, this paper offers empirical evidence that government intervention can simultaneously promote firms' access to financing and encourage firms to undertake informal payments for that finance. Hence, the paper shows that government intervention can be both a curse and a blessing at the same time.

This paper uses the World Bank Investment Climate Survey undertaken in 2005 for China because it provides information about access to financing and informal payments by Chinese firms, thus allowing us to conduct an empirical test of the dual properties of government intervention. We focus on China's experience for the following reasons. First, local governments in China have strong control over financial intermediaries and financial loans, which are almost the only sources of external capital for Chinese firms. Second, capital is the most important source of financing in China (Allen, Qian, & Qian, 2005), so access to it is important for Chinese firms to survive and to develop. Thus, China's experience in the 2000s provides an excellent laboratory for our purposes (see Section 2 for further details).

In this paper, we first assume that government intervention in firms' access to financing has a promotional effect because it can reduce financial costs and correct or prevent market imperfections. In anticipation of this promotional effect, firms tend to form strategic alliances with local governments and financial institutions (Wang, 2007). But when government intervention focuses on access to financing, the constraint effect of economic institutions on corruption is weakened (Du, Lu, & Tao, 2008; Lin, Lin, & Song, 2010). Specifically, several factors can affect corruption, including discretionary power (e.g., Jain, 2001; Lambsdorff, 2005), lack of competition (Ades & Di Tella, 1995, 1997; Henderson, 1999) and deterrents to corruption (Jain, 2001). Because of government intervention, all these factors cannot be

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effectively constrained. Hence, the rent-seeking incentive is rarely avoided (Tollison, 2012). This paper argues that, as a result, a theoretical basis exists for attributing a dual role to government intervention in financing firms.

To test this dual role, this paper first investigates whether government intervention helps firms to gain access to financing and encourages financial corruption, that is, informal payment for financial access.[1] Given the well-known potential endogeneity issues, we also test for the effect of government intervention using exogenous instrumental variable (IV) approach. After confirming the causal effect of government intervention, we examine the significance of financial corruption after controlling for government intervention. Thus, we test whether government intervention promotes financial access through corruption. Put differently, given that the potential endogeneity bias is negligible for the government intervention effects, we conduct the mediation model to examine the mediation effect of financial corruption regarding the role of government intervention in terms of providing financial access.

In addition, the paper conducts two robustness tests by splitting the sample of cities based on their population and GDP size. Large-population cities may have larger political position in the central government; whereas large-GDP cities tend to have better resource endowment of the local governments, including subsidies. For example, evidence indicates that the level of political connections is positively with the amount of government subsidies in China (Tao, Sun, Zhu, & Yang, 2017). Thus, sample-splitting helps to capture different political and economic climates, and then the split-sample estimations help reduce the omitted variables bias at the city level when the population or GDP of the city is exogenous for firm financing. The robustness tests show that the mediation effect is significant for firms operating in cities at different population/GDP sizes.

The rest of the paper is organized as follows. Section 2 builds our testable hypotheses based on earlier studies and China's investment climate during the sample period. Section 3 introduces the empirical methods while Section 4 reports the empirical results. Section 5 presents robustness tests. Section 6 concludes the paper with some policy implications of the findings.

2. China's investment climate survey, literature review, and hypotheses development

To illustrate the dual role of government intervention, we observe firms' financing in China using investment climate survey data published in 2005, which provide data for 2004, during which financial access was crucial for Chinese firms. At least prior to 2012, firm innovation (e.g., the transfer of new technology and independent intellectual property rights) could not provide a driving force for the operations of Chinese firms, and labor was relatively cheap.[2]

The survey obtains samples from the universe of registered businesses and follows a stratified random sampling methodology. Subjects may misreport their attitudes or hide relevant information, e.g., about informal payment, but the survey data are not subject to self-selection bias. The 2005 survey comprises 12,400 firms located across 120 cities in 30 provinces. Only Tibet is excluded because the institutional background there is clearly different from that in the provinces surveyed. The survey includes 30 types of manufacturing industries.

Although the World Bank conducts other similar surveys, we use the survey on China's investment climate as it fits much better with our objectives. As discussed further below, the survey captures the significant role of government intervention in financial access in 2004. After 2005, China's government reformed financial markets (i.e., split-share reform; see Liao, Liu, & Wang, 2014) and the four large state-owned commercial banks successively went public (García-Herrero, Gavilá, & Santabárbara, 2006). Hence, using a post-2005 survey might bias our inferences. Indeed, some scholars have utilized the 2005 survey to examine the impact of government intervention on firm performance (Cai, Fang, & Xu, 2011), firm growth (Wang & You, 2012), and financial constraint (Cull, Li, Sun, & Xu, 2015).

During the survey period, China was listed as one of the countries with the poorest protection on intellectual property rights (La Porta, López de Silanes, Pop-Eleches, & Shleifer, 2004), and the country had no formal patent law until 2007. The 2005 survey therefore reflects the poor institutional climate in which firms tend to seek help from the local government, which was the key method of financing then for most firms. Consequently, the 2005 survey captures China's institutional environment during the 2000s, allowing us to test how government intervention allocates financial resources such an environment.

During the 2000s, Chinese firms also heavily relied on loans for financing because the banking sector and other financial intermediaries dominated China's financial system (Linton, 2006). Given that the literature mainly uses data on firms' access to loans to investigate issues regarding firms' financing (Ayyagari, Demirguc-Kunt, & Maksimovi, 2010), the heavy reliance of firms on loans also helps net out any noisy data in our empirical investigation.

Local Chinese governments have many incentives for forming strategic alliances with financial intermediaries and firms. First, they have the power to intervene in firms' corporate finance. China's open-door policy has empowered local governments through administrative decentralization. First, control over financial institutions and other organizations was delegated to local governments (Boisot & Meyer, 2008). As a result, financial intermediaries are controlled by local governments, and all types of firms seek help from them to gain access to financing. Local governments also have an incentive to strategically control loans. The rapid growth of China's economy is driven in part by local governments and social trust (Cui, 2017). Before 2012, every official chief had to meet a gross domestic product growth target determined by top-level government organizations. Otherwise, the poor performance of the local government officials would cause job losses, not to mention preventing promotions. Given that investment is one of the most important requirements for economic growth, especially in developing countries, local government officials make the most efficient use of financial institutions to promote social thrust, investment and hence economic growth.

