

# The Effect of Political Connections on Corporate Environmental Performance—Evidence from Chinese Private Firms

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## Abstract

This paper examines the effect of political connections on environmental performance of private firms. Using the nationwide survey of Chinese private firms in 2006, 2008 and 2010, I find that politically connected firms have better environmental performance than non-politically connected firms. Specifically, membership of the National People's Congress, the Chinese People's Political Consultative Conference and the Communist Party have a significantly positive impact on environmental performance, whereas the past cadres show non-significant effect. I further find that rent seeking activities of firms and regional corruption weaken the positive impact of political connections on environmental performance. To reduce endogeneity bias, I further exploit the variation in whether establishing trade union within the firm to instrument political connections, yielding similar conclusions. I also find evidence that the promoting effect of political connections arises from entrepreneurs with political connections having stronger motivation to maintain their reputation and therefore actively taking social environmental responsibility, instead of from politically connected firms being more likely to obtain government green subsidies.

**Keywords**— Political Connections, Environmental performance, Rent seeking, Endogeneity bias

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# 1 Introduction

Private firm is the main body of the enterprise and is the primary polluter in China. Its environmental performance plays a key role in the sustainable development of a country. In the existing literature, pressure from shareholders[Ruf et al., 2001], corporate governance[Frydman et al., 1999, Claessens and Djankov, 1999] are considered as the main factors affecting firms environmental performance. However, few studies have investigated the role of political connections. In transition economies such as China, political connections are equally important as internal governance to the survival of firms[Chen et al., 2011]. Existing studies have shown mixed effects of political connections on companies[Shleifer, 1997, Faccio et al., 2006]. On the one hand, firms with political connections are more likely to obtain bank credit[Khwaja and Mian, 2005, Guo et al., 2014], government subsidies[Li et al., 2008], and tax incentives[Khwaja and Mian, 2005] and the protection from informal institutions[Faccio et al., 2006], thus having better economic performance[Johnson and Mitton, 2003] and company value[Fisman, 2001]. On the other hand, political connections increase the operating costs of firms[Shleifer, 1997], reduce operating efficiency[Fan et al., 2007], ultimately hurting corporate value[Porta et al., 1998].

What's the effect of political connections on environmental performance of private firms? This is the primary empirical task of this paper. Political connections may affect environmental performance in opposite directions: In order to gain social status and political recognition, politically firms may have the incentive to bear social environmental responsibility and therefore improve environmental performance. However, political connections may imply inefficiency and corruption, which helps firms evade environmental supervision and pollution sanctions, leading to worse environmental performance. Even politically connected firms do better in environmental performance, the cause can be that those firms are stronger rent-seekers and easier to obtain government green subsidies which help them perform better. How to distinguish motivation of maintaining reputation from behavior of rent-seeking constitutes the second task of this research.

In this paper, I mainly examine the impact of political connections on environmental performance of private firms by using the nationwide survey data on private firms in 2006, 2008 and 2010. Environmental performance is measured as the percent of environmental investment of sales. Because over 50% of firms in the survey have zero environmental investment, I use Tobit model to estimate the effect of political connections. In order to reduce potential endogeneity caused by omitted variables, inverse causality or measure errors, I exploit the variation in whether establishing trade union to instrument political connections. In 2001, the "Trade Union Law of the People's Republic of China" was implemented, and any organization group, including private firms, were encouraged to establish trade union. Since trade unions is supported by the Party and the government, politically connected firms are more inclined to cater to the party and government policies and establish the union. A good IV must be exogenous and if trade union can affect environmental performance through other channels other than political connections, exclusive restrictions would be unsatisfied. A possibility is that firms having trade union care more about their employees' benefit and therefore promote environmental performance as a way to create safer working condition

for workers. I find empirical evidence that politically connected firms have no difference in caring their employees and therefore reject this possible channel.

I find that political connections have a positive impact on environment performance of private firms, and that the higher the degree of political connections, the better the environment performance. I further exploit whether different types of political connections affect environmental performance differently. There are two different types of political connections for Chinese private firms: membership of the Political Committee including deputy of the People's Congress(NPC) or the member the Political Consultative Conference(CPPCC) and former cadres[Holm et al., 2013]. I find that Political Committee and the ruling Communist Party members have a significantly positive effect on firms environmental performance, whereas former cadres show non-significant impact on environmental performance. This largely reflects that the promoting effect of political connections arises from that entrepreneurs with political connections have stronger motivation to maintain their reputation, therefore actively taking social environmental responsibility, not from that politically connected firms are more likely to obtain government green subsidies. because Political Committee and the Party members don't have real political power but they represent social image and good reputation, whereas the former cadres is the opposite—they care less about reputation but have more impacts on politics. I test this explanation by regressing government support on green technologies on political connections and find that there is no difference between politically connected firms and non-connected firms in obtaining government support, providing little evidence for rent-seeking possibilities. I further investigate the role of rent-seeking activities and corruption in the relationship between political connections and environmental performance. Empirical results show that rent-seeking activities of firms and regional corruption negatively regulated the positive effect of political connections on environmental performance.

