

Chen, Zhuo; Hu, Mingzhi; Qiu, Zhiyi

Article

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Article

Promotion Pressures of Local Leaders and Real Estate Investments: China and Leader Heterogeneity

Zhuo Chen ¹, Mingzhi Hu ^{2,*} and Zhiyi Qiu ³¹ School of Government Audit, Nanjing Audit University, Nanjing 211815, China; chenzhuo@nau.edu.cn² School of Management, Chinese Academy of Housing and Real Estate, Zhejiang University of Technology, Hangzhou 310014, China³ School of Economics, Changzhou University, Changzhou 213159, China; zyuqiu1789@cczu.edu.cn

* Correspondence: mzhu@zjut.edu.cn or hu_mingzhi@outlook.com

Abstract: Chinese local officials have strong incentives to stimulate economic growth in the pursuit of promotion. However, the connection between promotion pressure of local officials and investment in the real estate market has not been rigorously explored. By using the panel data of local leaders (municipal party secretaries or mayors) from 2002 to 2010, this paper investigates the correlations between local leaders' promotion pressures and growth in real estate investments. Empirical results show that local leaders' promotion pressures are significantly and positively correlated with the growth of the real estate market. Furthermore, the positive effect of promotion pressure on real estate development is significant if the leader is young or born locally, whereas this effect is insignificant if the leader is older or not a native. Our findings provide new evidence on how local leaders may strategically intervene in local economic activities.

Keywords: real estate investment; promotion pressure; local officials; China

JEL Classification: O15; R23; R31



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1. Introduction

The Chinese government has heavy intervention in the economy within the operational procedures of the Chinese Communist Party (CCP) cadre appointment system (Yao and Zhang 2015; Chen et al. 2017). Scholars have long argued that local officials have incentives to take opportunistic behaviors to affect local economic activities to satisfy their own self-interests (Nordhaus 1975; Alesina and Roubini 1992). They have also recognized that the devolution of authority from the central to local governments, which is regarded as the decentralization with Chinese characteristics, has played a critical role in stimulating China's rapid economic growth since the economic reform in 1978 (Cai and Treisman 2006; Xu 2011). The key point for the decentralization with Chinese characteristics is that the promotion of local leaders of China's provinces and autonomous regions is decided by the central government, largely based on the local economic performance (Bo 1996; Li and Zhou 2005; Huang 2002; Edin 2003; Choi 2012). Specifically, regional gross domestic product (GDP) has been used both as a benchmark for judging local officials' policy decisions and as a criteria in determining promotions within the Communist Party (Zhang et al. 2017). The unique political institution provides us a good opportunity to test how local officials are motivated to stimulate local economic growth.

The real estate industry is considered the engine of economic growth in China (Wu et al. 2012; Pan et al. 2015). Figure 1 plots the ratio of real estate investment to GDP in China from 1997 to 2015. It shows an upward trend for the ratio of real estate investment to GDP during this period. The ratio increased by more than threefold within less than two decades, from less than 5% in 1997 to nearly 15% in 2015. In 2017, the amount of real estate investment exceeded CNY 10 trillion, accounting for about 13.27% of China's

GDP. We hypothesize that local officials under promotion pressures have strong incentives to stimulate local economic growth through heavy investment in the real estate sector. Investment in the real estate market has long been considered an effective and feasible strategy for local governments to drive economic development in China. The main reason is that urban land in China is owned by the state, and the local government can easily intervene in the real estate market through the control of land supply (Pan et al. 2015). Many studies have documented that local governments have strong incentives to promote the rapid development of the real estate sector and, thus, increases the land revenue (Han and Kung 2015; Wang and Hui 2017). Local regulations on purchase restrictions, banking loans, and urban planning are also available to government intervention in the real estate market (Wu et al. 2012; Han and Kung 2015).