Because of the strategic alliances formed among local governments, firms, and financial intermediaries, government intervention promotes financial access for firms in several ways. First, local governments contribute to “critical inputs” (Byrd, 1990; Chang & Wang, 1994; Naughton, 1992, 1994) by cutting firms' financial costs. For example, governments tend to involve the credit extension of financial institutions (Wang, 2007); as such, governments can help firms to access capital. Second, government intervention further reduces costs in a broader sense because it can effectively reduce both ex-ante and ex-post financial uncertainty.[3] As Faccio et al. (2006) show, government connected firms can be more bailed out under financial stress. Third, when legal institutions and financial institutions are underdeveloped, government intervention helps correct and prevent market imperfection (e.g., Che, 2005; Pigou, 1938). As mentioned before, China is one of the countries with the poorest protection on intellectual property rights (La

[1] The survey asks the manager whether informal payments to bank staff or lending institutions are necessary. We use the response to this question to measure the corruption.

[2] For our purposes, we only need to show that innovation and labor were relatively unimportant with respect to capital in 2004.

[3] The significance of government intervention for China's firms is shown by the fact that, after the decentralization empowering local governments, state-owned enterprises experienced rapid growth (Oi, 1992, 1999; Qian & Weingast, 1996; Wong, 1992).

Porta et al., 2004),[4] most firms need to construct a relational capital with governments for their positions in market. Following this discussion, we propose our first hypothesis as follows:

Hypothesis 1. Government intervention promotes firms' access to financing.

While government intervention helps firms with financing, it may also deteriorate the financial climate. As the public choice school points out, government managers, like other economic actors, are "self-interested and they will therefore exploit their monopoly power over certain decisions to generate rents" (Hopkin & Rodriguez-Pose, 2007: 188). Government officials tend to reward narrow rather than encompassing economic efficiency (Becker, 1983), and this leads to poor-quality services with additional costs (Tanzi & Schuknecht, 2000) or bureaucratic delay (Bose, 2004). If the monitoring system is imperfect (Alesina, Cohen, & Roubini, 1992; Buchanan, 1983; Frank & Cook, 1995), government intervention will result in rent-seeking behavior. Such adverse effects of government intervention on financial corruption are reflected in the 2005 survey that we use. As mentioned before, China's legal system was underdeveloped in 2004, and the government held power over the financial system. When financial sector managers realize that their business relies on government intervention instead of market rules, they will have incentives to seek rent from firms. If the local governments decide to help firms, the constraint effect of economic institutions on corruption is also weakened (e.g., Du et al., 2008; Lin et al., 2010). Hence, we propose our second hypothesis as follows:

Hypothesis 2. Government intervention encourages firms to make informal payments to financial intermediaries—that is, government intervention promotes corruption.

In theory, corruption per se arises from government intervention that promotes firms' financial access. Firms use a channel to local governments for financial access, but financial institutions need their managers to handle financial services. Even when they have a close network with local governments, firms may need to bribe bank managers or informally pay financial institutions to obtain loans. In other words, managers of financial institutions can use their power to strategically or reasonably delay or deny firms' financing requests unless they receive informal payments, and in this way, corruption promotes firms' access to financing. Thus, we state our third hypothesis as follows:

Hypothesis 3. Government intervention promotes firms' access to financing through financial corruption.

In sum, government intervention helps firms gain financial access, but it also leads to corruption, which mediates the promotion effect of government intervention on financial access. To identify the dual role of government intervention, we only need to confirm a significant mediator effect of financial corruption on the relationship between government intervention and firms' financial access. Our empirical design is described next.

3. Empirical methodology

To test our predictions, we first identify the causal effects of government intervention on financial access (Hypothesis 1) and financial corruption (Hypothesis 2), respectively. Afterward, we examine the mediation effect of corruption on the relationship between government intervention and financial access (Hypothesis 3).

[4] According to the annual International Property Rights Index (https://www.internationalpropertyrightsindex.org/), which is available since 2007 for 125 countries producing 98% of world Gross Domestic Product, China's ranks improved over time very slightly. For example, China ranked as 45 and 52 in 2007 and 2018, respectively. An increase in the number indicates improvements in the index. Hence, in 2007 there were over 80 countries having better property rights than China and this has changed to 73 in 2018.Overall, in a decade, China has not made big progress on improving international property rights.

Table 1
Descriptive statistics.

	Obs.	Mean	Std. dev.	Min.	Max.
Financial access	12,398	0.600	0.490	0	1
Financial corruption	11,317	0.071	0.257	0	1
Government intervention (for business issues)	12,265	2.567	1.272	1	8
Public security intervention (log of intervention days)	11,718	1.788	1.021	0	5.889
Public security helping (ratio of helping officials for public security)	11,376	38.373	39.387	0	100
Firm size (log of employee number)	12,395	5.553	1.491	0	11.700
Firm age (log of years)	12,400	2.128	0.880	0.693	4.934
Export	12,400	0.377	0.485	0	1
State share (ratio in ownership)	12,400	0.134	0.316	0	1
Foreign share (ratio in ownership)	12,400	0.146	0.317	0	1
Government appointment	12,400	0.118	0.322	0	1
CEO education	12,386	5.578	0.998	1	7
CEO tenure (log of years)	12,384	1.591	0.754	0	4.025

3.1. The causal effects of government intervention

To examine the correlation between government intervention and financial access (or financial corruption), we empirically estimate the following two equations.

$$Pr(FA_i = 1) = \beta_1 GIB_i + \beta_2' X_i + city_i + industry_i + e_i \quad (1)$$

$$Pr(FC_i = 1) = \beta_3 GIB_i + \beta_4' X_i + city_i + industry_i + e_i \quad (2)$$

where *FA* refers to financial access, *FC* refers to corruption, *GIB* is government intervention in business affairs, and X_i represents control variables. Eqs. (1)–(2) also include fixed effects at the city and industry levels, respectively.

We construct a dummy variable to measure whether the firm has access to financing (FA). The dummy variable is based on the manager's response to the question: "Does your company have loans from banks or other financial institutions?" This dummy variable is the outcome of interest in our estimations. As mentioned above, firms rely on loans to obtain capital. As Ayyagari et al. (2010) report, this measure reflects firms' access to financing more objectively.

We also construct a dummy variable to measure whether the firm has to bribe financial institutions in order to gain access to financing (FC). It is based on the manager's response to the question: Are informal payments to bank staff or lending institutions necessary? This variable directly measures the corruption in financial sectors needed for firms to obtain access to financing. Given that our outcome and mediator variables are measured using dummy variables, we first employ the Probit method for estimations.

