

Involuntary Political Connections and Firm Outcomes*

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Abstract

While prior studies focus on active corporate political connections such as board appointments, campaign contributions, and lobbying expenditures, this paper focuses on involuntary connections that are ubiquitous and not actively pursued by the firm. We estimate the causal effect of these connections on firm outcomes by exploiting the exogeneity of the geographic distance between collective firms and local governments in China. Distance from government improves operating performance. Consistent with our model's predictions, the effect is weaker when the government is bigger, when the local market and legal systems are more developed, when road infrastructure is better, and following adverse economic shocks. We analyze firms' responses to a World Bank survey to investigate the economic mechanisms through which involuntary connections operate. We find that distance from government increases firm autonomy, and reduces taxes, protectionism, anti-competitive behavior, and time spent on interactions with government officials. Overall, we provide clean estimates of the effects of government intervention on firm outcomes and the channels through which they operate.

JEL Classification: D72, P16

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Introduction

The popular press and academic literature have largely focused on voluntary, active political connections that are cultivated by firms through board appointments, campaign contributions, or lobbying expenditures. The *Economist* magazine, for example, reported that the 50 companies with the most intensive lobbying activities in the S&P 500 index have outperformed the rest of the index by 11 percent per year. Similarly, academic studies find that firm value increases when firms establish political connections (Roberts (1990), Fisman (2001), Faccio (2006), Akey (2015), and Chen, Parsley, and Yang (2015)).

However, the vast majority of firms are not politically active. Kerr, Lincoln, and Mishra (2014), for example, find that only 10% of U.S. publicly traded firms engaged in lobbying in one year or more over the period 1998-2006. They argue that upfront costs and returns to experience act as barriers to entry to becoming politically active. What role, then, does the government play in politically inactive firms? To answer this question, this paper focuses on government interventions in firm operations that are not actively cultivated by the firm. Such involuntary political connections are ubiquitous and potentially important for the majority of firms, which lack the resources and expertise to build active political connections.

Involuntary, passive political connections can arise when politicians behave as rent-seekers, expropriating shareholder wealth, or promoting policies to enlist support at the expense of firm efficiency (Dixit, Grossman, and Helpman (1997), Frye and Shleifer (1997), and Shleifer and Vishny (1998)). Identifying involuntary political connections, however, is challenging because the firm endogenously determines even seemingly involuntary connections, such as its geographic proximity to the government. To overcome this challenge, the key innovation in this paper is to focus on Chinese Collective firms, whose location, and therefore geographic distance from the government, is exogenously determined.

The paper exploits novel data from the Census of manufacturing firms and from a World Bank survey to answer three main questions. First, how do involuntary political connections affect firm policies and performance? Second, how do these effects vary in the cross section and through time, across governments' financial conditions or size, levels of market and legal development, and economic conditions? Third, what economic mechanisms, such as government interventions in firms' production, investment, and employment decisions, tax policies, or product market competition, are driving these effects?

We estimate the effects of involuntary political connections, instrumented by the exogenous distance of Collective firms from the government, using data from two main sources. The first data source is the Census of manufacturing firms, compiled annually by China's National Bureau of Statistics (NBS) from 1998 to 2007. The Census includes detailed financial data on all State Owned Enterprises (SOEs) engaged in manufacturing regardless of size, and all private, collective, foreign, and Hong Kong/Macau/Taiwan (HMT) firms engaged in manufacturing with annual revenues exceeding five million Chinese Yuan. The second data source is the Investment Climate Survey (ICS) conducted by the World Bank in 2005, which covers 12,400 establishments across industries and cities in China through face-to-face interviews with firm managers and owners. The survey data include direct questions about the relationship between the firm and the government.

We find that firms' operating performance increases with their distance from government. The average return on assets (ROA) of the most distant collective firms (top tercile) is 3.3 percentage points higher than that of the closest collective firms (bottom tercile), and the difference is statistically significant at the 1 percent level. We find similar effects in multivariate regressions that control for time-varying firm level attributes as well as industry-specific time

trends and time-invariant geographic heterogeneity. These findings suggest that involuntary political connections have a sizable negative effect on firm performance.

An important concern is whether our findings on involuntary political connections are Collective-firm specific. It is possible that some omitted characteristics about Collective firms drive our results. However, the locations of other types of firms tend to be endogenous and it is therefore difficult to investigate the causal effect of their proximity to the local government. To address this concern, we take advantage of government office relocation and examine ex-post changes for all types of existing firms. The results continue to hold in this setting. Specifically, we identify 23 instances of exogenous government offices relocations during our sample period. Our results indicate that an increase of 10% in the distance from government following office relocations corresponds to an increase of 3.8% in ROA.

We develop a simple model to examine the factors that may weaken or exacerbate the effect of the firm's distance from government. First, we investigate the role of transportation infrastructure. The model suggests that the effect of distance from government on firm performance is weaker when infrastructure is more developed because the costs of distant government interventions are lower. Consistent with the model's prediction, we find that an improvement of one standard deviation in infrastructure and road conditions, as measured by highways and passenger transportation per capita, weakens the distance effect by 24.1 - 30.8%.

Second, we investigate the effects of government size, capacity, and financial conditions. The model predicts that the effect of firms' distance from government would be weaker when the government is bigger and when it has higher capital expenditures or deficits. Consistent with the model, we find that when the size of the government relative to the size of the population is 10% higher, the effect of distance from government on performance weakens by 5.9%. Further

consistent with the model, an increase of one standard deviation in the government's deficit leads to a decrease of 28% in the effect of distance from government on performance.

Third, we study how the effect of political connections varies with the development of the local market and legal system. The model predicts that more developed markets and better legal systems weaken the effects of firms' distance from government on performance. To test these predictions, we exploit region-specific shocks to market development and the legal system over the sample period. The analyses indicate that the effect of distance from government varies substantially with changes in market and legal development. In particular, when market and legal development is above median, the effect of distance from government on firm performance weakens by 61.3%.

Fourth, we study whether being closer to government plays a more positive role following adverse economic shocks. This hypothesis is motivated by several studies that show that politically connected firms are more likely to be bailed out or receive preferential access to government resources following crises (Faccio, Masulis, and McConnell (2006), Duchin and Sosyura (2012), Brogaard, Denes, and Duchin (2016)). Under this view, political connections serve as a government-issued insurance policy against adverse shocks.

To test this hypothesis, we study the effect of distance from government across provinces affected by the 1998 flood disaster in China. We find that the effect of distance from government on firm performance was 22.6% - 46.1% weaker in affected provinces following the flood disaster. Taken together, these results suggest that the government expropriates fewer resources during bad times.

The second set of analyses provides direct survey evidence on the effects of distance from government. The goal of these analyses is to uncover the underlying economic mechanisms through which involuntary political connectedness influences firm performance.

The evidence suggests that political distance operates along several dimensions. First, distant firms are more autonomous than close firms are. An increase of one standard deviation (26 km) in the distance between the firm and the government increases its production autonomy by 3.2%, its investment autonomy by 3%, and its autonomy in setting its employment policy by 2.3%.