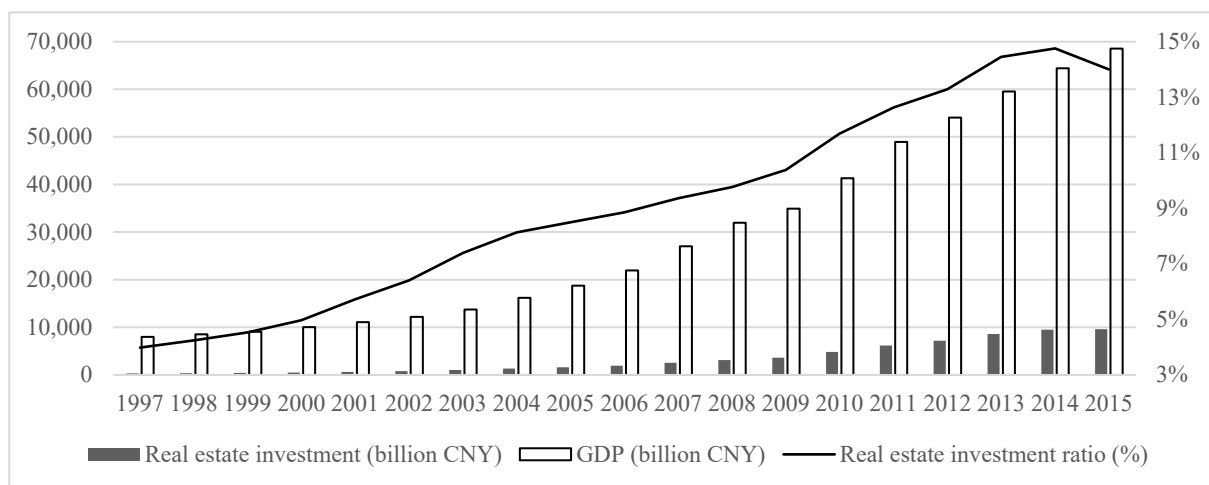


Figure 1. Ratio of real estate investment to GDP (1997–2015). Data source: China Statistical Yearbook.

This paper contributes to the growing literature concerning the effect of local government intervention in the real estate market by highlighting the role of local leaders. In recent years, a growing number of social science studies have indicated that the Chinese central government creates a “yardstick competition” among local leaders by promoting or demoting them largely based on economic performance (Bo 1996; Chen et al. 2005, 2017; Li and Zhou 2005; Yao and Zhang 2015; Wu and Chen 2016). The role of promotion pressure on local officials to stimulate economic growth has been extensively examined. However, less attention has been paid to the specific channels where local leaders promote economic development. Using data of local leaders by manually collecting from local yearbooks, municipal official websites, and official websites, we find a significant and positive effect of local leaders’ promotion pressures on investment in real estate. To the best of our knowledge, our study is one of the first to examine the effect of local leaders’ promotion pressures on real estate investments. Furthermore, our findings suggest a heterogeneity effect of the promotion pressures of local leaders on real estate investments across local leaders with different characteristics. We find that the positive effect of promotion pressure on real estate development is significant if the leader is young or born locally, whereas this effect is insignificant if the leader is older or not a native.

The remainder of this paper is structured as follows. Section 2 introduces the research background and reviews related studies. Section 3 raises the relevant hypotheses. Section 4 describes the data, variables, and research methodology. Section 5 presents the empirical results. Section 6 provides some concluding remarks.

2. Literature Review

2.1. Promotion System of Local Officials in China

The personnel system in China is a two-level structure with the leaders of CCP (politburo and State Council) as the control level, and the bureaucratic officials at various levels as the controlled level (Huang 2002). The double-leader structure underlies each level of public administration body in China; with any certain government body there exists two leaders composed of a one-party secretary who is responsible for strategic affairs and one administration head who addresses daily affairs (Landry 2008). The authoritarian governance of China that is fragmented at the local level leads to a highly decentralized personnel system (Cai and Treisman 2006). Specifically, the local bureaucratic system in China is designed as a four-level hierarchy in accordance with the geographical area of jurisdiction, province, prefecture (municipality), county, and town (See Figure 2)¹. Provincial leaders are directly appointed by the CCP's Central Committee and the State Council, whereas the sub-provincial officials are selected by local governments (Wu and Chen 2016).

