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Land Cronyism and Corporate Political Cycles in China

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Keywords: Cronyism, land, political turnover, China.
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Abstract

Since 2004, China's industrial land price has remained constant while other land prices in China have increased to about six times their 2004 levels. This paper measures the degree of industrial land subsidy to a firm using the ratio of the market value of land in the neighborhood to the price at which the firm purchased the land from the local government. Matching publicly listed firm data with over one million land transactions from 1998 through 2013 in China, we find that heavily subsidized firms exhibit starker political business cycles, that is, we find higher investment rates in the years that immediately precede expected changes in local leadership. However, these firms' investment efficiency rates decline in the actual turnover years. We interpret these findings as evidence of cronyism, i.e., listed firms return the favor of land subsidies from local leaders since increased investment before turnovers can boost local GDP and enhance a leader's likelihood of promotion. Further investigation shows that the cronyism effect is stronger for cities with high-career-incentive leaders.

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1. Introduction

Industrial policy was frequently used in the early stages of development for many developed countries and East-Asian growth miracles, including China.[1] East-Asian economies also top the list of the global crony capitalism index. Crony capitalism is frequently mentioned as a cause for the 1998 Asian Financial Crisis (Kang, 2002). China, a socialist country by its own claim, ranks 19th for 2016 in *Economist* magazine's crony capitalism list.

In this paper, we study crony capitalism as evidenced by interactions between firms and local government leaders. Local government is important in China, particularly at the city level (prefecture-level cities), where it accounts for 70% of fiscal expenditures. Since China is a large country, it's more likely for local government to have extensive interactions with firms. Given the central government's limited attention, most firms rarely interact with it.

We focus on local governments' allocation of industrial land. Because China's land prices are booming and related housing prices in major cities are among the highest in the world,[2] land becomes a more valuable input for firms. Land allocation is controlled by local government in China. Unlike other key firm inputs such as capital and labor, industrial land is the only element in China that local government can allocate to firms under its direction.

However, this important production factor and its prevalence in industrial policy have been omitted in current studies (Aghion et al., 2015). As for labor, mobility across regions has increased dramatically, as evidenced by the huge number of migrant workers. Regarding capital, after the financial reform of 1998, state-owned banks (which comprised a majority share of the banking sector and still do) centralized their personnel and loan-approval decisions to their regional headquarters, weakening local government control of local branches. Further centralization of activities in the national headquarters in Beijing

[1] According to official definition, a country's industrial policy is its official strategic effort to encourage the development and growth of part or all of the manufacturing sector, as well as other sectors of the economy. So here industrial policy is not necessarily directed at an industry. It can be viewed as being directed at specific firms as well.

[2] Timely city housing prices can be checked biweekly at www.numbeo.com. For example, the average apartment price in major cities in China such as Beijing, Shanghai, and Shenzhen was about 12,000 USD per square meter in 2018, around the same price as New York City's Manhattan area.

weakened local government control even more. As for taxation, since the major tax reform of 1994, the share of total taxation collected by local governments has shrunk compared to that collected by the central government. This constrains local government budgets and makes it unlikely that they will give tax breaks to corporations. In this paper, our investigation only targets listed corporations, which undergo thorough audits, making tax evasion rare. Combining the above factors with very high land prices, we can see that local governments' influence upon firms manifests mainly through the channel of land allocation.

Industrial land allocation is controlled by local governments mostly through agreement transfers, in contrast to residential and commercial land distribution, which has had to go through public auction since 2004.[3] Parcels of land have been sold at market value since then (Cai, Henderson, and Zhang, 2013). As a result, industrial land can still be subsidized by local governments and sold at prices far below those for surrounding residential and commercial lands. Given that land has become a more and more valuable resource during China's urbanization, and given that local governments in China rely heavily on land-sale revenues to finance public infrastructure (Han and Kung, 2015; Wang, Zhang and Zhou, 2018), local governments' subsidization of industrial land might seem puzzling. A prevalent argument is that by doing so, the local government is able to attract more industrial firms and boost local GDP (Rauch, 1993). However, in our firm-level dataset, we find it is lower productivity firms instead obtain lands. This paper asks a further and equally important question: is there cronyism behind local economic development? That is, do local government leaders grant cheap land to firms in hopes that they may return the favor in the future? We find evidence that the cronyism argument is most likely true. This finding reveals the dark side of China's industry policy.

This paper uses the ratio of the average unit price of the surrounding residential and commercial lands to the industrial land's unit land price as our measure of industrial land subsidy. We use the surrounding 1.5- 3- and 5-kilometer radius area's residential and commercial land prices separately, and our results remain robust.[4] Some of the industrial

[3] Central government states that "local government can allocate industrial land at its own discretion based on local conditions or local economic development needs".

[4] In our main regression, we use a 5-kilometer radius to enlarge our comparison group and thereby reduce idiosyncratic differences in land characteristics. Considering the largeness of Chinese cities, 5 kilometers is also reasonable.

lands were even given to firms for free, for accounting purposes (denoted as one yuan in the data). Note that these do not drive our results because we winsorized every variable in the analysis.[5]

We examine group differences between firms with land deals and those with no land deals as well as the differences between firms with high industrial land subsidies and firms with low subsidies (within the firms that received deals), for key firm characteristics including TFP, firm age, SOE, leverage, assets as a measure of size, and political connections as measured by the presence of government officials on firm boards. We find that, conditional on firm and year fixed effects, it is older firms with low TFP and large asset size that purchase industrial land parcels. This can be seen as weak evidence of cronyism, particularly in that low-TFP firms buy land. However, all of these characteristics are insignificant conditional differences for high- and low-subsidy firms within the firms that received deals.

We view this new measure as preferable to other commonly used measures of favoritism such as capital price and tax credits, which are more a matter of national policy and cannot be controlled by local governments in China. In our data, there were 2357 land deals made by around one third of all the listed firms. If we set the unit prices of these land deals equal to the surrounding residential land price levels, we find that the total land subsidy is around 3 billion yuan, much larger than the tax credit of 39.34 million yuan for all the listed firms (based on our own calculation using data from WIND). Moreover, according to the World Bank Business Environment Survey (2012), land is the most preferred collateral for banks to lend to firms. We can see from Figure 2 that land prices have appreciated significantly, thus bringing more collateral financial benefits to firms in the future. Moreover, both the capital price and tax credit measures suffer severe endogeneity issues. For example, they are strongly affected by firms' total factor productivity (TFP). In contrast, for our measure we observe a very weak relation between TFP and industrial land purchases.

In this paper, we then study how subsidies in the industrial land market affect firms'

[5] There are three cases where industrial lands were given by the local government to listed firms almost for free. We checked through online announcements and news coverage to ensure that there were no typographical errors in accounting. For example, on September 14, 2007, Xuzhou city government in Jiangsu province gave a 4187-square-meter piece of land to Enhua Firm (002262.SZ) for a total price of 1 yuan, less than 1 dollar, even though this firm is neither SOE nor politically connected as defined by Fan et al. (2007) where a firm is politically connected if either its CEO or chairman previously worked in government.

behaviors over political business cycles in China. According to Blanchard and Shleifer (2001), China's economic success can be largely attributed to political centralization and economic decentralization where central government leaders promote local leaders who can contribute to higher regional GDP growth rates. More formal frameworks based on their argument are surveyed by Xu (2011). Local government leaders need firm investment to boost local economies (Bai et al. 2016). According to the political business cycle theory first put forth by Nordhaus (1975), politicians have strong incentives to manipulate their local economies into better shape before elections. Considering that local government budgets are small in comparison to large firms' investments, local politicians face GDP competition from peers and have strong incentives to push firms to invest at the key turnover time. And those firms who have received favorable land subsidies in the past are presumably more responsive to local leaders' needs. We use two turnover timing measures. The first is *Predicted*, the year in which city leader turnover is predicted to occur.[6] The city leader is expected to change his or her position every five years, which is average tenure length. So the key political year is *Predicted* +4. The predicted turnover year depends only on the city's past information, before 1998, not on current and future city variables, and is therefore more likely to be exogenous. The other measure, *PPC*, uses the People's Congress of Communist Party (PCCP), which is exogenously determined and varies among provinces over a five-year period. This is the event during which politicians are elected.[7] *PPC* is a dummy variable and takes the value of one for the year when PCCP is held only when the event happens before June. Otherwise we set *PPC* equal to one in the next year. Both timing measures will be detailed in the sample construction section.

In this paper, employing data for 2616 listed firms from 1998 through 2013, we find that firms obtain highly subsidized land in that the sale prices are low compared to sales of surrounding residential lands. We also find that firms exhibit a stark political business cycle pattern in which they invest much more in the year immediately before the exogenous People's Congress of Communist Party (PCCP) (or the local leader changeover) occurs in

[6] We follow the strategy from Shue and Townsend (2014) and Ru (2018) using predicted cycles as instruments.

[7] There were exceptional cases when PCCPs were not held in a five-year interval. Although these changes were highly irrelevant for economic reasons, we follow Cole (2009) using the exogenous five-year interval as a predictor for actual PCCP timing and find that the R square is close to one. The results remain largely intact when using this instrument variable.

their region. This volatility is increasing in our measure of favoritism.

Regarding its contribution to the literature, our paper is the first to study industrial land policy in China, to the best of our knowledge. Even very recent literature such as Aghion et al. (2015) omits land as a factor in their comprehensive review of various industrial policies in China. Moreover, our China setting is unique in studying industrial land policy. In China, local governments control land allocation, but the central government requires that homogenous residential lands to be publicly auctioned and every transaction must be listed on the official website. The price difference can be pinned down to industrial policy much better in this unique institutional environment.

Our paper contributes to the literature by first (to the best of our knowledge) unveiling an unexpected effect of the industrial land policies adopted by many Chinese cities, an effect whereby, in return for land subsidy favors, listed firms increase their investment in the critical years just before turnover of their local leaders. However, this increment is negatively correlated with firms' investment efficiency. We consider this to constitute evidence of cronyism.

Previous literature mostly studies how political connections bring positive effects such as bank loans and bailouts to firms (Johnson and Mitton, 2003, Khwaja and Mian, 2005, Faccio 2006, Faccio et al. 2006).[8] We instead study how subsidized firms in return assist politicians. This reciprocal relationship has rarely been studied. One exception is Chen and Kung (2018) who also study reciprocal cronyism in Chinese land market. However, their channel is still through connection, i.e., connected firms obtain cheaper lands and politicians in the city with such cheaper land sales have higher probability to be promoted. We instead use publicly listed firm data and provide a detailed mechanism through firm's investment decision from corporate finance perspective.

Moreover, this paper also enriches the existing political cycle literature. Recent dominant findings suggested that private firms' investments decreased just before elections or political turnovers, possibly due to uncertainty, such as the work by Julio and Yook (2012),

[8] Fan et al. (2007) pioneered political connection literature for China by using whether CEOs have served in the government to proxy for connection, following the construction method from Faccio (2006). Moreover, they find negative outcome effect for connected firms in contrast to the findings from majority other countries. Then it's doubtful what benefits can be obtained from connecting to the government and why firms chose to connect if such relation destroys firm values.

which stands in contrast to Nordhaus (1975)'s theoretical prediction. However, we care more about firm heterogeneity considering politicians' limited attention, and find that more favored firms (in terms of higher land subsidies) exhibit more Nordhaus-style political investment cycles.

