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Public land sales and the political cycle in China

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ABSTRACT

This study analyzed the influence of the political cycle on public land transfer. In this paper, the Party Congress is taken as a political cycle, and we construct a model to discuss the relationship between public land sales and the political cycle. The empirical analysis is based on the land transfer panel data of prefecture-level cities from 2002 to 2018. The main results show that the land transfer area and land transfer income show a downward trend in the early stage of the Party Congress, while the land transfer area and land transfer income show an upward trend after the Party Congress. We believe that the political cycle has a significant impact on the supply of public land. The reason is that the political uncertainty in the early stage of the Party Congress is very high, and the impact of the land transfer on tax revenue and economic growth lags behind. Officials reduce the valuation of future income and thus reduce land transfer. As political uncertainty abated after the party congress, local officials joined the promotion race, offering land to attract investment and boost economic growth.

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Introduction

In China, the government divides cities into municipalities, sub-provincial cities, prefecture-level cities, and county-level cities, and appoints a municipal party secretary as its leader. A municipal party secretary is in charge of the comprehensive party and government work in the city, the organization of Municipal Standing Committee activities, and is mainly responsible for the work of the Party Committee. In China, a municipal party secretary is the actual ruler of the city while the major is the person in charge of administrative affairs. And the appointment and removal of officials is in the hands of higher party organizations. Moreover, the Party Congress is held on every five years, and it carries out a series of appointments and dismissals of local administrators at the same time, which is a reshuffle of personnel in the political

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system and drafts the government policy for the next phase. Therefore, the author believes that the political cycle can be described by the party congress cycle.

The influence of the political system on the economy is extensive. There have been many studies on the impact of politics on the economy and public finance from the aspects of the impact of the political institutions (Boräng et al., 2016; Fankhauser et al., 2015; Li et al., 2018; Rodrik, 1999), fluctuations in currency exchange rates (Bachman, 1992; Frieden, 1994; Liu & Pauwels, 2012), educational institutions and financial budget (Afenor, 2008; Chou et al., 2020, Wang & Chou, 2022), environmental impact (Nie et al., 2013), environmental regulations and energy consumption (Jia et al., 2014), etc. In China, the impact of the political cycle is quite comprehensive. In China, we find that the party congress brings about a big reshuffle of the political system and changes in policies. Local governments are monopolists in the primary land supply market and have discretionary power over land transfer. Political uncertainty brought by the Party Congress will cause officials to make a series of reactions, thus affecting land transfer. In this paper, the author will study the influence of political system on land transfer area from the perspective of political cycle.

As a scarce resource, land is the basic factor of production in economic activities. Under the current land transfer system in China, the prefecture-level city government monopolizes the first-level land supply market and can unilaterally set the land compensation standard and carry out compulsory land expropriation. The local government expropriates land from farmers at a low price, converts it into construction land, and then transfers the right to use it to land units to obtain the intermediate price difference. Of course, in addition to the one-time land sale revenue, the local government can also get direct and related taxes from the land sale. Direct taxes include deed tax, land value-added tax, urban land use tax, property tax and farmland occupation tax. Indirect taxes such as value-added tax and business tax will also be brought with the subsequent entry of enterprises. In recent years, the area of land transferred has been increasing year by year. The area of land transferred has increased from 45,000 hectares in 1999 to 225,400 hectares in 2017, and the income from land transferred has increased from 0.05 trillion yuan in 1999 to 4.99 trillion yuan in 2017. Why are local governments so keen on land transfer and can this be explained in terms of political systems? In this study, we analyze the impact of the political cycle on public land sales. The main results indicate that the Chinese Communist Party Congress bring a significant effect. In the first year before and after the Party Congress, the revenue or the land area has been reduced; but increased significantly in the second year before and after the Party Congress. The results indicate that there is a cycle between land transfer and the convening of the party congress. We believe that political uncertainty is high on the eve of the party congress, and the effects of taxation and economic growth caused by land transfers are lagging, so officials lower the valuation of future earnings, thereby reducing land transfers. After the party congress was held, as political uncertainty weakened, local officials joined the promotion tournament to strengthen the government's land transfer, to attract investment, and to promote economic growth.

