



How revolving-door recruitment makes firms stand out in land market: Evidence from China

Shenghua Lu^{a,b}, Hui Wang^{a,*}

^a School of Public Affairs, Zhejiang University, PR China

^b Faculty of Law, The University of Hong Kong, Hong Kong, PR China

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ABSTRACT

The fact that firms seek political connections through revolving-door recruitment is widely acknowledged around the world. Using an original database including the information of listed firms' board members and parcel-level land transaction records, this paper documents how revolving-door recruitment makes firms stand out in China's land market. We show that firms with revolving-door recruitment receive special deals in land transactions, which are simultaneously reflected in the quantity and price of land. Specifically, connected firms buy more parcels and larger areas of land in the primary land market. Due to the particularity of industrial land, price discounts are only identified for commercial and residential land, while not for industrial land. Measuring economic activity by night light intensity, we find no evidence that land transaction under the influence of political connections has a negative impact on economic activity on land. Our research advances the understanding that the state-business relationship is an essential factor in resource allocation in an emerging market with government intervention.

1. Introduction

Revolving-door recruitment, in which firms recruit incumbent or retired officials, is a pervasive phenomenon around the world (Blanes i Vidal & Fons-Rosen, 2012; Faccio, 2006; Khwaja & Mian, 2011). Firms that establish political connections through revolving door recruitment tend to receive various benefits and advantages which their counterparts without connections do not have. A growing literature explores how revolving-door recruitment can provide firms with preferential access to government-controlled or government-influenced resources, such as bank credit, government subsidies, and government contracts (Fan, Wong, & Zhang, 2007; Goldman, Rocholl, & So, 2013; Liu, Tang, & Tian, 2013). Political connections can even play a role in lowering firms' labor costs (Chizema, Liu, Lu, & Gao, 2015; Wei, Hu, & Chen, 2020). These advantages and privileged access to economic resources, in turn, lead to better firm performance and bring more superior returns in capital market (Cooper, Gulen, & Ovtchinnikov, 2010; Li, Meng, Wang, & Zhou, 2008). However, while it is considered as one of the three most important production factors in classical economics, land is rarely discussed in literature on political connections. One reason for this omission might be that land is generally privately owned, and in most countries, individuals can trade land freely in the market (Galiani & Scharfgrudsky, 2011). In regimes that have private ownership of land, although governments can designate land uses through zoning and land use regulation, they have less power to directly intervene in the land market.

In contrast, China's land market provides an ideal institutional background to test how far political connections through revolving-

* Corresponding author at: No. 866, Yuhang Tang Road, Hangzhou, Zhejiang 310058, PR China.

E-mail addresses: lushenghua@zju.edu.cn (S. Lu), wanghuidn@zju.edu.cn (H. Wang).

door recruitment can affect the allocation of land resources. As the state owns urban land in China, county and city governments monopolize the primary land market. This institutional background provides local governments with full discretion to control the allocation of scarce land resources. The literature indicates that governments strategically intervene in the land market to cater to their political and fiscal incentives (Han & Kung, 2015; Lu, Yao, & Wang, 2021). Although waves of land marketization have been seen in China in recent years (Lu, Jiang, & Gong, 2020; Yuan, Wei, & Xiao, 2019), local governments can still select land buyers by setting exclusive restrictions to prevent all but those who are favored to participate in an auction or by manipulating the transaction process in favor of a bidding partner (Lian, Li, & Ko, 2019). Meanwhile, local officials, who face limited institutional constraints, have the final say on many public affairs under one-party rule, such as taxation, land development, and government procurement (Chen & Kung, 2016; Guo, 2009; Lü & Landry, 2014; Lu & Wang, 2022a). As such, firms that have *jurisdiction-specific* political connections due to their having recruited former officials, may receive preferential treatment in the primary land market.

By matching board members and high-level executives at publicly listed firms and land transaction data, we build an original database constituted by the firm-jurisdiction-year dyads to test the effect of jurisdiction-specified political connections. Using a specification that controls multi-dimensional fixed effects, our empirical results show that connected firms receive larger quantities of land than their unconnected counterparts. Preferential access to land resources is found for both industrial land and commercial/residential land. Although we also identify price discounts, we find that these discounts are only significant for commercial and residential land but not for industrial land. These results indicate that while firms with political connections receive special deals in land market, the favors received are heterogeneous, depending on land usage.

Furthermore, as noted in previous studies, economic resources, such as labor resources, land, and bank loans, are misallocated due to government intervention (Huang & Du, 2017a; Shenoy, 2017). Therefore, we also discuss how the allocation of land resources under the influence of political connections affects economic activity on land, which is measured by a novel indicator, i.e., night light intensity. In opposition to the conventional wisdom, which holds that allocating resources in a non-market-oriented way inevitably leads to misallocation, our empirical results find no evidence that revolving-door recruitment has a negative impact on economic activity on land.

Our paper makes several contributions to the literature. First, we provide two main contributions to the body of literature on the influence of political connections in markets. On the one hand, previous studies usually measure the political connections by whether a firm has recruited incumbent or retired officials but overlook the precise working experience of these officials (Li, Li, Wang, & Si, 2021; Tao, Sun, Zhu, & Yang, 2017; Wu & Yang, 2020). However, the influence of local officials is usually jurisdiction-specified. This means that an official working in city A generally has little influence in the public affairs of city B. Therefore, it is essential to clarify the effect of the political connections on the firms-jurisdictions dyadic level. On the other hand, our work is one of a few studies that focus on the effect of political connections on land resource allocation. From this perspective, the research most related to ours is Chen, Xie, Han, and Kung (2016), who find local officials and listed firms are “trading favors” in land market: Local officials provide price discounts for firms, and firms reward officials with future recruitment and high salaries. Unlike that work, we document that there are not only preferential treatments in land price but also in land quantity. We also document the heterogeneous effects on different types of land use and find that price discounts are not pervasive. Due to the already low price of industrial land and the institutional restrictions placed by the central government, local officials cannot provide significant price discounts on industrial land. This paper provides evidence that the price discounts from revolving-door recruitment in China are only significant on commercial and residential land.

The second contribution is that we bring a novel perspective to understand land development in China. In recent decades, most studies have investigated land governance and land development from the incentive and behavior of local governments (Lu & Wang, 2020; Tian & Ma, 2009). Perspectives considering the development of land for economic growth and the development of land for fiscal revenue have received particular attention (Shu, Xie, Jiang, & Chen, 2018). While we agree that local governments and local officials are critical players in land development, it is worth noting that the land market could not function without the participation of enterprises. This means that bringing the enterprises back and revealing the interaction between enterprises and governments are essential for a complete portrait of the operation of land market. Using publicly listed firms and their board members as samples, our work seeks to disentangle the importance of government-business relations in an emerging and immature land market.

Third, we contribute to a core issue in political economy, namely, whether political connections can lead to resource misallocation. Much previous work has noted that political connections lead to the distortion of economic resources, such as the availability of credit, industry funds, and government subsidies (Banerjee & Moll, 2010; He, Wang, & Zhang, 2020; Huneus & Kim, 2018). However, other streams of literature argue that political connections could improve the economic efficiency of resources. For example, Chen, Liu, and Su (2013) find that the connections formed by bribery act like a lubricant, which greases the wheels of bank lending and improves the efficiency of credit allocation. To the best of our knowledge, no work has studied how political connections affect economic activity on land, partly due to the difficulty in choosing a proper measurement. Using the novel indicator of night light intensity to measure economic activity, our work fills this gap.

The remainder of this paper is organized as follows. Section 2 introduces the background for revolving-door recruitment in the listed firms and gives an overall picture of China’s land market. Following the theoretical analysis, research hypotheses are proposed. Section 3 presents the method and data we use to test the hypotheses. The empirical results are presented in section 4. Section 5 discusses the results and concludes the paper.

2. Background and hypothesis

2.1. Revolving-door recruitment in China

Revolving-door recruitment refers to the worldwide phenomenon whereby incumbent or retired officials hold positions as board members or high-level executives in firms. At the end of the last century, during a period of rapid growth for the market economy, many Chinese officials chose to apply to “suspending wages but keeping position” (*tingxin liuzhi*) or even resigned from the government to devote themselves to business (known as *xiahai*) (Huang & Chen, 2016; Li, 1998).¹ This represents the earliest pattern of revolving-door in contemporary China. Since the beginning of the twenty-first century, however, due to the increasingly strict regulations on officials doing business, a different type of revolving-door had emerged. According to this pattern, officials are employed by firms and become directors or executives after leaving their leadership position (usually after retiring). Given the enormous public-private wage gap in China (Démurger, Li, & Yang, 2012), officials may earn more money through revolving-door recruitment than before leaving office. Pecuniary incentives for officials are an important way in which the revolving-door recruitment functions (Li, 2021).