The variable of interest is GIB. As a standard measure of government intervention with survey data (e.g., Lin et al., 2010), it is based on managers' responses to the question: "How many days does the general manager (GM) or deputy GM spend on government assignments and communications per month?" The respondent selects from one of the following eight choices: (1) 1 day, (2) 2–3 days, (3) 4–5 days, (4) 6–8 days, (5) 9–12 days, (6) 13–16 days, (7) 17–20 days, or (8) $\geq$21 days. This variable in particular reflects government intervention in business affairs.

Our control variables capture firm characteristics and the characteristics of the chief executive officer (CEO). With respect to firm characteristics, we first control for firm age. The survey provides the year of the firm's establishment, so we can obtain the firm's age in 2004.

Table 2
Correlation matrix.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	Financial access	1											
(2)	Financial corruption	0.052	1										
(3)	Government intervention	0.038	0.069	1									
(4)	Public security intervention	0.114	0.004	0.143	1								
(5)	Public security helping	0.031	−0.066	−0.062	0.113	1							
(6)	Firm size	0.251	−0.041	0.067	0.297	0.060	1						
(7)	Firm age	0.067	−0.011	0.036	0.126	−0.018	0.309	1					
(8)	Export	0.150	−0.033	0.001	0.078	0.052	0.356	0.058	1				
(9)	State share	−0.012	−0.008	0.053	0.151	−0.016	0.248	0.340	−0.021	1			
(10)	Foreign share	−0.051	−0.050	−0.023	−0.016	0.015	0.105	−0.072	0.327	−0.146	1		
(11)	Government appointment	−0.032	0.010	0.048	0.087	−0.014	0.163	0.299	−0.039	0.441	−0.130	1	
(12)	CEO education	0.082	−0.021	0.050	0.149	0.020	0.347	0.080	0.176	0.165	0.168	0.059	1
(13)	CEO tenure	0.047	0.014	−0.011	−0.057	0.001	−0.085	0.160	0.009	−0.110	−0.077	0.016	−0.176

Table 3
Baseline estimates.

	Financial access		Financial corruption	
Government intervention	0.039***	0.039***	0.087***	0.087***
	(0.010)	(0.010)	(0.014)	(0.014)
Firm size	0.275***	0.275***	−0.039**	−0.039**
	(0.011)	(0.013)	(0.016)	(0.015)
Firm age	0.026+	0.026+	−0.001	−0.001
	(0.016)	(0.016)	(0.024)	(0.024)
Export	0.246***	0.246***	0.018	0.018
	(0.031)	(0.032)	(0.046)	(0.046)
State share	−0.241***	−0.241***	−0.100	−0.100
	(0.047)	(0.049)	(0.073)	(0.080)
Foreign share	−0.418***	−0.418***	−0.262***	−0.262***
	(0.048)	(0.055)	(0.082)	(0.083)
Government appointment	−0.203***	−0.203***	0.034	0.034
	(0.044)	(0.043)	(0.065)	(0.068)
CEO education	0.074***	0.074***	−0.006	−0.006
	(0.014)	(0.015)	(0.021)	(0.021)
CEO tenure	0.096***	0.096***	0.028	0.028
	(0.017)	(0.017)	(0.026)	(0.028)
Constant	−1.383***	−1.383***	−1.401***	−1.401***
	(0.163)	(0.182)	(0.245)	(0.202)
City	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]
Pseudo R^2	0.068	0.068	0.146	0.146
N	12,244	12,244	10,612	10,612

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

Second, following earlier work (e.g., Cai et al., 2011; Lin et al., 2010), we use the log of total income to control for firm scale. In particular, we select the total income value in 2003 to reduce the potential reverse-causality bias. We also control for whether firms have export sales and the ratios of the government share and the foreign share in the ownership structure. The Chinese government aims to support exports, which helps firms gain financial access. The state share represents the degree of the relationship of the firm with the government, whereas the foreign share may be also related to the government preference policy (Che & Qian, 1998). However, these two ratio variables can be also negatively related to financial access because a firm with a state or foreign share can rely more on informal financing, such as working capital, thanks to government support (Ayyagari et al., 2010).

As for the CEO characteristics, we employ three variables. First, we control for whether the CEO is appointed by the government. We also suspect that firms with a government-appointed CEO have a close relationship with the government and can use more informal financing, such that they have less need for access to formal financing. Moreover, we control for the education level and tenure of the CEO as they may be beneficial to firms' financial access and performance.

Our coefficient of interest may be biased by potential reverse causality. Capital needs may force the firm to seek the participation of the local government. As mentioned above, the financial system in China is controlled by local governments. When firms cannot obtain access to financing, the local government may offer to help firms. We adopt IV estimations to address the problem of potential endogeneity. Specifically, we use the IV Probit method (Rivers & Vuong, 1988) to estimate the following equations:

$$GIB_i = \alpha_1 PSI_i + \alpha_2 PSH_i + \alpha_3' X_i + city_i + industry_i + e_i \quad (3)$$

$$Pr(FA_i = 1) = \alpha_3 \widehat{GIB}_{i,t} + \alpha_4' X_{i,t} + city_i + industry_i + e_i \quad (4)$$

$$Pr(FC_i = 1) = \alpha_5 \widehat{GIB}_{i,t} + \alpha_6' X_{i,t} + city_i + industry_i + e_i \quad (5)$$

where $\widehat{GIB}_i$ is the fitted value of GIB_i, which is estimated from Eq. (3). Our instruments include *PSI* and *PSH*. *PSI* in Eq. (3) is government intervention in public security[5] (i.e., PSI). We use "government intervention" in IV estimations to mean "government intervention in business affairs (GIB)" unless noted otherwise. The investment climate survey asks firm managers how many days the firm needs to spend on interactions with the government on public security. In particular, we use the logarithm value of the response number to measure PSI. According to the definition, PSI should be related to government intervention in business affairs, but it is irrelevant to financial access or financial corruption. Therefore, PSI can be a good IV variable regarding government intervention to explain access to financing or financial corruption.

PSH in Eq. (3) is the public security help variable. The investment climate survey also asks firm managers about the percentage of officials who help the firm in the development of public security. We use the response to measure the ratio of government help with public security, which is irrelevant to financial access, but it should be negatively related to government intervention because friendlier officials reduce the demand for government intervention.

In sum, we use government intervention (in business affairs) as our variable of interest, which is the standard measure in the empirical literature. To obtain IVs, we also measure PSI or PSH. The latter variables are related to our variable of interest but are irrelevant to

[5] Our data provides the detailed information of government intervention in the surveyed firm's operation. In particular, it investigates how many days governments intervene in the public security issue in 2004.

Table 4
First-stage estimates.