This study contributes to the literature in several ways. First, this paper is the first to investigate the effect of political connections on private firms environmental performance in China; Second, this study provides empirical evidence that politically connected firms have better environmental performance because they value their reputation and therefore more active in taking social environmental responsibility. This is different from the explanation of [Lin et al., 2015] who claim that government green subsidies explain why political connected firms do better. And the corresponding policy implication is quite different: granting private entrepreneurs political titles can somewhat helps restraint their misconduct.

The reminding of the paper is organized as follows. Section 2 provides theories and hypotheses to the study. Section 3 introduce the research design. Section 4 presents the empirical results, and Section 5 conducts a series of robustness checks. Section 6 is the conclusion remarks.

## 2 Theories and Hypotheses

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### 2.1 Corporate reputation theory

Corporate reputation theory posits that financial performance is not the only pursuit of a firm, and reputation has a profound impact on the behavior of the firm. If firms believe their reputation is valuable, they will independently retain their wrongdoings and make reputation conform to social norms [Brammer and Pavelin, 2006]. Kreps and Wilson [1982] believes that reputation can restrain short-term opportunistic behavior and encourage firms to consider long-term interests. De Hoogh and Den Hartog [2008] points out that members of NPC, CPPCC has a higher social status and represents the image of China, thus the government, the public and stakeholders have higher expectations in their social responsibility and moral standards. Therefore, politically connected firms may perform better environmentally, whether it is because politically connected firm owners have higher moral standards and social responsibility, or simply because of the political strategies to gain government and public recognition, to reduce reputation losses. Based on this discussion, we state our first hypothesis as follows.

**H 1a:** *Private firms with political connections have higher environmental performance than those without political connections. The stronger the political connections are, the better the environmental performance of private firms will be.*

In addition, different types of political connections may have different impacts on firm environmental performance. Choi et al. [2014] argue that the Communist Party and the government often confer political honors on private entrepreneurs through various channels to expand the united front, and that an institutional arrangement is to absorb them into the People's Congress or the Political Consultative Conference. The People's Congress is the supreme organ of state power and legislative body. Its deputies are elected through a five-year multi-level electoral system. The CPPCC is a political consultative body, and members usually come from the influential democracy-party and non-party members. Although NPC members have a higher status than members of the CPPCC, access to both bodies represents honor. Those private firm owners who are economically successful but lack political influence have a strong desire to become NPC or CPPCC members [Chen and Cao, 2016]. Besides, due to the special status of the Communist Party in China, CPC members are a symbol of political status [Li et al., 2008]. Therefore, whether the firm owner is NPC, CPPCC member or CPC member, they represent political honor, national image and social identity. Under the pressure of social expectations and public supervision, they will care more about environmental performance to maintain their existing social status and political integration. By contrast, firm owners who worked for the government concerns less about public pressure because their tenure has ended, and therefore have little motivation to improve environmental performance. Based on the above analysis, I make the following hypothesis.

**H 1b:** *Political connections through NPC, CPPCC and CPC members have a significant effect on the environmental performance, while Political connections through former cadres have no significant effect on the environmental performance.*

## 2.2 Rent-seeking theory

Buchanan et al. [1980] defines rent-seeking as an activity in which economic agents seek for wealth transfer through government asylum. Rent-seeking can greatly damage social welfare and distort resource allocation [Krueger, 1974]. China is experiencing economic transformation, and the influence and intervention of the Chinese government on firms is far greater than that of developed countries. The government owns resources firms need, such as project approval, land transfer, and credit rationing. Local governments have certain autonomy in decision-making on these scarce resources, and the absence of supervision provides a large space for local officials to rent [Shen et al., 2015]. Firms with political connections are more likely to acquire benefits from rent-seeking and therefore to evade environmental supervision and pollution punishment, which is not conducive to the improvement of the enterprise's environmental performance. And the greater the political influence, the stronger the rent-seeking ability, and the less likely it is subject to environmental supervision and control, the worse the corporate environmental performance. Based on this analysis, the paper makes the following assumptions:

**H 2a:** *Private firms with political connections have worse environmental performance than those without political connections. The higher the degree of political association, the worse the environmental performance of private companies.*

In China, the magnitude of the benefits from political connections depends on the level of connections. Although in theory, the NPC is the supreme organ of power in China, in reality, the power and influence of the people's congress is limited [O'brien, 1990, Lieberthal and Lieberthal, 2003]. The CPPCC, the government advisory body, has no legal power and its actual influence is even smaller [Chen and Cao, 2016]. Similarly, Communist Party members represent political subordinates and positions, and do not have real political power. That is to say, the NPC, CPPCC, CPC members have limited rent-seeking capabilities. By contrast, the firm owners who used to be government cadres often formed extensive and profound political connections with government and government officials during their tenure. This kind of personal resources serve as emotional investment and interest exchange, having long-lasting impacts [Ma and Parish, 2006]. Therefore, firm owners who have served as government cadres may have strong rent-seeking capabilities because of their special relationship with the government, and it is easier to evade environmental supervision, therefore having worse environmental performance. The corresponding hypothesis as follows.