Second, distant firms appear more shielded from distortive policies enacted by the government. In particular, distant firms perceive the government's policies to be less impeding to their growth. An increase of one standard deviation in distance from government reduces the impeding effects of tax administration and customs policies by 0.09 and 0.05 points (on a scale of 0 to 4), respectively. Further, distant firms report lower levels of local protectionism and anti-competitive behavior. An increase of one standard deviation in distance from government reduces protectionism and anti-competition by 0.1 and 0.11 points (on a scale of 0 to 4), respectively.

Third, we investigate the interactions between firms and the government on a nexus of issues including taxation, public security, environment, labor, and social issues. Across all these issues, the evidence suggests that distant firms maintain better relationships with the government, spend fewer days on interactions with government officials, and are more likely to acknowledge the contribution of government officials to their growth. The magnitudes of these effects are nontrivial and statistically significant at conventional levels.

Overall, this article offers new evidence on the role of involuntary interactions between firms and government officials in firm performance and operations. First, it provides clean estimates on the effects of involuntary political connections by exploiting the exogenous distance between collective Chinese firms and the local government. Second, it identifies cross-sectional and time-series variation in the effects of involuntary political connections. Third, it provides direct evidence on the economic mechanisms that drive the effect of involuntary political connections, including firm autonomy, taxation, and the competitive landscape.

The rest of this paper proceeds as follows: Section 1 displays a conceptual framework and discusses its testable predications. Section 2 introduces the institutional background of Collective firms in China and describes the Census data and the empirical model. Section 3 presents the empirical results from the Census data. Section 4 examines the potential economic mechanism using the World Bank survey. Finally, Section 5 concludes.

1. Conceptual Framework

In this section, we present a simple conceptual framework to identify testable implications for the case where firms have involuntary connections to politicians and government officials. In our reduced-form model, government officials extract rents from firms. The model is silent about the nature of the private benefits that government officials extract. These can be direct monetary benefits or indirect political benefits (Dixit, Grossman, and Helpman (1997), Frye and Shleifer (1997), and Shleifer and Vishny (1998)).

Our model incorporates involuntary political connections by focusing on the geographic distance between the firm and the government. This setup highlights the key benefit of our empirical approach, which exploits the exogeneity of the distance between Chinese Collective

firms and the local government. The model includes two types of firms. The first type of firm is located close to the local government (a nearby firm n); the second type of firm is far away from the government (a faraway firm f).

The local government is non-benevolent. It extracts rents R_n from firm n and R_f from firm f . Importantly, rent seeking is not costless. Let C_n and C_f denote the costs of each unit of rent extraction from the nearby firm and the faraway firm, respectively. A firm's distance from the government captures the strength of its involuntary political connections by assuming that it is more costly for the local government to extract rents from the faraway firm than from the local firm: $C_n < C_f$. The government has limited resources to spend on rent extraction, reflected in the following resource constraint:

$$C_n R_n + C_f R_f \leq B \tag{1}$$

The model also assumes that government officials face the risk of detection. The likelihood of detection increases in the level of the government's risk-seeking activity. Thus, we assume that the government cannot extract rents that exceed a level ρ . If it does, its rent extraction activities will be discovered. Note that this constraint is equally binding for nearby and faraway firms. For simplicity, we assume that the government is always subject to the detection constraint, that is, we assume that the cost of extracting rents that exceed ρ is infinite:

$$\max(R_n, R_f) \leq \rho \tag{2}$$

Since the firms in this model are passive, and their distance from government (and therefore strength of political connections) is exogenously determined, the model needs only consider the local government's maximization problem, which is given by:

$$\max_{R_n, R_f} R_n + R_f,$$

subject to

$$C_n R_n + C_f R_f \leq B, \quad (3)$$

and

$$\max(R_n, R_f) \leq \rho$$

We solve this problem focusing on the interesting case in which the constraints are binding.

Since $C_n < C_f$, we arrive at the optimal solution:

$$R_n^* = \rho \text{ and } R_f^* = \frac{B - C_n \rho}{C_f}. \quad (4)$$

Next, we examine what the effect of a firm's distance from government is on its performance. Let P denote the firm's baseline performance absent the effect of involuntary political connections. To derive meaningful comparative statics, we assume that the two types of firms (nearby and faraway) are identical in their baseline performance. After taking into account the rents extracted through involuntary political connections, the performance function becomes $P - R_n$ for the nearby firm and $P - R_f$ for the faraway firm. Substituting the optimal levels of rent extraction from eq. (4), we arrive at the performance difference between the faraway and nearby firm, which captures the effect of the distance from government:

$$(P - R_f^*) - (P - R_n^*) = R_n^* - R_f^* = \frac{(C_n + C_f)\rho - B}{C_f}. \quad (5)$$

Eq. (5) gives rise to the following proposition:

Proposition 1: When the above constraints are binding, faraway firms outperform nearby ones. Especially, the effect of a firm's distance from government on its performance is higher when the cost of extracting rents from faraway firms C_f is higher, when the government has fewer resources B , and when the risk of detection is lower, that is, when ρ is higher.

Discussion

We derive several testable implications based on proposition 1.

- 1) **Road infrastructure.** When the road infrastructure is more developed, e.g., when there are more highways, C_f is lower and therefore the effect of a firm's distance from government on its performance is weaker.
- 2) **Government capacity.** When the government has greater capacity, e.g., more personnel or a bigger budget, B is higher, and therefore the effect of a firm's distance from government on its performance is weaker.
- 3) **Market and legal system development.** When the local market is more developed and has a better legal system, the risk of detection is higher, i.e., ρ is lower, and therefore the effect of a firm's distance from government on its performance is weaker.
- 4) **Economic shocks.** Following prominent adverse economic shocks, such as natural disasters, that draw the public's attention, the risk of detection is higher, i.e., ρ is lower, and therefore the effect of a firm's distance from government on its performance is weaker.

To summarize, this setup provides a way to understand the effect of involuntary political connections, as captured by the exogenous distance between the firm and the local government,

on firm performance. The reduced-form model derives testable implications for the cross-sectional and time-series variation in the effects of involuntary connections. In the next section, we test these predictions using Census data on Collective firms, whose geographic location, and therefore distance from government, is exogenous.

2. Institutional Background, Census Data Description, and Empirical Model

A. Collective Firms

In this paper, we focus exclusively on collective firms because their location is exogenous. Our unit of analysis is a collective firm-prefecture-year since the local government in each prefecture is in charge of overseeing the collective firms that fall under its jurisdiction and for collecting taxes from collective firms and sharing them with the higher levels of government.

The location of collective firms is exogenous because they are owned by local communities and are restricted to reside within those communities. Local urban communities, such as a street or a block own urban collectives. Townships or villages own rural collectives, also known as township or village enterprises. Collective firms, particularly township and village enterprises, experienced a dramatic growth since 1978, and contributed substantially to China's economic reforms (e.g. Putterman, 1997; Jin and Qian, 1998). In 2000, township and village enterprises accounted for 47 percent of total industrial output and 25 percent of the rural labor force, that is, 18 percent of the total labor force in China (Fu and Balasubramanyam, 2003).