Public security intervention	0.220***	0.220***			0.232***	0.232***
	(0.019)	(0.019)			(0.020)	(0.020)
Public security helping			−0.001**	−0.001*	−0.002***	−0.002***
			(0.001)	(0.001)	(0.001)	(0.001)
Firm size	0.064***	0.064***	0.101***	0.101***	0.063***	0.063***
	(0.015)	(0.017)	(0.015)	(0.016)	(0.016)	(0.017)
Firm age	0.003	0.003	0.011	0.011	0.005	0.005
	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)
Export	−0.022	−0.022	−0.021	−0.021	−0.026	−0.026
	(0.042)	(0.041)	(0.043)	(0.042)	(0.043)	(0.042)
State share	−0.030	−0.030	0.019	0.019	−0.019	−0.019
	(0.067)	(0.070)	(0.067)	(0.071)	(0.067)	(0.072)
Foreign share	−0.125*	−0.125*	−0.107+	−0.107	−0.096	−0.096
	(0.070)	(0.074)	(0.072)	(0.075)	(0.072)	(0.075)
Government appointment	0.068	0.068	0.059	0.059	0.067	0.067
	(0.063)	(0.064)	(0.063)	(0.064)	(0.063)	(0.065)
CEO education	0.046**	0.046**	0.048**	0.048**	0.043**	0.043**
	(0.020)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
CEO tenure	0.027	0.027	0.014	0.014	0.023	0.023
	(0.024)	(0.025)	(0.025)	(0.026)	(0.025)	(0.026)
City	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]	Robust	Clustered[a]
Pseudo R^2	0.025	0.025	0.034	0.034	0.029	0.029
N	11,594	11,594	11,263	11,263	11,260	11,260

The dependent variable is government intervention in business affairs, reflected by days general manager or deputy general manager spends on government assignments and communications per month. The instrumental variables (IVs; variables of interest in this regression) are public security intervention and public security helping. The former is measured by the number of days the firm needs to spend on interactions with the government on the public security issues; whereas the latter is measured by the percentage of officials involved in public security matters at the firm. To examine the significance of the IV, columns 1–2 report results on public security intervention. Columns 3–4 report results on public security helping. Columns 5–6 report results on both public security intervention and public security helping. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of the estimates are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

business, satisfying the key requirement of the IV approach.

As one "Chinese characteristics", the Chinese government has been emphasizing that "stability is a principle of overriding importance"; as our data show, only 5% of our sample (11,718 observations) is not inspected in 2004. Hence, it is usual for a firm to be inspected for public security reason. Given the pervasive public security intervention, it is unpractical for banks to take it into account for supplying credit.

3.2. The mediation effect of corruption

After confirming the potential causal effect of government intervention on financial access and corruption, we examine the mediation effect of corruption on the relationship between government intervention and financial access according to the following equation (Baron & Kenny, 1986; Goodman, 1960; Sobel, 1982):

$$Pr(FA_i = 1) = \beta_5 GIB_i + \beta_6 FC_i + \beta_7' X_i + city_i + industry_i + e_i \quad (6)$$

where *FA* is the outcome variable of interest, *FC* is the mediator variable, and *GIB* is the variable of interest. Recall that Eq. (1) estimates the relationship between government intervention and financial access and that Eq. (2) examines whether government intervention significantly affects corruption; thus, Eq. (3) tests whether corruption is still significant after government intervention is controlled for.

The significance of the mediator variable requires that, first, β_1 in Eq. (1), β_3 in Eq. (2), and β_6 in Eq. (3) are statistically significant, and, second, β_1 in Eq. (1) and β_3 in Eq. (2) are significantly different. After comparing β_1 and β_3, we can infer whether *FA* can affect the relationship between *GIB* and *FA*. To test whether the difference between β_1 and β_3 is significant, following Baron and Kenny (1986), Goodman (1960), and Sobel (1982), we employ the following z-tests.

$$z_1 = \frac{me_{\beta_1} * me_{\beta_6}}{\sqrt{(me_{\beta_1})^2 * (S_{\beta_6})^2 + (me_{\beta_6})^2 * (S_{\beta_1})^2}} \quad (7)$$

$$z_2 = \frac{me_{\beta_1} * me_{\beta_6}}{\sqrt{(me_{\beta_1})^2 * (S_{\beta_6})^2 + (me_{\beta_6})^2 * (S_{\beta_1})^2 + (S_{\beta_6})^2 * (S_{\beta_1})^2}} \quad (8)$$

$$z_3 = \frac{me_{\beta_1} * me_{\beta_6}}{\sqrt{(me_{\beta_1})^2 * (S_{\beta_6})^2 + (me_{\beta_6})^2 * (S_{\beta_1})^2 - (S_{\beta_6})^2 * (S_{\beta_1})^2}} \quad (9)$$

where me_{β_1} is the marginal effect of government intervention at its average value and me_{β_6} is the marginal effect of financial access at its average value (i.e., average partial effect; see Wooldridge, 2002). S_{β_1} and S_{β_6} are the standard deviation of government intervention and financial access, respectively. Based on the traditional ordinary least squares (OLS) estimator, the coefficients and marginal effects are fixed such that the three versions of the z-tests can be simplified with the coefficients to replace marginal effects in Eqs. (7)–(9). However, this simplification strategy is not applicable in our case. The Probit method used for estimating the Eqs. (1)–(2) and (6) adopts the maximum likelihood estimation. As a result, uncontrolled and controlled coefficients can differ when the model is rescaled. Put differently, the inclusion of the mediator variable *FC* in the maximum likelihood model alters the coefficient of *GIB*, which includes differences in effects and scale parameters. To exclude the difference due to the rescaling problem, we adopt the average partial effects model suggested by Wooldridge (2002). That is why we use the marginal effects of the variables at their average values to calculate the three z-tests.

It is worthy pointing that the mediation model does or should not need to solve the endogenous bias; the core is orientated to investigate the change of the coefficient of interest after including the mediation variable. To some extent, the change of the coefficient of interest is more significant than the (static and) unbiased size of the coefficient of interest. More practically, if our IV estimates obtain the same findings as baseline estimates do, thereby confirming the causal effects of government intervention on financial access and corruption, the potential endogenous bias would not be large enough to distort our estimation. Considering that IV estimation is less efficient than baseline

Table 5
IV estimates.