While officials can receive significant monetary rewards, the firms that hire them also receive tremendous benefits. First, officials who have significant working experience in government have better knowledge of government policies and public affairs. Their professional advice can allow firms to avoid the risks caused by potential policy uncertainty (Liu, Hu, & Cheng, 2021; Pham, 2019). Second, the *guanxi* brought into the firm through revolving-door recruitment can directly help firms obtain scarce economic resources.² In China, even after officials have left office, their influence continues through their personal networks for an extended period (Lawrence & Martin, 2013; Shih, Shan, & Liu, 2010). Consequently, the political connections that become available through revolving-door recruitment are considered helpful in accessing financial resources (Cull & Xu, 2005; Fan et al., 2007; Piotroski & Zhang, 2014), receiving government subsidies (Li et al., 2021), and obtaining tax abatement (Tsai, Liu, & Liu, 2021; Wu, Wu, Zhou, & Wu, 2012). Moreover, due to the protection provided by political connections, firms can even evade government oversight and costly mandatory compliance (Chizema et al., 2015; Kato & Long, 2006). Through this preferential treatment, politically connected firms can perform better and receive greater returns on assets in the capital market (Hung, Jiang, Liu, Tu, & Wang, 2017). In short, it has been evident that revolving-door recruitment leads to a win-win situation for both officials and firms.

2.2. Land market and government intervention

China's land ownership is unique. In this system, urban land is owned by the state, and rural land is owned by rural collectives. In this arrangement, the flow of land factor between rural and urban is state-controlled and unidirectional. That is, rural land can be converted into urban land through land expropriation, in which the land location, expropriation time, and compensation for land lost to farmers are almost entirely determined by local governments (Wang, Tan, Yang, Lin, & Zhang, 2019). While rural construction land does not enter into a unified market,³ an institutionalized and state-endorsed market does exist for urban construction land,⁴ which lays the foundation for the capitalization of urban land. Given that the state owns urban land, it is not the land ownership being traded in the land market. Instead, drawing on the Hong Kong land leasing system, it is the use rights of urban land transacted, which is termed “land transfer.” Most commonly, land transfers take place between landowners, namely, the state as represented by local government,⁵ and the private land developers. This market is called the primary land market, in which private land developers pay land transfer fees to local governments to acquire decades of land use rights.⁶ Private land developers must pay land value-added tax, deed tax, and land use tax, which are very low compared to the land transfer fees. In addition to the primary market, there is also a secondary land market, in which land use rights transactions take place between private land developers. By law, land transactions in the secondary market also require approval and certification from the government, in which process the transaction will be charged with a tax of around 5% of the total transaction price. This paper mainly focuses on urban land transfers in the primary market.

From the standpoint of local governments, the primary land market provides a continuous source of fiscal revenue. After the land bank system was established in the late 1990s, other organizations, such as state-owned enterprises and universities were no longer allowed to transfer land, leaving local governments the only monopolist in primary land market (Zhu, 1999). In the land bank system, all types of urban construction land, including newly expropriated rural land (known as incremental land, mainly source), idle urban

¹ “Suspending wages but keeping position” is a wide phenomenon that governments allow officials to leave their positions and stop paying their wages during the leaving period. However, the ranks of officials are reserved, which means these officials can return to their original positions and enjoy the same wages.

² *Guanxi* refers to the system of social networks and influential relationships that facilitate business and other dealings.

³ Rural construction land is mainly composed by homestead land, which is distributed based on village collective membership and is strictly prohibited to be transferred to non-village residents.

⁴ Construction land is a classification opposed to agricultural land. According to the Land Management Law, all land in China could be classified as construction land, agricultural land, and unused land (e.g., desert). Industrial land, commercial land, and residential land to be mentioned below are sub-categories of construction land.

⁵ The local government could either be prefecture government or county government, depending on whether the land to be transferred is located in the urban districts or the county. Land located in county jurisdiction is transferred by county governments. And land located in urban districts is transferred by prefecture governments.

⁶ The terms of land use rights are determined by land use. For industrial land, the term is 50 years. For commercial and residential land, the term is 40 and 70 years, respectively.

land, and stock urban construction land are reserved in the land bank. When a local government launches a parcel of land from the land bank for transfer,⁷ it can choose market-oriented transfer methods (listing, auction, or tender) or non-market-oriented methods (agreement or assignment). Assignment is an exceptional method through which land use rights are allocated for free to the public sector for medical use, education, or other public purposes. In the agreement method, land price is determined in a private negotiation between local governments and land developers, which produces an underestimation of the value of the land and is often accompanied by corruption (Cai, Henderson, & Zhang, 2013). In market-oriented methods, local governments set an initial bid and set the bidding method. Then the bidders make their offers, and the bidder who posts the highest bid buys the land. To prevent corruption and activate the market value of land, commercial and residential land have been required to be transferred through market-oriented methods since 2002. A market-oriented reform in industrial land followed in 2007. Benefiting from the rapid urbanization and industrialization that have followed from the second half of the 1990s, urban land prices have skyrocketed, providing a windfall to local governments. According to data from China Land Resource Statistics, the price of land increased from 122.46 yuan/m² in 2000 to 2251.39 yuan/m² in 2017.⁸ Over the same period, the revenues generated by land transfer raised from 59.5 billion yuan to 5198.4 billion yuan (see Fig. 1). In some cities, such as Hangzhou, land revenues have even exceeded the general budget revenues in recent years.⁹

While local governments pay more attention to the fiscal revenue brought by land transfer, the central government pursues more diversified goals, such as reserving farmland, ensuring food security, and protecting the environment (Lu & Wang, 2022b). Consequently, the central government placed strict land use regulations on local government, which is mainly achieved through Master Land Use Planning and Annual Land Use Planning. The former sets the ‘overall planning quota’ (*guihua zhibiao*, in Chinese) and the latter sets the ‘annual quota’ (*jihua zhibiao*) for each jurisdiction above the township level. By setting a ceiling of permissible agricultural land that can be converted to construction use, land quotas effectively constrain the urge of local governments to expand urban areas. To prevent land quotas from being exceeded, local land bureaus arrange the uses of land parcels to be transferred before land parcels are put into the primary market (Cai, Wang, & Zhang, 2017), in which process zoning is employed to specify the different usages of land parcels. In general, urban construction land can be divided into four categories: industrial land, residential land, commercial land, and infrastructure land. Appendix A provides an example of the Canal New City, Hangzhou, to illustrate how land use is pre-determined by local land bureaus before land parcels are put on the market.

As the infrastructure land is usually assigned by local governments for public use without charge, we will not take this type of land into consideration. Then the rest is industrial land, commercial land, and residential land. The role of industrial land in land development is quite distinct. Compared with commercial and residential land, the price of industrial land is extremely low and has increased only slightly over the past two decades (Fig. 2). The special role that industrial land plays can primarily be attributed to local governments’ strategy in transferring land. Although local governments obtain sizable revenues by transferring commercial and residential land, they tend to charge low rates for industrial land in hopes of attracting investment. On the one hand, local governments expect to earn short-term land transferring fees by commercial and residential land (Cao, Feng, & Tao, 2008). On the other hand, local governments seek to nourish their long-term tax base by attracting manufacturing investments through the provision of low-priced industrial land (Huang & Du, 2017b; Tao, Su, Liu, & Cao, 2010). This has led to a coexistence of high-priced commercial and residential land and low-priced industrial land for many years (Lu & Wang, 2020). Acknowledging the difference between industrial land and commercial and residential land, local governments adopt different transfer strategies in response to their distinct economic and political incentives. For example, Li (2018) notes that in the early terms of local officials, they tend to transfer more industrial land, as the economic output of industrial land will not arrive until several years after the land transfer. In this way, local officials anticipate being able to achieve better economic performance in their jurisdictions at their critical age of promotion. Strategic land transfer is also used as an instrument for the relief of local fiscal pressure (Shu et al., 2018; Whiting, 2011). In summary, the fact that local governments are equipped with autonomy to intervene in the land market and they often do so set up the institutional background for our study.