The rest of this paper proceeds as follows. Section 2 introduces the institutional background. Section 3 discusses data and details how we construct the key measures of land subsidy and political turnovers. In Section 4, we present empirical analysis: Section 4.1 outlines the empirical strategy; Section 4.2 reports the baseline results; Section 4.3 conducts robustness checks; and Section 4.4 includes discussions on some supporting evidence. Section 5 addresses concerns about the endogeneity issues. Section 6 concludes.

2. Background on China's Political Institutions and Land Policy

2.1 China's Political Institutions

China is an authoritarian government with a one-party system and is ruled by the China Communist Party. There are several key layers of government. From top to bottom, they include: central, provincial, city, county, town, and village. In this paper, we use city to short for prefecture level cities which is larger concept than the urban area, more comparable to county in the US. There are 33 provincial governments and 334 city governments. However, the key layer for interacting with publicly listed firms is city government, the very middle layer, simply because of limited attention.

The de facto leader in a region is its party secretary, not its city mayor or provincial governor. The mayor reports to the party secretary as the party secretary stands for the communist party. In theory, the mayor should be responsible for the economic development of the city but, considering the important regional economic and political role that large enterprises play, the party secretary has strong incentives to build connections with these large enterprises.

Approximately every five years, each provincial administrative region holds a PCCP, the

most important event related to turnover of city party secretaries. There are also occurrences of the National Congress of the Communist Party (NCCP). The effects of NCCPs will be controlled for in our year fixed effect variable because they happened in 2002, 2007, and 2012 during our sample period. The PCCPs have provincial variations as well, thus providing an experiment-like environment for our investigation.

2.2 China's Land Policy

In order to keep urban land expansion under control, the central government amended the Land Administrative Law in 1998 and enacted a new set of arable land protection provisions in order to prohibit any additional loss of arable land. In the same year, a new ministry, the Ministry of National Land and Resources of the People's Republic of China, was established to strengthen the central government's control over land development.

Since 1998, an urban land quota system has been implemented via a hierarchical, top-down planning process. The central government creates the nation's long-term land development plan. The first plan covered the period from 1997 through 2010. The plan dictates the maximum amount of newly developed urban land for each province in the long term as well as the minimum amount of arable rural land that must be kept in reserve. Given these two important constraints, provincial governments make their own long-term plans for land development. In addition, provincial governments also make short-term (five-year or annual) land development plans. According to these plans, they allocate land use quotas to cities that fall under their administrative control.

By Chinese law, all urban land is owned by the state. The authority that is in charge of general land use planning and guideline setting is the city's land reserve and allocation committee, whose members include the city's key leaders and bureau directors from relevant government agencies. Apparently the city's top leader has a decisive voice in key urban planning and land development strategies such as setting urban spatial boundaries. After setting up the urban development strategies and guidelines, the committee typically delegates to the city's urban planning bureau the routine decisions, such as use type and

detailed restrictions on floor-area-ratio (FAR)[9], building height, green area rate, etc. for each parcel of land to be developed. After the urban planning bureau has set the detailed use regulations for a land parcel, the land is turned over to the city's land bureau for sale. Note what is actually for sale is the leasehold of the land. The typical leasehold duration for residential-use land is 70 years, and for purely commercial-use land it is 40 years. For industrial land, the duration is shorter than 50 years. Since 1988, the use rights for vacant urban land parcels have been allocated through leaseholds by city land bureaus.

To curb corruption in land transactions, the Central government passed a law in 2002 dictating that all land used for profit must be sold through public auction. This law has been strictly enforced for residential and commercial land since August 31, 2004. For industrial land, there is still wiggle room and we find many industrial land transactions that occurred through negotiated sales in our data. It is worth mentioning that about three quarters of land sale revenues come from the sale of residential land, however, the majority of land area sold is industrial (Wang, Zhang and Zhou, 2018). City governments tend to deliberately lower the sale prices of industrial land.

Since the late 1970s, China has gone through several waves of fiscal reforms aimed at decentralizing its fiscal system and fiscal management. Fiscal decentralization led to a perpetually declining share of central fiscal income, and the central government acted to turn this tide. In 1994, the tax-sharing reform was implemented and consequently 75 percent of the value-added tax, the largest source of tax revenue, went to the central government. Corporate income tax, which was originally designated as a local tax in 1994, was reclassified as a shared tax between the central and local governments after 2000. As a result of repeated rearrangements of tax revenues in favor of the central government, local governments underwent increasing fiscal pressures because, in China, local governments are largely responsible for provision of local public goods and for local economic development (Lardy, 1975). Against this backdrop, land sale revenues rose to prominence and became the largest source of extra-budgetary income for local governments. Over the past two decades,

[9] Floor-area-ratio is the total floor space built on a land parcel divided by the total land area. In order to regulate building density, the city government typically imposes an upper limit on FAR which specifies the maximum floor space that can be built per unit of land (Cai, Wang and Zhang, 2017).

city governments have increasingly relied on land-leasing revenues to finance provision of urban public goods such as infrastructure, which in turn can help boost local GDP. The ratio of land sale revenues to local fiscal revenues for prefecture city governments increased from 10% in 2000 to 45% in 2010 (Wang, Zhang and Zhou, 2018).

China is economically decentralized, and local governments are responsible for around 80% of national fiscal expenditures according to Lardy (1975). Local governments own land in their respective regions. In the 1990s, because privatization had just begun, local governments mainly faced their own region's SOEs including SOEs specializing real estate as private firms are sparse. Local governments owned these local SOEs as well. Therefore, lands were directly transferred to these SOEs. This issue also played a part in our decision to study 1998 and later – it was not only due to data availability.

3. Data, Measurement, and Summary Statistics

3.1 Data Sources

Our data sample is composed of large-scale land transaction data which we use to calculate our land subsidy measure, firm-level data which we use for firm performance analysis, regional macroeconomic data and data on politicians' characteristics for control variables, and political timing variables related to local leader turnover.

The land data is from each city's Land Bureau, which lists on its official website all the land transaction information for that city. For our research purposes, we collected the data from 2001 through 2013. The year 2013 corresponds to the latest round of large-scale turnovers of city leaders. For each land parcel transacted, we have information on the transaction date, sale price, reservation price, land area, density regulation, detailed address, and the buyers (which will be denoted as firm names if they are firms), and land usage type (which is categorized as residential, commercial, or industrial).[10]

Firm-level data are obtained from Chinese Stock Market Accounting Research (CSMAR)

[10] If the land for sale is industrial land, then surely the purchasers are firms as denoted in the data. However, land purchasers for other purposes can be denoted as persons. Since we focus in this study on large listed firms, the possibility for land purchasers that are firms to be denoted as persons is extremely low.

and WIND from 1998 through 2013. These two datasets are very comprehensive and have been used widely in Chinese financial market studies.

The regional macroeconomic data is from *China City Statistic Yearbooks*. We manually collected local leaders' characteristics such as age and start date and end date of office term from each city government's website and supplemented it with information from Baidu Baike, Baidu version of wikipedia.

3.2 Measurement of Land Subsidy

We first use the Baidu Map App for each land parcel to find its longitude and latitude based on its detailed address information. Then we set the longitude and latitude of each industrial land parcel as the center and draw three concentric circles with radii of 1.5 km, 3 km, and 5 km, respectively. We then calculate the average unit price of all the residential and commercial land parcels within the three circles that are sold in the same year as the industrial parcels. Because most of the residential and commercial land parcels sold during our sample period are publicly auctioned, their prices reflect the land's market value. Note that it is not uncommon for industrial land to be sold through negotiated sales. We then use the ratio of the average unit price of all residential and commercial land sold during the same year and within the same neighborhood as each industrial land parcel over the industrial land's unit price to measure the degree of subsidy on the industrial land. If the ratio is equal to one, then the industrial land is sold at market value and there is no subsidy. Our subsidy measure takes three values which correspond to the three neighborhood circle radii and are denoted as S1, S2, and S (1.5km, 3km, and 5km, respectively). We use the last one in our main regressions and the other two as robustness checks. So the last one's numeric suffix is dropped.

There are some industrial land parcel sales for which we cannot find any matching residential or commercial land sales. For such cases, we match the industrial land sale with the surrounding residential and commercial land parcels sold within *two years before or after* the sale of the industrial land. Because land prices change over time, we use a housing price deflator at the city level to adjust the prices of residential and commercial land sold

in different years from that of the industrial land. The deflator is constructed based on the city level yearly housing price obtained from the China Regional Economic Yearbook.

There are concerns that industrial land and residential land are inappropriate for comparison. We here argue that local governments have faced very tight budgets since the 1994 tax reform due to lower tax revenues, and that selling land is the largest source of revenue for local governments (Xu, 2011). Since the average tenure length for a city leader is five years, and it takes firms years to bring a land parcel from construction to production, local leaders most likely try to maximize instant land sale revenue in order to boost discretionary funds. If maximizing sale revenue is the main goal, then industrial lands and residential lands can be viewed as the same, or at least similar.

3.3 Matching Land Deals with Firms and Subsidy Index Construction

After we measure the degree of subsidy for each industrial land parcel, we match industrial land parcels to publicly listed firms by buyer name. There are a total of 2852 publicly listed firms from 1998 through 2013 in our dataset, and we have matched 2616 land deals with them. We do not consider firm subsidiaries' land purchases as these subsidiaries are independent legal entities; their accounting balance sheet information is not shown in the parent firm's reports.

We examine how the investments made by all the publicly listed firms from 1998 through 2013 are related to the land subsidies they receive. We assume that the effect of land subsidies is persistent. This is not only because a subsidy serves as a reduction in imputed land rents over time, but also because firms who receive favorable subsidies from local governments have built up relationships with local leaders that may last for a long time.

Below we describe how we construct the land subsidy index for each firm over time. First, consider firm i, which purchased an industrial land parcel at year t, but had never purchased any land before year t. We can directly apply the subsidy measure constructed above to the firm from year t onward. We consider that it receives no land subsidy before year t and hence we set its land subsidy index to 1 for all years before year t. Second, if

firm *i* had multiple land transactions in year *t,* then we take the average of the subsidy measure across different land deals in that year as the land subsidy index for the firm from year *t* onward. Last, if firm *i* purchased multiple land parcels in multiple years (say, the firm bought one land parcel in year t_1 and another land parcel in year t_2), then its land subsidy index would be 1 for all the years before t_1 and would take the subsidy measure based on the year t_1 transaction for the years from t_1 to t_2-*1*. Then the subsidy measure based on the year t_2 transaction would be used as the land subsidy index for the firm from t_2 onward. Note that here we assume the firm's relationship with local government is updated and reflected in the most recent land deals. We also tried other ways of assigning the land subsidy index. These will be detailed in our robustness check section.

There are a limited number of cases where a firm purchased multiple industrial land parcels not only in its own headquartered city but also in another city. We consider that a firm has firm business in all cities where it owns land, and that it has a relationship with any city government that grants a land subsidy to it. As such, we append to our sample a similar set of firm-year observations for a given firm but in a different city. In each of the observations, the land subsidy index is assigned in the same way as previously discussed but based on land deals in that different city only, and the firm characteristics remain the same.[11] The city characteristics are changed correspondingly. We have done a robustness check by pooling all the land deals for a given firm in a given year into one group and taking the average. We find that this doesn't change our results much.