Collective firms have other desirable properties. They are market-orientated and are operated as private firms, thus enjoying a high degree of autonomy (Svejnar, 1990; Jefferson and Rawski, 1994; Weitzman and Xu, 1994; Tian, 2000). Unlike State Owned Enterprises (SOEs), they face hard budget constraints and have limited access to formal external financing from state-owned banks (Perotti, Sun, and Zou, 2014). In practice, their size is relatively small and most of

them have only one plant, which is located in their local community. This allows us to measure their distance from the local government accurately. In addition, due to their small size and limited resources and expertise, they are less likely to pursue political relationship with the government actively. These properties of collective firms are therefore suitable for our study on involuntary political connections.

We focus on involuntary political connections between collective firms and prefectural governments because higher levels of government, such as the provincial and central government, have little direct interactions with non-state firms. Given that collective firms are typically small, the provincial and central government have no direct dealings with them. We do not study the connections between collective firms and the lower, county-level governments due to data limitations. There are more than 2,800 counties in China and their local government office addresses are not all publicly available. In addition, our World Bank dataset only discloses the county where a firm is located. We therefore cannot measure the distance between a firm and the local county government office.

B. Distance from Government

We follow the standard method in the literature to calculate the distance between a firm and its local government based on their coordinates, denoted by (X, Y) , where X and Y are the latitude and longitude of each coordinate, respectively. The distance between point A, with coordinates (X_1, Y_1) , and B, with coordinates (X_2, Y_2) , is calculated using the following formula:

$$Distance = R * 2 * atan2(\sqrt{\alpha}, \sqrt{1 - \alpha})$$

$$R = \text{earth radius}, \alpha = \left[\sin\left(\frac{Y_1 - Y_2}{360} * \pi\right) \right]^2 + \cos\left(\frac{Y_1}{180} * \pi\right) * \cos\left(\frac{Y_2}{180} * \pi\right) * \left[\sin\left(\frac{X_1 - X_2}{360} * \pi\right) \right]^2$$

The coordinates of firms' and governments' addresses are retrieved from the Gaode map, which is considered the most accurate map provider in China. Several online map services are based on the Gaode Map, including Tencent, which is the largest internet firm in terms of its market capitalization. We manually collect governments' addresses from various online sources.¹ Depending on data availability, firms' coordinates are based either on their exact address or on their 12-digit zip code.²

C. Sample Construction from the Census Data

We use the Census of manufacturing firms in China compiled annually by China's National Bureau of Statistics (NBS) from 1998 to 2007. The census includes all state-owned enterprises (SOEs) engaged in manufacturing regardless of size, and all private, collective, foreign, and Hong Kong/Macau/Taiwan (HMT) firms engaged in manufacturing with annual revenues exceeding RMB five million.

We arrive at our final sample of collective firms as follows. First, we drop observations where the exact address and the 12-digit zip code are both missing. We do so because we cannot calculate these firms' distance from government. Second, we exclude collective firms that have a nonzero state ownership stake because state ownership confounds the definition and analyses of involuntary political connections, which are the focus of our study. Following prior studies (e.g., Dougherty, Richard and Ping, 2007; Brandt, Van Biesebroeck and Zhang 2012), we classify a

¹ The data is mainly obtained from following two websites on the history of China's administrative divisions: <http://t.cn/zHzBLQs> and <http://t.cn/8sIJAxU>.

² 12-digit zip codes are the finest zip code levels in China. They refer to regions at the village level. According to the zip code system released in 2006, there are 31 provinces, 344 prefectures, 2,871 counties, 43,970 towns and 719,993 villages in China. A prefecture thus comprises 2,093 villages on average. Given that villages are small geographic units, using the coordinates of a village as the coordinates of the firm is accurate.

firm's ownership based on the type of paid-in capital that exceeds 50% of total capital. If no single type exceeds 50%, we rely on the registration type in the census data.³

Third, we drop observations with total assets less than total current assets or total fixed assets. Fourth, we drop all firm-year observations for which the constituent elements of total assets do not equal their total because these are essential for our measures of profitability. Fifth, we drop observations from four municipalities (Beijing, Shanghai, Tianjin and Chongqing) because they include tiny many prefectures. The variation of the distance between a firm and its local government in these municipalities is therefore too small to be meaningful. Finally, we lose a few observations due to missing values. After imposing the above sample screens, the final sample includes 146,839 observations and 48,043 unique collective firms.

Appendix A provides the definitions of all the variables used in this study. All the continuous variables in this study are winsorized at the 1% and 99% levels. Table 1 presents the summary statistics for the final dataset. The average distance between a firm and its prefecture-level local government is 32 kilometers. There is substantial variation in distance: the standard deviation of distance is 28 kilometers and the inter-quartile range between Q1 and Q3 (25th and 75th percentiles) is 38 kilometers. The average firm has positive return on assets (ROA) of 9.7%, has a leverage ratio of 60.9%, and is 11.5 ($=e^{2.441}$) years old.

[Insert Table 1 here]

³ There are six categories of paid-in capital: SOE, collective, legal person, private, foreign, and HMT. For the legal person type, we use additional information on the firm's registration type, available from the Census database, to classify it in one of the other five categories following Brandt, Van Biesebroeck and Zhang (2012). We do not rely exclusively on the firm's registration type provided in the Census database for two reasons. First, the official registration status in the census often does not reflect de facto ownership (Dougherty, Richard, and Ping, 2007). Second, many registration types (there are 23 in total) are not meaningfully distinct (OECD, 2000; ADB, 2003). Basing the ownership type on the controlling shareholder is more meaningful in understanding the variation in firm performance. However, the results throughout the paper are qualitatively similar if we classify collective firms based on their registration status.

D. Empirical Model

We use the following model specification to study the effect of distance on firm performance:

$$Performance_{i,t} = \alpha + \beta_1 * Distance_{i,t} + \beta_2 * Leverage_{i,t} + \beta_3 * Size_{i,t} + \beta_4 * Age_{i,t} + \varepsilon_{i,t}$$

where *Performance* is one of four alternative measures of accounting performance. *Distance* refers to the distance between a firm and its affiliated government office in 1000 kilometers to make estimates more readable.⁴ *Leverage* is measured as the total liabilities divided by total assets. *Size* and *Age* are defined as the natural logarithm of total assets and the natural logarithm of the number of years since a firm was established. As the distance between firms and their local government are not comparable across prefectures, we include prefecture fixed effect. By doing this we can also control for local shocks. To account for potential omitted shocks at the industry level and aggregate economic fluctuations, we also incorporate industry-year fixed effect into our test, where the industry is at 2-digit level. Since firms' and government offices' address barely change over time, firm fixed effect cannot be controlled in our analysis.

3. Results

A. Do Distant Firms Perform Better?

⁴ The results throughout the paper are qualitatively the same if the distance between a firm and its affiliated government office is defined as the natural logarithm of the distance in kilometers.