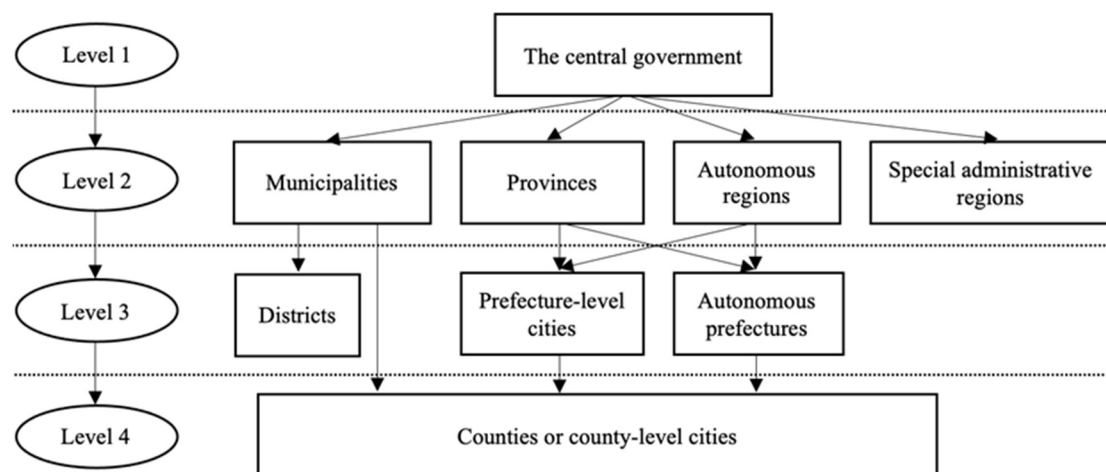


Figure 2. The Chinese political hierarchy above the county level.

Based on the prevailing evaluation system of civil servants in China, published by the CCP Organization Department in 1993², political integrity, competence, diligence, and work achievements are the four criteria where work achievements account for no less than 60% of evaluation scores (Edin 2003).

2.2. Land Finance in Urban China

Land finance refers to the practice that local governments sustain fiscal expenditures by selling use rights of local urban land to private sectors (Pan et al. 2015). In China, all the non-arable lands are state-owned, as is stated in the Land Administration Law of the People's Republic of China passed at the 15th National Congress of the Communist Party of China in 1998. The local governments are entitled to lease the land to firms or individuals for a limited tenure, 70 years for residential housing, 50 years for industrial use, and 40 years for commercial housing (Wu et al. 2012). As a result, local governments own de jure the land in their geographical jurisdictions (Lin and Ho 2005). Since the land-leasing system changed in 2003, local governments have a “nearly monopolistic power” in land allocation (Pan et al. 2015), and they lease the land lots at higher prices than before (Cao et al. 2008). Consequently, some local governments reap “huge windfalls” of revenue from leasing land (Chen and Kung 2016) with a strong incentive to promote the real estate sector to maximize land revenue (Lichtenberg and Ding 2009; Han and Kung 2015; Wang and Hui 2017).

Figure 3 plots the fiscal dependence on the land sale of local governments from 2003 to 2015, which is measured as the ratio of land sale revenue over local fiscal income. Despite the fluctuations, this ratio stays around 50%, indicating considerable dependence of local

governments on land sale revenue. Such a phenomenon is widely defined by the literature and news reports as “land finance” (Fu 2015; Wu et al. 2015a; Pan et al. 2015). As is widely argued, land finance is opportunism, similar to undermining financial sustainability and economic stability (Wu et al. 2015b).