The contribution of this paper is to study the influence of political cycle on land transfer by taking the Party congress as political cycle and analyzing the influence

mechanism behind it. The structure of this paper is as follows: the second part is literature review, the third part is research methods and empirical data, the fourth part is empirical results, and the last part is summary and discussion.

Literature review

The change of economic environment is of significance to the development of a country and the economy. It has been extensively studied in the literature. In studies on the political factors that influence economic development, Some foreign scholars study the influence of political institutions on economic development. Nordhaus (1975) pointed out that political institutions and the change of government had a key impact on the economic environment. The setting of the institutions could reduce the uncertainties and the cost of transaction. Corporate behavior in the economic society was not only affected by official institutions but also regulated by non-official institutions. (North, 1990; Williamson, 1985). Assane and Grammy (2003) examined the effect of ‘quality’ of the institutional framework on economic development and the results indicated that economic development requires not only physical and human capital formation but also a freedom to choose and institutional support. While some researchers have focused on the impact of political institutions on economic policy and the economic environment, Rodrik et al. (2004) concluded that the influence of the quality of institutions was larger than other factors such as geography, trade, income levels, etc.

The most important thing in the political system is officials, and the performance of officials in office is also the embodiment of the political system. Some Chinese researchers focus on the study of the impact of official replacement on the economy. Wang et al. (2009) and Wang et al. (2010) concluded that when local government officials in China change, the newly appointed local officials tend to invest in productive public goods to achieve new economic performance in new positions and often enhance economic growth performance. In this way, local officials will promote economic growth through economic activities and thus gain political promotion, but it will lead to problems such as fiscal imbalance and budget deficit, which will lead the government to raise funds by leasing public resources. Yang et al. (2014) conducted an empirical study on the sample of official changes in prefecture-level cities from 1999 to 2013 and found that policy factors and policy risks in China’s economic growth were significantly weakened due to the weakening of economic evaluation indicators by the government in recent years. Wang et al. (2009) explored the impact of various local officials’ replacement on the short-term economic growth system. They used the sample data of officials’ replacement in 29 provinces and autonomous regions in China from 1979 to 2006 to test and found that the replacement of governors and provincial Party secretaries would have a short-term negative impact on economic growth. And its influence degree is different with the change frequency of local officials, the age of officials and other factors. The replacement of local officials will only affect short-term economic fluctuations, not long-term economic growth trends. So who decides the change of local officials in China? In China, the appointment and removal of officials is in the hands of higher party organizations, The two

sessions and the Conference of Party Representatives of the Communist Party of China are held every five years, which have become China's regular political cycle meetings. Some studies concluded a significant relation between 'the two sessions' cycle (changes in central government) and the economic fluctuation cycle (Chen & Miao, 2010; Shao & Chou, 2023; Wang & Chou, 2022). The change of central government-would generate communication cycles of local governments. which is held every five years, has become a regular political cycle meeting in China. And every party congress brings about changes of officials, a series of appointments and dismissals of local officials, which is a 'reshuffle' of the political system. The congress drafts the next phase of government policy. So some researchers have studied economic fluctuations in terms of political cycles, Zhou (2017) studied the cyclical changes of local fiscal revenue. Based on cross-provincial panel data from 2000 to 2013, the study shows that fiscal effort decreases before the party congress and increases significantly one year after it. To a large extent, land finance reflects the efforts of finance.