3.4. The Timing of Political Turnover

We use two turnover indicators denoted as *Predicted* and *PPC*, respectively. The first indicator *Predicted* uses the actual turnover year of city leader plus five years to predict the next turnover, because five years is the typical length of one term for a city leader by law. If a leader is in office for more than 5 years, then we treat the sixth year as the start of a

[11] Unfortunately we do not have detailed information on each firm's characteristics and performance in each city. However, a city where a firm purchases land must be a large component of that firm's balance sheet, such as sales. Making a large land deal is a huge commitment for a firm to increase its production in a city. There is a learning curve for a firm to enter a city market. It would be very unlikely for a firm without major sales in a city to purchase a land parcel.

new term and use the sixth year plus five years to predict the next turnover. According to our hypothesis, the fourth year should be the year when a local leader needs to improve GDP performance the most. Therefore, the local leader has the strongest incentive to push the big firms who have received higher land subsidies to increase their investments in the fourth year, in return for the favors they received. This predicted turnover is shown to have a strong correlation with actual turnover but alleviates endogeneity concern over turnover timing.[12]

PPC is a discrete dummy variable. We let *PPC* take the value of 1 for each year when PCCP takes place in the month after July. If the month when PCCP takes place is before June, then *PPC* takes the value of 1 for the previous year.

3.4 Descriptive Statistics

[Insert Table 1 here]

Table 1 shows the distribution of firms with their subsidy index across all the provinces in China.[13] The four provinces having the highest percentage of firms with land deals are Guizhou, Anhui, Shandong, and Guangxi. Our land subsidy measure does not seem to have a close relation with local economic development. For our land subsidy measure, both the highest measure (10.24 for Gansu) and the lowest measure (1.14 for Shaanxi) are in underdeveloped regions, and Beijing, a highly developed provincial level administrative region, receives a high score of 6.46 as well. If we use GDP per capita as a proxy for economic development level, there are weak relationships between development level and land deals, and between development level and our subsidy measure.

[Insert Table 2 here]

[12] The strong correlation is available upon request.

[13] Here we use "province" to cover provincial-level administrative regions, which include 22 provinces, 5 autonomous regions, and four municipalities (Beijing, Chongqing, Shanghai, and Tianjin). The leaders (i.e., party secretaries) in these areas enjoy the same political status as provincial party secretaries.

Table 2 displays the industry distribution of all the sample firms and of the firms with land deals only. The manufacturing industry has the most firms, more than the rest of the industries combined. About one third of manufacturing firms had land transactions. Other industries have a similar fraction but mining, construction, accommodation and catering, and IT made no land deals at all. This is mostly likely a consequence of their industry properties.

Table 3 shows summary statistics for our key variables. We winsorized all variables at the 1% and 99% levels. The mean for land subsidy measure based on S1, S2, and S, differentiated by the surrounding distances, is 2.316, which indicates that the surrounding residential and commercial land prices were 131.6% higher than the industrial land parcel's unit price. Our land subsidy measures also displayed large variations with a standard deviation of 7.978, ranging from a minimum of 0.397 to a maximum of 108.856. This large variation is advantageous for empirical analysis. The other key firm level variables such as investment, Tobin's Q, cash flow, and sales growth rate exhibit mean values similar to those of other listed firm studies (Giannetti, Liao, and Yu (2015), Cao et al. (2015)). In particular, the mean value for investment rate is 0.065, the mean value for Tobin's Q is 1.756, the mean value for cash flow is 0.078, and the mean for sales growth rate is 0.234. The standard deviations of these variables are comparable to their mean values, unlike the much larger standard deviation over mean value that we see for land subsidy.

As for political variables, the real and predicted city leader turnovers have mean values of 0.299 and 0.28 respectively, with standard deviations of around 0.45. The real city leader turnover fraction around PCCP is displayed in Figure 3. These mean values deviate a little bit from the five-year turnover period, probably because there are exogenous forces affecting leader turnover, such as death and the anti-corruption campaign of 2013. The PCCP timing-related variables have mean values a little bit higher than 0.2, indicating more strongly that the average turnover period is five years. The average secretary age is 54 years old.

[Insert Table 3 here]

4. Empirical Strategy and Results

In this section, we conduct the empirical analysis of our investigation into how corporate investment and efficiency change with local governments' land subsidies over political cycles. We first present the empirical strategy then discuss the baseline results and robustness checks.

4.1. Empirical strategy

Our baseline empirical model specifies that

$$y_{cit} = \alpha + \beta * S_{cit} + \gamma * cycle_{ct} + \theta * S_{it} * cycle_{ct} + \lambda * X_{it} + \phi * Z_{ct} + U_t + I_i + \varepsilon_{cit}$$

In the above equation, y_{cit} is the outcome variable at time *t* for firm *i* who at some point purchased land in city *c*.[14] For example, one of the key dependent variables we are interested in is the firm investment rate, defined as capital expenditure divided by beginning-of-year book value of total assets (lagged total assets). S_{cit} is the land subsidy index at time *t* of firm *i* based on land deals in city *c*. $cycle_{ct}$ is a vector of the political cycle indicator of city *c* at time *t*. Specifically, $cycle = [TurnovePre2, TurnoverPre1, Turnover, TurnoverPost1]$, respectively representing two years before the predicted city leader turnover, one year before, the year of turnover itself, and one year after. We are particularly interested in how the land subsidy index plays on the firm's investments and efficiency when interacted with the cycle indicators.

We control for a vector of city-level time-varying characteristics, denoted as Z_{ct}. We use prefecture GDP growth rate to control for potential macroeconomic growth opportunities for the firms in that city. Other key city economic controls include local population and foreign direct investment (FDI). FDI is relevant not only in economic terms but is also a proxy for the local institutional environment which is an important element in our study (Smarzynska and Wei, 2000).

[14] If a firm has never purchased any land, its land subsidy index is set to be 1, a neutral value indicating the possibility of no relationship with local government, and city *c* is taken as its headquartered city.

We also control for a vector of firm-level time-varying characteristics, denoted as X_{it}. The baseline control variables include lagged Tobin's Q[15], sales growth, and cash flow as measured by EBIT plus depreciation and amortization minus interest expense and taxes divided by beginning-of-year book value of total assets. These firm-level control variables are commonly used controls in the related literature such as Julio and Yook (2012). In the regression, we control for firm and year fixed effects, subsuming time invariant firm specific factors and common shocks to all the firms across years.

In addition, we also control for TFP of each firm not only because it might be an important factor in determining investment but also because TFP might be key for local government decisions regarding subsidy recipients and amounts. Here, we follow the literature such as Schoar (2002) and estimate the following equation:

$$sale_{ijt} = \rho_{jt} + \kappa_{jt} l_{ijt} + \delta_{jt} k_{ijt} + \chi_{jt} m_{ijt} + e_{ijt}$$

where sale_{ijt} is the logarithm of firm *i*'s sales in year *t* where *j* is the industry firm *i* belongs to, l_{ijt} is the log of firm *i*'s employment of workers, k_{ijt} is the log of firm *i*'s total capital assets, and m_{ijt} is the log of firm *i*'s input of intermediate goods used for production.[16] The average TFP in our sample is 1.5% and the standard deviation is 19%, a large dispersion. This is mostly in line with the literature.

4.2 Political Cycle and Corporate Investment: Baseline Result

In Table 4 we report the results of the regressions of firm investment rate on the land subsidy index and political cycle indicators and their interactions from 1998 through 2013. The dependent variable is firm investment rate, defined as capital expenditure over lagged total assets. We use *TurnoverPreX* to denote *X* years preceding the expected turnover, and *TurnoverPostX* to denote *X* years after the expected turnover. We experimented with two types of political cycle indicators corresponding to the two variables of expected turnover

[15] Tobin′s Q is measured as book value of total assets minus book value of equity plus market value of equity divided by book value of total assets.

[16] The value of intermediate goods is not directly available. We use both the production method and the revenue method commonly used in the literature to obtain two values and we take the average of these two values for our measure. For the production method, intermediate goods input = main business cost + financing fee + management fee + sales fee – labor compensation - depreciation. For the revenue method, intermediate goods input = main business revenue – depreciation – labor compensation – business tax – main business profit. All of these variables are obtained from CSMAR.

timing of local leaders; *Predicted* and *PPC*. The results are all similar as shown in Table 4.

Columns 1 and 2 of Table 4 show the baseline results of this paper.[17] Column 1 controls for industry fixed effects while column 2 controls for firm fixed effects. The key coefficient of interest is the interaction of *TurnoverPre1* and a firm's land subsidy index. It turns out to be highly significant and positive, indicating that, holding other control variables constant, in the year preceding the expected turnover of local leadership, a firm that has received higher land subsidies in the past invests more. So a firm that has received greater land subsidies exhibits a more political cycle of investment. As to the magnitude of such effect, a one-standard-deviation increase in the land subsidy index leads the firm's investment rate to increase by 0.0024, which represents 3.7% growth compared to the sample mean investment rate (0.065). Politically, the local economic performance during the year preceding the expected turnover is key to the promotion of the current local leader. So the local leader may have strong incentives to push the heavily subsidized large firms in the city to increase investment in order to boost GDP during that critical time as a returned favor. However, the coefficient of the base term of land subsidy index is insignificant, indicating that, on average, firm investment is not influenced by land subsidy.

Control variables display expected signs. Firms with higher efficiency as reflected by higher Tobin's Q invest more. Higher cash flows induce greater investment. Notably, the politician control variable, Secretary Age, has a negative coefficient, suggesting that older politicians who are closer to retirement have less incentive to improve local economic performance and hence the general investment environment in the city slows down, which could contribute to lowered investment rate levels. This negative effect becomes insignificant, however, after we control for firm fixed effects. Another possible reason is that firms find that returning favors to retiring leaders brings very low future returns compared to making deals with leaders who will be promoted.

Columns 3 and 4 present the results using cycle indicators that are based on the expected timing of PCCP, denoted as *PPC*, predicted by the convening of the Provincial Congress of the Communist Party. The results are fairly similar to those of columns 1 and 2.

One notable variable is TurnoverPost1*S, whose coefficients are both economically and

[17] Our result is robust to non-winsorized data as well as data that excludes obvious outliers. Available upon request.

statistically significant when we use the *Predicted* turnover dummy. However, their significance almost vanished for the PCCP dummy, showing non-robustness of the post-turnover effect.

4.3 Robustness

Neighborhoods Defined by Different Radii

For a robustness check, we first use different neighborhood distances to construct our land subsidy measure. Remember that for any parcel of industrial land, the benchmark average neighborhood residential and commercial land price we use includes all of the land parcels within a five-kilometer radius. We now turn to 1.5 and 3 kilometers, and use S1 and S2 to respectively denote the two measures thus defined. Using shorter distances means that the land attributes are more similar to the industrial land but there are fewer land parcels considered. From Table 3 summary statistics, S1 and S2 have mean values of 2.049 and 2.198, similar to our main subsidy value of 2.316.

We then interact S1 and S2 with our political cycle indicators and run regressions similar to those used in Table 4. Table 5 reports the results. The results for S1 and S2 are comparable to our baseline results as shown in Table 4. Even the control variables display remarkably similar coefficients.