We begin with a univariate test that studies how a firm's distance from local government affects its performance. In Table 2, we sort firms into terciles based on their distance from local, prefecture-level government. For each tercile, Panel A reports mean operating performance and Panel B reports median operating performance.

We consider four measures of operating performance. *OPOA* and *OPOE* scale the firm's operating income by the total value of book assets and by the total value of equity, respectively. *ROA* and *ROE* focus on the firm's net income and scale it by the total value of book assets and by the total value of equity, respectively.

Panels A and B of Table 2 show that firm performance monotonically increases in the firm's distance from local government. This finding holds across all measures of operating performance for both mean and median performance. In both panels, the *Diff* column reports the difference in performance between the top and bottom tercile. As Table 2 shows, all eight differences are highly statistically significant at the one percent level. Moreover, the differences are economically large. For example, the differences-in-mean estimates in Panel A suggest that firms farthest from local government have *ROA* and *ROE* that are 3.3 percentage points and 8.7 percentage points higher, respectively. These findings are consistent with our hypothesis that stronger involuntary political connections erode the firm's performance.

[Insert Table 2 here]

Table 3 shows multivariate evidence on the effect of distance on operating performance with a full system of controls and fixed effects. The coefficients of distance are positive and statistically significant at the 1% level across all measures of operating performance. The

economic magnitudes are also significant. Based on column 1, for example, *OPOA* increases by 45 basis points (bps) for every additional 10km in distance from the local government, or by about 14.2% of the median firm's operating performance. These results confirm our previous findings that distant firms significantly outperform firms that are closer to government. In the next section, we investigate how the effect of distance varies in the cross section, across governments' financial conditions or size, levels of market and legal development, and economic conditions.

[Insert Table 3 here]

B. Cross Sectional Analyses

In this section, we explore the role of road infrastructure, governments' financial capacity, market and legal development, and economic shocks in involuntary political connections. These and subsequent analyses focus on *OPOA* as the main measure of operating performance because it is less susceptible to manipulation through tax and payout treatments. However, we obtain similar results using the other three measures of firm performance.

We begin the cross-sectional analyses with the role of road infrastructure. Based on our model, when the road infrastructure is more developed, the cost of expropriation from distant firms is lower, and therefore the effect of a firm's distance from government on its performance is weaker.

We consider two measures of road infrastructure: 1) the length of existing highways (in kilometers) per capita in a given prefecture, and 2) the number of highway passengers per capita in a given prefecture. Columns 1 and 2 of Table 4 present the results. Consistent with predictions

of the model, the distance effect is weaker when infrastructure is more developed. The interaction terms *Distance x Highway* and *Distance x Passengers* are statistically significant at the 5 percent level or better, and are economically meaningful. An increase of one standard deviation in the length of existing highways per capita (the number of highway passengers per capital) corresponds to a decrease of 24.1% (30.8%) in the effect of distance on firm performance.

Next, we consider the role of the government's capacity. According to the model, when the government has greater capacity, the effect of a firm's distance from government on its performance is weaker.

We consider two measures of government capacity: 1) the number of government staff members per capita in a given prefecture, and 2) the difference between the government's expenditures and revenues, divided by the GDP in a given prefecture. Columns 3 and 4 of Table 4 present the results. Consistent with predictions of the model, the distance effect is weaker when infrastructure is more developed. The interaction term *Distance x Government capacity* is statistically significant at the 5 percent level, and is economically nontrivial. An increase of one standard deviation in the government's capacity (fiscal deficit) corresponds to a decrease of 11.2% (28%) in the effect of distance on firm performance.

Taken together, the results in Table 4 suggest that when road conditions are better or when the government has greater capacity, being farther away from the government is less beneficial. This is so because the costs of field visits and resource expropriations at distant firms drop when roads are better and when government work force is more readily available.

[Insert Table 4 here]

Next, we investigate the role of market and legal system development. According to our model, when the local market is more developed and has a better legal system, the risk of detection is higher, and therefore the effect of a firm's distance from government on its performance is weaker.

To measure development, we use the province-level legal development index compiled by the National Economic Research Institute. This measure has been used in prior studies, such as Wang, Wong and Xia (2008). The development index is the average of four sub-indices: market intermediary development, producer protection, intellectual property rights protection, and consumer protection. The values of the indices range from zero to ten in the base year 2001, with higher scores indicating systems that are more developed. The index values can fall below zero or exceed ten before and after 2001 to reflect progress or retrogression over time. As these indices are not continuous by design, we convert them into four dummy variables that equal one above the median and zero below the median.

Table 5 reports the results. Consistent with our model's predictions, the interaction term *Distance x Developed* is persistently negative across the different indices. The interaction term is statistically significant at conventional levels in 4 of the 5 cases. Based on column 1, which corresponds to the aggregate index of market and legal development, the effect of distance is weaker by 61.3% when development is above median, and this effect is highly statistically significant at the 1% level. Overall, these findings suggest that market and legal development attenuate the effects of involuntary political connections of firm performance.

[Insert Table 5 here]

Finally, we investigate whether the distance effect is weaker during economic downturns by focusing on natural disasters. Our model suggests that following prominent adverse economic shocks, such as natural disasters, that draw the public's attention, the risk of detection is higher, and therefore the effect of a firm's distance from government on its performance is weaker.

According to the Disaster Report of the 1998 Flood (DRF) released by the Chinese Flood Control and Drought Relief Department, the flood disaster in 1998 was the biggest disaster in China since 1961 in terms of the total economic loss and the size of the affected geographic area. The DRF details the damages caused by the flood along several dimensions at the level of each province: the size of the affected area, the number of affected residents, and the total economic loss.

We use the DRF to construct three measures of the severity of the flood in each province: 1) the size of affected area scaled by the local territorial area, 2) the number of affected residents scaled by the overall local population, and 3) the total economic loss scaled by local GDP. For each measure, we sort the sample into two subsamples around the median. *More affected* is a dummy variable that equals one for the top half. Given the magnitude of the 1998 flood disaster in China, we expect its impact to last several years. We therefore define the first half of our sample period, i.e., 1998 to 2002, as the affected period, and the second half as the unaffected period.

Table 6 reports the difference-in-difference regression estimates, where the first difference is between affected and unaffected provinces, and the second difference is between the affected and unaffected period. The triple interaction term *Distance x More affected x*

Affected period measures the incremental effect of distance on firm performance in more severely affected provinces during the affected period.

The results in Table 6 indicate that the effect of distance from government on firm performance was weaker following the 1998 flood in affected regions. This finding is evidenced by the negative coefficient on the triple interaction *Distance x More affected x Affected period*, and is consistent with our model's predictions. This effect is statistically significant at conventional levels across the three province-levels measures of the severity of the flood, and is economically meaningful. In particular, the effect of distance from government on firm performance was 22.6% - 46.1% weaker in affected provinces following the flood disaster.

[Insert Table 6 here]

C. Robustness: Government Office Relocations

Are collective firms special to this distance effect? One may worry that some unique and omitted characteristics of collective firms could drive our results. In other words, can we generalize our results to other types of firms if they are also involuntarily connected with local government?