The literature on land transfer mainly focus on explaining the incentive mechanism of land transfer, including fiscal and tax incentives and political incentives. Since the tax sharing reform in 1994, the fiscal power of local governments has been transferred to the central government and delegated to the lower levels, leading to a steady increase in local government fiscal expenditure. Liu and Zhang (2007) argue that the local government not only need to take a constructive expenditure and matching funds to a major project, the public welfare institutions, administrative expenses, but also to undertake all kinds of public welfare spending due to the reform of state-owned enterprises and even the general public sector brought about by various social security expenditure, as well as various enterprises loss subsidies and price subsidies, etc. Yu et al. (2015) believe that these mismatched financial power pressures lead local governments to take the road of 'land finance'. In addition to the one-time land transfer income, land transfer will also bring about a variety of direct and indirect taxes. All these will increase local fiscal revenue. Xie (2006) believes that after the collection of property rights, there are not enough local taxes that can increase stably, such as property tax and land value-added tax, which have higher tax rates, but have not been levied. In the absence of stable tax sources, local governments also need some extra off-budget income to 'spend freely', so that land transfer fees become the pillar of off-budget income for local governments. On the other hand, believed that the current political performance appraisal system, which focuses on GDP and fiscal revenue, enabled local governments' political performance to be reflected in economic growth, and local officials joined the 'promotion tournament' one after another for political promotion. Tian et al. (2019) believed that land, as an important factor in production, naturally became a bargaining chip for officials to be promoted. On the one hand, a large amount of land is sold at a low price to obtain one-time land income and build development zones. On the other hand, real estate land is sold at a high price in a market-oriented way to obtain high land transfer fee and then invested in infrastructure construction. Land sales have become a way for local governments to attract businesses. Yang et al. (2014) believe that enterprises' entry will expand the scale of investment in fixed assets, which has a direct driving effect on the economy, and create capital for political achievements and promotion in the short term.

It is worth noting that in countries with a general election system, officials are mainly replaced through political elections, and their terms of office are fixed. Therefore, the cycle of election and party rotation is basically the same as the cycle of official replacement. However, these characters we mentioned before do not appear in China. The Party congress is ‘a big reshuffle’ of the political personnel system. Officials have accurate expectations for the convening of the Party Congress and clearly know that the convening of the Party Congress is accompanied by changes in personnel position or future perspective, and resulting in regular and periodic decision-making behaviors. By contrast, with the exception of the expiration of their term, officials’ expectations for the transfer of themselves and other officials in non-party congress years are not as accurate and strong as the party congress expectations. The convening of the Party Congress and the simple replacement of officials have different impacts on the decision-making behavior of officials, and thus on the local economic construction. Because the simple replacement of officials is sudden, local officials cannot predict when they will be transferred, and it is difficult to make short-term reactions before the transfer. To sum up, this study analyzes the influence of the Party Congress on China’s urban public land sales from the perspective of whether the Party Congress is a control variable of China’s political cycle.

Method and data

Several approaches are applied in the literature to assess the role of the political cycle: the standard approach is the use of the year dummy (Bertoli & Grembi, 2021). Previous study usually set the election year to reflect the political cycle impact and estimate whether the coefficient significant or not (Alesina & Paradisi, 2017; Baskaran et al., 2015; Bee & Moulton, 2015; Cole, 2009; Shi & Svensson, 2000). Follow Wang and Chou (2022), we set two empirical models to examine the impact of political cycle on the land transfer:

$$\begin{aligned} \log(\text{Land Revenue}_{it}) = & \alpha + \beta_1 \log(\text{Capita}_{it}) + \beta_2 \text{Finance Pressure}_{it} + \sum \beta_j \text{Conference} \\ & + \beta_3 \text{Change} + \beta_4 \log(\text{Wage}) + \beta_5 \text{Education} + \beta_6 \text{Age} + \beta_7 \text{Term} \\ & + e_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \log(\text{Land Area}_{it}) = & \alpha + \gamma_1 \log(\text{Capita}_{it}) + \gamma_2 \text{Finance Pressure}_{it} + \sum \gamma_j \text{Conference} \\ & + \gamma_3 \text{Change} + \gamma_4 \log(\text{Wage}) + \gamma_5 \text{Education} + \gamma_6 \text{Age} + \gamma_7 \text{Term} \\ & + e_{it} \end{aligned} \quad (2)$$

Where Land Revenue_{it} is the revenue of public land sold in the year on city i , Land Area_{it} is the area of public land sold in the year; $\text{Finance Pressure}_{it}$ is the i -th city’s financial burden in year t . Conference represents the Communist Party Congress in China, considering that China usually conducts a change of government

office every few years, we have selected the party congress in the year and two years before and after to discuss the impact of the change on the dependent variable. For *Change*, it is a (1,0) dummy variable with a value of 1 when the party secretary of the city changed in the current year. Variable *Education* (if the variable with a value of 0, 1, 2, 3 and 4, indicates the secretary with educational background on others, primary, secondary, undergraduate and graduate degree), *Age* and *Term* are the individual characters of the party secretary of the city.