[Insert Table 5 here]

Firms with no Land Deals

Another concern over our baseline regression is the presence of no-land-transaction firms in our sample. For these firms we set the land subsidy measure to be 1, a neutral value representing no land subsidy at all. We will further consider the differences in firm attributes between firms with land transactions and firms without when we deal with endogeneity in the last section of this paper.

As a robustness check here, we restrict our sample to the 990 firms that had land

transactions. We also further restrict our sample to the 917 of those 990 that had received one or more land subsidies; i.e., those firms with S>1 only. The results are reported in Table 6. They are still remarkably similar to those of our baseline regression. The average coefficient of TurnoverPre1*S is 0.0003, which is significant at the 5% level. The control variables also display similar magnitudes to those of the baseline regression.

[Insert Table 6 here]

Alternative Land Subsidy Index Construction for No-land-deal Years

There is also concern over the way we assign the land subsidy index to firms during no-land-transaction years. In the baseline regressions, we base the land subsidy index in such years on the most recent previous land transaction. If there have been no land deals in the past, we set the land subsidy index to be 1 (see discussion in Section 3.2).

[Insert Table 7 here]

As a robustness check, Table 7 reports the regression results using an alternative method of constructing the land subsidy index over time. Some may worry that the relationship between a city government and a firm that stems from some subsidized land deal may only last for the duration of the office span of the leader who grants the land subsidy to the firm. As such, we base the land subsidy index in no-land-deal years on the most recent previous land transaction only if those years are within the office span of the same city leader. Otherwise, we set the index to be 1. All the columns in Table 7 display remarkably robust patterns for the key variables of interest as well as for the control variables. The coefficients for *TurnoverPre1* are even slightly larger than those in the baseline regressions.[18]

Finally, we also do a robustness check by adding to our baseline regressions (as in Table 5) a set of provincial economic variables, including province GDP, province GDP growth rate, and province industry structure, in order to capture possible regional trends in

[18] We also experimented with other ways of setting the subsidy index for no-land-deal years. For example, we set the average land subsidy measures of two consecutive land deals to the interim years between the two land deals. The results are robust, and are available upon request.

economic development. The key results, reported in Table 2, remain fairly robust.

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4.4. Reciprocal Favors: Other Supportive Evidence

Investment Efficiency

If it is indeed true that firms return land subsidy favors by investing more in the year just before an expected political turnover, we conjecture that such politically driven investments might lead to lower investment efficiency before turnovers. Following the existing literature such as Gertner, Powers and Scharfstein (2002), we view the sensitivity of investment to Tobin's Q as a measure of investment efficiency given that investment rates should be higher when growth opportunities (as measured by Tobin's Q) are higher.

[Insert Table 8 here]

To test our hypothesis, we run another set of regressions. The specifications are the same as for the baseline regressions in Table 4 except that we add in triple interaction terms, Cycle*Subsidy*Q. Table 8 reports the results. The coefficients on the interaction term of *TurnoverPre1*S*Q* are all negative in all six columns and are mostly significant. The coefficients on *TurnoverPre2*S*Q* are mostly significantly negative as well. All these findings indicate reduced investment efficiency before political turnovers for firms that are more subsidized, which supports the reciprocal story of this paper.

Local leaders' Career Incentives

At the heart of our story is local leaders' career incentives, which drive their pursuit of GDP performance. If a city leader has stronger career incentives, then in a reciprocal crony relationship, he or she will press harder on the related firm to make more investments in order to boost GDP during key political years. Therefore, we expect TurnoverPre1*S to have a greater effect on investment under those leaders.

To check whether this is indeed true, we investigate the effects of heterogeneous career incentives. Specifically we use an indicator based on a local leader's age at the start of

office as a proxy for the leader's career incentives, with "1" indicating strong incentives.[19] We then add to our main regressions a triple interaction term comprised of TurnoverPre1, land subsidy (S) and this incentive indicator. If the estimated coefficient of the interaction term is positive, then it means that under more highly incentivized local leaders, the investments of those heavily subsidized firms exhibit even stronger political cycles than they do under less incentivized leaders, which supports our story.

[Insert Table 9 here]

Table 9 reports the results. Columns (1) through (3) are based on predicted cycles, while columns (4) through (6) are based on PPC cycles. We present the results using three different crony measures based on differing radii. As expected, the triple interaction term is mostly significant and positive throughout all the columns in the table.

5. Further Investigation on Endogeneity

If firms' unobservable investment determinants are associated with the land subsidy index, and those unobservables fluctuate over political cycles in a systematic way, then the estimated coefficient of *TurnoverPre1*S* in our baseline regression (see Table 4) may be biased. We therefore check the robustness of our key finding to controlling for various variables that may influence firms' investment rates.

[Insert Table 10 here]

[Insert Table 11 here]

[19] The incentive indicator, denoted as IC, is constructed as follows: Incentive=1 if the office start age of the current city leader is below 50 and the city is neither provincial nor sub-provincial; Incentive=0 otherwise. According to Wang, Zhang and Zhou (2018), a city leader of a non-provincial or non-sub-provincial city is typically of the prefectural level and the retirement age for such leaders is 60. Considering that a single term of office is officially five years long and a leader needs one to two terms to prove himself/herself, those leaders below 50 years old have longer career spans and higher incentives.

We first examine whether firms with land deals differ significantly from firms without land deals in key firm characteristics. Table 10 shows the group difference results. Land Deal = 0 when a firm has not made any land deals with local governments. Land Deal = 1 if a firm has ever made a land deal with a local government. Columns (1) and (2) report the mean and standard deviation for firms with Land Deal=0 and Land Deal=1, respectively. Column (3) reports the mean differences for these two groups. Column (4) reports the conditional mean differences for these two groups, specifically, conditional on firm and year fixed effects. If there exist significant differences in some firm characteristics between these two groups after conditioning on year and firm fixed effects, the characteristics in question are likely to be related to the land subsidy index and may drive the effect of *TurnoverPre1*S* on firm investment. Using the 1999-2007 manufacturing survey data, Aghion et al. (2015) found that industry policies such as tax breaks, bank credits, and tariff reductions in China targeting a more competitive sector fostered that sector's growth. However, they did not consider land policy, which in our view is more important than other elements. It might be interesting to see (and we will examine in our paper) whether higher TFP leads to land grants and lower pricing, and consequently explains China's growth from an industrial land policy perspective.

As shown in Table 10, we find that firms that purchased lands have TFP levels much lower than those of firms with no land deals ever. The conditional difference is 0.01, and is highly significant at the 1% level. This may be because local governemnts tend to grant industrial land to firms with relatively lower TFP levels. Or it may be because, after firm obtains a land parcel at a cheap price from the local government, firms become prone to making investments in return for favors from the government instead of for pure business purposes, which causes their TFP to decline.

[Insert Table 14 here]

Firms with land deals are on average older than non-land-deal firms. The mean ages are 14.14 years and 11.72 years, respectively. Older firms in a given region usually have deep ties with various local government agencies and meet frequently with them. This

bureaucratic feature, quite common in emerging markets, gives local firms more opportunities to build connections with local governments – and more need to do so. Trust takes years to build, so older firms have the advantage. The conditional difference, however, almost vanished, though it remained statistically significant.

SOEs are often viewed to have closer government relationships because of their ownership. We wanted to find out whether SOEs have better access to subsidized land. In the result table for ownership type, we find that 8% of firms with land deals are SOEs while 18.8% of non-land-deal firms are SOEs. The difference is statistically large, but the conditional difference shrinks to 1.1%. The statistical level for the conditional difference also decreases to 10%. This confirms that, since the SOE reform regime of the late 1990s, local governments have been losing control of SOEs as the central government recentralizes its control. Local government officials thus go to private firms to improve their political success.

Land is the most popular collateral asset in China for bank borrowing, and banks dominate China's financial system. One concern for our regression results concerns leverage, as firms can use purchased land to increase their borrowing abilities. Thus, the increase in investment might be due to increased borrowing and not due to government pressure. Note, however, in Table 10 that neither the difference nor the conditional difference show significant increases in leverage, which alleviates our leverage concerns.[20]

Large firms (in terms of asset size) are regionally and systemically important. Local government is incented to connect with them as their investments can generate multiplying investment effects among other firms. Indeed, we find that firms with land deals are on average larger, and that they grew even larger after their land deals. The conditional difference is -0.084, or $e^{-0.084}=0.919$, indicating that firms receiving land deals grow around 10% more after controlling for year and firm fixed effects.

Lastly, we examine group differences among firms' political connection index values, as commonly done in the literature by Fan, Wong, and Zhang (2007), who code a firm as politically connected in a given year if its CEO or any of its board members were ever government bureaucrats or military officers. We find that no-land-deal firm year

[20] Our unreported results include leverage in the regressions. The coefficients are largely unaffected.

observations rate as 20.6% connected while those for land-deal firms are measured at 23.2%, but this difference vanishes after controlling for firm and year fixed effects.

Also, for land-deal firms only, we divide the sample into two groups by designating those firm-year observations as highly subsidized if their corresponding subsidy measure is greater than or equal to the mean of the land-deal subsample. We then compare the mean differences in firm characteristics between these two groups, as shown in Table 11. We find no significant mean differences in firm characteristics conditional on firm and year fixed effects.

We then add the firm characteristics that exhibit significant group differences and their interactions with our key variable *TurnoverPre1* to our main regression one by one. The results are shown in Table 12. Due to space limitations, we only show the results that use cycle indicators based on *predicted*. We find that although some of the coefficients are largely affected, our key coefficient of interest, the one on *TurnoverPre1*S*, is unaffected throughout the four regressions, alleviating our concern over the omitted variable endogeneity problem.

PS Matching Analysis

We also adopt a PS matching appoach to check the treatment effect of heavily subsidized firms. Specifically, we divide the sample into two groups by designating firm-year observations as heavily subsidized (i.e., treated) if their corresponding subsidy measure is greater than or equal to the top 15^{th} percentile of the subsample with S1>1. Then, through the PS matching approach, we predict the propensity score of each firm-year's likelihood of being heavily subsidized (i.e., being treated), using the same control variables used in our main regressions of Table 4 in addition to the ones we just discussed above, such as TFP, firm age, firm size, and ownership. We then compare the investment rates in key political years (i.e., those that occur immediately before the actual turnover years) between the treated group and the untreated group.

The results are shown in Table 13. As can be seen, the ATT (average treatment effect) is positive and significant, suggesting that heavily subsidized firms have higher investment rates in key political years than other firms do. If we relax the standard of being heavily

subsidized and redefine the group using subsidy measure cutoffs at the top 15th percentile, top 20th percentile and so on until the top 60th percentile, we can see from Table 13 that the ATT gradually decreases and its significance level declines, which is consistent with our story.

Finally, there is a concern that in key political years, local governments tend to grant more land subsidies and simultaneously adopt other policies to stimulate investment, generating a positive correlation between land subsidies and investment rates in those years. To address this concern, we compare land subsidies in key political years with those in non-key years. Table A3 reports the differences in land subsidies between the TurnoverPre1 year and other years. Column (3) reports the differences in land subsidies while Column (4) reports the conditional land subsidies after factoring out the firm and year fixed effects. One can see that land subsidies are significantly lower in key political years. This difference gets much weaker and becomes insignificant after we control for the firm and year fixed effects.