2.3. Theoretical analysis and hypotheses development

Combining the facts that local governments have autonomy over land transfer in their jurisdictions and the allocation of resources is likely to be inclined to politically connected firms, we suppose that having political connections will translate into receiving preferential treatment in the land market. The next question is, what are the specific aspects of preferential treatments? And how do these preferential treatments affect the economic activity on land? A line of literature has discussed local governments direct more land resources to specific companies or industries. For the purpose of industrial transformation and upgrading, local governments are found to allocate more land resources to the emerging and high-tech industries listed in the five-year plan (Zhang, Zhu, Li, & Wang, 2017). Wu and Yang (2020) document that, due to the property right discrimination from local governments, more residential land is allocated to state-owned enterprises. As for the role of informal connections, Chen and Kung (2019) pointed out that those “princeling companies,” which are jointly run by descendants of the top political elites, purchased slightly more land. Therefore, we expect that one aspect of the preferential treatments caused by the revolving-door recruitment will be reflected in land quantity. We formulate this expectation into the following hypothesis.

⁷ “Parcel” is a statistical unit counting for land plot in China. “A parcel of land” refers to a land plot that has clearly boundaries, which could be transacted in the land market.

⁸ Land price is calculated through dividing the total land transfer fees by the total land transfer areas.

⁹ The general fiscal revenues of Hangzhou were 209.33 billion yuan in 2020, while the land transfer fees amounted to 252.1 billion yuan.

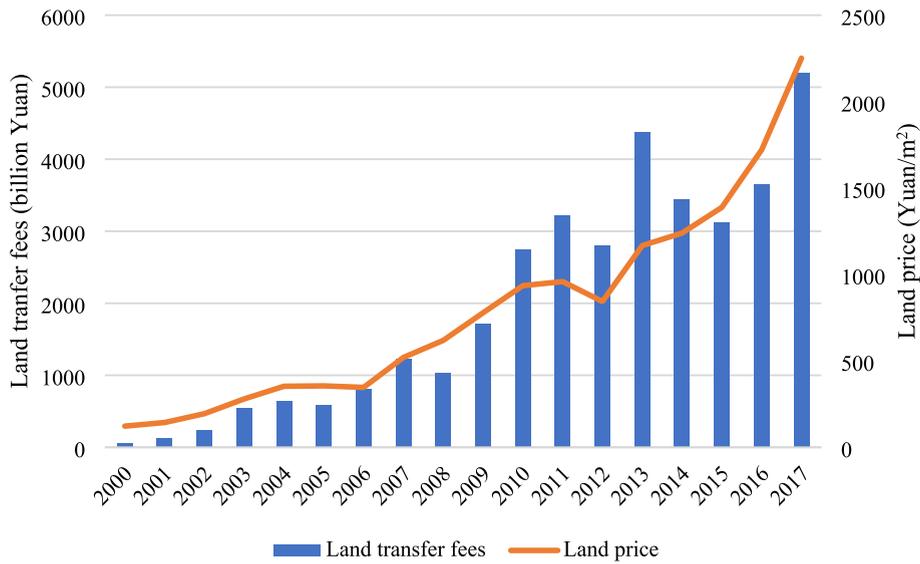


Fig. 1. Land price and land transfer fees, 2000–2017.

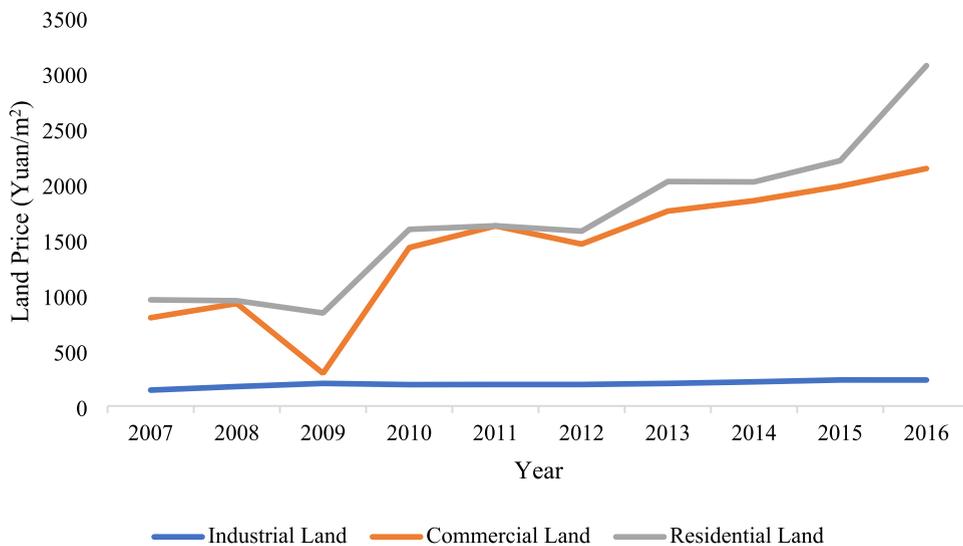


Fig. 2. Land price by different usages, 2007–2016.

H1. Firms with political connections through revolving-door recruitment buy a larger quantity of land than their unconnected counterparts.

Another part of the literature focuses on how the land price is manipulated by local governments. State-owned enterprises are the most widely recognized recipients of significant land price discounts. Local governments adopt non-market-oriented ways like the agreement method to transfer land to state-owned enterprises, which generates prices that are much lower than the market values (Lu & Wang, 2019; Wu & Yang, 2020). With respect to political connections, two papers led by Chen and her partners are the most representative works. In Chen and Kung (2019), they find that the “princeling companies” tend to buy land with surprisingly large

price discounts, motivated by local officials' promotion incentives. In another paper, they argue that the political connections of publicly listed firms will lead to price discounts, which is viewed as a "trading favor" phenomenon where officials provide discounted land prices to exchange for recruitment and high salaries in the favored firms after their retirement (Chen et al., 2016).

However, as noted above, the logic of the formation of industrial land prices is different from that of commercial and residential land. Industrial land is widely used to attract investment, so its price is already at an extremely low level. On the other hand, the central government drafted minimum price restrictions for industrial land in different cities to promote intensive use of land since 2007.¹⁰ In a high-decentralization regime, local governments may risk going against the central authorities (Yang, 1996). This means that it might be troublesome to provide price discounts on industrial land, even when the land buyers are politically connected firms. Therefore, unlike Wu and Yang (2020) and Chen et al. (2016), we step forward and argue for a possible heterogeneity in price discounts between different usages of land. For industrial land, providing price discounts might not be easy due to its already low price and the price restrictions set by the central government. We thus formulate this expectation into the following hypothesis.

H2. Firms with political connections through revolving-door recruitment buy land at lower prices, but the price discounts will only appear on commercial and residential land.

A large body of literature on political economy concerns the relationship between political connections and resource allocation efficiency. While some studies, such as that of Chen et al. (2013), find that connections improve the efficiency of credit allocation, most find that political connections cause distortion. Jin and Zhang (2019) find that political connection causes misallocation of capital and government subsidies, and the breakdown of connections could significantly improve firms' investment efficiency. In Korea, government contracts that are allocated to connected firms are executed poorly and encounter more frequent cost increases through renegotiations (Schoenherr, 2019). Unlike countries with mature and liberalized markets, the original status of resource allocation is highly distorted in transitional markets like those of China (Lin, Cai, & Li, 2004). For this reason, many previous studies argued that the informal networks in China act as "lubricants" instead of "stumbling blocks" (He & Zhang, 2019; Kong, Tao, & Wang, 2020). Drawing on this perspective, albeit with a certain degree of suspicion, we follow the conclusion from most studies and propose the following hypothesis.

H3. Land resource allocation affected by revolving-door recruitment will have a negative impact on economic activity on land.

3. Method and data

3.1. Method

We estimate the effects of revolving-door recruitment on firms' performance in the land market by using a multi-dimensional fixed-effects model. The model is specified as follows:

$$Y_{ijt} = \alpha_0 + \alpha_1 * \text{Revolving Door}_{ijt} + \gamma X + \delta \text{Other PC} + \theta_i + \vartheta_j + \sigma_t + \mu \quad (1)$$

where the subscripts i, j, t refer to firm i in jurisdiction j at year t . It is worth noting that because the primary land market is monopolized by prefectural or county governments, j could represent either a prefecture-level jurisdiction or county-level jurisdiction. Y is the dependent variable, which could be the quantity or the land price (with logarithmic when it comes to area and price for semi-elasticity regression) that firm i get in the land market of jurisdiction j at year t . The core explanatory variable, Revolving Door, is equal to 1 only if there is at least one official who had served in jurisdiction j and is an executive or board member of firm i at year t .¹¹ To exclude the effect of confounders, we control firm characteristics with X , which includes the total assets, total main income, liabilities, the number of employees, return on assets, and return on equity of the firm. Firm, city, and year fixed effects are controlled by $\theta_i, \vartheta_j, \sigma_t$ respectively. μ is a robust standard error clustered at the city level.