The empirical data in this paper mainly come from three aspects. The variables *Capita*, *Finance Pressure*, and *Wage* are from the 2002–2018 China City Statistical Yearbook and, the variables *Land Revenue*, *Land Area* collected from the 2002–2018 China Land and Resources Statistical Yearbook. Secondly, variables such as whether the Party conference was held in the year (*Conference*), whether there's a change of the city secretary in each city (*Change*), the age of the city secretary (*Age*), education level of the secretary (variable *Education* is one that can be 0,1,2,3 or 4 with each value indicating that the education level of the secretary is other, primary school, high school, university or postgraduate), *Term* of office (*Term*) comes from databases of the Chinese party and government leaders published by Baidu Encyclopedia, Wikipedia and the Communist Party of China News Network (see <http://cpc.people.com.cn/index.html>). [Table 1](#) sorts out the descriptive statistics and definitions of various variables; [Table 2](#) makes statistics on the frequency of replacement of the Party Congress and Municipal Party Secretary in China. From the frequency of secretary change, it can be seen that there are more than 150 changes of secretary each year, and the number of changes was the greatest in the year when the party congress was held and the next year.

[Figure 1](#) summarizes the changes of the leased area of public land over the years. The data shows that the leased area of land before and after each Party Congress fluctuates significantly. The land sales area in 2007 was the lowest point. The possible factor is that the global financial crisis in that year affected fiscal revenue, expenditure and economic decision-making of local government in China. From the time period before and after the Party Congress, except for the 18th Party Congress, the sales area in the year before the party Congress showed a downward trend, and the sales area in the year after the Party Congress showed an upward trend. In other words, [Figure 1](#) shows that there is a correlation between whether the party congress is held or not and the number or scale of public land sales.

Empirical results

[Tables 3](#) and [4](#) list the OLS and the Least Square Dummy Variable (LSDV) estimation, the outcomes indicate that variable $\log(\text{Land Revenue})$ and $\log(\text{Land Area})$ decreased during the Party Congress and increased in the second year before and after the party congress significantly. In the regression, we control the variables of per capita output value ($\log(\text{Capita})$), urban financial pressure (*Finance Pressure*), labors annual average wage ($\log(\text{Wage})$) and the characteristic of city secretary (*Age*, *Education* and *Term*). We assume that as the Party Congress is approaching, due to the uncertainty of the government, the future earnings of the incumbent secretary are

Table 1. Descriptive statistics.

Variable	Mean	Observations	Definition
Land Revenue	561217	4557	The revenue of public land sold in the year (unit: ten thousand RMB)
Land Area	654.958	5213	The area of public land sold in the year (unit: hectares)
Capita	189851	4756	Output per capita. (Unit: RMB)
Finance Pressure	2.638	4501	Fiscal expenditure divided by fiscal revenue. (Unit: ten thousand RMB)
Wage	31378	4772	Average annual wage of employed persons. (Unit: RMB)
Change	0.244	5615	Dummy variable, if the year that the party secretary changed = 1, others = 0
Conference t-2	0.235	5661	Dummy variable, if the year is 2 years before the party congress = 1, others = 0
Conference t-1	0.176	5661	Dummy variable, if the year is 1 years before the party congress = 1, others = 0
Conference t	0.176	5661	Dummy variable, if the year had Party congress = 1, others = 0
Conference t + 1	0.176	5661	Dummy variable, if the year is 1 years after the party congress = 1, others = 0
Conference t + 2	0.176	5661	Dummy variable, if the year is 2 years after the party congress = 1, others = 0

Source: This study, Wang and Chou (2022).

Table 2. The frequency of the Party congress and the characters of party secretary.