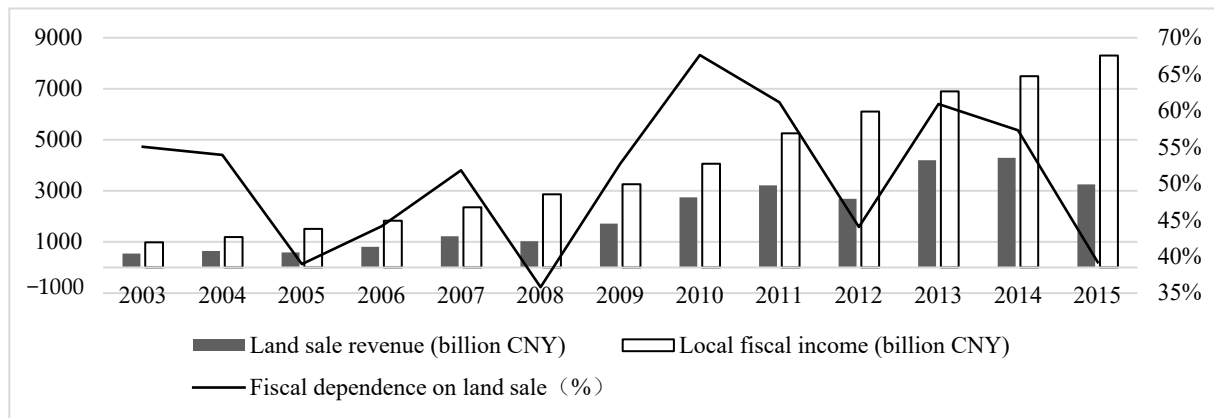


Figure 3. Fiscal dependence on land sale (2003–2015). Data source: China Statistical Yearbook, China Land and Resources Statistical Yearbook.

3. Hypothesis Development

3.1. Fiscal Decentralization, Political Centralization, and Promotion Pressures

Since China’s economic reform in 1978, local governments play an increasingly important role in running local economies due to the institutional central–local arrangements with Chinese characteristics. Earlier literature generally theorizes that Chinese local governments have incentives to promote the local economy due to the devolution from central to local government in terms of governance and a fiscal responsibility system (Qian and Weingast 1997). However, the incentive of the local government was undermined after the central government took away its excessive share of the tax base after the 1994 tax-sharing reform (Xu 2011). The hypothesis of fiscal federalism takes the central government as a firm; thus, this hypothesis does not understand the real function of the central government in the local economy, nor can it interpret the negative effect of fiscal federalism (Xu 2011).

A large body of research suggests that personal career advancement is the main incentive for officials to manage the local economy (Cai and Treisman 2005). In comparison with fiscal incentives, political promotion incentives are more effective due to the direct influence on local officials (Cai and Treisman 2005, 2006). In terms of political promotion and in addition to individual expectations of promotion, the evaluation system of the central government affects local officials’ behaviors (Oates 1999; Weingast 1995). The yardstick competition thesis (Chen et al. 2005; Maskin et al. 2000; Xu 2011) argues that official promotion is a process of hierarchical knocking-out; that is, the winners stay in the contest for the next round, whereas all the losers must withdraw. Consequently, local officials rely on better performance to win the contest, and “competition focused on growth” prevails among local governments of the same level (Bo 1996; Chen et al. 2005; Li and Zhou 2005). Therefore, the decentralization with Chinese characteristic is the combination of economic decentralization and political centralization; the central government transfers economic authority to local governments but attains the right to appoint local leaders. Thus, the central government keeps incentives and constraints effective, whereas local governments, entitled with applicable authority, are responsible for economic growth (Chen et al. 2017). As economic growth is the prime concern of the Chinese state (Xu 2011), a large amount of research has suggested that the absolute or relative growth rate of GDP works as a key criterion when the central government evaluates local officials’ performances (Bo 1996; Edin 2003; Chen et al. 2005, 2017; Landry 2008; Li and Zhou 2005; Persson and Zhuravskaya 2016; Yao and Zhang 2015).

Existing research indicates that investment in real estate plays an indispensable role in official promotions due to its effect on the local economy. Specifically, the investment in real estate, affecting several related industries, has a greater impact on the local economy in the short term. The promotion competition among local officials leads to the problem of land finance (Wu et al. 2015b). In addition to economic growth, investment in real estate brings the local government more revenue related to land and housing. Consequently, local officials might construct infrastructures with this revenue and might gain good reputations for promotions. Accordingly, we propose our first hypothesis.

H1. *Promotion pressures of local officials have a positive effect on investments in real estate.*

3.2. Individual Characteristics of Local Officials and Promotion Pressures

Governance competence and political integrity are the two key criteria of official selection in China (Edin 2003). Although neither of the two is easy to observe in practice (Wu et al. 2012; Yao and Zhang 2015), the former seems comparatively more feasible to measure (Choi 2012; Zeng 2014). Hence, governance competence is a fundamental criterion in official promotion in China. Two approaches are used to measure governance competence: (1) development of the regions where the official has taken office, and (2) individual characteristics and experiences of the official. The second approach is widely used in recent research. For example, previous studies have suggested that age and education of the local officials have negative correlations with economic growth (Chen et al. 2017). Furthermore, municipal data show that older officials have less intention for promotion, which mitigate their incentive to run the local economy.