In this empirical strategy, it is worth mentioning that this paper focuses on revolving-door recruitment, a specific type of political connection. Therefore, the results should be interpreted as an underestimation of the value of political connections. This means that if we focus only on a specific type of political connection and could find a significant effect on the land market, we could safely say that political connections, a collection of government-business ties that go beyond revolving-door recruitment, must have a substantial effect on land acquisition. Although an underestimated result is acceptable for empirical analysis, there are potential confounding effects from other types of political connections that we credit to revolving-door recruitment. To exclude these confounders, we add

¹⁰ See Notice on Issuing and Implementing the "National Minimum Price Standard for Industrial Land Transfer" (https://www.ndrc.gov.cn/xwtd/ztl/jdstjyqcb/zccs/201705/t20170516_1028523.html?code=&state=123, accessed on Dec. 21, 2022). The Ministry of Land Resource believed that the land developers will not intensively use land if land is transferred at extremely low price, which causes problems like idleness of land. Therefore, this notice sets the minimum price for industrial land in each city to ensure that land developers pay reasonable costs to acquire the land use right, which may incentivize them to develop land intensively. For example, the notice stipulates that the price of industrial land in Hangzhou shall not be lower than 480 yuan/m².

¹¹ In the definition of revolving-door recruitment, we exclude the work experience of People's Congress and Political Consultative Conference since these two institutions seldom participate in governments' daily decision-making and policy implementation. Instead, we control these two work experiences separately. See the following content for the introduction of control variables related to People's Congress and Political Consultative Conference.

other indicators of political connections that are widely used in the literature (Li et al., 2008; Li, Meng, & Zhang, 2006; Wang, 2015), i. e., Chinese Communist Party (CCP) member, People's Congress (PC) representative, or Political Consultative Conference (PCC) member as CEO or chairman of the board. Unlike revolving-door recruitment, which highlights the employment of retired government officials, the three indexes capture core leaders' political identities, indicating whether they are insiders in the political regime. We control these types of political connections as *Other PC* in model (1).

3.2. Data

To test our hypothesis, we create an original database containing revolving-door recruitment information for publicly listed firms, parcel-level land transaction data from the primary land market, and the night light intensity data. Correspondingly, we gather data from three sources.

The first source is the annual reports posted by publicly listed firms from 2008 to 2018. These reports provide detailed information on the firms' high-level executives (such as chief executive officer, chief operating officer, and chief financial officer) and the core board members (such as directors and supervisors). The personal profiles from the China Stock Market & Accounting Research Database (CSMAR) and Sina Finance allow us to track the careers of 100,901 executives from 3423 A-share listed firms from 2008 to 2018, paying particular attention to whether these officers have had experience in government or in the Chinese Communist Party to determine whether the firm has built political connections through the revolving-door recruitment. Furthermore, we clarify the jurisdictions that the connections are linked to, according to the working jurisdictions of the revolving-door officials. In this process, we use named-entity recognition (NER) technology to identify the government entity and manually verify the results of the machine recognition. Appendix B provides an example to show how we extract the information from profile texts and construct a structured revolving-door recruitment dataset.

The second source of data is www.landchina.com, which hosts an exhaustive dataset of land transaction. The Law of Land Management requires the prefectural and county bureau of land resource to report each land transaction in their jurisdiction electronically to this website, which generates a complete dataset of land transaction. This dataset contains detailed information on land, including usage, area, price, and location, and the full names of land buyers. We collected all 1,477,898 posted records of industrial, commercial, and residential land transactions from 2008 to 2018. Then, using the names of land buyers, we identify whether a parcel of land is bought by a listed firm or its subsidiary. In our dataset, there are a total of 19,500 parcels of land identified as bought by listed firms, among which 10,151 parcels are industrial land. As the focal point of this paper is to reveal the effects of political connection between the firm and the jurisdiction on land market, we aggregate the parcel level land transaction data into a firm-jurisdiction-year dyad database.

Third, the night light intensity data is from DMSP/OLS and NPP/VIIRS, which are released by NASA/NOAA. The primary coverage year of the former sensors is 1992–2012, and the latter one has been continuously updated from 2013 to 2020. Following previously published methods (Elvidge et al., 2009; Li et al., 2013), we apply a series of continuity and consistency corrections to the two datasets to ensure that they are continuous and mutually comparable around 2012. These data are used because there are no official parcel-level statistics on the economic output of land. Night light intensity data, which is highly correlated with economic performance and can be precisely matched to each parcel of land by latitude and longitude (Chen & Nordhaus, 2011; Henderson, Storeygard, & Weil, 2012), allows us to measure the economic activity on land.¹²

Finally, the firm characteristics are collected from CSMAR. The definitions and descriptive statistics at the firm-jurisdiction-year level are shown in Table 1. It should be noted that the variables are variant on different levels. For example, the value of ROA is variant on the firm level. By contrast, since the *log area* refers to the logarithm of area of land bought by a company in a jurisdiction in a single year, it is variant on the firm-jurisdiction level. We label the source of variation of each variable in the last column of Table 1.

4. Empirical results

4.1. Baseline: Revolving-door recruitment and land quantity

Table 2 presents the effects of revolving-door recruitment on the quantity of land. We begin by regressing the total land area on revolving-door recruitment with only year fixed effect being controlled. The coefficient in column (1) is 0.174, and it is significant at the 1% level. This means that compared with firms without political connections, firms with revolving-door recruitment buy 17.4% more land by area. In columns (2)–(4), we gradually add the control variables, jurisdiction fixed effects and firm fixed effects, and the statistical significance of the coefficient remains at a 1% level. In each of the last four columns, we measure the quantity of land by the number of parcels and also use stepwise regression. The results show a more sizable effect: the parcels of land bought by the connected firms is 40% more than their unconnected counterparts. In total, the results in Table 2 support hypothesis 1 and indicate that revolving

¹² It is worth noting that economic activity (which is proxied by night light intensity in this paper) could only be viewed as an indirect measurement of allocation efficiency. The assumption is that, if a parcel of land is not fully developed, the night light intensity will be lower than its normal level, which implies there might be misallocation. This method is also adopted in a newly published paper (Nian & Wang, 2023). However, such a definition is different from the classical definition of misallocation in economic literature (e.g., Hsieh & Klenow, 2009), which uses TFP to measure allocation efficiency from a general equilibrium perspective. We must admit that the use of night light intensity is a suboptimal choice, given that there is no systematical statistics of land output available in China.

Table 1
Definitions and descriptive statistics of variables.

Variable	Definition	Obs	Mean	Std. dev.	Min	Max	Source of variation
log_area	logarithm of area of land bought by firm in a jurisdiction	12,404	1.84	0.97	0.01	6.89	Firm-jurisdiction
log_area_ind	logarithm of area of industrial land bought by firm in a jurisdiction	12,404	1.05	1.14	0.00	6.89	Firm-jurisdiction
log_area_cr	logarithm of area of commercial and residential land bought by firm in a jurisdiction	12,404	0.77	1.12	0.00	5.31	Firm-jurisdiction
total_n	parcels of land bought by firm in a jurisdiction	12,404	1.57	1.82	1.00	49.00	Firm-jurisdiction
total_n_ind	parcels of industrial land bought by firm in a jurisdiction	12,404	0.80	1.14	0.00	24.00	Firm-jurisdiction
total_n_cr	parcels of commercial and residential land bought by firm in a jurisdiction	12,404	0.74	1.69	0.00	49.00	Firm-jurisdiction
log_average	logarithm of average price of land bought by firm in a jurisdiction	12,165	6.67	1.83	-8.68	12.73	Firm-jurisdiction
log_average_ind	logarithm of average price of industrial land bought by firm in a jurisdiction	7192	5.53	0.86	-1.05	11.60	Firm-jurisdiction
log_average_cr	logarithm of average price of commercial and residential land bought by firm in a jurisdiction	4969	8.33	1.59	-8.68	12.73	Firm-jurisdiction
revolving_door	1 = have revolving door recruitment	12,404	0.10	0.30	0.00	1.00	Firm-jurisdiction
ln_income	logarithm of main business income	12,377	22.82	1.84	11.86	28.69	Firm
ln_asset	logarithm of asset	12,377	23.62	1.90	17.60	30.78	Firm
ln_liability	logarithm of liability	12,377	22.94	2.25	14.86	30.69	Firm
ln_employee	logarithm of employees	12,369	8.63	1.54	2.83	13.22	Firm
ROA	return of asset	12,377	0.04	0.05	-1.58	0.66	Firm
ROE	return of equity	12,366	0.09	0.39	-33.00	6.60	Firm
CEO_CCP	CEO holds Chinese Communist Party (CCP) membership	12,404	0.30	0.46	0.00	1.00	Firm
CEO_PC	CEO is People's Congress (PC) representative	12,404	0.05	0.21	0.00	1.00	Firm
CEO_PCC	CEO holds Political Consultative Conference (PCC) membership	12,404	0.03	0.16	0.00	1.00	Firm
Chairman_CCP	Chairman holds Chinese Communist Party (CCP) membership	12,404	0.39	0.49	0.00	1.00	Firm
Chairman_PC	Chairman is People's Congress (PC) representative	12,404	0.15	0.35	0.00	1.00	Firm
Chairman_PCC	Chairman holds Political Consultative Conference (PCC) membership	12,404	0.09	0.29	0.00	1.00	Firm

Table 2
Baseline results: Effect of revolving door on the quantity of all land.