**H 2b:** *Political connections through former cadre are has greater negative effect on environmental performance than connections through NPC, CPPCC, CPC members.*

Two theories-reputation motivation and rent-seeking motivation are not completely competing, and both can coexist at the same time. When the motivation for maintaining reputation is greater than the motivation for rent-seeking, there is a positive correlation between political connections and environmental performance. And firms rent-seeking activities will negatively regulate this relationship. When the motivation for rent-seeking is greater than the motivation for maintaining reputation, political connections would have a negative effect on environmental performance. Rent-seeking activities of firms would deteriorate this negative correlation. Based on this discussion, I state the related hypothesis as follows.

**H 3a:** *Corporate rent-seeking behavior can exacerbate the relationship between political connections and environmental performance.*

The motivation for firms to seek political connections is related to the institutional environment. When the institutional environment is corrupt, the establishment of political connections is more for rent-seeking. Zhang et al. [2016] confirmed that in areas with high levels of corruption, private entrepreneurs are more inclined to increase investment in rent-seeking activities, which will further weaken the environmental performance of firms. This can be summarized as the following assumptions:

**H 3b:** *Regional corruption can worsen the relationship between political connections and environmental performance.*

## 3 Research Design

### 3.1 Data

Data used in this paper comes from the three rounds of national private firms surveys conducted by the Central United Front Work Department, the All-China Federation of Industry and Commerce and the China Private Economic Research Association in 2006, 2008 and 2010 respectively. The data includes different types of private firms in China and the questionnaire survey involves information of the characteristics of the private firm owners, their personal experience and the performance of the firms. According to the research needs, the original data is processed as follows: 1. Since the pollution mainly occurs in the manufacturing industry, I only keep the observations of the manufacturing firms. Among the 17384 observations, manufacturing firms account for 39.5%, the largest proportion. 2. Because the scale of private firms varies greatly, I winsorized the extreme values of variables, including number of employees, environmental protection investment, and operating income, at 5%. After the above processing, we obtained 2677 observations, including 742 in 2006, 986 in 2008, and 949 in 2010.

### 3.2 Variable definition

Dependent variable: Environmental performance of private firm. In the private enterprise survey questionnaire, the question related to the environmental performance of the enterprise is: In the previous year, how many yuan did your firm invest in pollution control?. Fix the firm size and pollution levels, the more pollution control inputs, the more capital the firm has to carry out equipment transformation[McWilliams and Siegel, 2001], the purchase of clean raw materials[King and Lenox, 2002], and the corresponding environment performance will be better. Based on data availability, I follow[Spicer, 1978] and [Nehrt, 1996] and take the environmental investment of unit operating income as the proxy indicator of the environmental performance (EP), the more environmental protection investment, the better the environmental performance.

Explanatory variables: Political connections of private firms. In the questionnaire, questions related to political connections include the past political experience and the current political title of the owner. Following existing research[Guo et al., 2014, Chen and Cao, 2016], this paper measures political connections from three dimensions: first, if the firm owner once served as a government cadre or has the title of a Communist Party member, a NPC deputy, or a CPPCC member, the firm is considered to have a political connection with a value of 1, otherwise there is no political connection and the value is 0. Second, set separate dummies for different type of political connections, including the NPC deputies or CPPCC members, members of the Chinese Communist Party, and former government cadres. Third, according to the strength of the connection, set ordered variables. specifically, If the NPC deputy or CPPCC members are at country level, assign a value 5. The provincial , city, county, and township level are assigned 4, 3, 2,1, respectively. The non-NPC deputies or CPPCC members are assigned a value of 0. Besides, Li et al. [2008] argue that If the firm owner joined the Communist Party before 2002, the intensity of the political connections is greater than that of the owners who joined the Communist Party after 2002 . I follow this approach and set the dummy variable of CCPpost2002 with value 1 if joining the Communist Party after 2002.

Control variables: This paper controls for personal characteristics of firm owners and firm characteristics. Personal characteristic variables include: age, gender, and education level. Firm characteristic variables include: firm size, age of firm, owner share. Year and Province fixed effects are also introduced. Regulatory variables: Firm rent-seeking activities and regional corruption. Referring to [He et al., 2016], this paper use non-productive time to measure enterprise rent-seeking. The relevant questions in the questionnaire are How much time do you spend on meetings, public relations, and hospitality on average each day? The longer the non-productive time, the more the company can find rent-seeking activities. Following [He et al., 2016] Regional corruption is expressed as the ratio of the number of corruption cases in each province to the number of public officials (per 10,000). [authors according to the 2006-2010 China Procuratorate Yearbook. Indicators, refer to [He et al., 2016], expressed as the ratio of the number of corruption cases in each province to the number of public officials (per 10,000).

The definition and measurement of the above variables are shown in appendix Table 7

### 3.3 Descriptive Statistics

Table 1 lists the descriptive statistics of political connections. Out of 2677 samples, 1505 are NPC deputies and CPPCC members, accounting for 56.22% of the total sample. In terms of sub-division, 830 people are County NPC deputies or CPPCC members, accounting for 31.00%, and less than 4% of provincial and above NPC deputies or CPPCC members. 47.85% of entrepreneurs have political connections through Communist Party members, while 886 entrepreneurs have experience of government cadres, accounting for 33.10%. Overall, nearly 80% of private entrepreneurs (79.04%) have political connections, indicating that political connections are common in private firms in China.