Selection bias is another potential concern. Probably it raises the threshold to start business if being further away from a political center. As a result, faraway firms are more successful from the beginning and keep earning greater profits than nearby ones.

In addition, operational cost is a confounding factor that we have not ruled out from the previous analysis. Nearby firms may face higher rental and labor costs if government office

happens to be located in the city center. Consequently, nearby firms perform worse than faraway ones.

We attempt to address these concerns by providing auxiliary evidence in a setting where government office relocated. We examine the performance of all types of local firms if government relocation occurs. Our identifying assumption is that in the short window surrounding the relocation, the resulting change in the distance from government of existing firms is exogenous due to the adjustment costs associated with relocating the firm. These analyses do not focus on collective firms, thus demonstrating that our results are not collective firms-specific. In addition, it reduces the concern on selection bias as we look into the change in outcomes of existing firms before and after government relocation. Finally, as government relocation may not directly affect firms' operational cost, the difference in outcomes could only reflect the change in involuntary political connection

During our sample period, 23 prefectures relocated their government offices. We collect the completion year of all office relocations. Since relocations can take a long time, and may start in the year prior to their completion, we use the year prior to the previous year as the pre-relocation year and the year after the relocation completion year as the post-relocation year. Since our control variables are persistent across the post- and pre-relocation years, we investigate the effect of the exogenous change in distance on the change in performance by regressing the latter on the former only using firms with no change in address before and after the relocation.

Table 7 presents the estimates. As we can see, the coefficients of the change in distance are significantly positive throughout all four columns, suggesting that an increase in the distance from the government leads to an improvement in firm performance. These effects are statistically significant at conventional levels and are economically important. An increase of 10% in

distance from government following office relocations corresponds to an increase of 5.2%, 5.8%, 3.8%, and 3.5% in OPOA, OPOE, ROA, and ROE, respectively. The results thus provide consistent evidence for the adverse effect of involuntary political connections on general firms.

[Insert Table 7 here]

4. Economic Mechanisms: Evidence from the World Bank Survey

In this section, we provide direct evidence on the economic channels through which involuntary political connections operate. We compare firms' survey responses across collective firms to explore how their distance from local government affects their interactions with government officials. We explore the role of involuntary political connections along several dimensions, including government interventions in firms' production, investment, and employment decisions, tax policies, and product market competition.

A. Data Description

The data come from the 2005 Investment Climate Survey (ICS) conducted by the World Bank. This survey covers 12,400 establishments across all industries and cities in China. By interviewing managers and owners face to face, the 2005 ICS collected comprehensive information about the day-to-day operations of firms and managers in China. In addition to standard firm-level indicators, the survey includes managers' and owners' answers to questions that the firm's accounting records do not address. Most important for our study, the survey asks direct questions about the relationship between the firm and the government. It also includes questions about potential factors impeding firm growth, customer-supplier relationships, labor,

social security, infrastructure, financing, and the interactions between top management and the board of directors.

We identify collective firms in the ICS dataset based on their ownership structure, following the same approach that we used to identify collective firms in the Census data. Since the survey does not disclose firms' identities, we do not know the exact address of each firm. However, the survey does provide the unique district code where each firm is located. We use the coordinates of the district centroid as a proxy for the firm's location, and follow the same approach as before to calculate the distance between the firm and the local government. Our final sample includes 1,021 collective firms from 28 industries and 114 cities in China.

Table 8 provides summary statistics for the variables used in our analysis. The mean distance between the firm and the local government is 25 kilometers. There is substantial variation in distance: the standard deviation of distance is 26 kilometers. The inter-quartile range between Q1 and Q3 (25th and 75th percentiles) is 38 kilometers. The average firm has positive total-profit-to-total-sales ratio of 1 % and is 13.0 ($=e^{2.562}$) years old. As Table 8 shows, the variation in firm-level characteristics in the ICS dataset is substantial and similar to the distribution we observed in the Census data (see Table 1).

[Insert Table 8 here]

B. Results

We first verify that our finding that distance from government improves firm performance continues to hold in the sample of collective firms surveyed by the World Bank. These results

are reported in Table 9. The analysis focuses on firm performance in 2004, the year immediately preceding the survey year, 2005.

We measure the firm's performance using its profit margin, defined as the ratio of total profit to total sales, because the survey dataset does not contain sufficient data to calculate the same measures of operating performance that we used in our previous analyses. The regressions control for the firm's age and fixed assets, and include prefecture fixed effects to absorb the unobservable heterogeneity across regions in China. We cluster the standard errors by industry.

Consistent with the previous findings, Table 9 shows that distant firms outperform nearby firms. The distance effect is highly statistically significant at the 5% level and is economically important. An increase of 10 kilometers in a firm's distance from local government enhances its profit margin by 73 bps. We therefore conclude that the negative effect of being close to the local government holds robustly in the sample of surveyed collective firms, and devote the remainder of the analyses to investigating the mechanisms through which the local government erodes firm performance.

[Insert Table 9 here]

The survey provides direct evidence, based on managers' responses, on the interactions between the firm and the local government. We start by analyzing the response to the following question: "How much autonomy does the general manager has over the production, investment,

and employment?” To analyze the responses, we construct an indicator variable that equals 1 if the answer is 100% (full autonomy) and 0 otherwise.⁵

The results are reported in Table 10. We find that distance from government increases the firm’s autonomy in its production, investment, and employment. The coefficients on *Distance* are positive and of similar magnitude across the different measures of autonomy, albeit they are only marginally statistically significant in one specification and are insignificant in the other two specifications. Overall, these results are consistent with the hypothesis that the government is less likely to intervene in the decisions and policies of more distant firms. These firms are therefore able to operate more efficiently and generate higher profit margins.

[Insert Table 10 here]

The survey also provides evidence on the obstacles to conducting business that managers report. We study four factors potentially impeding firms’ growth that are related to government interventions: tax administration, customs, local protectionism, and anti-competitive behavior. The rating ranges from 0 for “no obstacles”, to 4 for “very high impeding”.

Table 11 reports the regression estimates. The findings suggest that nearby firms are more sensitive to these obstacles than faraway firms. In particular, the adverse effect of taxes, customs, local protectionism, and anti-competitive behaviors are weaker for distant firms, and these findings are highly statistically significant at the 5% level and are economically meaningful. An increase of one standard deviation in the distance between the firm and the local government

⁵ There survey allows respondent to choose among eight autonomy levels. However, about 50% of the respondents selected level 8 (100%). We therefore classify level 8 (100% autonomy) as the full autonomy, and all other levels as partial autonomy.

reduces the impeding effects of tax administration by 0.09, of customs policies by 0.05, of local protectionism by 0.1, and of anti-competitive behaviors by 0.11 points.

Taken together, these results suggest that involuntary political connections hurt firm performance through the inefficiencies that arise from the local government's tax policies and its influence on product market competition.