Dep. Var.	Area				Number of parcels			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Revolving Door	0.174*** (0.050)	0.226*** (0.050)	0.241*** (0.040)	0.277*** (0.043)	0.208** (0.084)	0.271*** (0.081)	0.353*** (0.071)	0.404*** (0.104)
Control	N	Y	Y	Y	N	Y	Y	Y
Other PC	N	Y	Y	Y	N	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Jurisdiction FE	N	N	Y	Y	N	N	Y	Y
Firm FE	N	N	N	Y	N	N	N	Y
Observations	12,404	12,360	11,887	11,164	12,404	12,360	11,887	11,164
R-squared	0.010	0.079	0.247	0.447	0.002	0.041	0.309	0.436

Notes: Robust standard errors in parentheses are clustered at jurisdiction level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The dependent variables are areas and parcels of all construction land respectively.

door recruitment leads firms to buy a larger quantity of land.

4.2. Endogeneity issue and dynamic effect

4.2.1. Endogeneity issue

There are potential endogeneity problems in the baseline results, mainly because the political connections are not randomly assigned among firms. Retired officials may tend to join firms that have a strong capacity, and such firms can be expected to have better performance in the land market. To address this concern, we first use a subsample of listed firms with different statuses of revolving-door recruitment but are as similar as possible in other dimensions. This subsample is generated with a propensity score matching approach to minimize the systematic differences in firm characteristics other than revolving-door recruitment. We use the same covariates as the control variables in the baseline regressions to obtain the matched sample. Table 3 reports the balancing test results

Table 3
Balance test before and after matching.

Variable	Sample	Mean			t-test	
		Treated	Control	Diff	t	p > t
ln_income	Full	22.086	22.902	-0.816	-14.870	0.000***
	Matched	22.150	22.116	0.034	0.530	0.594
ln_asset	Full	22.920	23.700	-0.780	-13.690	0.000***
	Matched	22.957	22.917	0.040	0.610	0.544
roa	Full	0.041	0.042	0.000	-0.290	0.770
	Matched	0.419	0.432	-0.013	-0.670	0.504
ln_libaility	Full	22.190	23.028	-0.838	-12.400	0.000***
	Matched	22.220	22.150	0.070	0.860	0.391
ln_employ	Full	8.062	8.690	-0.628	-13.640	0.000***
	Matched	8.106	8.117	-0.011	-0.190	0.852
roe	Full	0.086	0.092	-0.006	-0.500	0.615
	Matched	0.084	0.087	-0.003	-0.480	0.634

after matching. We find that the differences in covariates between the two groups (firms with and without revolving-door recruitment) are insignificant after matching, which proves the effectiveness of matching. The regression results of the matched samples are reported in Table 4. Consistent with the baseline results, the revolving-door recruitment has a statistically significant effect on land quantity.

The second method we use to address the endogeneity concerns is instrumental variable regression. Following previous studies on firms' political connections, the widely used instrumental variables are those not variant on the analysis level, which are more likely to be exogenously determined. For example, Zhang et al. (2022), which discusses the effect of firm-level political connections on corporates' poverty alleviation decisions, use industry-location aggregated chairman's political connection, given such an aggregated variable is exogenous for single firms (Fisman & Svensson, 2007). Therefore, given that the analysis unit of this paper is the firm-jurisdiction-year level, we use the aggregated values of revolving-door recruitment at the firm-year level and jurisdiction-year level as the instrumental variables. The reasonability of these two IVs is twofold: First, if a jurisdiction has more retired officials working in listed firms, it might signal that connections (*guanxi*) are more emphasized for doing business in such jurisdiction. Similarly, if a firm recruits more retired officials in its board of directors, it might signal that its business is more reliant on government connections. Therefore, the firm-year and jurisdiction-year aggregated revolving-door recruitment are closely related to our primary explanatory variable. Second, by netting out firm-jurisdiction-specific political connections, firm-year and jurisdiction-year aggregated revolving-door recruitment addresses the endogeneity problems specific to the firm-jurisdiction-year observation (Reinikka & Svensson, 2006), which suggests that these two instruments can presumably satisfy the exclusion restriction.

Table 5 reports the instrumental variable results using two-stage least squares with multiple-dimensional fixed effects being controlled. As shown in column 1, which reports the first stage results, both instruments are significantly related to the firm-jurisdiction specific revolving-door recruitment. The Cragg-Donald Wald F statistic reaches 1313.89, suggesting that the two instruments are powerful and unlikely to be biased toward the OLS estimates. In columns (2) and (3), the fitted values of the revolving-door recruitment and other control variables are included in the second stage estimation. The Hansen J statistic suggests that the two instrument variables satisfy the over-identification restrictions. Although the coefficients are shrinking, we still find that revolving-door recruitment has statistically significant effects on land acquisition when the endogeneity issues are addressed through IV methods.

4.2.2. Dynamic effect

Then we examine the dynamic effect of revolving-door recruitment on the quantity of land acquired by firms. As our identification strategy relies on the differences between connected/unconnected samples and before/after connection periods, it is essential to verify

Table 4
Regression results with matching sample.

Dep. Var.	Area				Number of parcels			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Revolving Door	0.140*** (0.051)	0.200*** (0.050)	0.220*** (0.041)	0.285*** (0.048)	0.241*** (0.085)	0.290*** (0.084)	0.362*** (0.078)	0.422*** (0.119)
Control	N	Y	Y	Y	N	Y	Y	Y
Other PC	N	Y	Y	Y	N	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Jurisdiction FE	N	N	Y	Y	N	N	Y	Y
Firm FE	N	N	N	Y	N	N	N	Y
Observations	9582	9582	9081	8347	9582	9582	9081	8347
R-squared	0.011	0.097	0.268	0.481	0.004	0.047	0.326	0.441

Notes: Robust standard errors in parentheses are clustered at jurisdiction level. *** p < 0.01, ** p < 0.05, * p < 0.1. The dependent variables are areas and parcels of all construction land respectively.

Table 5
Instrument variable regression.

Dependent Variable	First Stage		Second Stage	
	Revolving Door		Area	Number of parcels
	(1)	(2)	(3)	(4)
Revolving Door_jurisdiction	0.036*** (0.012)			
Revolving Door_firm	0.271*** (0.021)			
Revolving Door		0.190** (0.085)	0.315* (0.178)	
Control	Y	Y	Y	Y
Other PC	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Jurisdiction FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Cragg-Donald Wald F statistic	1313.89			
Hansen J statistic		0.15	0.26	
Observations	11,164	11,164	11,164	
R-squared	0.654	0.007	0.005	

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

whether there has been a significant difference between the treatment and control group before establishing connections, which is like the parallel pre-trend test in the DID estimation. The results of the dynamic effect are shown in Fig. 3. We present the coefficients of two years before and three years after acquiring political connections through revolving-door recruitment, with a 95% confidence interval attached. Two conclusions can be drawn according to the figure. First, the insignificant coefficients of two years before revolving-door recruitment verify the parallel pre-trend premise. Second, the preferential treatment on the quantity of land takes effect immediately after obtaining political connections and keeps significant for several years.

4.3. Heterogeneity conditional on different land usage

As we mentioned above, there are significant differences between industrial land and commercial/residential land, which indicates that we should discuss the effects of revolving door recruitment on the quantity of different usages of land. The results are shown in Table 6. The first four columns present the estimation results for industrial land, and the last four show commercial and residential land. As in Table 2, it is clear that connected firms purchase a larger quantity of industrial land and commercial and residential land, no matter how the quantity is measured. However, it is worth noting that the effect of revolving-door recruitment on area is larger than that on parcels in industrial land. By comparison, the effect on parcels is larger than that on area for commercial and residential land. This means that connected firms are more likely to buy larger plots of industrial land and more likely to buy more commercial and residential land parcels. Fig. 4 reports the dynamic effects of revolving-door recruitment on the quantity of industrial land and commercial and residential land, respectively. We find that the parallel pre-trend assumption is satisfied. In total, the preferential treatments on the quantity are significant for both industrial land and commercial and residential land.