Table 2 shows the full statistical information. It can be seen that the average environmen-

Table 1: Descriptive Statistics of political connections. N=2677

	Number	%
1. NPC deputies or CPPCC members	1,505	56.22
<i>At national level</i>	18	0.67
<i>At province level</i>	80	2.99
<i>At city level</i>	469	17.52
<i>At County level</i>	830	31.00
<i>At Township Level</i>	108	4.03
2. Party members	1,281	47.85
3. Former Cadres	886	33.10
Firm owners with Political connections	2,116	79.04

Table 2: Descriptive Statistics of all variables. N=2677

Variable	Descriptive information
Environmental investment	M=102200, SD=24.68, 50.4% sample= 0
EP(Environmental investment/Sales)	M=0.59% SD=16.45
PC	79.04% have
PC_level	M=1.33, Mode/Median=conty
NPC.CPPCC	56.21%
Party member	47.85%
Former Cadres	33.09%
Party_before2002	2.94%
Age	M=46, SD=8.38
Gender	9.86% are females
Education	57.24% secondary school or above
Firm size(Number of employees)	M=198, SD=235.88
Operating income	M=89319400, SD=75599
Firm age	M=9, SD=4.56
R&D	67.16%
Owner's equity	M=63.70%, SD=27.78
Rentseek(hours of non-productive time per day)	M=3.3h, SD=1.99
Regional Corruption	Min=Tibet, Max=Jilin



tal investment of private firms is 102.2 million yuan, but more than half of the firms (50.4%) do not invest in environmental protection. For 49.6% of the firms having environmental protection investment, the average environmental protection investment is 206.3 million yuan, and the ratio of environmental protection investment to operating income is 0.59%. Individual characteristics of entrepreneurs reflect that the private firms in China are dominated by middle-aged males. 57.24% of these entrepreneurs are educated above secondary vocational school [including secondary vocational school, undergraduate and graduate students]. The average share of ownership is 63.70%, which reflects the high concentration of ownership in private firms.

### 3.4 Model specification

To examine whether political connections have an impact on environmental performance, the following model is set:

$$EP_{it} = \beta_0 + \beta_1 PC_{it} + \gamma \sum X_{it} + \mu_{it} \quad (1)$$

where  $EP_{it}$  stands for the environmental performance of firm  $i$  at time  $t$ ,  $PC_{it}$  is dummy political connections.  $\sum X_{it}$  a set of controls, including personal characteristics—Gender, Age, Education, and firm characteristics—Firm age, Firm Size, RD and Ownershare.

To examine the differences in the impact of different types of political connections on environmental performance, the following models were constructed:

$$EP_{it} = \alpha_0 + \alpha_1 NPC\_CPPCC_{it} + \psi \sum X_{it} + \nu_{it} \quad (2)$$

$$EP_{it} = \delta_0 + \delta_1 CCP_{it} + \varpi \sum X_{it} + \epsilon_{it} \quad (3)$$

$$EP_{it} = \sigma_0 + \sigma_1 Cadre_{it} + \xi \sum X_{it} + \eta_{it} \quad (4)$$

where  $NPC\_CPPCC_{it}$  is dummy variable of NPC deputies or CPPCC members,  $CCP_{it}$  stands for dummy of CCP member and  $Cadre_{it}$  represents former cadre.

To investigate the impact of the intensity of political connections on environmental performance, the following models are constructed:

$$EP_{it} = \theta_0 + \theta_1 PC\_level_{it} + \xi \sum X_{it} + \eta_{it} \quad (5)$$

$$EP_{it} = \lambda_0 + \lambda_1 CCP_{it} + \lambda_2 CCP\_Before2002_{it} + \lambda_3 CCP_{it} \times CCP\_Before2002_{it} + \xi \sum X_{it} + \eta_{it} \quad (6)$$

where  $PC\_level_{it}$  stands for the strength of political connections. In (6),  $CCP\_before2002_{it}$  is the dummy variable representing whether the firm owner joined the Communist Party before 2002. The old party members (before joining the party before 2002) are more politically

connected than the new party members. If the business owner joins the Chinese Communist Party after 2002, the value is assigned 1, otherwise 0. (5) and (6) respectively use different specifications to test the impact of political connection intensity on environmental performance.

To test the moderating effect of rent-seeking activities and regional corruption on the relationship between political connections and environmental performance, the following models are constructed:

$$EP_{it} = \beta_0 + \beta_1 PC_{it} + \beta_2 Rentseek_{it} + \beta_3 PC_{it} \times Rentseek_{it} + \xi \sum X_{it} + \eta_{it} \quad (7)$$

$$EP_{it} = \alpha_0 + \alpha_1 PC_{it} + \alpha_2 Corruption_{it} + \alpha_3 PC_{it} \times Corruption_{it} + \xi \sum X_{it} + \eta_{it} \quad (8)$$

where  $rentseek_{it}$  is the rent-seeking activities of firms,  $Corruption_{it}$  represent corruption level at province level.