Officials with rich occupational experiences enjoy advantage in promotion. For one, officials might obtain social capital via occupational experiences. For another, experienced officials are expected to be sufficiently capable to deal with complexity. Evidence shows that cross-province occupational experiences have a significantly positive effect on local growth (Muratova et al. 2018). In fact, governors and provincial party secretaries with occupational experience in other provinces outperform their counterparts assigned from the government in terms of local economy and their individual political position (Wu and Cao 2021; Li et al. 2022). The mobility of officials across different regions, necessary in the yardstick competition, is aimed at selecting the more competent winner through comparison (Yao and Zhang 2015).

In this paper, we focus on the fact that local officials of different ages have distinct pursuits of promotion, which lead to different preferences in estate investment. Young officials tend to be more ambitious in promotion and react positively to the promotion pressures and set more aggressive economic goals. As to the real estate industry, longer development period, as well as higher risk, are involved. Thus, young officials with relatively adequate courage and confidence to bear the risk, are more likely to take actions to stimulate local economic growth by boosting investments in real estate. On the contrary, older officials might be too conservative. Accordingly, we propose the second hypothesis.

H2. *The effect of promotion pressures on real estate investments is more obvious for young local leaders than older local leaders.*

Moreover, the correlation between promotion pressures and real estate investments might differ upon the sources of local leaders. We find that nearly two-thirds of local leaders in our sample take office in their hometown, which is consistent with the previous literature (Hodler and Raschky 2014; Chen et al. 2019). Support from the locals provides preferential environments for the native officials to climb the occupational ladder (Guo et al. 2021). In addition, friendly policies concerning land quotas and credit availability are critical for boosting real estate investment, and the native officials with rich, local social networks and good knowledge of the region are likely to access these resources. Accordingly, we propose the third hypothesis.

H3. The effect of promotion pressures on real estate investments is more obvious for native local leaders than non-native local leaders.

In summary, we hypothesize that the promotion pressures of local officials have a significantly positive effect on their intervention in the real estate market. In addition, age and the hometown of the local officials moderate the relationship between promotion pressures and real estate investments. The theoretical framework for promotion pressure and real estate investment is shown in Figure 4.

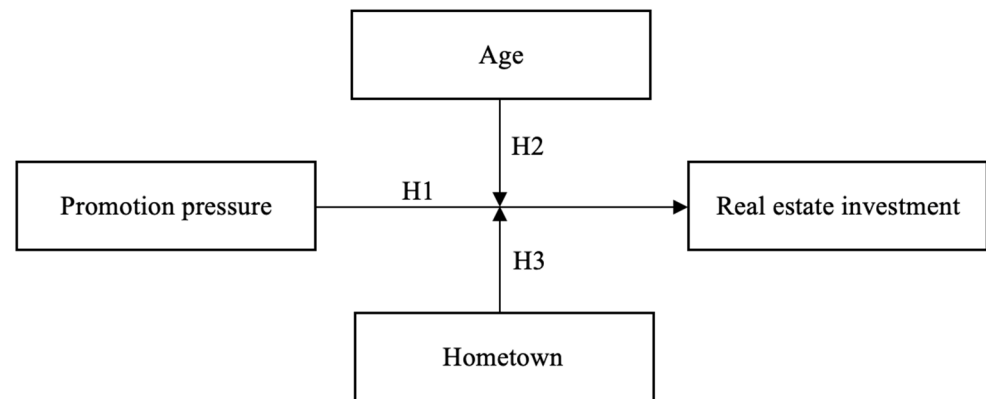


Figure 4. Theoretical framework.