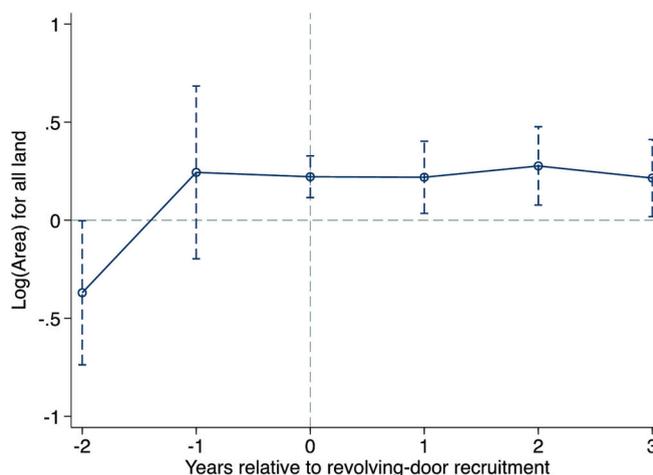


Fig. 3. Dynamic effect of revolving-door recruitment on the land quantity.

Table 6
Effect of revolving door on the quantity of different land.

Land Usage Dep. Var.	Industrial Land				Commercial and residential land			
	Area		Number of parcels		Area		Number of parcels	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Revolving Door	0.185*** (0.039)	0.180*** (0.039)	0.094** (0.044)	0.093** (0.043)	0.075** (0.033)	0.073** (0.033)	0.253*** (0.086)	0.257*** (0.087)
Controls	N	Y	N	Y	N	Y	N	Y
Other PC	N	Y	N	Y	N	Y	N	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Jurisdiction FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	11,204	11,164	11,204	11,164	11,204	11,164	11,204	11,164
R-squared	0.632	0.633	0.525	0.526	0.748	0.749	0.493	0.494

Notes: Robust standard errors in parentheses are clustered at jurisdiction level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.4. Revolving-door recruitment and land price

Now we turn to test the effect of revolving door recruitment on land price. The results are presented in Table 7, where the first three columns present only multi-dimensional fixed effects, and the last three columns control for firm characteristics and other political connections. We first show the regression results with average price of all land as the dependent variable in column (1). The coefficient -0.098 , which is significant at the 5% level, implies that firms with revolving-door recruitment buy land at lower prices. This result is highly consistent with the work of Chen et al. (2016), who find a “trading favor” phenomenon where local officials provide firms with discounted prices in exchange for a position in the company after retirement. Unlike their work, however, we move steps forward and document that price discounts are not prevailing. As shown in columns (2) and (3), where we present the effect of revolving-door recruitment on different land usages, the price discounts are only significant for commercial and residential land, while not for industrial land. For commercial and residential land, connected firms get the land at around 20% below the average price. On the contrary, the effect of revolving-door recruitment on the price of industrial land is not significant. We argue there are two reasons accounting for this heterogeneity. First, as noted above, the price of industrial land is extremely low in China, which means that the practical benefits of providing industrial land with discounts are very limited. Second, there is a minimum price restriction for industrial land, which determines the bottom line of price. Thus, even if local officials intend to provide price concessions on industrial land, they have only a very limited ability to do so. In summary, the results presented in Table 7 support hypothesis 2, that connected firms receive price discounts only in transactions involving commercial and residential land.

We also present the dynamic effect of revolving-door recruitment on the price of land in Fig. 5. The insignificant coefficients of two years before revolving-door recruitment verify the pre-trend premise. Different from quantity, connected firms only receive significant price discounts on commercial and residential land. Another notable distinction is that, although the preferential treatment of quantity takes effect shortly after the political connections are built, the price discount seems to take more time to take effect. A report by the Central Commission for Discipline Inspection (CCDI) may explain this result.¹³ In that report, the most typical land corruption is characterized by the fact that local officials transfer land at a price discount and then charge rebates from the purchasing firm. This implies that local governments undertake higher risks such as being accused of participating in benefits exchange or corruption if they provide price discounts for favored companies. In contrast, it may not be a major political risk to show preferences in terms of quantity.

4.5. Revolving-door recruitment and economic activity on land

We test the final hypothesis by matching parcel-level land data with night light intensity data. Because we turn to focus on the parcel level, the regression model is adjusted as follows:

$$\text{Growth}_{pijt} = \alpha_0 + \alpha_1 * \text{Revolving Door}_{ijt} + \gamma X_{it} + \beta \text{Land}_p + \theta_i + \vartheta_j + \sigma_t + \mu \quad (2)$$

Compared with model (1), model (2) adds a new subscript p , which refers to the parcel of land. Consequently, the dependent variable Growth_{pijt} represents the growth of night light intensity for land p , which is transferred at year t , in jurisdiction j and bought by firm i . We index Growth_{pijt} with the following formula: $(NLI_{n-years} - NLI_{initial})/NLI_{initial}$ where $NLI_{n-years}$ and $NLI_{initial}$ represents the night light intensity of land when it is transferred and n ($n = 1, 2, 3, 4, 5$) years after transferring respectively.¹⁴ In the specification of

¹³ CCDI is the highest disciplinary inspection agency of the Communist Party of China, whose main functions are supervising the officials and punishing corruption.

¹⁴ For example, if a land parcel was transferred in Blanes i Vidal & Fons-Rosen, 2012, then the dependent variable, Growth_{pijt} , assuming $n = 5$, is the night light intensity growth rate from Blanes i Vidal & Fons-Rosen, 2012 to 2017. Similarly, Growth_{pijt} with $n = 5$ is constituted by the night light intensity growth rate during 2008–2013, 2009–2014, 2010–2015...2013–2018, depending on the specific land transfer year.

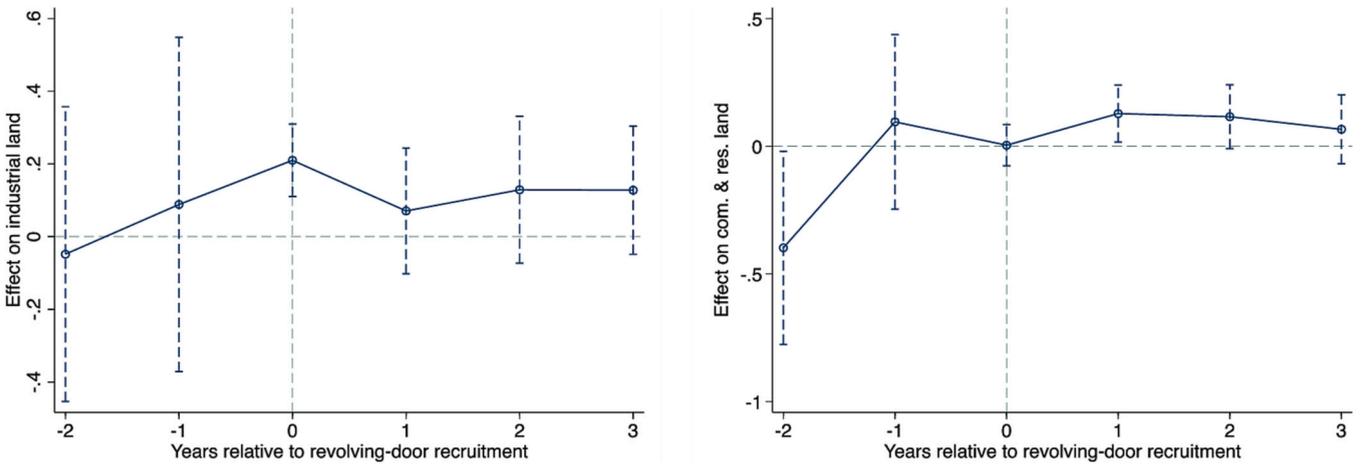


Fig. 4. Dynamic effect of revolving-door recruitment on the quantity of industrial land and commercial & residential land.

Table 7
Effect of revolving door on the price of different land.