In this paper, the cross-sectional data were pooled together. I will use OLS regressions as benchmark results. Because there are a large number of samples with 0 (50.4%) environmental input, the corner solution will exist. OLS estimation will lead to biasness and inconsistency so the Tobit model will be used to estimate to parameters.

### 3.5 Address endogeneity

However, the Tobit estimates may still be biased because of potential endogeneity of political connections. The reasons for endogeneity may be: 1. omitted variables. Although a number of variables that influence the environmental performance have been controlled for, some key variables may still be omitted. Having a political connection to a certain degree means high personal ability [Li et al., 2008], and factors that affect individual ability can cause endogeneity. 2. Reverse causality. Firms owners are more likely to be appointed as NPC deputies, CPPCC members, government officials because their firm performing well in environment. One way to deal with endogeneity is to find an instrumental variable that is related to political connections but is unrelated with the environmental performance of the enterprise. Entrepreneurs with good corporate environmental performance are more likely to be appointed as NPC deputies, CPPCC members, government officials or more likely to join the Chinese Communist Party, thus having a political connection. 3. Measurement errors, especially when political connections are measured with errors.

Refer to [Guo et al., 2014], I use the establishment of trade union as an exogenous instrumental variable. If a firm establishes the union, the value is 1, otherwise it is 0. In October 2001, the "Trade Union Law of the People's Republic of China" was implemented, and any organization group, including the private firms, are encouraged to establish union. By 2010, about 70.1% of private firms in the surveyed firms have established trade unions. Since the establishment of trade unions is supported by the party and the government, firms with political connections are more inclined to cater to the party and government policies and establish the union. In addition, instrumental variables need to meet exogenous

Table 3: The effect of political connections on environmental performance

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	Tobit	Tobit	IVTobit
Political Connections	0.465*** (2.89)	0.334** (2.11)	3.122*** (5.70)	1.432** (2.42)	10.912*** (2.62)
Controls	No	Yes	No	Yes	Yes
Year FE	No	Yes	No	Yes	Yes
Province FE	No	Yes	Yes	Yes	Yes
Observations	2677	2677	2677	2677	2677
R2/ Pseudo R2	0.0009	0.009	0.003	0.015	
Wald					5.856
First-stage F stat					51.60

Notes: Dependent variable is environmental performance which is calculated as Environmental investment/Sales . Robust t/z-statistics adjusted for clustering at the province level in parenthesis. \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . t or z value in parentheses.

assumptions. This paper argues that whether a firm has a trade union is not directly related to its environmental performance. Therefore, the trade union is a good candidate for IV<sup>1</sup>.

## 4 Empirical Results and Analysis

### 4.1 The effect of political connections on environmental performance

Table 3 reports on the impact of political connections on environmental performance. model (1) is the benchmark OLS regression results. Only PC was included, with a significant and positive coefficient is significantly positive. Indicating firms with political connections perform better in environment than those without political connections. After controlling for personal characteristics and firm characteristics in model (2), PC coefficient reduced from 0.465 to 0.334, but it was still significant. Models (3) and (4) report Tobit regression results, and their parameters are the marginal effects at the mean of the samples. Tobit regression

<sup>1</sup>However, it is not excluded that trade unions may still influence the environmental performance of private firms through other channels. The existence of trade unions represents the common interests of workers, and they can safeguard the interests of workers by negotiating wages, working hours and working conditions with employers. Pollution caused by firms with poor environmental performance will damage the health of workers, and it is in the interests of workers to improve the environmental performance of firms in order to have a safer and healthier working environment. In order to verify whether the above mechanism exist, this paper will test whether the union can help workers get more rights in the private firms. The results are presented in the appendix. It can be found that the union's coefficient in the five regressions is close to zero, and it is not significant. It can be considered that in the private firm, the trade union has little impact on the improvement of workers' rights and interests. Then, the incentives for private firms to improve their environmental performance in order to protect workers' rights are weak. It can be argued that trade union does not affect the environmental performance through other channels, and it is to satisfy the exclusive condition.

Table 4: The effect of different types of political connections on environmental performance

	(1)	(2)	(3)	(4)	(5)	(6)
	Tobit	Tobit	Tobit	IVTobit	IVTobit	IVtobit
NPC or CPPCC member	0.108 (0.35)			8.483*** (2.65)		
Party member		0.432** (2.16)			14.447** (2.28)	
former Cadre			0.260 (0.79)			65.804 (1.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year/Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2677	2677	2677	2677	2677	2677
Pseudo R2	0.008	0.009	0.009			
Wald				5.957	6.71	7.370
First-stage F stat				61.84	24.50	40.13

Notes: Dependent variable is environmental performance which is calculated as Environmental investment/Sales . Robust t/z-statistics adjusted for clustering at the province level in parenthesis. \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . t or z value in parentheses.

results yield similar results with OLS. In order to reduce the potential endogenous bias, model (5) use establishment of trade union to instrument political connections and report the IVtobit results. To save space, only the second stage results were reported. The Wald's exogeneity test showed that exogenous null hypotheses can be rejected, that is, endogenous bias is considered to exist. The First-stage F stat is 51.60, greater than the threshold 10, and it can be considered that there is no weak instrument variable. In model (5), the marginal effect of PC on EP is significantly positive. Compared with model (4), the coefficients vary greatly from 1.432 to 10.912, implying that Tobit regression produced negative bias. Models (1) to (6) show that private firms with political connections have higher environmental performance than those without political connections, and hypothesis 1a is confirmed.