6. Conclusion

In this paper, we investigated one of China's key industrial policies, its industrial land sale policy, which is mostly omitted in the previous literature concerning relations between China's businesses and their local governments. After China's "Grasp the large, let go of the small" state enterprise reform, local governments lost control of state enterprises, so they turned to private businesses for investent. Politicians build relationships with local businesses by offering them subsidized land parcels, thereby obtaining return in the form of increased investment in key promotion years.

While previous literature such as Che and Qian (1998) argues that local government connections can shelter businesses from the grabbing hand of upper government, we consider here the cost side of government connections. We find that heavily subsidized firms induce reductions in their own investment efficiency by increasing investment just before expected turnover years. Our paper unveils an unexpected side effect of the prevalent industrial policy in Chinese cities: it incentivizes politicians to subsidize

industrial land parcels in order to achieve political success.

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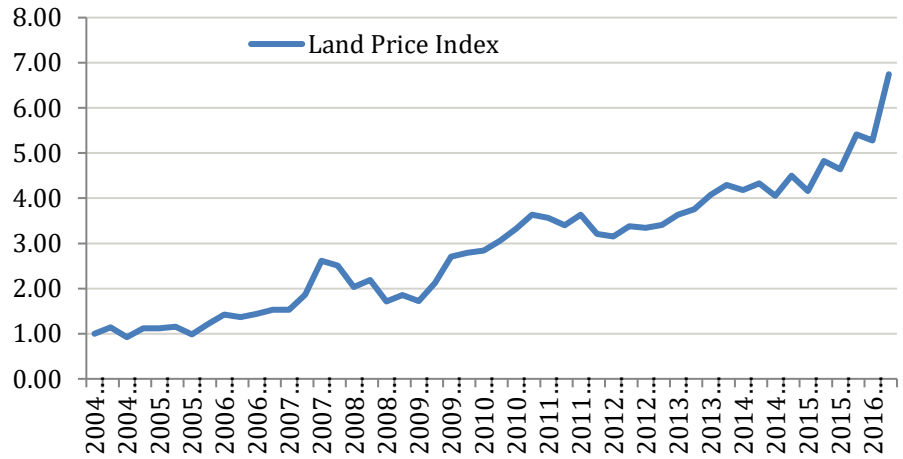
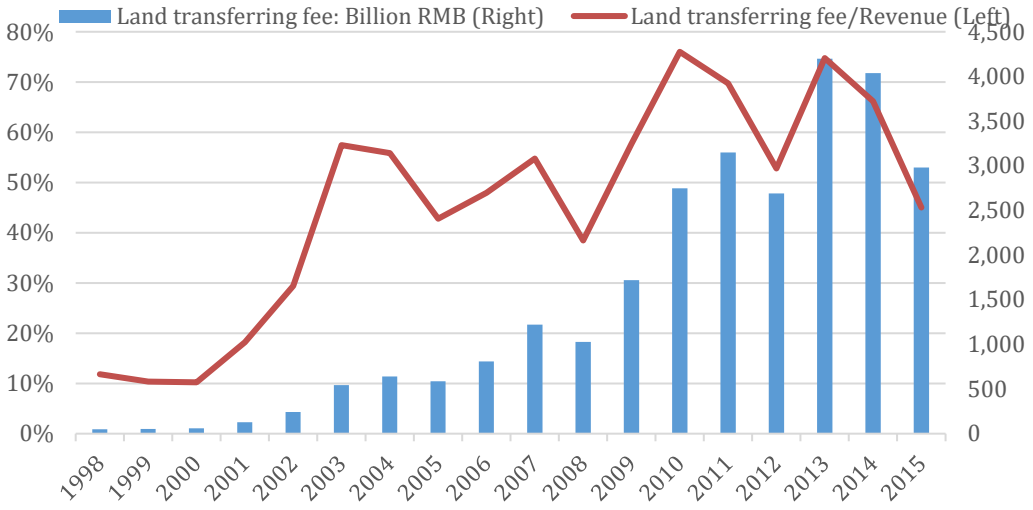
Figure 1: Hedonic Land Price Index (2004-2016)



Source: The hedonic land price data are from Wu, Gyourko, and Deng (2012), and are downloadable at http://real.wharton.upenn.edu/~gyourko/chineselandpriceindex.html.

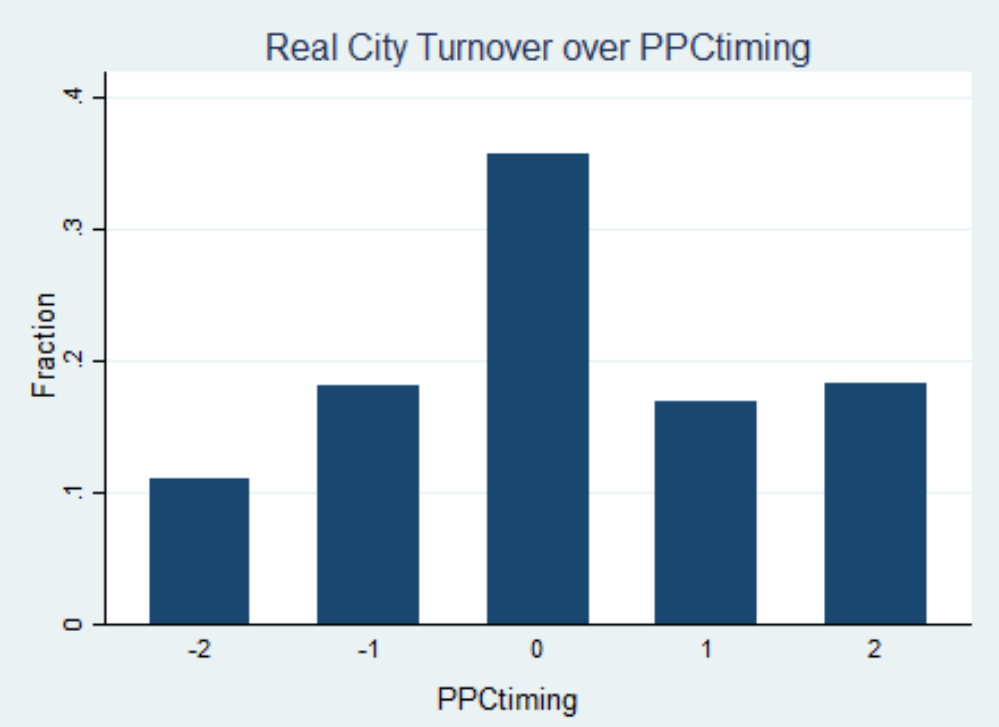
Figure 2: Local Government Revenue Structure (1998-2015)



Source: China Statistic Yearbook for Regional Economy 1998-2015

Figure 3: City Leader Turnover Over PPC Timing

This figure shows the frequency distribution of city party secretary turnover around PCCP when we do not control for the party secretary's age and other factors that exogenously limit the city leader's tenure.



Source: Hand collected.

Table 1: Provincial Distribution of All Firms and Firms with Land Deals

This table reports the distribution across provinces in China for all the sample firms and for all the firms with land deals. The average subsidy index is the average of surrounding residential and commercial land prices over the price of purchased industrial land for each firm within that province. GDP per capita for each province is for 2015.

Province	No. of Firms	No. of Obs.	No. of Firms with Land Deals	No. of Obs.	Average Subsidy Index	GDP per capita (yuan)
Anhui	88	1173	37	497	3.35	35996.56
Beijing	258	3123	49	704	6.46	106497.00
Chongqing	43	589	15	192	2.44	52321.00
Fujian	102	1277	30	412	1.92	67965.52
Gansu	28	402	9	103	10.24	26165.26
Guangdong	429	5090	88	1149	3.04	67503.00
Guangxi	34	498	14	189	4.19	35190.00
Guizhou	20	326	10	173	7.29	29847.25
Hainan	29	445	5	75	1.45	40818.00
Hebei	53	757	24	356	2.29	40255.00
Heilongjiang	34	505	7	104	1.32	39461.56
Henan	73	950	26	343	1.70	39122.61
Hubei	88	1326	29	457	1.64	50653.85
Hunan	84	1092	29	370	2.00	42753.86
Jiangsu	284	3261	107	1233	4.70	87995.00
Jiangxi	35	519	8	130	2.29	36724.00
Jilin	39	598	11	164	1.58	51086.00
Liaoning	76	1076	18	266	1.86	65354.41
Inner Mongolia	26	408	7	109	1.71	71100.54
Ningxia	12	205	5	79	1.85	43805.00
Qinghai	10	166	4	62	1.61	41252.00
Shandong	167	2192	68	909	1.91	64168.30
Shanghai	221	3098	26	367	1.41	103795.54
Shaanxi	36	565	6	106	1.14	34918.71
Shanxi	42	592	11	146	1.97	47626.00
Sichuan	105	1385	29	418	6.09	36775.00
Tianjin	42	594	6	89	1.82	107960.09
Xinjiang	45	640	8	102	1.46	40036.00
Tibet	12	173	1	18	1.30	31999.00
Yunnan	30	453	6	105	1.46	28806.00
Zhejiang	307	3471	94	1048	2.60	77643.69

Table 2: Industry Distribution of Sample Firms and Firms with Land Deals

Industry	No. of firms	No. of firms with Land Deals	%
Agriculture	45	17	37.78%
Mining	71	0	0.00%
Manufacturing	1869	615	32.91%
Utilities	84	32	38.10%
Construction	77	0	0.00%
Wholesale and retail trade	161	43	26.71%
Transportation	89	26	29.21%
Accommodation and catering industry	12	0	0.00%
IT	157	21	13.38%
Real estate	139	0	0.00%
Leasing and business services	29	8	27.59%
Scientific research and technical services	25	2	8.00%
Water conservancy, environment and public facilities management	31	8	25.81%
Education	2	1	50.00%
Health and social work	3	1	33.33%
Culture, sports, entertainment	29	9	31.03%
Comprehensive	23	4	17.39%

Table 3

Summary Statistics

This table reports the summary statistics of key variables used in the paper, including number of observations, mean, standard deviation, minimum value, and maximum value. All variables have been winsorized at the 1% level. The sample period is from 1998 through 2013.