Dep. Var.	Average Price						
	Land Usage	All	Industrial	Com. & Res.	All	Industrial	Com. & Res.
	(1)	(2)	(3)	(4)	(5)	(6)	
Revolving Door	-0.098** (0.048)	-0.022 (0.042)	-0.209*** (0.075)	-0.097** (0.048)	-0.020 (0.043)	-0.207*** (0.076)	
Controls	N	N	N	Y	Y	Y	
Other PC	N	N	N	Y	Y	Y	
Jurisdiction FE	Y	Y	Y	Y	Y	Y	
Year FE	Y	Y	Y	Y	Y	Y	
Firm FE	Y	Y	Y	Y	Y	Y	
Observations	10,947	5949	4195	10,908	5914	4193	
R-squared	0.829	0.829	0.751	0.830	0.829	0.753	

Notes: Robust standard errors in parentheses are clustered at jurisdiction level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Com. & Res. represents commercial and residential land.

model (2), we further add the control variables for land, including land quality and land area.¹⁵ The meanings of other variables are the same as those in model (1).

The regression results are presented in Fig. 6. We plot the coefficients of revolving-door recruitment for all land, industrial land, and commercial and residential land respectively for the 1–5 year periods. The 95% confidence intervals are also added. Regardless of how much time is taken for the focus period, we find no significant effect of revolving-door recruitment on the growth of night light intensity. This result obviously fails to support hypothesis 3, which asserts that political connections built by revolving-door recruitment decrease economic activity on land. There might be two reasons accounting for this phenomenon. First, due to the widespread government intervention, the logic of land resource allocation in China has moved far from the principle of market competition. This means that land resource allocation biased by revolving-door recruitment might not lead to a more severe deviation from market-oriented allocation. Evidence from the credit market even shows that political connections could reverse the result of resource misallocation toward a more market-oriented allocation (Chen et al., 2013). Second, and more important, as noted above, there is also an active secondary market where land is transferred between land users. Even though connected firms buy a larger quantity of land at lower price and they do not need so much land for their daily operations, they would rather transfer the land to other land users than allow it to remain idle. Taking our field experience as an example, a large quantity of industrial land in Hangzhou is transferred to top firms at low price. Although the quantity of land usually exceeds the actual needs of the leading firms, the land is also entirely developed, as the original users transfer or rent it to other users, who obtain land at market prices and are incentivized to improve its efficiency. That means, due to the existence of the secondary market, the misallocation of land resources could be corrected so that the economic activity on land is not reduced. In summary, revolving-door recruitment is unlikely to decrease economic activity on land.

5. Discussion and conclusion

This paper shows how revolving-door recruitment makes firms stand out in the primary land market in China. Using the dataset composed of the information of listed firms' board members, parcel-level land transaction records, and the night light intensity data, we find firms with political connections formed by recruiting officials who have worked in government or party committees receive preferential treatment in the primary land market. Politically connected firms purchase a larger quantity of land than their unconnected counterparts. We also find that price discounts are provided to connected firms only in commercial and residential land, but not in industrial land. Using night light intensity data matched to the parcel-level land, we investigate whether political connections distort the allocation of land resources but find no significant evidence.

Theoretically, this paper not only simply adds to the evidence that political connections matter in a transitional economy, but also clarifies how the jurisdiction-specified connections are important. To the best of our knowledge, this is the first paper to discuss the heterogeneous effects of political connection on different usages of land and indicates that price discounts disappear for industrial land. This contribution may well complement the literature by advancing the understanding of how informal networks, such as political connections, are constrained by formal rules. Meanwhile, the test for the efficiency hypothesis challenges the conventional wisdom that political connections must lead to distortion. We speculate that if there has been a systematic misallocation of land resources in China's land market due to the government intervention, the informal institutions like *guanxi* and corruption may act as "lubricants" instead of "stumbling blocks" for economic growth (He & Zhang, 2019; Kong et al., 2020). This speculation calls for further research tests. Another shortcoming of this paper comes from the limitations of the current revolving-door recruitment dataset. First, due to the availability of the business elites' resumes, this paper only focuses on executives and board members from the listed firms. Although the listed firms are among of the most important components of the Chinese economy (e.g., the total revenue of listed companies

¹⁵ Land quality is determined by local land bureaus' evaluation on land based on the natural (e.g., slope of land) and economic (e.g., location) attributes of the land. Accordingly, the construction land can be divided into 15 grades.

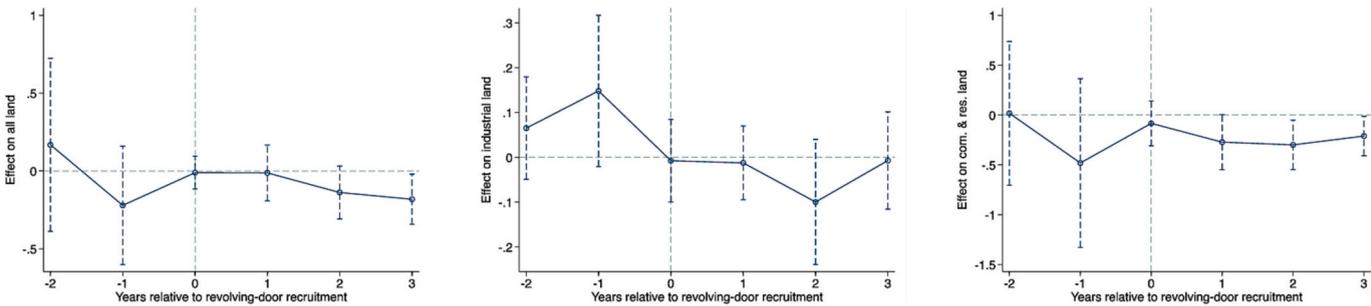


Fig. 5. Dynamic effect of revolving-door recruitment on the price of land.

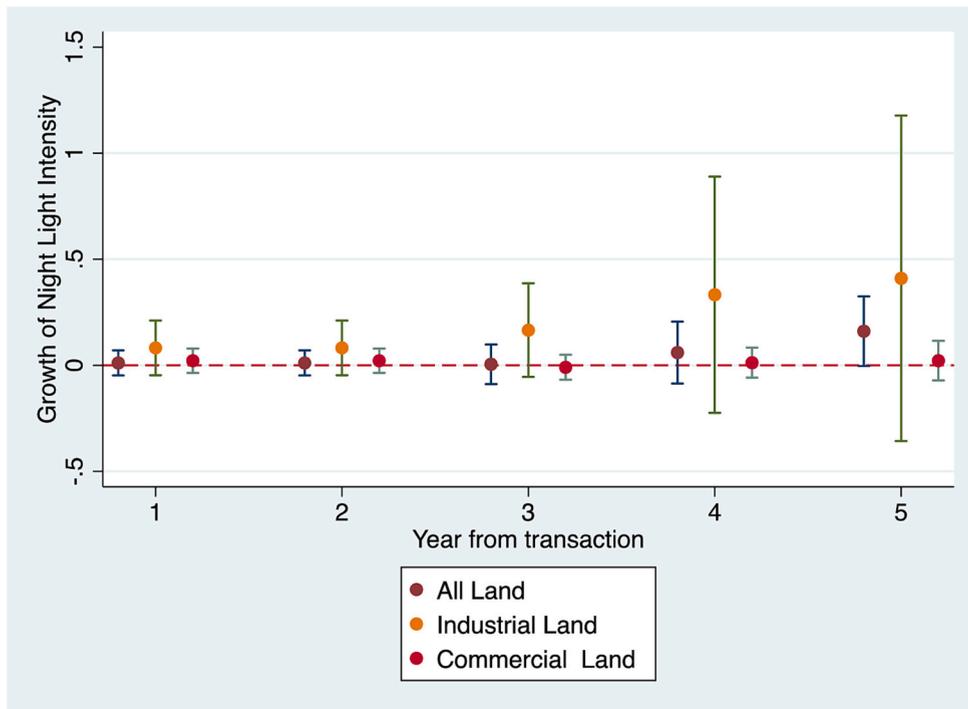


Fig. 6. The effect of revolving-door recruitment on the economic activity on land

accounts for 56.81% of China's GDP in 2021),¹⁶ which ensures that the results drawn from listed firms are relatively representative, listed firms only make up a small fraction of the universe of all Chinese firms. Therefore, we must acknowledge that the external validity of our conclusions would be further strengthened if the information disclosure of ordinary enterprises is improved. Second, the current revolving-door recruitment dataset have not fully considered the ranks of officials. Principal and deputy leaders should have different powers over local affairs, which may lead to different effects on resource distribution after retirement. This deficiency requires us to continue to improve the revolving-door recruitment database in the future.