[Insert Table 11 here]

Lastly, in Table 12, we investigate the day-to-day interactions between firms and the government on various issues, including taxation, public security, environment, and labor and social. The survey includes three related questions about each set of interactions: relationship with the government (rated from 1 for "bad" to 5 for "very good"), total days of interactions, and the percent of the government officials who contribute to the development of the company.

The results in Table 12 suggest that across all these interactions, distant firms maintain a better relationship with the government than nearby firms do. Distant firms acknowledge the positive contribution of government officials to their growth. Furthermore, distant firms spend fewer days on interactions with the government.

Finally, in Panel E of Table 12, interviewers ask firms whether they "have specialized staff to handle government relationships". By regressing their answers on the distance and controlling for firm age and fixed assets, we find that distant firms are apt to appoint specific manpower to deal with the government

Taken together, the evidence presented in Table 12 supports the hypothesis that distant firms enjoy a better relationship with the government along multiple dimensions. They perceive

the government as playing a more positive role, spend less time on interactions with government officials, and economize on the labor costs associated with such interactions.

[Insert Table 12 here]

5. Conclusion

We study how involuntary political connections affect the performance of firms. Using variation in the exogenously determined distance between firms and prefectural governments in China, we find that distant firms outperform nearby firms. The effects are stronger when the government is smaller, when the market and legal systems and local infrastructure are less developed. We explore several channels through which the variation in involuntary connections may affect firm performance, and find evidence consistent with autonomy, tax policies, and anti-competitive behavior.

While most research on political connections has focused on active political connections such as board appointments, lobbying, and campaign contributions, our evidence shows that involuntary political connections that are not initiated by the firm have an important effect on firm performance. Our findings suggest that further analysis of this different type of political connections, possibly in other countries, can improve our understanding of the multifaceted role that the government plays in corporations.

Our findings have important implications because even though most firms are not politically active, they still have varying degrees of involuntary, passive political connections. While we focus on the effect of involuntary connections on firm performance, these connections could also influence many other firm policies and attributes, such as the firm's investment decisions and financing choices.

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Appendix A. Variables Definition

Variable	Definition
Distance	Distance from a firm to the office address of its local government at prefecture level in kilometers divided by 1000.
OPOA	Operating income divided by total assets.
OPOE	Operating income divided by total equity.
ROA	Net income divided by total assets.
ROE	Net income divided by total equity.
Leverage	Total liabilities divided by total assets.
Size	Natural logarithm of total assets.
Age	Natural logarithm of the number of years since a firm was established.
Highway	The length of high way in kilometers per one million population in a given prefecture.
Passenger	The number of passengers travelling by high way per 100 person in a given prefecture.
Government capacity	The number of government staffs per 1 million populations in a given prefecture.
Fiscal deficit	The ratio of fiscal expenditure minus fiscal revenue divided by GDP in a given prefecture.
Legal development	The average of four sub-indices: market intermediary development, producer protection, intellectual property rights protection and consumer protection. The higher the value the stronger the legal environment.
Market intermediary development	An index measuring the development of law firms and auditing firms in a given province based on the number of lawyers and accountants scaled by local population. The higher the value the more the market intermediary development.
Producer protection	An index measuring the court's efficiency in resolving legal cases based on enterprise surveys. The higher the value the stronger the producer protection.
Intellectual property rights protection	An index measuring intellectual property rights protection based on two aspects: the ratio of R&D researchers divided by local population and the number of patents per R&D researcher. The higher the value the stronger the producer protection.
Consumer protection	An index measuring consumer protection based on the number of consumer complaints received by local Consumer Association scaled by local GDP. The higher the value the stronger the consumer protection.
Affected area	The ratio of the size of affected area in 1998 flood disaster scaled by local territorial area
Affected population	The ratio of the number of affected population 1998 flood disaster scaled by local population in 1998.
Economic loss	The ratio of total economic loss due to 1998 flood disaster scaled by local GDP.
Fixed assets	Natural logarithm of fixed assets in thousand yuan.

Table 1. Summary Statistics

This table presents the summary statistics. All of the variables are defined in Appendix A.

Variable	Mean	S.D.	Q1	Q2	Q3
Distance	0.032	0.028	0.009	0.026	0.047
OPOA	0.099	0.203	0.001	0.032	0.117
OPOE	0.275	0.715	0.006	0.098	0.323
ROA	0.097	0.186	0.003	0.034	0.118
ROE	0.264	0.613	0.012	0.104	0.323
Leverage	0.609	0.293	0.405	0.618	0.809
Size	9.616	1.210	8.784	9.524	10.347
Age	2.441	0.795	1.946	2.485	2.996
Highway	0.134	0.089	0.078	0.101	0.162
Passenger	0.207	0.157	0.097	0.151	0.290
Government capacity	3.114	0.587	2.691	3.013	3.418
Deficit	0.027	0.027	0.010	0.021	0.038
Legal development	5.079	2.547	3.200	4.380	6.350
Market intermediary development	3.032	2.042	1.390	2.200	4.660
Producer protection	4.363	2.058	2.840	4.120	5.920
Intellectual property rights protection	5.488	6.150	1.320	3.030	7.640
Consumer protection	7.819	1.973	6.600	8.130	9.410
Affected area	0.042	0.030	0.022	0.040	0.044
Affected population	0.099	0.096	0.045	0.091	0.102
Economic loss	0.025	0.043	0.006	0.011	0.012

Table 2. Univariate Test

This table presents the univariate test with Panels A and B for means and medians, respectively. All firms in the sample are split into three groups by the geographic distance between firms and local governments. All of the variables are defined in Appendix A. The p-values are reported in parentheses.

	1 (nearest)	2	3 (farthest)	Diff = (3) - (1)	Diff / (1)	
Panel A. mean						
OPOA	0.080	0.102	0.116	0.036 (0.000)	0.451	
OPOE	0.230	0.272	0.327	0.097 (0.000)	0.423	
ROA	0.080	0.099	0.113	0.033 (0.000)	0.412	
ROE	0.225	0.260	0.312	0.087 (0.000)	0.386	
Panel B2. median						
OPOA	0.022	0.034	0.041	0.019 (0.000)	0.842	
OPOE	0.076	0.102	0.122	0.046 (0.000)	0.601	
ROA	0.024	0.037	0.044	0.020 (0.000)	0.808	
ROE	0.082	0.109	0.128	0.046 (0.000)	0.564	

Table 3. Baseline Regression Results

This table reports the effect of distance on firm performance with Columns (1) to (4) using OPOA, OPOE, ROA and ROE as the dependent variable, respectively. All of the variables are defined in Appendix A. Industry-year and prefecture fixed effects are included in all of the columns. The t-statistics calculated with robust standard errors clustered at the firm and prefecture level (two-way clustering) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively

	OPOA	OPOE	ROA	ROE
	(1)	(2)	(3)	(4)
Distance	0.452*** (3.733)	1.308*** (4.028)	0.413*** (3.604)	1.193*** (4.122)
Leverage	-0.151*** (-15.902)	0.209*** (9.659)	-0.150*** (-16.563)	0.178*** (9.528)
Size	-0.027*** (-8.030)	-0.073*** (-7.511)	-0.025*** (-7.828)	-0.065*** (-7.401)
Age	-0.006*** (-3.409)	-0.028*** (-5.558)	-0.006*** (-3.721)	-0.029*** (-6.276)
Constant	0.597*** (20.248)	1.491*** (15.562)	0.567*** (20.906)	1.350*** (17.321)
Industry-year, prefecture FE	Yes	Yes	Yes	Yes
Observations	146,839	146,514	146,839	146,514
Adjusted R-squared	0.330	0.130	0.342	0.138

Table 4. The Role of Transportation Infrastructure, Government Capacity, and Fiscal Condition

This table investigates how transportation infrastructure and government characteristics mediate the effect of distance on firm performance, which is defined as operating income divided by total assets (OPOA). *Highway* is defined as the number of kilometers of highway per 1 million population. *Passenger* is measured as the number of passengers traveled by high way per 100 persons. *Government capacity* is defined as the number of government employees per 1 million population. *Fiscal deficit* is measured as the ratio of fiscal expenditure minus fiscal revenue divided by GDP. All these four variables are all defined at prefecture level. All of the variables are defined in Appendix A. Industry-year and prefecture fixed effects are included in all of the columns. The t-statistics calculated with robust standard errors clustered at the firm and prefecture level (two-way clustering) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Distance	0.789*** (4.542)	0.680*** (4.008)	1.140*** (2.732)	0.687*** (3.716)
Distance * Highway	-2.145*** (-3.724)			
Highway	0.117** (1.988)			
Distance * Passenger		-1.328** (-2.447)		
Passenger		-0.026 (-0.461)		
Distance * Government capacity			-0.218** (-2.038)	
Government capacity			0.014* (1.952)	
Distance * Fiscal deficit				-7.032*** (-2.756)
Fiscal deficit				0.151 (1.449)
Leverage	-0.151*** (-15.911)	-0.151*** (-15.976)	-0.151*** (-15.944)	-0.151*** (-15.988)
Size	-0.026*** (-8.113)	-0.026*** (-8.041)	-0.026*** (-8.044)	-0.026*** (-8.051)
Age	-0.006*** (-3.376)	-0.006*** (-3.378)	-0.006*** (-3.391)	-0.006*** (-3.435)
Constant	0.583*** (20.159)	0.594*** (20.015)	0.555*** (19.985)	0.589*** (21.076)
Industry-year, prefecture FE	Yes	Yes	Yes	Yes
Observations	146,839	146,839	146,839	146,839
Adjusted R-squared	0.331	0.331	0.331	0.331

Table 5. The Role of Legal System

This table investigates how legal development mediates the effect of distance on firm performance, which is defined as operating income divided by total assets (OPOA). In Column (1), the sorting variable is the overall market and legal development, which is a combined index constructed from four dimensions: market intermediary development, producer protection, intellectual property rights protection and consumer protection. In Columns (2) to (5), we use one of above four dimensions as the sorting variables for each column. For each sorting variable, we split the sample by median and set *Better Legal* at one for the top half and zero for the bottom half. All of the variables are defined in Appendix A. Industry-year and prefecture fixed effects are included in all of the columns. The t-statistics calculated with robust standard errors clustered at the firm and prefecture level (two-way clustering) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Overall Development	Market Intermediary Development	Producer Protection	Intellectual Property Rights	Consumer Protection
	(1)	(2)	(3)	(4)	(5)
Distance	0.580*** (4.429)	0.570*** (3.588)	0.523*** (4.769)	0.532*** (4.117)	0.643*** (3.900)
Distance * Developed	-0.356*** (-2.759)	-0.344** (-2.041)	-0.182 (-1.351)	-0.218* (-1.795)	-0.497*** (-2.844)
Better Legal	0.015** (2.111)	0.012* (1.743)	0.012** (2.478)	-0.003 (-0.480)	-0.020** (-2.120)
Leverage	-0.153*** (-15.784)	-0.153*** (-15.873)	-0.153*** (-15.749)	-0.153*** (-15.769)	-0.153*** (-16.130)
Size	-0.026*** (-8.089)	-0.027*** (-8.050)	-0.026*** (-8.030)	-0.026*** (-8.064)	-0.027*** (-8.051)
Age	-0.006*** (-3.570)	-0.006*** (-3.534)	-0.006*** (-3.574)	-0.006*** (-3.634)	-0.006*** (-3.484)
Constant	0.709*** (20.999)	0.711*** (20.895)	0.711*** (20.781)	0.711*** (20.602)	0.692*** (21.599)
Industry-year, prefecture FE	Yes	Yes	Yes	Yes	Yes
Observations	146,839	146,839	146,839	146,839	146,839
Adjusted R-squared	0.323	0.323	0.323	0.323	0.326

Table 6. The Historical Flood Disaster in 1998

This table investigates how the historical flood disaster in 1998 mediates the effect of distance on firm performance, which is defined as operating income divided by total assets (OPOA). The severity of the flood disaster is measured from three perspectives: the size of affected area scaled by local territorial area, the number of affected population scaled by local population and total economic loss scaled by local GDP. All these three variables are all defined at province level. For each proxy of severity, we sort the sample by median and set *More affected* at one for the top half and zero for the bottom half. *Affected period* is set at one for the first half period during our sample and zero for the rest years. *More affected* and *Affected period* are absorbed by industry-year and prefecture fixed effect. All of the variables are defined in Appendix A. Industry-year and prefecture fixed effects are included in all of the columns. The t-statistics calculated with robust standard errors clustered at the firm and prefecture level (two-way clustering) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Affected area	Affected population	Economic loss
	(1)	(2)	(3)
Distance	0.540*** (2.961)	0.822*** (4.369)	0.826*** (4.381)
Distance * More affected * Affected period	-0.249* (-1.905)	-0.185** (-2.257)	-0.182** (-2.220)
Distance * More affected	-0.121 (-0.520)	-0.713*** (-3.346)	-0.720*** (-3.370)
More affected * Affected period	-0.010 (-0.843)	0.032*** (3.085)	0.032*** (3.073)
Leverage	-0.153*** (-15.913)	-0.152*** (-16.175)	-0.152*** (-16.185)
Size	-0.027*** (-8.143)	-0.027*** (-8.071)	-0.027*** (-8.072)
Age	-0.006*** (-3.600)	-0.006*** (-3.385)	-0.006*** (-3.387)
Constant	0.714*** (20.544)	0.697*** (21.199)	0.697*** (21.210)
Industry-year, prefecture FE	Yes	Yes	Yes
Observations	146,839	146,839	146,839
Adjusted R-squared	0.323	0.326	0.326