## 4.2 the effect of different types of political connections on environmental performance

Table 4 reports the impact of different types of political connections on the environmental performance of private firms. The coefficients of NPC\_CPPCC members, Party members and Cadre are positive in Tobit model, but only coefficients of Party members are significant. After using establishment of trade union to instrument political connections , the coefficients of the three variables increased and their t-ratio increased, but the Cadre still insignificant. The status of NPC deputy or CPPCC member and Party member has a significant effect in promoting the performance of environment, while the environmental performance of firms in which the owner is a former cadre is not significantly different from that of the firms in which the owner doesnt have government working experience. hypothesis 1b is confirmed. A reasonable explanation for this is that under the pressure of social expectations and public supervision, NPC, CPPCC and Party members who symbolize honor and social recognition pay more attention to the environmental performance of firms which helps maintain their

Table 5: The effect of political connection intensity on environmental performance

	(1)	(2)	(3)	(4)	(5)
	OLS	Full sample Tobit	IVTobit	2008 sub-sample OLS	2008 sub-sample Tobit
Political connection intensity	-0.012 (-0.10)	0.342* (1.88)	3.808*** (2.60)		
Party member				-0.143 (-1.26)	-0.300* (-1.77)
Party member×Join Party before 2002				0.296** (2.25)	0.805 (1.58)
Controls/Year and Province FEs	YES	YES	YES	YES	YES
Observations	2677	2677	2677	986	986
Wald test			7.586		
R2/ Pseudo R2	0.008	0.0153		0.023	0.0226

Notes: Dependent variable is environmental performance which is calculated as Environmental investment/Sales. Robust t/z-statistics adjusted for clustering at the province level in parenthesis. \* $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

social status and political legitimacy. However, firm owners whose official tenure has ended are less subject to public supervision and public opinion pressure, and have less motivation to improve corporate environmental performance.

### 4.3 The effect of political connection intensity on environmental performance

Table 5 reports on the impact of political intensity on corporate environmental performance. In the model (1) OLS regression results, the coefficient of PC\_level is negative, but the t-ratio is close to 0, not statistically significant. Because the EP is truncated, the results of the OLS regression are biased. The Tobit regression results show that the coefficient of PC\_level is significant and positive. Further IVTobit regression shows that as the degree of political connections increase, environmental performance is better.

At the same time, I use the 2008 sub-sample<sup>2</sup> and alternative method to test whether political connections intensity has a significantly positive effect on environmental performance. In model (4), the interaction coefficient between Party member and Party\_before\_2002 is positive and significant at 5% level. It shows that firms whose entrepreneurs who joined the Party before 2002 have better environmental performance than those managed by the entrepreneurs who joined the CPC after 2002. Because its more difficult to join the Party before 2002, and the degree of political connections of these old party members is greater than that of new party members. The above results show that firms with high degree of political connections have higher environmental performance than those with low degree of political connections. hypothesis 1C is verified again.

<sup>2</sup>data on the time of joining the Party are not available in other years.

Table 6: How rent seeking and regional corruption regulate the relationship between political connection and environmental performance

	(1) Tobit	(2) Tobit	(3) IVTobit	(4) IVTobit	(5) IVTobit
Political connection	0.989 (1.27)	1.090* (1.90)	23.710** (2.08)	13.680** (2.27)	29.565** (1.97)
Rent seeking	-0.006 (-0.03)		3.727** (1.98)		3.790* (1.89)
Connection× Rent seeking	0.030 (0.15)		-4.783** (-1.98)		-4.874* (-1.88)
Regional corruption		0.114 (0.15)		9.037** (2.09)	8.612* (1.89)
Connection×Corruption		-0.012 (-0.02)		-11.434** (-2.08)	-10.806* (-1.88)
Controls/Year and Province FEs	YES	YES	YES	YES	YES
Observations	2677	2677	2677	2677	2677
Wald test			5.335	5.234	5.263

Notes: Dependent variable is environmental performance which is calculated as Environmental investment/Sales . Robust t/z-statistics adjusted for clustering at the province level in parenthesis. \*p < 0.1, \*\*p < 0.05, \*\*\* p < 0.01.

#### 4.4 How rent seeking and regional corruption regulate the relationship between political connection and environmental performance

Previous studies conclude that political connections have a positive effect on environmental performance, and this promoting effect mainly through two channels: the identity of NPC or CPPCC members, and the identity of Party members. Politically connected firms pay more attention to reputation and social image and display higher level of social responsibility, whether due to their higher moral standards or just a political strategy to safeguard political legitimacy. Now I will examine whether rent-seeking activities and regional corruption can "erode" this sense of social responsibility, that is, whether rent-seeking activities and regional corruption can negatively regulate the positive correlation between political connections and corporate environmental performance.