4. Data, Variables, and Model Specification

4.1. Data

The data used in this paper come from multiple sources. The data of local leaders, including municipal party secretaries and mayors, are manually collected from the local yearbooks, municipal official websites, and official websites, such as *Renmin* (<http://www.people.com.cn>, accessed on 1 July 2019) and *Xinhua* (<http://www.xinhuanet.com>, accessed on 15 July 2019). Personal characteristics of local leaders, such as name, age, gender, hometown, and occupational experience, are available from these sources (Chen 2015; Oppen et al. 2015; Shi et al. 2018). We exclude the samples from the provinces of Tibet, Xinjiang, and Qinghai due to difficulty in data collection. The dataset of local leaders after excluding these provinces includes 279 municipalities from 2002 to 2010³. Figure 5 shows the geographic distribution of these municipalities. The data of investments in the real estate market and macroeconomic variables are from the China City Statistical Yearbook, which is the largest and most authoritative statistical database in China. All nominal variables are deflated by the provincial consumer price index.

4.2. Promotion Pressures

Promotion pressures of local leaders are the key variables in this paper, which are measured by the performance of local economies relative to competitive regions (i.e., peer pressure faced by local leaders). We take several steps to construct the variable of promotion pressures of local leaders. First, we construct the variables of budget surplus ratio (*Surplus*) and employment rate (*Employment*).

$$Surplus_{i,t} = \frac{Revenue_{i,t} - Expenditure_{i,t}}{Revenue_{i,t}} \times 100\% \quad (1)$$

$$Employment_{i,t} = \frac{Employed_{i,t}}{Labor_{i,t}} \times 100\% \quad (2)$$

where $Surplus_{i,t}$ is the budget surplus ratio in city i and year t , $Revenue_{i,t}$ is the amount of budget revenue in city i and year t , $Expenditure_{i,t}$ represents the budget expenditure in city i and year t , $Employment_{i,t}$ denotes the employment rate in city i and year t , $Employed_{i,t}$ is

the amount of employed population in city i and year t , and $Labor_{i,t}$ represents the total number in the labor force in city i in year t .

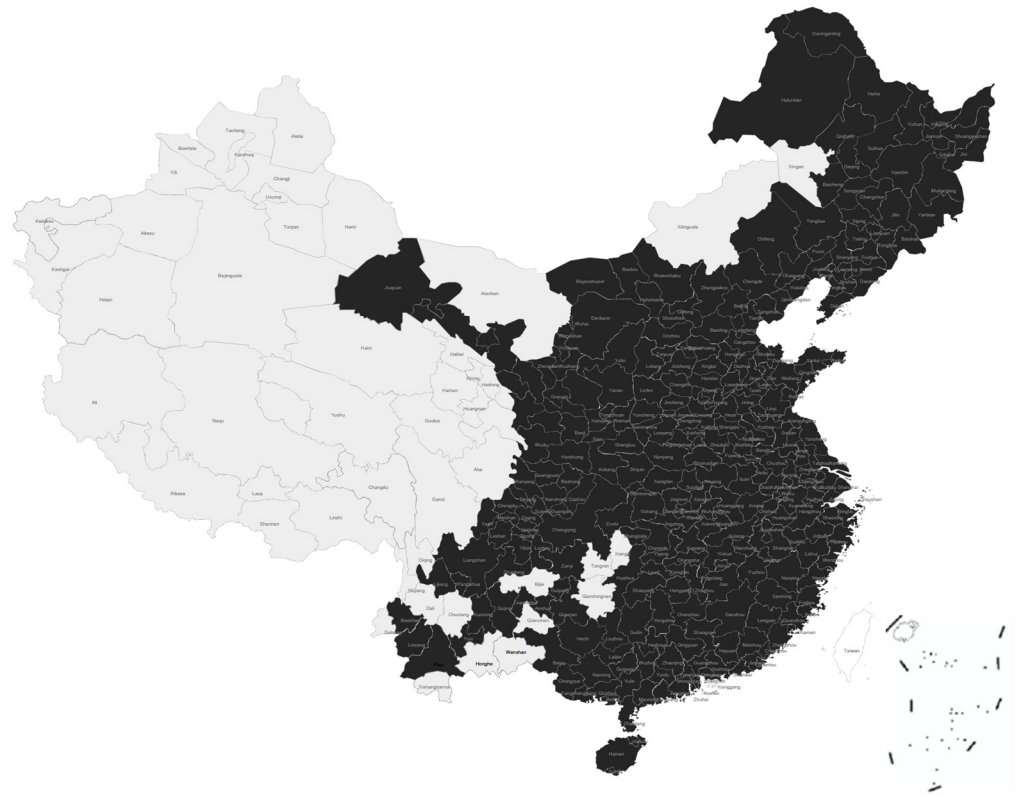


Figure 5. Distribution of the sampled municipalities. Note: Darkly shaded regions correspond to municipalities used in our analysis.