	No. of Obs.	Mean	Stddev	min	max
Panel A: Firm Level Variables					
Investment	20,213	0.065	0.06	0	0.291
S1	20,213	2.049	6.408	0.36	100.762
S2	20,213	2.198	7.065	0.372	89.688
S	20,213	2.316	7.978	0.397	108.856
Q	20,213	1.756	1.596	0.165	11.059
Cash Flow	20,213	0.078	0.072	-0.164	0.366
Sales Growth Rate	20,213	0.234	0.517	-0.687	3.607
Total Factor Productivity	18,166	0.015	0.19	-0.985	0.626
SOE	20,213	0.382	0.486	0	1
Panel B: Political Variables					
Predicted	20,213	0.28	0.449	0	1
Real City Leader Turnover	20,213	0.299	0.458	0	1
PPC	20,213	0.219	0.414	0	1
Secretary Age	20,213	54.379	5.345	39	70
Panel C: City Macro Variables					
log(Population)	20,213	7.741	1.286	4.394	9.878
log(FDI)	20,213	11.395	1.919	5.659	14.233
log(GDP)	20,213	7.741	1.286	4.394	9.878
Marketization	20,213	7.968	1.142	1	9.055

Table 4

Political Cycles and Corporate Investment: Baseline Results

This table reports the panel regressions of firm investment rates on political cycle timing and their interactions with our subsidy measure. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. TurnoverPre2, TurnoverPre1, Turnover, and TurnoverPost1 are timing variables where they are dummies when Turnover=Predict/PPC. The interaction variables are our variables of interest. Control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of city leader. See the variable list table for the definition of variables. Our two measures of political cycles, Predicted and PPC, are used in columns (1)-(2) and (3)-(4), respectively. Columns (1) and (3) control for industry and year fixed effects. Columns (2) and (4) control for firm and year fixed effects. Standard errors are clustered at the firm level, and are reported below the estimated coefficient. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Turnover=Predicted		Turnover=PPC	
	(1)	(2)	(3)	(4)
S	-0.0000	-0.0000	0.0001	0.0001
	(0.0002)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2	-0.0006	-0.0011	0.0044**	0.0019
	(0.0010)	(0.0009)	(0.0020)	(0.0019)
TurnoverPre1	0.0006	0.0006	0.0019	0.0007
	(0.0011)	(0.0010)	(0.0015)	(0.0014)
Turnover	-0.0002	0.0008	0.0044**	0.0046**
	(0.0011)	(0.0010)	(0.0021)	(0.0021)
TurnoverPost1	-0.0003	0.0000	0.0000	-0.0004
	(0.0010)	(0.0010)	(0.0008)	(0.0008)
TurnoverPre2*S	0.0001	0.0002	0.0002	0.0004*
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
TurnoverPre1*S	0.0003**	0.0003**	0.0002**	0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Turnover*S	0.0000	0.0001	-0.0001	-0.0000
	(0.0002)	(0.0002)	(0.0001)	(0.0001)
TurnoverPost1*S	0.0003*	0.0003***	0.0000	0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Q	-0.0002	0.0027***	-0.0002	0.0027***
	(0.0005)	(0.0006)	(0.0005)	(0.0006)
Cash Flow	0.2174***	0.1165***	0.2171***	0.1160***
	(0.0112)	(0.0119)	(0.0112)	(0.0119)
Sales Growth Rate	-0.0018**	-0.0000	-0.0018**	-0.0001
	(0.0009)	(0.0008)	(0.0009)	(0.0008)
log(Population)	0.0019	0.0082	0.0021*	0.0081
	(0.0012)	(0.0072)	(0.0012)	(0.0072)
log(FDI)	-0.0009	0.0009	-0.0008	0.0009
	(0.0007)	(0.0011)	(0.0007)	(0.0011)
log(GDP)	-0.0008	0.0018	-0.0009	0.0019
	(0.0015)	(0.0050)	(0.0015)	(0.0050)
Secretary Age	-0.0004***	-0.0002	-0.0004***	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.0606***	0.0035	0.0595***	0.0036
	(0.0127)	(0.0460)	(0.0127)	(0.0460)

Firm FE	No	Yes	No	Yes
Industry FE	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
Observations	20,213	20,213	20,213	20,213
R-squared	0.2174	0.0519	0.2174	0.0518
Number of Firms	2,603	2,603	2,603	2,603

Table 5

Political Cycles and Corporate Investment: Differing Subsidy Measures

This table reports the panel regressions of firm investment rates on political cycle timing and their interactions with our subsidy measure. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. TurnoverPre2, TurnoverPre1, Turnover, and TurnoverPost1 are timing variables where they are dummies when Turnover=Predict/PPC. The interaction variables are our variables of interest. Control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of city leader. See the variable list table for the definition of variables. S1, S2, and S3 correspond to our three crony measures created by comparing with residential land prices in the surrounding areas (1.5-km, 3-km, and 5-km radii, respectively). Our two measures of political cycles, Predicted and PPC, are used in columns (1)-(3) and (4)-(6), respectively. Standard errors are clustered at the firm level, and are reported below the estimated coefficient. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Turnover=Predicted			Turnover=PPC		
	S1	S2	S3	S1	S2	S3
	(1)	(2)	(3)	(4)	(5)	(6)
S	-0.0001	0.0000	-0.0000	0.0002	0.0001	0.0001
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2	-0.0012	-0.0010	-0.0011	0.0020	0.0019	0.0019
	(0.0009)	(0.0009)	(0.0009)	(0.0019)	(0.0019)	(0.0019)
TurnoverPre1	0.0004	0.0005	0.0006	0.0009	0.0007	0.0007
	(0.0010)	(0.0010)	(0.0010)	(0.0014)	(0.0014)	(0.0014)
Turnover	0.0004	0.0008	0.0008	0.0041**	0.0045**	0.0046**
	(0.0010)	(0.0010)	(0.0010)	(0.0021)	(0.0021)	(0.0021)
TurnoverPost1	-0.0001	-0.0001	0.0000	-0.0002	-0.0003	-0.0004
	(0.0010)	(0.0010)	(0.0010)	(0.0008)	(0.0008)	(0.0008)
TurnoverPre2*S	0.0002*	0.0001	0.0002	0.0004	0.0004	0.0004*
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
TurnoverPre1*S	0.0004***	0.0003**	0.0003**	0.0002**	0.0003**	0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Turnover*S	0.0003**	0.0001	0.0001	0.0000	-0.0000	-0.0000
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
TurnoverPost1*S	0.0004***	0.0004***	0.0003***	0.0001	0.0001	0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Q	0.0027***	0.0027***	0.0027***	0.0027***	0.0027***	0.0027***
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)

Cash Flow	0.1163***	0.1163***	0.1165***	0.1160***	0.1160***	0.1160***
	(0.0119)	(0.0119)	(0.0119)	(0.0119)	(0.0119)	(0.0119)
Sales Growth Rate	-0.0000	-0.0000	-0.0000	-0.0001	-0.0001	-0.0001
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
log(Population)	0.0088	0.0086	0.0082	0.0085	0.0083	0.0081
	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)
log(FDI)	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
log(GDP)	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019
	(0.0050)	(0.0050)	(0.0050)	(0.0050)	(0.0050)	(0.0050)
Secretary Age	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.0014	0.0018	0.0035	0.0018	0.0025	0.0036
	(0.0460)	(0.0460)	(0.0460)	(0.0460)	(0.0460)	(0.0460)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,213	20,213	20,213	20,213	20,213	20,213
R-squared	0.0518	0.0519	0.0519	0.0514	0.0516	0.0518
Number of Firms	2,603	2,603	2,603	2,603	2,603	2,603

Table 6

Political Cycles and Corporate Investment: Firms with Land Transactions Only

This table reports the panel regressions of firm investment rates on political cycle timing and their interactions with our subsidy measure. The dependent variable is the firm investment rate, defined as CAPX/Lagged Assets. The first two columns report the results for firms with land transactions only. The last two columns report the results for firms that obtained subsidized lands only, i.e., S>1. TurnoverPre2, TurnoverPre1, Turnover, and TurnoverPost1 are timing variables where they are dummies when Turnover=Predicted/PPC. The interaction variables are our variables of interest. Control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of city leader. See the variable list table for the definition of variables. Our two measures of political cycles, Predicted and PPC, are used in columns (1) and (3) and in columns (2) and (4), respectively. Standard errors are clustered at the firm level, and are reported below the estimated coefficient. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Firms with Land Transactions		Firms with Subsidized Lands	
	Predicted	PPC	Predicted	PPC
	(1)	(2)	(3)	(4)
S	-0.0000	0.0001	-0.0000	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2	-0.0027*	0.0007	-0.0030**	-0.0003
	(0.0014)	(0.0033)	(0.0015)	(0.0030)
TurnoverPre1	-0.0002	-0.0027	-0.0010	-0.0044*
	(0.0017)	(0.0024)	(0.0018)	(0.0023)
Turnover	0.0004	0.0017	0.0001	0.0036
	(0.0015)	(0.0050)	(0.0016)	(0.0049)
TurnoverPost1	-0.0012	-0.0006	-0.0010	0.0001
	(0.0015)	(0.0014)	(0.0015)	(0.0015)
TurnoverPre2*S	0.0002*	0.0003	0.0002*	0.0003
	(0.0001)	(0.0002)	(0.0001)	(0.0002)
TurnoverPre1*S	0.0003**	0.0003**	0.0003**	0.0004***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Turnover*S	0.0001	-0.0001	0.0001	-0.0001

	(0.0002)	(0.0001)	(0.0002)	(0.0001)
TurnoverPost1*S	0.0003***	0.0001	0.0003***	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Q	0.0021	0.0022*	0.0015	0.0016
	(0.0013)	(0.0013)	(0.0013)	(0.0013)
Cash Flow	0.0967***	0.0961***	0.0949***	0.0941***
	(0.0330)	(0.0331)	(0.0315)	(0.0317)
Sales Growth Rate	0.0026	0.0024	0.0027	0.0026
	(0.0021)	(0.0021)	(0.0022)	(0.0022)
log(Population)	-0.0049	-0.0043	-0.0053	-0.0047
	(0.0129)	(0.0130)	(0.0137)	(0.0138)
log(FDI)	0.0023	0.0022	0.0023	0.0022
	(0.0016)	(0.0016)	(0.0017)	(0.0017)
log(GDP)	0.0044	0.0049	0.0053	0.0058
	(0.0077)	(0.0077)	(0.0078)	(0.0078)
Secretary Age	-0.0002	-0.0002	-0.0003	-0.0003
	(0.0002)	(0.0002)	(0.0003)	(0.0002)
Constant	0.0624	0.0564	0.0636	0.0574
	(0.0781)	(0.0788)	(0.0820)	(0.0827)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	7,168	7,168	6,570	6,570
R-squared	0.0482	0.0476	0.0496	0.0494
Number of Firms	990	990	917	917

Table 7

Political Cycles and Corporate Investment: Robustness to Alternative Persistence of Crony Relationship

This table reports the panel regressions of firm investment rates on political cycle timing and their interactions with our subsidy measure. In this table, we assume that the crony relationship built upon a certain land deal between a local government and a firm only lasts for the office span of the city leader who grants this land to the firm. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. TurnoverPre2, TurnoverPre1, Turnover, and TurnoverPost1 are timing variables where they are dummies when Turnover=Predict/PPC. Their interactions with the land subsidy index S are our variables of interest. Control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of city leader. See the variable list table for the definition of variables. Standard errors are clustered at the firm level, and are reported below the estimated coefficient. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Crony relationship persists only for the current leader's office span	
	Predicted	PPC
	(1)	(2)
S	0.0000	0.0001
	(0.0001)	(0.0001)
TurnoverPre2	-0.0006	0.0016
	(0.0009)	(0.0019)
TurnoverPre1	0.0007	0.0006
	(0.0010)	(0.0014)
Turnover	0.0016	0.0047**
	(0.0010)	(0.0021)
TurnoverPost1	0.0003	0.0003
	(0.0010)	(0.0008)
TurnoverPre2*S	0.0002	0.0004**
	(0.0001)	(0.0002)
TurnoverPre1*S	0.0003**	0.0004***
	(0.0001)	(0.0001)
Turnover*S	0.0000	-0.0000
	(0.0001)	(0.0001)
TurnoverPost1*S	0.0003***	0.0001
	(0.0001)	(0.0001)
Q	0.0027***	0.0027***
	(0.0006)	(0.0006)
Cash Flow	0.0999***	0.0995***
	(0.0122)	(0.0122)
Sales Growth Rate	-0.0003	-0.0003
	(0.0008)	(0.0008)
log(Population)	0.0090	0.0089
	(0.0072)	(0.0072)
log(FDI)	0.0008	0.0008
	(0.0011)	(0.0011)
log(GDP)	0.0025	0.0023
	(0.0051)	(0.0051)
Secretary Age	-0.0002	-0.0002*
	(0.0001)	(0.0001)