The frequency of the Communist Party Congress	Number of changes of city's party secretary	Ratio (%)	
2 years before the congress (Conference t-2)	212	16.49	
1 year before the congress (Conference t-1)	254	19.75	
Current year the party congress was held (Conference t)	280	21.77	
1 years after the congress (Conference t + 1)	384	29.86	
2 year after the congress (Conference t + 2)	156	12.13	
Total	1286	100	
Characters of Party Secretary	Mean	Min	Max
Age	52.008	30	69
Education	2.766	0	4
Term	2.707	0	12

Source: This study, Wang and Chou (2022).

uncertain. As a result, local officials have been less enthusiastic about investment and land sales have slowed in the year of Party Congress (Wang & Chou, 2022). In the year before or after the Party Congress, the current secretary increased investment for performance reasons, which in turn led to an increase in land sales, which showed up in the second year after the Congress. The results in Tables 3 show that the time from the Party Congress is significant at the level of 5% in the OLS and the LSDV outcome, which is consistent with our hypothesis. However, the estimation outcome in Table 4 is weak consistent. Therefore, we further test the robustness.

To investigate the robustness of our findings, we perform the multicollinearity test and the White test for heteroscedasticity checks on the estimation results of Tables 3 and 4. According to Nerlove (1963), Wang and Chou (2022), if the variance inflation factor (VIF) is greater than 10, the influence of the estimated variable collinearity is higher. The results show that the VIF values of the other variables are less than 10. However, the null hypothesis of homoskedasticity is reject. Therefore we apply the weighted least square (WLS) in Table 5. The estimations show that there is no clear

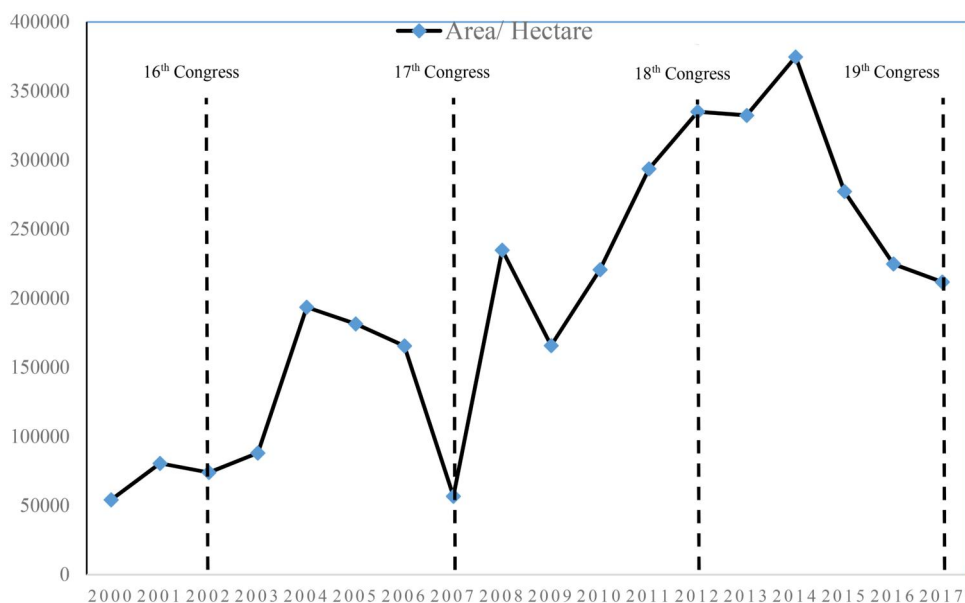


Figure 1. The evolution trend of Chinese public land sold area. Unit: hectares.

Source: This study.

Table 3. Results 1.

Dependent Variable	log(Land Revenue)			
	(1) OLS 1	(2) LSDV 1	(3) OLS 2	(4) LSDV 2
log(Capita)	0.092*** (0.007)	0.071*** (0.004)	0.106*** (0.007)	0.076*** (0.004)
Finance Pressure	-0.265*** (0.011)	0.002 (0.011)	-0.266*** (0.011)	-0.005 (0.013)
Conference t-2			0.216*** (0.062)	0.086** (0.035)
Conference t-1			0.129** (0.066)	0.099*** (0.036)
Conference t	-0.127*** (0.049)	-0.132*** (0.022)		
Conference t + 1			0.059** (0.032)	0.082** (0.031)
Conference t + 2			0.268*** (0.063)	0.124*** (0.037)
Change	-0.011 (0.056)	-0.055* (0.031)	0.022 (0.057)	-0.039 (0.032)
log(Wage)	0.701*** (0.037)	0.597*** (0.022)	0.707*** (0.037)	0.600*** (0.021)
Age	0.016*** (0.006)	0.001 (0.004)	0.016*** (0.006)	0.002 (0.004)
Education	0.138 (0.274)	0.045** (0.017)	0.140 (0.124)	0.048 (0.038)
Term	0.004 (0.015)	-0.011 (0.010)	0.001 (0.015)	-0.017* (0.009)
Year Dummies	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes
N	3803	3803	3803	3803
R square	0.468	0.618	0.472	0.623
VIF	1.301		1.504	
White test (P-value)	0.000		0.000	

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: This study, Wang and Chou (2022).