	Financial access		Financial corruption	
Government intervention	0.423***	0.423***	0.290**	0.290**
	(0.068)	(0.071)	(0.133)	(0.134)
Firm size	0.215***	0.215***	−0.058***	−0.058***
	(0.020)	(0.022)	(0.017)	(0.017)
Firm age	0.215***	0.215***	0.018	0.018
	(0.032)	(0.033)	(0.046)	(0.045)
Export	−0.217***	−0.217***	−0.066	−0.066
	(0.048)	(0.051)	(0.073)	(0.078)
State share	−0.346***	−0.346***	−0.236***	−0.236***
	(0.054)	(0.059)	(0.084)	(0.086)
Foreign share	−0.215***	−0.215***	0.017	0.017
	(0.044)	(0.044)	(0.065)	(0.068)
Government appointment	0.051***	0.051***	−0.015	−0.015
	(0.015)	(0.016)	(0.022)	(0.021)
CEO education	0.016	0.016	−0.003	−0.003
	(0.016)	(0.016)	(0.025)	(0.024)
CEO tenure	0.081***	0.081***	0.025	0.025
	(0.018)	(0.018)	(0.027)	(0.029)
Constant	−1.952***	−1.952***	−1.691***	−1.691***
	(0.178)	(0.201)	(0.314)	(0.284)
City	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]
N	12,244	12,244	10,612	10,612

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

estimations, we mainly refer to baseline estimations to investigate the potential mediation effect. By contrast, IV estimation in the mediation model can reduce the endogeneity bias. Specifically, it cannot address the endogenous bias due to the correlation between government intervention and corruption, but it addresses the endogeneity bias due to omitted or unobservable (exogenous) control variables and reverse causality.[6] As supplementary evidence, we can also use mediation model under IV estimation to test the mediation effect of corruption.

4. Empirical findings

This section first reports the baseline estimates followed by the IV estimates and mediation effect estimates.

4.1. Baseline estimates

Table 1 reports descriptive statistics, and Table 2 presents the correlations of the variables. As Table 1 shows, government intervention (or financial corruption) and financial access have a large standard deviation relative to the average value. To address the heterogeneity issue, we estimate Eqs. (1)–(2) using two types of standard errors. First, we use the so-called robust standard errors. Second, we use cluster standard errors to address the heterogeneity issue across different firm groups. Considering that we have controlled for the fixed effects at the city level, we use the cluster standard errors at the county level.[7]

[6] As mentioned before, mediation effect does not require addressing the endogeneity issue.

[7] The surveyed firm's location information is particularly identified at the county level; 1003 counties are involved.

Table 6
Mediation effect estimates.

Dependent var.	Financial access			
	Baseline estimates		IV estimates	
Financial corruption	0.363***	0.363***	0.200***	0.200***
	(0.055)	(0.061)	(0.066)	(0.069)
Government intervention	0.038***	0.038***	0.392***	0.392***
	(0.011)	(0.011)	(0.078)	(0.080)
Firm size	0.259***	0.259***	0.210***	0.210***
	(0.012)	(0.014)	(0.021)	(0.022)
Firm age	0.031*	0.031*	0.235***	0.235***
	(0.018)	(0.018)	(0.034)	(0.035)
Export	0.253***	0.253***	−0.200***	−0.200***
	(0.033)	(0.034)	(0.052)	(0.054)
State share	−0.215***	−0.215***	−0.386***	−0.386***
	(0.051)	(0.053)	(0.057)	(0.061)
Foreign share	−0.429***	−0.429***	−0.233***	−0.233***
	(0.051)	(0.057)	(0.047)	(0.047)
Government appointment	−0.233***	−0.233***	0.047***	0.047***
	(0.047)	(0.046)	(0.016)	(0.017)
CEO education	0.071***	0.071***	0.019	0.019
	(0.015)	(0.016)	(0.018)	(0.017)
CEO tenure	0.092***	0.092***	0.084***	0.084***
	(0.019)	(0.018)	(0.019)	(0.019)
Constant	−1.346***	−1.346***	−1.865***	−1.865***
	(0.167)	(0.184)	(0.190)	(0.214)
City	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]
Pseudo R^2	0.143	0.143		
N	10,995	10,995	10,995	10,995

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

As Table 3 shows, government intervention (in business affairs) promotes financial corruption and firms' access to financing, as shown by the fact that the coefficient of government intervention is positive and significantly related to both. Controlling financial corruption reduces the coefficient of government intervention. Moreover, financial corruption is also positively and significantly related to financial access.

As Table 3 shows, with a one grade increase in government intervention, the probability of financial corruption increases by 52.134% (the coefficient is 0.087) and the probability of the firm's financial access increases by 50.975% (the coefficient is 0.039). Moreover, government intervention has marginal effects on financial corruption at 0.012 and on financial access at 0.013. Thus, government intervention has an almost symmetrical effect on financial access and financial corruption.

Moreover, all the coefficients of control variables are significant for financial access. Among these control variables, the government's share, the foreign share, and government appointment of the CEO are negatively related to financial access, while the others are positively associated with financial access. Negative relationships with those three variables reflect that, as mentioned earlier, a firm with a state/foreign share or government-appointed CEO can use informal financing to fund corporate needs, thereby reducing the demand for access to more formal financial channels.

4.2. Instrumental variable estimates

We report IV estimates in Tables 4–5. As Table 4 shows, our IVs

Table 7
Z-tests for mediation effects.

Sample and method	Standard errors	Models		
		Sobel model	Baron and Kenny model	Goodman model
Panel A: coefficient and causality				
For complete sample with the Probit estimator	Robust SE (in Tables 3 & 6)	4.610***	4.638***	4.583***
	Clustered SE[a] (in Tables 3 & 6)	4.296 ***	4.325***	4.267***
For complete sample with the IV Probit estimator	Robust SE (in Tables 5 & 6)	1.774*	1.841*	1.714*
	Clustered SE[a] (in Tables 5 & 6)	1.733*	1.803*	1.671*
Panel B: A heterogeneous effect for population size with the Probit estimator				
For large-population cities	Robust SE (in Table 8)	3.748***	3.782***	3.715***
	Clustered SE[a] (in Table 8)	3.590***	3.625***	3.556***
For small-population cities	Robust SE (in Table 9)	2.657***	2.705***	2.611***
	Clustered SE[a] (in Table 9)	2.441**	2.493**	2.392**
Panel C: A heterogeneous effect for GDP size with the Probit estimator				
For large-GDP cities	Robust SE (in Table 10)	2.103**	2.165**	2.047**
	Clustered SE[a] (in Table 10)	1.959*	2.025**	1.898*
For small-GDP cities	Robust SE (in Table 11)	4.128***	4.158***	4.098***
	Clustered SE[a] (in Table 11)	3.923***	3.956***	3.892***

Note: z-test for mediation effect can be obtained in three models. To ensure the robustness of mediation effect, we calculate the z-test results for all potential models, using estimations in Tables 3, 5, 6 and 8–11. *, ** significant at the 15%, 10%, 5%, and 1% level, respectively. Table 3 reports results for Probit estimates, Table 5 reports results for IV Probit estimates, Tables 8–9 reports results of Probit estimates for samples split according to the city population and Tables 10–11 reports results of Probit estimates for samples split according to the growth of GDP per capita of the city.