Constant	-0.0092	-0.0073
	(0.0459)	(0.0459)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	19,438	19,438
R-squared	0.0552	0.0552
Number of Firms	2,614	2,614

Table 8

Political Cycles and Corporate Investment: Tobin's Q and Efficiency

This table reports the panel regressions of firm investment rates on political cycle timing and their interactions with our subsidy measure. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. TurnoverPre2, TurnoverPre1, Turnover, and TurnoverPost1 are timing variables where they are dummies when Turnover=Predict/PPC. Their interactions with the land subsidy index S are our variables of interest. Control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of city leader. See the variable list table for the definition of variables. Our two measures of political cycles, Predicted and PPC, are used in columns (1) and (2) and in columns (3) and (4), respectively. Standard errors are clustered at the firm level, and are reported below the estimated coefficient. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Turnover=Predicted		Turnover=PPC	
	(1)	(2)	(3)	(4)
S	-0.0000	-0.0000	0.0001	0.0001
	(0.0002)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2	-0.0004	-0.0009	0.0039*	0.0014
	(0.0010)	(0.0009)	(0.0021)	(0.0019)
TurnoverPre1	0.0005	0.0007	0.0018	0.0004
	(0.0011)	(0.0010)	(0.0015)	(0.0014)
Turnover	0.0000	0.0012	0.0047**	0.0048**
	(0.0011)	(0.0010)	(0.0022)	(0.0021)
TurnoverPost1	-0.0002	0.0003	0.0003	0.0001
	(0.0010)	(0.0010)	(0.0008)	(0.0008)
TurnoverPre2*S	0.0004**	0.0004**	0.0007*	0.0008***
	(0.0002)	(0.0002)	(0.0004)	(0.0003)
TurnoverPre1*S	0.0006***	0.0005**	0.0006***	0.0007***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Turnover*S	0.0002	0.0001	0.0001	0.0001
	(0.0002)	(0.0002)	(0.0001)	(0.0001)
TurnoverPost1*S	0.0004**	0.0003**	0.0002*	0.0003**
	(0.0002)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2*S*Q	-0.0001*	-0.0001**	-0.0002	-0.0002**
	(0.0000)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre1*S*Q	-0.0002*	-0.0001	-0.0002***	-0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Turnover*S*Q	-0.0001*	0.0000	-0.0001*	-0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPost1*S*Q	-0.0001	0.0000	-0.0001**	-0.0001
	(0.0001)	(0.0001)	(0.0000)	(0.0001)
Q	0.0000	0.0028***	0.0001	0.0029***
	(0.0005)	(0.0006)	(0.0005)	(0.0006)
Cash Flow	0.2116***	0.1040***	0.2115***	0.1039***
	(0.0118)	(0.0126)	(0.0118)	(0.0126)
Sales Growth Rate	-0.0016*	-0.0004	-0.0016*	-0.0005
	(0.0009)	(0.0008)	(0.0009)	(0.0008)
log(Population)	0.0021*	0.0080	0.0022*	0.0080
	(0.0012)	(0.0072)	(0.0012)	(0.0072)

log(FDI)	-0.0008	0.0007	-0.0007	0.0008
	(0.0007)	(0.0011)	(0.0007)	(0.0011)
log(GDP)	-0.0009	0.0023	-0.0011	0.0023
	(0.0015)	(0.0050)	(0.0015)	(0.0050)
Secretary Age	-0.0004***	-0.0002	-0.0004***	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.0578***	-0.0030	0.0566***	-0.0034
	(0.0129)	(0.0460)	(0.0128)	(0.0460)
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	19,208	19,208	19,208	19,208
R-squared	0.2176	0.0556	0.2178	0.0559
Number of Firms	2,610	2,610	2,610	2,610

Table 9

Political Cycles and Corporate Investment: Local Leaders' Career Incentive

This table reports panel regressions of firm investment rate on political cycle timings and their interactions with our subsidy measure. Note in all the regressions of this table, we add in the career incentive indicator of the current city leader, its interaction with land subsidy, and the triple interaction term of TurnoverPre1*S*Incentive. Incentive=1 if the office start age of the current city leader is below 50 and the city is neither provincial nor sub-provincial; Incentive=0 otherwise. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. TurnoverPre2, TurnoverPre1, Turnover, TurnoverPost1, are timing variables where they are dummies when Turnover=Predict/PPC. Control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of that city's leader. See variable list table for the definition of variables. Standard errors are clustered at firm level, which are reported below the estimated coefficient. ***, ** , and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Turnover=Predicted		Turnover=PPC	
	(1)	(2)	(3)	(4)
S	0.0000	0.0001	0.0001*	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Incentive	0.0027*	0.0016	0.0026*	0.0010
	(0.0016)	(0.0018)	(0.0016)	(0.0018)
S*Incentive	-0.0003**	-0.0004**	-0.0002*	-0.0003
	(0.0001)	(0.0002)	(0.0001)	(0.0002)
TurnoverPre2	-0.0007	-0.0007	0.0006	-0.0005
	(0.0009)	(0.0008)	(0.0034)	(0.0034)
TurnoverPre1	0.0001	-0.0000	-0.0021	-0.0030
	(0.0010)	(0.0010)	(0.0031)	(0.0032)
TurnoverPre1*Incentive	0.0010	0.0009	-0.0003	-0.0002
	(0.0017)	(0.0016)	(0.0022)	(0.0022)
Turnover	-0.0000	0.0003	-0.0009	-0.0015
	(0.0010)	(0.0009)	(0.0024)	(0.0025)
TurnoverPost1	-0.0010	-0.0013	-0.0006	-0.0010
	(0.0009)	(0.0008)	(0.0014)	(0.0014)
TurnoverPre2*S	0.0001	0.0000	0.0004	0.0004
	(0.0001)	(0.0001)	(0.0003)	(0.0003)
TurnoverPre1*S	0.0002	0.0001	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0002)
TurnoverPre1*S*Incentive	0.0000***	0.0000***	0.0008**	0.0009***
	(0.0000)	(0.0000)	(0.0003)	(0.0003)
Turnover*S	0.0000	-0.0000	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPost1*S	0.0003***	0.0002**	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Q	-0.0006	0.0000	-0.0007*	-0.0000
	(0.0004)	(0.0005)	(0.0004)	(0.0005)
Cash Flow	0.1510***	0.1192***	0.1531***	0.1191***
	(0.0099)	(0.0105)	(0.0101)	(0.0107)
Sales Growth Rate	-0.0007	-0.0005	-0.0008	-0.0004
	(0.0007)	(0.0007)	(0.0008)	(0.0007)
log(Population)	0.0007	0.0004	0.0004	-0.0005
	(0.0013)	(0.0065)	(0.0013)	(0.0065)

log(FDI)	-0.0008	-0.0004	-0.0010	-0.0006
	(0.0007)	(0.0010)	(0.0007)	(0.0010)
log(GDP)	0.0005	0.0017	0.0008	0.0068
	(0.0015)	(0.0052)	(0.0015)	(0.0053)
Secretary Age	-0.0002*	-0.0001	-0.0003**	-0.0002
	(0.0001)	(0.0002)	(0.0001)	(0.0002)
Constant	0.0398	0.0412	0.0395	0.0403
	(0.0460)	(0.0460)	(0.0428)	(0.0428)
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	20,868	20,868	20,919	20,919
R-squared	0.0531	0.0531	0.0531	0.0531
Number of Firms	2,622	2,622	2,635	2,635

Table 10

Group Differences: No-Land-Deal Firms vs. Land-Deal Firms

This table reports the difference and conditional difference between firms with no land deals and firms with land deals. These examined characteristics are the ones that are possibly correlated with our subsidy measure. Land Deal = 0 when a firm has not made any land deals with local governments. Land Deal = 1 beginning when a firm makes its first land deal with a local government. Columns (1) and (2) report the mean and standard deviation for firms with Land Deal=0 and Land Deal=1, respectively. Column (3) reports the mean differences for these two groups. Column (4) reports the conditional mean differences for these two groups conditional on firm and year fixed effects. *** indicates that the result is significant at the 1% level.

	(1) Land Deal = 0	(2) Land Deal = 1	(3) Difference	(4) Conditional Difference
Firm Characteristics				
TFP	0.017	-0.001	0.019***	0.010***
	(0.0017)	(0.0022)	(0.004)	(0.003)
Firm Age	11.724	14.143	-2.418***	-0.000***
	(0.041)	(0.103)	(0.133)	(0.000)
SOE	0.188	0.080	0.108***	0.011*
	(0.003)	(0.006)	(0.009)	(0.005)
Leverage	50.162	48.637	1.524	-0.051
	(0.665)	(0.466)	(0.74)	(1.72)
log(Asset)	21.657	22.743	-1.086***	-0.084***
	(0.0103)	(0.040)	(0.034)	(0.010)
Connection	0.206	0.232	-0.026**	0.001
	(0.0045)	(0.009)	(0.010)	(0.004)

Table 11

Group Differences: Low Subsidy Firms vs. High Subsidy Firms

This table reports the difference and conditional difference between firms that receive low subsidies and those that receive high subsidies. Columns (1) and (2) report the mean and standard deviation for firms with low subsidies and high subsidies, respectively. Column (3) reports the mean differences for these two groups. Column (4) reports the conditional mean differences for these two groups conditional on firm and year fixed effects. *** denotes significance at the 1% level.