Table 4. Results 2.

Dependent Variable	log(Land Area)			
	(1) OLS 1	(2) LSDV 1	(3) OLS 2	(4) LSDV 2
Conference t-2			0.171*** (0.050)	0.071** (0.033)
Conference t-1			0.082* (0.048)	0.126*** (0.031)
Conference t	-0.041 (0.038)	0.030 (0.025)		
Conference t + 1			-0.047 (0.047)	0.089*** (0.030)
Conference t + 2			0.214*** (0.050)	0.099*** (0.033)
log(Capita)	0.093*** (0.005)	0.072*** (0.004)	0.108*** (0.006)	0.078*** (0.004)
Finance Pressure	-0.169*** (0.008)	0.030*** (0.013)	-0.172*** (0.008)	0.021* (0.012)
Change	-0.016 (0.043)	-0.054* (0.028)	0.021 (0.043)	-0.026 (0.028)
log(Wage)	0.917*** (0.027)	0.848*** (0.020)	0.904*** (0.027)	0.842*** (0.021)
Age	0.013*** (0.004)	0.002 (0.003)	0.013*** (0.004)	0.002 (0.003)
Education	0.086*** (0.021)	0.007 (0.016)	0.086*** (0.021)	0.007 (0.016)
Term	0.009 (0.012)	-0.008 (0.008)	0.010 (0.012)	-0.007 (0.008)
Year Dummies	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes
N	4040	4040	4040	4040
R square	0.322	0.374	0.330	0.386
VIF	1.306		1.527	
Wald test (P-value)	0.000		0.000	

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: This study, Wang and Chou (2022).

statistical correlation between city land and whether the Party Congress is held that year (see WLS1 and WLS3). However, the year before the Party Congress is negatively correlated with land sold revenue and the area; the year after the Party Congress is held, there is a positive correlation with land sold revenue and the area (see WLS2 and WLS4). Comparing Tables 3–5, we found that the changes in the supply of public land in cities in China as a whole are related to the Party Congress, and the main results under the OLS estimation and the WLS estimation are consistent.

In order to determine whether the main empirical results have measurement errors or endogeneity problems caused by omitted variables, we further apply the endogenous test results in Table 6. We apply the propensity score matching (PSM) developed by Rosenbaum and Rubin (1983). To estimate the influence of a main control variable, we first calculate the matching score of each sample among other explanatory variables and then make the pairing according to the score. We can use it to estimate the effect of the primary control variable if the variance of the explanatory variable between the two samples with very close directional scores. The estimated value at this time is the average causal effect. The main issue in statistics here is how to define neighborhoods, that is, how to estimate neighbor assignments to find samples that can be paired with households. The influence of the variables estimated to be

Table 5. Results 3, robustness check 1.

Dependent Variable	log(Land Revenue)		log(Land Area)	
	(1) WLS 1	(2) WLS 2	(3) WLS 3	(4) WLS 4
Conference t-2		0.226*** (0.067)		0.171*** (0.048)
Conference t-1		0.108* (0.062)		-0.043 (0.049)
Conference t	-0.123** (0.049)		-0.055 (0.037)	
Conference t + 1		0.039 (0.059)		0.624*** (0.046)
Conference t + 2		0.301*** (0.063)		0.222*** (0.047)
Control Variable	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes
N	3803	3803	4040	4040
R square	0.477	0.482	0.334	0.335

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: This study, Wang and Chou (2022).