We also draw some policy implications from this work. Although we find no evidence supporting distortion, the side effects of political connections are quite clear. Firms that have political connections tend to buy more land at lower prices, which will inevitably create fairness concerns. This might also distort firms' incentives, encouraging firms to devote more of their efforts to non-productive activities, like building political connections, instead of pursuing productivity-improving activities. From our perspective, two measures could be considered to mitigate the effects of political connections. The first is to introduce more rigorous policies to restrict officials from serving in companies, especially for former bosses of jurisdictions who tend to have a long-lasting influence on public affairs even after retirement. Second, and more important, we believe that the pace of land marketization must be accelerated. Although the Chinese government has put great effort into land marketization and achieved some encouraging results, it remains far from forming an effectively competitive land market. Only a more mature land market and more formal rules can fundamentally reduce government intervention.

Data availability

Data will be made available on request.

Acknowledgement

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Appendix A. An example of how local land bureau determines land use by zoning

This appendix provides an example from the Canal New City, Hangzhou, to illustrate how local land bureaus use zoning to determine land usage before land parcels are put into the primary market. In this Land Regulatory Plan, yellow represents land parcels

¹⁶ See the report from China Securities Website, <https://news.cnstock.com/news,bwqx-202,204-4,874,008.htm>. Accessed on 09/20/2022.

designed for residential use, red represents land parcels designed for commercial use, brown represents land parcels designed for industrial use, and pink represents land parcels designed for infrastructure use. Green and blue represent the land covered with plants and water areas, respectively.

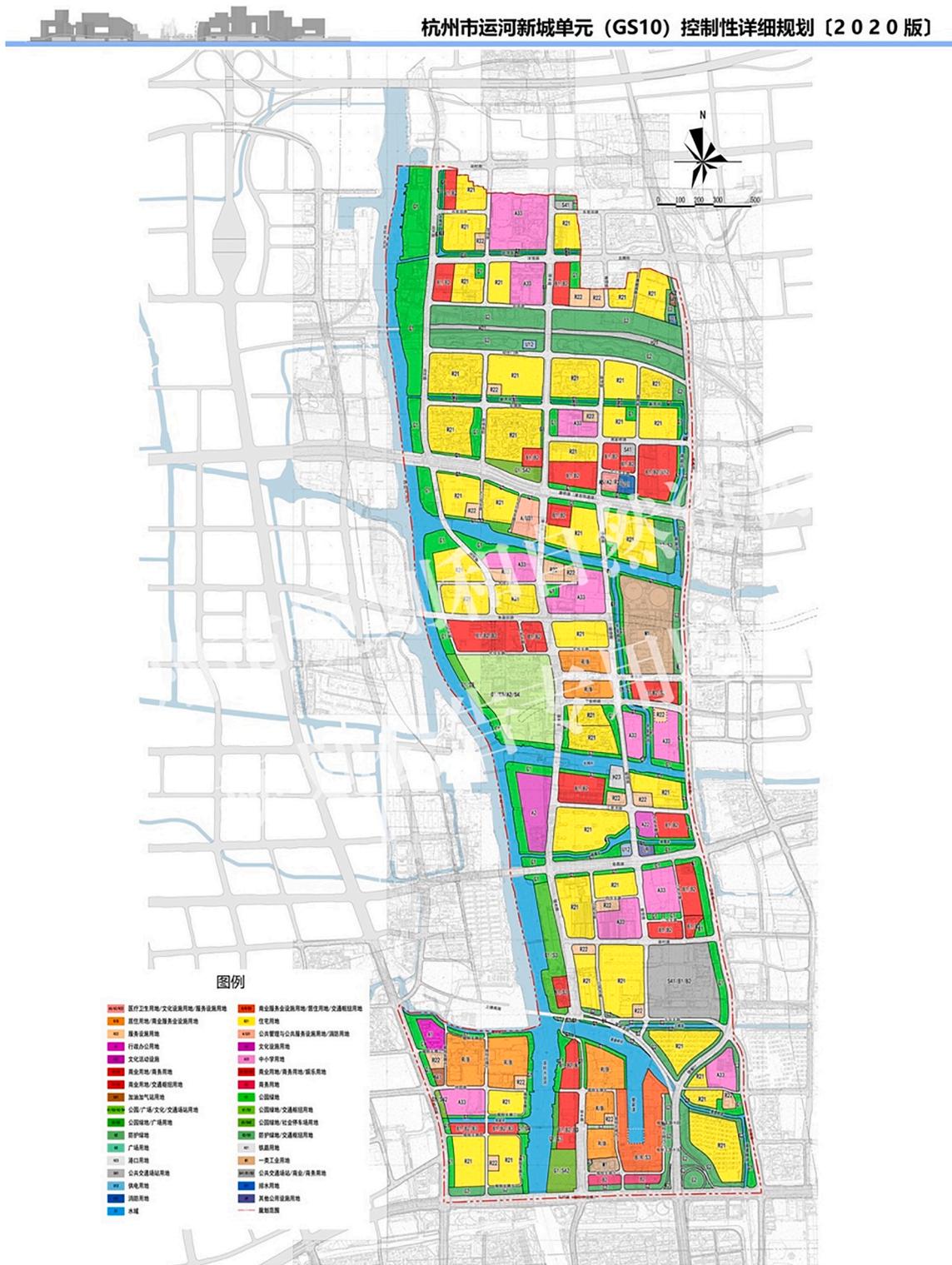


Figure Land Regulatory Plan with detailed land usage designed, Canal New City, Hangzhou, 2020

Appendix B. An example of the construction of the revolving-door recruitment dataset

This appendix provides an example of how we construct the revolving-door recruitment dataset and aggregate it to the firm-jurisdiction-year level (the analysis level of this paper). We use Mr. Deng, a director of the board of Fuxing Xiaocheng (current name Xiaocheng Technology, stock code 300139), as an example. Before joining Fuxing Xiaocheng, he worked in Hanchuan county, Dawu county, and Hanchuan prefecture. Therefore, we code Fuxing Xiaocheng has revolving-door recruitment in these three jurisdictions during Mr. Deng's term as director (2004–2013). Detailed processes from the raw personal profile to structured revolving-door recruitment on the firm-jurisdiction level are shown as follows.

(1) Raw personal profile (collected from CSMAR, supplemented according to Sina Finance)

个人简介				
姓名	性别	出生日期	学历	国籍
邓景	男	1944	本科	中国
简历	邓景先生，中国国籍，无永久境外居留权，1944年生，大学学历，高级经济师。1964年–1975年任汉川县南河公社党委副书记，1975年–1984年任刁东农场党委书记，1984年–1986年任汉川县庙头区委书记、汉川县公社书记、1986年–1991年任汉川县委办副主任、县委政法委书记，1991年–1997年任大悟县委副书记、县长，1997年–2004年任汉川市委副书记、人大主任，2004年至2013年12月任福星晓程董事，2013年12月13日，辞去公司董事职务。			

Translation of Mr. Deng's personal profile:

Mr. Deng, Chinese nationality, no permanent residency abroad, born in 1944, university degree, senior economist. From 1964 to 1975, he served as the deputy secretary of the Party Committee of Nanhe Commune, Hanchuan County. From 1975 to 1984, he served as the secretary of the Party Committee of Diaodong Farm. From 1984 to 1986, he served as the secretary of the Miaotou District Committee of Hanchuan County and the secretary of the Hanchuan County Commune. Director of the Office of the County Party Committee, Secretary of the Political and Legal Committee of the County Party Committee, Deputy Secretary of the Dawu County Party Committee and County Head from 1991 to 1997, Deputy Secretary of the Hanchuan Municipal Party Committee and Director of the People's Congress from 1997 to 2004. Deng serves as director of **Fuxing Xiaocheng** from 2004 to December 2013. He resigned on December 13, 2013.

(2) Structured revolving-door recruitment on person level (based on raw text, using named-entity recognition (NER) technology to identify the government entity and manually verify the results of machine recognition)

Person_name	Firmid	Jurisdiction
Mr. Deng	300,139	Hanchuan county
Mr. Deng	300,139	Dawu county
Mr. Deng	300,139	Hanchuan prefecture

(3) Structured listed company executive information (from CSMAR)

Person_name	Firmid	Start	End	Position
Mr. Deng	300139	2004	2013	Director

(4) Final structured revolving-door recruitment on firm-jurisdiction-year level by combining (2) and (3)

Firmid	Jurisdiction	Year	Revolving-door
300139	Hanchuan county	2004	1
300139	Dawu county	2004	1
300139	Hanchuan prefecture	2004	1
300139	Hanchuan county	2005	1
300139	Dawu county	2005	1
300139	Hanchuan prefecture	2005	1
300139	Hanchuan county	... (2006–2012)	1
300139	Dawu county	... (2006–2012)	1
300139	Hanchuan prefecture	... (2006–2012)	1
300139	Hanchuan county	2013	1
300139	Dawu county	2013	1
300139	Hanchuan prefecture	2013	1

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