Table 6 reports the role of rent-seeking activities and the degree of corruption in the relationship between political connections and environmental performance. Models (1) and (3) separately examine the regulatory role of corporate rent-seeking activities. In model (3), after considering endogeneity, the interaction term of political connections and rent-seeking is negative and significant at 5% level, indicating that rent-seeking activities of firms negative regulate the positive relationship between political connections and environmental performance. hypothesis 3a is confirmed. Models (2) and (4) individually examined the regulatory role of regional corruption. In model (2), the interaction coefficient between PC and Corruption is negative, but it is not statistically significant. In model (4), the IVTobit results show that the coefficient of the interaction term is significantly negative, indicating that the degree of regional corruption has a negative regulatory effect on the positive correlation

between political connections and environmental performance. hypothesis 3b is confirmed. In model (5), the interaction terms between PC and rent-seeking, PC and corruption are included in the model at the same time, and the direction and significance of the interaction terms are not changed. Rent-seeking and corruption can weaken the promoting effect of political connections on environmental performance.

## 5 Robustness Checks

### 5.1 Use alternative IVs

Alternatively, I adopted the provincial institutional environmental variables ranking of getting credit difficulty, ranking of contract execution difficulty, ranking of creating new enterprise difficulty and ranking of Patent registration difficulty as IVs. The IVs data comes from the Doing Business in China Report published by the World Bank. The better the regional institutional environment, the less institutional constraints, and the weaker incentives for companies to seek political connections and political asylum.

Table 8 in appendix reports the related results. The results show that the PC, NPC\_CPPCC, and Party member coefficients are significantly positive, and Cadre is insignificant. The results obtained by using the provincial institutional environment as IVs are consistent with the previous conclusions, indicating the robustness of the conclusions.

### 5.2 Check sample-selection bias

Sample-Selection bias may also exist. That is, a firm with political connections is more likely to engage in a green industry which is supported by the government. The reason may be that it is easier to obtain certain resources from the government through political connections, thus being more prepared in engaging in emerging green industries. I tested whether politically connected firms are more likely to engage in green industries. I use the dummy variable whether the firm has pollution control technology as the proxy indicator of the green industry. In Table 9, coefficients of political connection indicators are not significant, providing insufficient evidence that companies with political connections are more likely to engage in green industries.

### 5.3 Can political connections affect environmental performance through other channels?

In the previous analysis, political connections have a positive effect on environment. performance. One possible reason is that political connections means honor and reputation, and promoting environment. performance is consistent with social expectations. One evidence for this explanation is that this positive effect only occurs in the NPC or CPPCC members, and Party members who represent political titles, while the former cadres show little evidence

to substantiate the above relationship. However, the reason may also be that firms with political connections are more likely to benefit from environmental technology support from the government, thus having better environmental performance. Although [Chen and Cao, 2016] believe that the political connections through NPC and CPPCC titles are weaker than the former cadres. There may exist another possibility: the current political forces (NPC deputies, CPPCC members, and party members) are stronger than the past political forces (former government cadres), so that NPC deputies, CPPCC members, and party members are more likely to benefit from environmental technology support from the government and thus have better performance.

To this end, I tested whether politically connected firms are more likely to obtain government policy support related to environment, and whether different types of political connected firms have differences in accessing government support. I set up a dummy variable of environmental technology support as the explained variable and conducted two-stage Probit regressions. In Table 10, the PC, NPC\_CPPCC, and Party member coefficients are positive, and the Cadre coefficient is negative, but they are not significant. There is insufficient evidence to suggest that companies with political connections are more likely to receive government environmental technology support, and there is no evidence that different types of politically connected firms have significant differences in accessing environmental policy support

## 5.4 Additional evidence of reputation theory

Politically connected firms have higher environmental performance, because the motivation of maintaining their reputation encourages them to actively take social environmental responsibility. Reputation motivation is conflicted with the rent-seeking nature of political connections. If this is true, it can be inferred that there is no significant difference in investment of rent-seeking activities between politically related firms and non-politically connected firms. I constructed a dependent variable - rent-seeking cost. Its value is the firm's investment in non-productive activities, that is, the sum of the expenses invested in apportionment, public relations and hospitality. I used establishment of trade union as an exogenous instrumental variable and conducted 2SLS regressions. Table 11 is the results.

It can be found that the coefficients of political connection indicators are negative, and they are not statistically significant, indicating that there is no significant difference in investment rent-seeking activities between politically connected firms and the non-politically connected firms. This result provides further evidence for the reputation effect.

## 6 Conclusion Remarks

Using the survey data of Chinese private firms, this paper explores the impact of political connections on the environmental performance. Empirical results show that political connections can significantly improve the environmental performance of private firms. Different types of political connections have different impacts on corporate environmental performance.



The status of NPC deputies or CPPCC members and Party members has a significant role in promoting environmental performance, whereas the status of former government cadres has no significant impact on corporate environmental performance. Furthermore, this paper finds that rent-seeking activities and regional corruption can worsen the positive relationship between political connections and environmental performance.