Table 6. Results 4, robustness check 2.

	log(Land Revenue)			log(Land Area)		
	(1)	(2)	(3)	(4)	(5)	(6)
	Neighbor Matching	Caliper Matching	Kernel Matching	Neighbor Matching	Caliper Matching	Kernel Matching
Conference t (=1, if the year had Party congress)	-0.200** (0.096)	-0.157** (0.072)	-0.180*** (0.072)	-0.088 (0.068)	-0.049** (0.025)	-0.215*** (0.049)
Matching sample						
Conference t (=1)	774	774	774	775	775	775
Conference t (=0)	3029	3029	3029	3265	3265	3265

Source: This study, Wang and Chou (2022).

assigned is the dichotomous variables of 0 and 1. In Table 6, we defined that the variable Conference t is 1 if the year had Party Congress, or 0 if the year had not held the congress. Table 6 lists the results of nearest neighbor matching, caliper matching and the Kernel matching. The outcomes indicate that the coefficient of Conference t brings negative effect on land sold revenue and the area significantly which consistent with the outcomes in Tables 3–5.

Tables 7 and 8 further explore whether the political cycle has different changes in dependent variable under different age groups. We believe that older secretaries have a lower chance of being promoted because they are about to retire, their governance is more conservative, and they are less motivated to build the economy of the city. In other words, in the context of small promotion opportunities, will the secretary close to retirement be more conservative in pursuing economic construction, thus reducing the incentives for public land sales? The empirical results show that the year before the party congress has a significant negative impact on land sales revenue and land transfer area under the leadership of a secretary who is younger than 55 years old. On the other hand, for those over 55 years old, the influence before and after the Party Congress is significantly lower than that of young ones. Empirical evidence shows that the age of the governor is also a key factor affecting the sale of urban

Table 7. Results 5.

Dependent Variable	log(Land Revenue)			
	(1) Age < 55	(2) Age ≥ 55	(3) Coastal	(4) Non-Coastal
Conference t-2	0.089** (0.044)	0.042 (0.056)	0.122** (0.062)	0.067 (0.042)
Conference t-1	0.129*** (0.046)	0.023 (0.057)	0.131** (0.065)	0.085* (0.044)
Conference t + 1	0.059 (0.040)	-0.134 (0.063)	-0.062 (0.059)	0.089** (0.039)
Conference t + 2	0.128*** (0.043)	0.074 (0.059)	0.122** (0.063)	0.123*** (0.042)
log(Capita)	0.071*** (0.006)	0.085*** (0.007)	0.059*** (0.007)	0.085*** (0.005)
Finance Pressure	0.005 (0.016)	-0.008 (0.028)	0.041 (0.034)	-0.016 (0.015)
Change	-0.029 (0.039)	-0.013 (0.056)	0.019 (0.057)	-0.069* (0.039)
log(Wage)	0.550*** (0.028)	0.782*** (0.047)	1.403*** (0.043)	0.687*** (0.002)
Age			0.010 (0.006)	-0.001 (0.005)
Education	0.030 (0.023)	0.043 (0.032)	0.097*** (0.032)	0.027 (0.022)
Term	-0.009 (0.012)	-0.005 (0.013)	-0.009 (0.015)	-0.023** (0.011)
Constant	Yes	Yes	Yes	Yes
N	2691	1119	1184	2619
R square	0.605	0.663	0.573	0.658

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: This study, Wang and Chou (2022).

Table 8. Results 6.

Dependent Variable	log(Land Area)			
	(1) Age < 55	(2) Age ≥ 55	(3) Coastal	(4) Non-Coastal
Conference t-2	0.098** (0.041)	-0.032 (0.054)	0.119** (0.056)	0.041 (0.039)
Conference t-1	0.152*** (0.039)	-0.068 (0.050)	0.097* (0.053)	0.141*** (0.038)
Conference t + 1	-0.062 (0.038)	-0.036 (0.052)	0.099* (0.052)	0.086** (0.037)
Conference t + 2	0.098** (0.040)	0.067 (0.056)	0.107* (0.056)	0.094** (0.039)
log(Capita)	0.082*** (0.005)	0.079*** (0.006)	0.075*** (0.007)	0.089*** (0.005)
Finance Pressure	0.017 (0.014)	0.023 (0.022)	0.113*** (0.030)	-0.001 (0.013)
Change	-0.028 (0.035)	0.013 (0.053)	0.001 (0.049)	-0.044 (0.035)
log(Wage)	0.820** (0.024)	0.895*** (0.041)	0.511*** (0.036)	0.968*** (0.024)
Age			0.007 (0.006)	0.002 (0.004)
Education	-0.007 (0.021)	0.003 (0.030)	0.022 (0.028)	0.001 (0.020)
Term	-0.001 (0.011)	0.015 (0.013)	-0.010 (0.013)	-0.010 (0.010)
Constant	Yes	Yes	Yes	Yes
N	2691	1119	1184	2619
R square	0.363	0.412	0.236	0.460