Table 7. Government Office Relocation

This table presents the effect of the change in distance between firms and government on the change of firm performance from before to after the government office relocation. The pre-relocation period is defined as two-year before the relocation year and post-relocation period is defined as one year after the relocation. Columns (1) to (4) report the estimates using the change in OPOA, OPOE, ROA and ROE as the dependent variable, respectively. Δ Distance is the change in the distance between firms and government from before to after the relocation. All of the variables are defined in Appendix A. Industry-year and prefecture fixed effects are included in all of the columns. The t-statistics calculated with robust standard errors clustered at the firm and prefecture level (two-way clustering) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Δ OPOA	Δ OPOE	Δ ROA	Δ ROE
	(1)	(2)	(3)	(4)
Δ Distance	1.598*** (3.473)	4.930*** (4.341)	1.142* (1.946)	2.905** (2.098)
Constant	0.020 (0.983)	-0.037 (-0.256)	0.020 (0.732)	0.119 (0.774)
Industry-year, prefecture FE	Yes	Yes	Yes	Yes
Observations	4,669	4,613	4,693	4,621
Adjusted R-squared	0.037	0.021	0.028	0.015

Table 8. Summary Statistics for the World Bank Survey Data

This table presents the summary statistics for the World Bank Survey data

Variable	Mean	S.D.	Q1	Q2	Q3
Distance	0.025	0.026	0.003	0.015	0.041
Total profit/Total sales	0.010	0.240	-0.000	0.015	0.059
Age	2.562	0.627	2.197	2.565	3.045
Fixed asset	8.457	1.760	7.113	8.464	9.787

Table 9: Performance and Distance from the World Bank Survey

This table presents coefficient estimates from regressing the ratio of total profit to total sales in 2004 on the distance between the firm and local government and control variables including firm age and fixed assets. Industry and prefecture fixed effects are included, and *t*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Total profit/Total sales
Distance	0.727** (2.048)
Age	-0.026** (-2.199)
Fixed Asset	0.005 (1.064)
Constant	0.003 (0.008)
Prefecture FE	Yes
Industry FE	Yes
Observations	1021
Adjusted R-squared	0.175

Table 10: Firm Autonomy

This table presents coefficient estimates from regressing the index of firm autonomy (1 if full autonomy and 0 otherwise) on the distance between the firm and local government and control variables including firm age and fixed assets. Three aspects of firm autonomy are examined in three columns respectively: production, investment, and employment autonomy. Industry and prefecture fixed effects are included in all of the columns, and *t*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Production autonomy	Investment autonomy	Employment autonomy
	(1)	(2)	(3)
Distance	1.213*	1.165	0.888
	(1.694)	(1.498)	(1.202)
Age	0.014	-0.031	-0.020
	(0.600)	(-1.167)	(-0.824)
Fixed Asset	-0.008	-0.008	-0.014
	(-0.885)	(-0.810)	(-1.473)
Constant	1.019	0.575	0.309
	(1.593)	(0.825)	(0.469)
Prefecture FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	1012	1012	1011
Adjusted R-squared	0.060	0.075	0.085

Table 11: Impeding Factors

This table presents coefficient estimates from regressing impeding factors (the rating ranges from 0 for “no obstacles”, to 4 for “very high impeding”) on the distance between the firm and local government and control variables including firm age and fixed assets. Impeding factors include tax administration, customs, local protectionism, and anti-competition behaviors (from Column 1 to 4). Industry and prefecture fixed effects are included in all of the columns, and t-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Tax Administration	Customs	Local protectionism	Anti-competitive behaviors
	(1)	(2)	(3)	(4)
Distance	-3.562** (-2.510)	-1.809** (-2.581)	-3.730*** (-2.877)	-4.050** (-2.378)
Age	0.010 (0.218)	-0.024 (-1.036)	-0.045 (-1.040)	-0.019 (-0.331)
Fixed Asset	0.062*** (3.318)	0.033*** (3.548)	0.044*** (2.583)	0.041* (1.829)
Constant	-0.432 (-0.327)	2.148*** (3.289)	0.784 (0.649)	3.723** (2.348)
Prefecture FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	1021	1021	1021	1021
Adjusted R-squared	0.088	0.106	0.048	0.116

Table 12: Interaction with the Government

Panels A to D of this table present coefficient estimates from regressing the interactions between firms and government departments including taxation (Panel A), public security (Panel B), environment (Panel C), and labor and social (Panel D) on the distance between the firm and local government. Three aspects of interactions are examined: relationship (Column 1) with the department (rated from 1 for “bad” and 5 for “very good”), total days of interactions (Column 2), and the percent of the officials in the department who contribute to the development of the company (Column 3). Panel E presents coefficient estimate from regressing the dummy variable of whether the firm has specialized staff to handle government relationships or not on the distance between the firm and local government. Control variables include firm age and fixed assets. Industry and prefecture fixed effects are included in all of the columns, and *t*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Relationship	Days	Contribution
	(1)	(2)	(3)
		Panel A: Tax	
Distance	3.751** (2.241)	-82.960** (-2.119)	76.650 (1.448)
Age	-0.102* (-1.845)	-1.444 (-1.115)	-3.171* (-1.811)
Fixed Asset	0.040* (1.810)	1.217** (2.362)	0.482 (0.690)
Constant	1.123 (0.759)	39.330 (1.095)	5.597 (0.123)
Prefecture FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	1009	1008	985
Adjusted R-squared	0.099	0.102	0.371
		Panel B: Public Security	
Distance	4.260** (2.413)	-11.701 (-0.600)	63.113 (1.183)
Age	-0.100* (-1.708)	0.713 (1.094)	-3.575** (-2.017)
Fixed Asset	0.060** (2.484)	0.765*** (2.878)	0.852 (1.180)
Constant	-0.039 (-0.024)	1.996 (0.120)	-1.594 (-0.034)
Prefecture FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	938	937	916
Adjusted R-squared	0.138	0.022	0.383

Table 12: Interaction with Government (Continued)

	Relationship	Days	Contribution
	(1)	(2)	(3)
Panel C: Environment			
Distance	5.273*** (2.966)	4.717 (0.242)	116.413** (2.155)
Age	-0.075 (-1.266)	-0.111 (-0.171)	-2.339 (-1.305)
Fixed Asset	0.071*** (2.979)	1.374*** (5.223)	0.866 (1.195)
Constant	4.434*** (2.853)	-14.250 (-0.837)	7.469 (0.155)
Prefecture FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	965	964	940
Adjusted R-squared	0.105	0.071	0.364
Panel D: Labor and social			
Distance	3.590** (2.058)	-84.941*** (-3.163)	67.883 (1.274)
Age	-0.078 (-1.347)	1.815** (2.025)	-2.167 (-1.219)
Fixed Asset	0.055** (2.366)	1.657*** (4.580)	0.676 (0.944)
Constant	2.163 (1.428)	-27.880 (-1.133)	24.170 (0.529)
Prefecture FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	981	980	958
Adjusted R-squared	0.089	0.065	0.372
Panel E: If have specialized staff to handle government relationships (1) Yes (2) No			
Distance		2.105*** (3.241)	
Age		0.015 (0.689)	
Fixed Asset		-0.022*** (-2.610)	
Constant		2.358*** (3.900)	
Prefecture FE		Yes	
Industry FE		Yes	
Observations		1021	
Adjusted R-squared		0.058	