[#] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

Table 8
Mediation effect estimates with large-city samples.

	Financial access		Financial corruption		Financial access	
Financial corruption					0.414***	0.414***
					(0.075)	(0.082)
Government intervention	0.043***	0.043***	0.097***	0.097***	0.034**	0.034**
	(0.014)	(0.013)	(0.019)	(0.019)	(0.015)	(0.014)
Firm size	0.284***	0.284***	−0.040*	−0.040*	0.267***	0.267***
	(0.015)	(0.017)	(0.022)	(0.022)	(0.016)	(0.018)
Firm age	0.209***	0.209***	−0.004	−0.004	0.216***	0.216***
	(0.042)	(0.045)	(0.062)	(0.061)	(0.045)	(0.049)
Export	−0.260***	−0.260***	−0.052	−0.052	−0.238***	−0.238***
	(0.065)	(0.069)	(0.097)	(0.105)	(0.071)	(0.077)
State share	−0.340***	−0.340***	−0.310***	−0.310***	−0.359***	−0.359***
	(0.065)	(0.074)	(0.108)	(0.105)	(0.070)	(0.076)
Foreign share	−0.146**	−0.146**	−0.008	−0.008	−0.178***	−0.178***
	(0.061)	(0.062)	(0.087)	(0.093)	(0.065)	(0.068)
Government appointment	0.066***	0.066***	0.024	0.024	0.060***	0.060**
	(0.020)	(0.022)	(0.029)	(0.028)	(0.022)	(0.024)
CEO education	0.033+	0.033+	0.002	0.002	0.038+	0.038+
	(0.022)	(0.022)	(0.032)	(0.032)	(0.024)	(0.024)
CEO tenure	0.110***	0.110***	0.056+	0.056+	0.112***	0.112***
	(0.024)	(0.025)	(0.034)	(0.036)	(0.026)	(0.026)
Constant	−1.796***	−1.796***	−1.825***	−1.825***	−1.738***	−1.738***
	(0.391)	(0.364)	(0.249)	(0.268)	(0.272)	(0.291)
City	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]	Robust	Clustered[a]
N	6401	6401	5722	5722	5654	5654

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively. We only use the samples located in large population cities for regressions in this table.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

explain the variable of interest. First, the coefficient of PSI is positively and significantly related to government intervention. This is expected because government intervention and PSI should follow the same pattern for an individual firm. Second, PSH significantly reduces the degree of government intervention in business affairs. More helpful intervention should reduce the demand for intervention; thus, government help in public security (i.e., PSH) should be negatively related to government intervention (in business affairs). Additionally, most of the coefficients have the same signs as those in Table 3. Only the sign of the export dummy variable changes relative to the one in Table 3, but the coefficient becomes insignificant. Overall, our IVs significantly explain our variable of interest.

Table 9
Mediation effect estimates with small-city samples.

	Financial access		Financial corruption		Financial access	
Financial corruption					0.301***	0.301***
					(0.082)	(0.092)
Government intervention	0.035**	0.035**	0.077***	0.077***	0.042***	0.042***
	(0.015)	(0.015)	(0.020)	(0.021)	(0.015)	(0.016)
Firm size	0.268***	0.268***	−0.037+	−0.037+	0.256***	0.256***
	(0.017)	(0.018)	(0.024)	(0.023)	(0.018)	(0.020)
Firm age	0.288***	0.288***	0.037	0.037	0.292***	0.292***
	(0.045)	(0.045)	(0.069)	(0.070)	(0.048)	(0.047)
Export	−0.224***	−0.224***	−0.168+	−0.168	−0.198***	−0.198***
	(0.069)	(0.068)	(0.111)	(0.123)	(0.073)	(0.073)
State share	−0.495***	−0.495***	−0.182+	−0.182	−0.500***	−0.500***
	(0.072)	(0.082)	(0.125)	(0.132)	(0.076)	(0.086)
Foreign share	−0.267***	−0.267***	0.083	0.083	−0.291***	−0.291***
	(0.063)	(0.060)	(0.097)	(0.102)	(0.067)	(0.064)
Government appointment	0.084***	0.084***	−0.041	−0.041	0.081***	0.081***
	(0.021)	(0.021)	(0.032)	(0.029)	(0.022)	(0.022)
CEO education	0.020	0.020	0.000	0.000	0.025	0.025
	(0.025)	(0.025)	(0.039)	(0.039)	(0.026)	(0.026)
CEO tenure	0.083***	0.083***	−0.015	−0.015	0.072***	0.072***
	(0.026)	(0.024)	(0.041)	(0.045)	(0.027)	(0.026)
Constant	−1.649***	−1.649***	−1.085***	−1.085***	−1.569***	−1.569***
	(0.209)	(0.182)	(0.302)	(0.395)	(0.216)	(0.186)
City	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]	Robust	Clustered[a]
N	5840	5840	4842	4842	5339	5339

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively. We only use the samples located in small population cities for regressions in this table.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

As Table 5 shows, our estimates are also robust to the potential endogeneity bias. The mediation effect of financial corruption is still significant, and the coefficient of government intervention is still positively and significantly related to both financial corruption and financial access. Moreover, most of the control variables in Table 5 have the same signs as before and significantly explain financial access. In comparison with control variables in Table 3, only the export dummy variable still has a different sign in Table 5, and CEO education becomes insignificant. These results indicate that financial access (or financial corruption) may be related to exports or CEO education. However, our IVs are irrelevant to these potential relations, such that our IV estimates of government intervention are not affected.

4.3. Mediation effect estimates

As documented above, we confirm our estimated effects of government intervention on financial access and corruption are robust to potential endogeneity bias; hence, we can only use the baseline estimations to examine the mediation effect of corruption on the relationship between government intervention and financial access. More formally, the core of mediation effect estimation is orientated to investigate the change of the coefficient of interest after including the mediation variable. Considering that we have obtained the relationship between government intervention and financial access (or corruption), we only estimate the coefficient of government intervention after controlling for corruption and then investigate whether the coefficient is changed significantly than corruption being not controlled for.