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: This study, Wang and Chou (2022).

public land. Finally, we conducted discussions on coastal and non-coastal cities, and the results showed that whether it was coastal or non-coastal regions, land sales revenue and sales area decreased significantly in the year before the party congress, and increased significantly in the next year after the party congress. It is consistent with the aforementioned empirical results.

In summary, the empirical results show that the revenue and area of public land sales decreased significantly in the year before the party congress, and increased one year after the party congress, showing a political cycle. Combined with the above analysis, we believe that there are two reasons to explain the phenomenon:

First: on the eve of the Party Congress, the potential risk and cost of land transfer increased. Although we have no way of knowing whether there is corruption or other costs that distort market transactions in land sales, the cost of land acquisition in the process of selling public land may affect the acquisition and sales process. If the land acquisition is not handled properly, news incidents or petition issues may arise (Zhou et al., 2019). If these problems occur before the Party Congress is held, they will affect the promotion of officials, thus reducing the incentive to sell public land.

Second, on the eve of the Party Congress, political uncertainty was high, which affected the behavior of stakeholders in the land transfer. From the point of view of officials, the expected impact of political uncertainty in the convening of the party congress reduced their valuation of the future benefits from land transfers, thereby reducing land transfers. After the convening of the Party Congress, political uncertainty has decreased. Local officials have incentives to accumulate political achievements for their own promotion path by selling land, attracting investment, and promoting regional economic growth. The main result in our study is similar to Julio and Yook (2012), the authors found that due to the uncertainty in the election results of government officials, companies will reduce investment in election years and return to normal in non-election years. The difference between this article and the other literature is that, compared with countries where there is a clear local public office election year, the change of public officials in China is not affected by the general election system. Therefore, the Party Congress has become an indicator for analyzing political uncertainty and investment behavior.

Conclusion

In this study, we analyze the impact of the political cycle on public land sales. Using a sample of Chinese cities in the year 2002–2018, we found that the sales revenue or the land sales area decreased in the first year before the Party Congress and increased after the party congress. The main empirical outcomes indicate that the political cycle in China affects the supply of public land significantly. The empirical results reflect that land can be used as a policy tool for local governments and a bargaining chip for the promotion of officials. Under the system of appointment of Chinese officials, the main goal of the evaluation for promotion of officials is the GDP growth rate. However, if an official has corruption or major dereliction of duty, his political career will be frustrated, and he may even be expelled from the party and face legal sanctions. Therefore, before the Party Congress, in the face of promotion opportunities

and political uncertainty, officials will reduce land transfers; after the Party Congress, land transfers have risen rapidly, and officials promote themselves through the economic effects of land transfers.

The results of this study will help us better understand the impact of the political cycle on land transfer, and at the same time have important policy implications for the reform of the land transfer system and the official promotion system. First, government departments can consider revising the land tax system to obtain tax revenue from land growth and land transactions in government jurisdictions, instead of relying on a one-time land transfer fee. Second, government optimize the evaluation system and promotion system for officials, taking into account GDP growth as well as the evaluation of public services such as education, environmental governance and social security. In recent years, the Chinese government and society have paid more and more attention to environmental regulations (Zhou et al., 2019). We believe that in the future, the Chinese government will increasingly focus on other factors other than economic factors. In conclusion, reforming the incentive mechanism through officials may be one of the countermeasures to rectify distortions in the land market. Through this study, it can be found that the political cycle has an impact on the operation of China's economy. Whether the cycle will affect the development of energy, finance, employment or specific industries remains to be discussed in future research.

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Data availability statement

The database in this study can collect online in China City Statistical Yearbook, China Land and Resources Statistical Yearbook and the website of <http://cpc.people.com.cn/index.html>

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