	(1) Low Subsidy Firms	(2) High Subsidy Firms	(3) Difference	(4) Conditional Difference
Firm Characteristics				
TFP	0.026	0.030	-0.004	0.000
	(0.003)	(0.003)	(0.004)	(0.002)
Firm Age	11.805	10.576	1.229***	-0.000
	(0.092)	(0.092)	(0.131)	(0.000)
SOE	0.172	0.161	0.011	-0.001
	(0.007)	(0.007)	(0.010)	(0.006)
Leverage	51.716	46.649	5.066***	-0.067
	(0.448)	(0.343)	(0.560)	(0.349)
log(Asset)	22.208	22.804	-0.595***	-0.002
	(0.026)	(0.034)	(0.044)	(0.010)
Connection	0.262	0.208	0.053***	-0.000
	(0.010)	(0.009)	(0.014)	(0.006)

Table 12

Endogeneity: Control for More Firm Characteristics

This table reports our baseline regression with the addition of other key firm characteristics and their interactions with our key timing variable, TurnoverPre1. Here we only report results when Turnover=Predicted. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. Columns (1)-(4) report results by separately and sequentially adding SOE, TFP, Firm Age, lnAsset and their interactions with our key timing variable of interest, TurnoverPre1. The control variables include Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of city leader. See the variable list table in the appendix for the definition of variables. Standard errors are clustered at the firm level, and are reported below the estimated coefficient. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
S	-0.0000	-0.0000	-0.0000	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2	-0.0010	-0.0014	-0.0010	-0.0011
	(0.0010)	(0.0009)	(0.0009)	(0.0009)
TurnoverPre1	0.0011	0.0007	0.0024	-0.0156
	(0.0012)	(0.0011)	(0.0020)	(0.0098)
Turnover	0.0005	0.0010	0.0010	0.0009
	(0.0011)	(0.0010)	(0.0010)	(0.0010)
TurnoverPost1	0.0002	0.0002	0.0003	0.0002
	(0.0010)	(0.0010)	(0.0010)	(0.0010)
TurnoverPre2*S	0.0002	0.0002*	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre1*S	0.0003**	0.0003**	0.0003**	0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Turnover*S	0.0001	0.0001	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
TurnoverPost1*S	0.0003***	0.0003***	0.0003***	0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Q	-0.0000	0.0001	0.0002	0.0001
	(0.0007)	(0.0006)	(0.0005)	(0.0006)
Cash Flow	0.1091***	0.1180***	0.1183***	0.1163***
	(0.0129)	(0.0124)	(0.0114)	(0.0114)
Sales Growth Rate	0.0003	-0.0001	-0.0000	0.0002
	(0.0009)	(0.0008)	(0.0008)	(0.0008)
log(Population)	0.0068	-0.0009	0.0000	0.0008
	(0.0098)	(0.0071)	(0.0067)	(0.0071)
log(FDI)	0.0006	0.0004	0.0002	0.0004
	(0.0014)	(0.0011)	(0.0010)	(0.0011)
log(GDP)	0.0018	0.0010	0.0015	0.0011
	(0.0069)	(0.0060)	(0.0052)	(0.0057)
Secretary Age	-0.0001	-0.0002	-0.0002	-0.0002
	(0.0002)	(0.0002)	(0.0001)	(0.0001)
SOE	-0.0010			
	(0.0020)			

TurnoverPre1*SOE	-0.0014			
	(0.0020)			
TFP		-0.0059		
		(0.0046)		
TurnoverPre1*TFP		-0.0023		
		(0.0046)		
FirmAge			-0.0018**	
			(0.0007)	
TurnoverPre1*FirmAge			-0.0001	
			(0.0001)	
lnAsset				0.0061***
				(0.0014)
TurnoverPre1*lnAsset				0.0007*
				(0.0004)
Constant	0.0145	0.0606	0.0629	0.0484
	(0.0717)	(0.0511)	(0.0460)	(0.0501)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	16,320	18,702	19,929	19,699
R-squared	0.0511	0.0521	0.0523	0.0504
Number of Firms	2,594	2,575	2,578	2,603

Table 13

Investment Rate just Before Turnover: High Subsidy vs. Low (PS matching results)

This table reports the treatment effect of high land subsidies on the corporate investment rate one year before political turnover. The cutoffs to define high subsidy (treatment) go from the top 15th percentile of the S>1 sample to the top 60th percentile. The treatment effect gradually drops and becomes insignificant. ATT values, calculated based on three different PS matching approaches (radius caliper, n(3) and Kernel), are reported.

Cutoff of high subsidy	Treatment effect	radius caliper(0.01)		n(3)		kernel	
		Difference	t-stat	Difference	t-stat	Difference	t-stat
top 15%	**ATT**	**0.017**	**2.45**	**0.023**	**2.95**	**0.02**	**2.85**
top 20%	**ATT**	**0.015**	**2.5**	**0.022**	**3.26**	**0.017**	**2.9**
top 25%	**ATT**	**0.012**	**2.22**	**0.009**	**1.7**	**0.013**	**2.61**
top 30%	ATT	0.008	1.82	0.008	1.57	0.09	2.00
top 35%	ATT	0.007	1.67	0.009	1.84	0.007	1.74
top 40%	ATT	0.003	0.63	-0.02	-0.04	0.003	0.75
top 45%	ATT	0.003	0.84	0.005	1.26	0.004	0.93
top 50%	ATT	0.005	1.32	0.003	0.5	0.005	1.39
top 55%	ATT	0.004	1.14	0.04	0.98	0.05	1.34
top 60%	ATT	0.004	1.16	0.006	1.68	0.003	0.94

Table A1: Variable Definition and Source

Variable	Definition	Source
Investment	Capital expenditure divided by beginning-of-year book value of total assets.	CSMAR
S1	Unit industrial land price over surrounding 1.5-km unit residential land price	Hand collected
S2	Unit industrial land price over surrounding 3-km unit residential land price	Hand collected
S	Unit industrial land price over surrounding 5-km unit residential land price	Hand collected
PPC	Dummy variable. The year when Provincial Congress of Communist Party PCCP was held. If PCCP was held after June, PPC=1 for that year. Otherwise, preceding year=1	Hand collected
PPCPre1	Dummy variable. One year before PPC.	Hand collected
PPCPre2	Dummy variable. Two years before PPC.	Hand collected
PPCPost1	Dummy variable. One year after PPC.	Hand collected
PPCPost2	Dummy variable. Second year after PPC.	Hand collected
Leader Turnover	Dummy variable. =1 if a city experiences leader turnover.	Hand collected
Predicted	Actual city leader turnover year plus five years.	Hand collected
Secretary Age	City party secretary's age.	Hand collected
Q	Tobin's Q. Book value of total assets minus book value of equity plus market value of equity scaled by book value total assets.	CSMAR
Sales Growth Rate	Firm level annual sales growth rate.	CSMAR
Cash Flow	Cash Flow: EBIT plus depreciation and amortization minus interest expense and taxes cash scaled by beginning-of-year book value of total assets.	CSMAR
log(GDP)	Log of annual city real GDP level.	NBS
log(Population)	Log of annual city total population.	NBS
log(FDI)	Log of annual city total foreign direct investment.	NBS

Table A2
Political Cycles and Corporate Investment: Regional Economic Trend

This table reports panel regressions of firm investment rate on political cycle timings and their interactions with our subsidy measure. Note in all the regressions of this table, in order to control for possible regional economic trend effect, we add in additional province economic characteristics including province GDP, province GD growth rate, and province industry composition. The dependent variable is firm investment rate, defined as CAPX/Lagged Assets. TurnoverPre2, TurnoverPre1, Turnover, TurnoverPost1, are timing variables where they are dummies when Turnover=Predict/PPC. S1, S2 and S3 are the three land subsidy measures corresponding to the three neighborhood radii of 1.5 km, 3km and 5km respectively. Basic control variables include lagged Tobin's Q, cash flow, sales growth rate, log of city population, log of city FDI, log of city real GDP, and age of that city's leader. See variable list table for the definition of variables. Standard errors are clustered at firm level, which are reported below the estimated coefficient. ***, ** , and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Turnover=Predicted			Turnover=PPC		
	S1	S2	S3	S1	S2	S3
	(1)	(2)	(3)	(1)	(2)	(3)
S	-0.0000	0.0000	0.0000	0.0002	0.0001	0.0001
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
TurnoverPre2	-0.0009	-0.0008	-0.0009	-0.0016	-0.0021	-0.0020
	(0.0009)	(0.0009)	(0.0009)	(0.0031)	(0.0031)	(0.0031)
TurnoverPre1	0.0007	0.0008	0.0009	-0.0037	-0.0038	-0.0038
	(0.0010)	(0.0010)	(0.0010)	(0.0029)	(0.0029)	(0.0029)
Turnover	0.0006	0.0009	0.0009	-0.0020	-0.0020	-0.0020
	(0.0010)	(0.0010)	(0.0010)	(0.0023)	(0.0023)	(0.0023)
TurnoverPost1	0.0002	0.0002	0.0003	-0.0017	-0.0020	-0.0020
	(0.0010)	(0.0010)	(0.0010)	(0.0014)	(0.0014)	(0.0014)
TurnoverPre2*S	0.0002	0.0001	0.0002	0.0003	0.0006*	0.0005*
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0003)
TurnoverPre1*S	0.0004***	0.0003**	0.0003**	0.0003**	0.0004**	0.0003**
	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)

Turnover*S	0.0003**	0.0001	0.0001	0.0002	0.0002*	0.0001*
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
TurnoverPost1*S	0.0004***	0.0004***	0.0003***	0.0001	0.0002***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Q	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Cash Flow	0.1239***	0.1240***	0.1241***	0.1242***	0.1242***	0.1243***
	(0.0113)	(0.0113)	(0.0113)	(0.0113)	(0.0113)	(0.0113)
Sales Growth Rate	-0.0001	-0.0001	-0.0001	-0.0002	-0.0002	-0.0002
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
log(Population)	-0.0041	-0.0042	-0.0045	-0.0043	-0.0044	-0.0046
	(0.0069)	(0.0070)	(0.0069)	(0.0069)	(0.0069)	(0.0069)
log(FDI)	0.0001	0.0001	0.0001	-0.0001	-0.0001	-0.0001
	(0.0011)	(0.0011)	(0.0011)	(0.0010)	(0.0010)	(0.0011)
log(GDP)	0.0093	0.0094	0.0093	0.0092	0.0092	0.0093
	(0.0065)	(0.0065)	(0.0065)	(0.0059)	(0.0059)	(0.0059)
log(Poovince GDP)	-0.0109	-0.0110	-0.0109	-0.0108	-0.0109	-0.0110
	(0.0123)	(0.0124)	(0.0124)	(0.0119)	(0.0119)	(0.0119)
province GDP growth rate	0.0428	0.0427	0.0433	0.0445	0.0445	0.0450
	(0.0330)	(0.0330)	(0.0330)	(0.0329)	(0.0329)	(0.0329)
share of secondary_ind	-0.0837*	-0.0833*	-0.0822*	-0.0827*	-0.0813*	-0.0805*
	(0.0458)	(0.0458)	(0.0457)	(0.0456)	(0.0455)	-0.0455
share of tertiary_ind	-0.1244**	-0.1247**	-0.1235**	-0.1230**	-0.1221**	-0.1214**
	(0.0580)	(0.0579)	(0.0579)	(0.0577)	(0.0576)	(0.0575)
Constant	0.2001**	0.2014**	0.2018**	0.2018**	0.2022**	0.2030**
	(0.0959)	(0.0960)	(0.0959)	(0.0962)	(0.0962)	(0.0962)
Time Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes

Observations	20,868	20,868	20,868	20,919	20,919	20,919
R-squared	0.0535	0.0536	0.0536	0.0532	0.0535	0.0536
Number of Firm specific	2,622	2,622	2,622	2,635	2,635	2,635

Table A3

Difference in Land Subsidies between Key Political Years and Non-key Years

This table reports the difference in land subsidies between TurnoverPre1 and other years. S1, S2 and S3 are the three land subsidy measures corresponding to the neighborhood radii of 1.5 km, 3km and 5km, respectively. Columns (1) and (2) show the average land subsidy in non-key political years and in TurnoverPre1, respectively. Column (3) reports the difference in land subsidy while Column (4) reports the conditional land subsidy difference after factoring out the firm and year fixed effects. Standard errors are in parentheses.

	Non-TurnoverPre1 year	TurnoverPre1 year	Difference	Conditional Difference
	(1)	(2)	(3)	(4)
S1	1.710	1.557	0.153***	-0.005
	（0.027）	（0.040）	（0.051）	（0.041）
S2	1.794	1.606	0.188***	-0.009
	（0.030）	（0.043）	（0.055）	（0.044）
S3	1.852	1.666	0.185***	-0.010
	（0.032）	（0.049）	（0.061）	(0.049)