We report results in Table 6. As Columns 1–2 shows, after financial corruption is controlled for, the coefficient of government intervention becomes smaller, from 0.039 under baseline estimation (see Columns 1–2 of Table 3) to 0.038 here. Moreover, financial corruption is also positively and significantly related to financial access. These findings imply that the mediation effect of financial corruption is also significant for the relationship between government intervention and financial access. As supplementary evidence, we also estimate the mediation effect under IV estimations. As Columns 3–4 shows, the coefficient of government intervention after financial corruption is controlled for becomes smaller, from 0.423 under baseline estimation (see Columns 3–4 of Table 3) to 0.392 here. At the same time, financial corruption is also positively and significantly related to financial access. These findings show that the mediation effect of financial corruption is significant for the relationship between government intervention and financial access.

To further investigate the significance of the mediator variable, we report z-test results in Table 7. As Panel A in Table 7 shows, the mediation effect of financial corruption estimated with the Probit method is highly significant at the 1% level. This indicates that government intervention promotes financial corruption and then financial access for firms. Under the IV estimations, the mediation effect is still significant, though its significance is reduced. It is still significant at the 10% level, irrespective of different z-test models.

Reduction in the significance of the mediation effect under IV estimation indicates that the IV Probit estimation is remarkably less efficient so that the change of coefficient of interest become much less meaningful. Thus, we will mainly refer to baseline estimations to test the robustness of mediation effects in the next section.

5. Robustness tests

Given that China's authoritarian regime is characterized by political centralization and economic decentralization (Du, Fang, & Jin, 2014), a large city has better political position and resource endowment. In

Table 10
Mediation effect estimates with rapidly developing-city samples.

	Financial access		Financial corruption		Financial access	
Financial corruption					0.244***	0.244***
					(0.084)	(0.092)
Government intervention	0.048***	0.048***	0.061***	0.061***	0.046***	0.046***
	(0.015)	(0.014)	(0.020)	(0.021)	(0.015)	(0.015)
Firm size	0.267***	0.267***	−0.071***	−0.071***	0.254***	0.254***
	(0.016)	(0.019)	(0.024)	(0.024)	(0.017)	(0.020)
Firm age	0.230***	0.230***	0.022	0.022	0.199***	0.199***
	(0.045)	(0.047)	(0.069)	(0.072)	(0.047)	(0.050)
Export	−0.215***	−0.215***	−0.185*	−0.185+	−0.215***	−0.215***
	(0.070)	(0.068)	(0.109)	(0.123)	(0.073)	(0.073)
State share	−0.487***	−0.487***	−0.257**	−0.257**	−0.481***	−0.481***
	(0.062)	(0.073)	(0.105)	(0.109)	(0.065)	(0.075)
Foreign share	−0.095+	−0.095+	−0.004	−0.004	−0.134**	−0.134**
	(0.065)	(0.065)	(0.099)	(0.103)	(0.067)	(0.067)
Government appointment	0.077***	0.077***	0.014	0.014	0.063***	0.063***
	(0.021)	(0.024)	(0.032)	(0.030)	(0.022)	(0.024)
CEO education	0.020	0.020	0.005	0.005	0.016	0.016
	(0.025)	(0.026)	(0.038)	(0.040)	(0.026)	(0.027)
CEO tenure	0.065***	0.065***	0.020	0.020	0.061**	0.061**
	(0.025)	(0.024)	(0.039)	(0.041)	(0.026)	(0.025)
Constant	−1.683***	−1.683***	−1.119***	−1.119***	−1.514***	−1.514***
	(0.214)	(0.193)	(0.312)	(0.381)	(0.221)	(0.197)
City	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]	Robust	Clustered[a]
N	5791	5791	4991	4991	5348	5348

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively. We only use the samples located in cities whose GDP per capita is relatively large for regressions in this table.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

addition, existing intra-provincial disparities indicate the dispersion among cities within a given province (Zou & He, 2018) Thus, it is possible that the mediation effect of corruption may be only significant at the large cities. In this section, we split our sample to test the robustness of our mediation effect estimates. If our data can reject the concern, the mediation effect estimates are robust across different political and economic climates.

We conduct two heterogeneous effect tests. First, we examine whether financial corruption as a mediation effect is only significant in the samples from large-population cities. Small population cities should have poor political position in the central government. Second, we test whether the mediation effect is more significant in large-GDP cities. As mentioned in Section 2, local government intervention is important in our sample. Accordingly, the cities with lower GDP may have poor resource endowment for government help with financial access—that is, the mediation effect may be insignificant in small-GDP cities.

5.1. Large-population cities vs. small-population cities

First, we split the sample according to the population size. The samples with values that are larger than the average of city population represent ones from large cities; otherwise, the samples come from small cities. As Tables 8–9 show, financial corruption is significant in both of large-population cities and small-population cities when government intervention is controlled for or not. Moreover, government intervention can significantly explain financial corruption in both of split samples.

Both findings indicate that government intervention in firms' financial access through financial corruption is effective in both of split the samples. More objectively, as Panel B in Table 7 shows, the mediation effect of financial corruption is highly significant at 1% in large-population cities and at least significant at 5% in small-population cities. All z-test results are larger than 2.576 for large-population cities but are at least larger than 1.960 for small-population cities.

In comparison to the control variables in Table 3, all control variables in Table 8 have the same sign. At the same time, all the statistically significant control variables in Table 3 maintain their significance in Table 8. Similarly, most of the control variables in Table 9 have the same sign as those in Table 3. These findings related to control variables show that the sample splitting does not substantially affect our earlier regression inferences. Therefore, our findings suggest that government intervention in financial access through financial corruption is effective across cities split according to the population size.

5.2. Large-GDP cities vs. small-GDP cities

Second, we split the sample according to the size of local economy in the city. Firms are located in large-GDP cities if the sample firms come from cities whose GDP is higher than average; otherwise, the sample firms used in regressions are in small-GDP cities.

As the results in Tables 10–11 show, financial corruption is significant across split samples. Financial corruption is highly significant in explaining financial access in Tables 10–11 when government intervention is controlled for or not. Moreover, government intervention can significantly explain financial corruption in Tables 10–11. Both findings indicate that government intervention in financial access for firms through financial corruption is effective for both of split samples.

Furthermore, as Panel C in Table 7 shows, the mediation effect of financial corruption is significant in large-GDP cities; four of six z-test results reach and exceed 1.960 and the other two results also approaches to 1.960. Thus, most of mediation effect results are significant at 5% level. Moreover, the mediation effect of corruption is highly

Table 11
Mediation effect with slowly developing-city samples.