Lin et al. [2015] argue that politically connected firms perform better because they are more likely to receive government environmental subsidies, which help them improve their environmental performance. This paper re-examines this channel, but finds that there is no significant difference between politically connected firms and non-politically connected firms in obtaining government environmental policy support, that is, there is little evidence that political connections affects environmental performance through government policy support. I propose that political connections represent political honor and social image, and politically connected firms are influenced by more social supervision and public opinion, so they are more active in taking social environmental responsibility for the sake of maintaining good reputation.

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## **A Appendix**

Table 7: Variable Definition

Variable	Definition
Environmental performance	(Environmental investment/ Sales) $\times 100$
Political connection	Take value 1 if the firm owner is a NPC deputy, CPPCC member, Party member of once served as a government cadre, 0 otherwise
Political connection intensity	Take value 5 if being NPC deputy or CPPCC member at country level, 4 at province level, 3 at city level, 2 at county level, 1 at township level, 0 not being NPC or CPPCC member at any levels
NPC or CPPCC member	Take value 1 if the firm owner is a NPC deputy, CPPCC member, 0 otherwise
Party member	Take value 1 if the firm owner is a Party member, 0 otherwise
Former cadre	Take value 1 if the firm owner once worked in the government, 0 otherwise
Party before 2002	Take value 1 if the firm owner joined the Party before 2002
Age	Age of the firm owner
Gender	Female=1male=0
Education	Elementary school and below=1middle school=2high school=3junior college=4university=5graduate school=6
Firm Size	Log(total employees)
Firm age	Age of the firm
R&D	Take value 1 if the firm has R&D investment
Owner share	Share of the owner's equity
Rent seeking	Time spent on meetings, public relations, hospitality
Regional corruption	The ratio of the number of corruption cases to the number of public officials

Table 8: Use provincial institutional environment as IVs

	(1)	(2)	(3)	(4)
		IVTobit		
Political connection	24.325*** (2.58)			
NPC or CPPCC member		9.694** (2.27)		
Party member			8.385* (1.92)	
Former Cadre				9.088 (1.30)
Controls	Yes	Yes	Yes	Yes
Year and Province FEs	Yes	Yes	Yes	Yes
Observations	2677	2677	2677	2677

Notes: Dependent variable is environmental performance which is calculated as Environmental investment/Sales . Provincial institutional environment includes ranking of getting credit difficulty , ranking of contract execution difficulty, ranking of creating new enterprise difficulty and ranking of Patent registration difficulty. Robust t/z-statistics adjusted for clustering at the province level in parenthesis. \*p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

Table 9: Test whether political connected firms are more likely to engage in green industry

Dependent variable	(1)	(2)	(3)	(4)	(5)
Have pollution control technology	Probit		IVProbit		
Political connection	0.015 (0.05)	0.380 (0.21)			
NPC or CPPCC member			0.233 (0.22)		
Party member				1.962 (0.18)	
Former Cadre					0.548 (0.16)
Controls	Yes	Yes	Yes	Yes	Yes
Province FEs	Yes	Yes	Yes	Yes	Yes
Observations	367	367	367	367	367

Notes: Data is from survey in 2010. Robust t/z-statistics adjusted for clustering at the province level in parenthesis.

Table 10: Test whether politically connected are more likely to receive government support green technology

Dependent variable:	(1)	(2)	(3)	(4)	(5)
Government support on green technology	Probit		IVProbit		
Political connection	0.342 (1.33)	0.466 (0.19)			
NPC or CPPCC member			0.409 (0.22)		
Party member				0.429 (0.19)	
Former Cadre					-3.134 (-0.12)
Controls	Yes	Yes	Yes	Yes	Yes
Province FEs	Yes	Yes	Yes	Yes	Yes
Observations	515	515	515	515	515

Notes: Data is from survey in 2010. Robust z-statistics adjusted for clustering at the province level in parenthesis.

Table 11: The impact of political connections on corporate rent-seeking expenses

Dependent variable:	(1)	(2)	(3)	(4)	(5)
Firm rent-seeking expenses	OLS			TOLS	
Political connection	-1.762 (-0.76)	-34.917 (-1.25)			
NPC or CPPCC member			-27.356 (-1.24)		
Party member				-56.167 (-1.18)	
Former Cadre					-113.334 (-1.02)
Controls	Yes	Yes	Yes	Yes	Yes
Year and Province FEs	Yes	Yes	Yes	Yes	Yes
N	1789	1789	1789	1789	1789

Notes: Firm rent-seeking expenses is the firm's investment in non-productive activities, that is, the sum of the expenses invested in apportionment, public relations and hospitality. Robust t/z-statistics adjusted for clustering at the province level in parenthesis.

Table 12: Indirect evidence of the exogeneity of IV– Establishment of trade union

	(1)	(2)	(3)	(4)	(5)
	Pension insurance	Medical insurance	Work injury insurance	Maternity insurance	Unemployment insurance
Political connection	0.004 (0.09)	-0.001 (-0.08)	-0.000 (-0.00)	-0.000 (-0.04)	-0.000 (-0.10)
Controls	Yes	Yes	Yes	Yes	Yes
Year/Province FEs	Yes	Yes	Yes	Yes	Yes
N	2958	2903	2809	2671	2789