	Financial access		Financial corruption		Financial access	
Financial corruption					0.443***	0.443***
					(0.073)	(0.081)
Government intervention	0.031**	0.031**	0.107***	0.107***	0.029*	0.029*
	(0.014)	(0.014)	(0.019)	(0.019)	(0.015)	(0.016)
Firm size	0.287***	0.287***	−0.010	−0.010	0.270***	0.270***
	(0.016)	(0.017)	(0.021)	(0.021)	(0.017)	(0.018)
Firm age	0.250***	0.250***	0.013	0.013	0.292***	0.292***
	(0.043)	(0.043)	(0.062)	(0.060)	(0.046)	(0.047)
Export	−0.259***	−0.259***	−0.026	−0.026	−0.218***	−0.218***
	(0.064)	(0.070)	(0.099)	(0.109)	(0.071)	(0.077)
State share	−0.263***	−0.263***	−0.288**	−0.288**	−0.292***	−0.292***
	(0.079)	(0.081)	(0.136)	(0.130)	(0.085)	(0.086)
Foreign share	−0.288***	−0.288***	0.045	0.045	−0.320***	−0.320***
	(0.059)	(0.057)	(0.086)	(0.092)	(0.065)	(0.064)
Government appointment	0.074***	0.074***	−0.024	−0.024	0.077***	0.077***
	(0.020)	(0.020)	(0.029)	(0.028)	(0.021)	(0.022)
CEO education	0.032+	0.032+	−0.010	−0.010	0.042*	0.042*
	(0.022)	(0.021)	(0.032)	(0.032)	(0.024)	(0.023)
CEO tenure	0.127***	0.127***	0.040	0.040	0.123***	0.123***
	(0.025)	(0.024)	(0.036)	(0.040)	(0.027)	(0.026)
Constant	−1.492***	−1.492***	−1.500***	−1.500***	−1.493***	−1.493***
	(0.186)	(0.204)	(0.271)	(0.239)	(0.195)	(0.211)
City	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
SE	Robust	Clustered[a]	Robust	Clustered[a]	Robust	Clustered[a]
N	6452	6452	5557	5557	5645	5645

The dependent variable is financial access, measured by whether the surveyed firm has loans from banks or other financial institutions. The variable of interest is government intervention, reflected by the number of days the general manager or deputy general manager spends on government assignments and communications per month. For the regression, we adopt the Probit method. Despite control variables, we also control for the fixed effects of city and industry. For each estimation method, we use robust standard errors or cluster standard errors. Standard errors of estimate are in parentheses. +, *, **, *** significant at the 15%, 10%, 5%, and 1% level, respectively. We only use the samples located in cities whose GDP per capita is small for regressions in this table.

[a] Considering that we have controlled the fixed effect of city, we control the cluster standard errors at the level of county.

significant in small-GDP cities. This finding indicates that a small-GDP city may have a severe competition for government support and then the corruption may be more significant.

In comparison to the control variables reported in Table 3, all control variables in Table 10 have the same sign. At the same time, most of the significant control variables in Table 3 remain significant in Tables 10–11. These findings show that splitting the sample does not substantially affect the earlier regression results. Therefore, the findings suggest that government intervention in financial access through financial corruption is present across split samples according to GDP size.

6. Conclusions, policy implications and suggestions for further research

In academia, government intervention is usually seen as a “grabbing hand,” but recently it has also been portrayed as a “helping hand.” To the best of our knowledge, this paper is the first attempt to systematically explore both effects of government intervention. Based on the World Bank Investment Climate survey data collected for China in 2005, we have shown that government intervention promotes firms' financial access to capital but also forces firms to make informal payments to gain this financial access.

To further explore the resource allocation function of government intervention, we first use instrumental variables estimations to identify the causal effect of government intervention on financial access and corruption. Afterward, we utilize a mediator model to investigate the mediation effect of financial corruption on the relationship between government intervention and financial access. We find that government intervention promotes not only financial access but also financial corruption. This finding is robust to using different types of standard errors and including cities at different sizes.

Considering that our variables of financial access or financial corruption are dummy variables, our regressions cannot compare loans and bribes paid. However, our estimates reveal that government intervention functions as a double-edged sword. We find that, although government intervention in China during the 2000s promoted financial access, it could not constrain financial corruption. As mentioned before, government intervention has an almost symmetrical effect on financial access and financial corruption, i.e., the government has marginal effects on financial corruption at 0.012 and on financial access at 0.013. Hence, an important implication of this finding is that the government should further promote market mechanisms not only to support access to financing but also to constrain corruption. Our findings indicate a clear conflict between the micro efficiency of government intervention for a firm's access to financing and the macro inefficiency of government intervention in terms of financial corruption. This conflict may impede the country's financial development over time. For example, empirical evidence from China indicates that misallocation of government credit may hurt total factor productivity of firms and hence economic growth (Shang, Zhang, & Ouyang, 2018) and a significant change in financial system structure may have implications for income inequality (Hou, Li, & Wang, 2018). Hence, our results have broader policy implications and further suggest that economic policies cannot simply constrain financial corruption when government intervention determines financial access; the government needs to cultivate market mechanisms, thereby improving financial access but also constraining corruption (Jain, 2001; Tollison, 2012).

Our results have other important policy implications. Given the evidence that government intervention increases financial corruption, current government reforms dealing with financial corruption are on the right track and should go further. Because government reforms aimed at promoting growth in large cities may increase financial

corruption, policymakers need to increase legal reforms, especially in these cities, to effectively deal with financial corruption. Overall, our results suggest the need for further and more effective corporate finance and other governance reforms. For example, policy makers could increase the incentives for providing corporations with private financing through the privatization of domestic banks or encouraging the establishment of private banks at the city level, as well as easing the entry of foreign private banks into the country. Although China's government does not currently support the privatization of domestic banks fully and immediately, it has been opening the banking sector to private investors. A gradual approach to bank privatization is welcome and consistent with the country's turn away from a planned economy and move toward a market-based economic system.

Our results have broader policy implications as empirical evidence indicates that misallocation of government credit in China may hurt total factor productivity of firms and hence economic growth (Shang et al., 2018) and a significant change in financial structure may affect income inequality (Hou et al., 2018). Hence, policymakers need to consider such broader macro effects of government intervention in financial system.

Finally, the 2005 survey data we use is the most recent one. However, we believe that it captures trends that are still persistent in China's economy today. On one hand, the Chinese government has strongly resisted the US pressure from deregulating its financial system. On the other hand, the government has been implementing unprecedented anti-corruption policies. Thus, our findings may also be relevant today and should provide a yardstick for future studies. Hence, as new survey data becomes available over time, future research should further explore the dual function of government intervention on micro-finance.

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