Second, we classify our samples into two categories based on the city administrative levels, sub-provincial and prefecture-level cities⁴. Samples within the same category are defined as “comparable”. The promotion pressures of local leaders will only come from the economic performances in regions within the comparable region (Fang et al. 2018; Wang et al. 2019). Next, we calculate the difference between the value of the budget surplus ratio, the unemployment rate, and the GDP growth rate in each city and their mean values within the comparable region (i.e., in cities within the same category). Specifically, we construct a series of dummy variables (*Compare*), indicating the relative performances in different dimensions within the comparable region:

$$Compare_{j,i,t} = \begin{cases} 1, & Indicator_{j,i,t} < Indicator_{j,m,t} \\ 0, & \text{otherwise} \end{cases} \quad (3)$$

where $Indicator_{j,i,t}$ is the value of the indicator j . We have three indicators, namely, budget surplus ratio, employment rate, and GDP growth rate. $Indicator_{j,m,t}$ represents the mean value of indicator j in the comparable region m . $Compare_{j,i,t}$ is a dummy variable that is equal to 1 if $Indicator_{j,i,t}$ is lower than $Indicator_{j,m,t}$, and 0 otherwise. In other words, $Compare_{j,i,t}$ takes the value of 1 if local leaders in city i have a worse performance in the j th dimension compared with the average performance within the comparable region, which measures the relative performance.

Third, we construct the index of promotion pressure (*pressure*) with the following equation:

$$Pressure_{i,t} = \sum_j Compare_{j,i,t-1} \quad (4)$$

where $Pressure_{i,t}$ represents the promotion pressures of local leaders and is an ordered variable ranging from 0 (lowest promotion pressure) to 3 (highest promotion pressure). To ease the concern on the lagged effect of the promotion pressures of local leaders on their interventions in the local economies, we use the one-year lagged value of the relative performance (*Compare*).

Table 1 shows the individual characteristics of local leaders. The variable *retire* is measured as the difference between the mandatory age for retirement and the current age, which represents the years before retirement. The variable *Tenure* is a dummy variable that equals 1 if the current year is the first year of the leader in office and 0 otherwise. *Education* is a category variable that captures the educational attainment of the local leader, which includes four categories, bachelor's degree, master's degree, doctoral degree, and others. Previous studies have shown that higher educated officials are more likely to set higher goals for local economic development due to their higher confidence or better governance (Li and Zhou 2005). We construct two dummy variables to capture the technical–managerial and economic–financial skills of local leaders (Shambaugh 2001), engineering (equals 1 if the local leader is a qualified engineer and 0 otherwise) and economist (equals 1 if the local leader is a qualified economist and 0 otherwise). We also construct two dummy variables to capture the occupational experiences of local leaders (Oppen et al. 2015): committee (equals 1 if the local leader has ever worked in the Communist Youth League Committee and 0 otherwise) and secretary (equals 1 if the local leader has worked as a general secretary, vice general secretary, or director of municipal executive office, and 0 otherwise). Table 1 shows that mayors and municipal party secretaries are quite similar in promotion pressures. The mean value of promotion pressures is 1.48 for mayors and 1.47 for municipal party secretaries. Moreover, mayors and municipal party secretaries do not have considerable differences in most individual characteristics.

Table 1. Summary statistics of local leaders.

Individual Characteristics	Mayors			Municipal Party Secretaries		
	Observations	Mean	S.D.	Observations	Mean	S.D.
<i>Pressure</i>	2511	1.48	0.84	2532	1.47	0.85
<i>Retire</i>	2477	10.24	4.01	2382	8.23	3.66
<i>Tenure</i>	2497	2.54	1.47	2491	2.78	1.62
<i>Education</i>	2477	1.83	0.78	2308	1.82	0.72
<i>Engineering</i>	2362	0.10	0.31	2186	0.07	0.25
<i>Economist</i>	2362	0.09	0.28	2185	0.07	0.26
<i>Committee</i>	2432	0.38	0.49	2350	0.33	0.47
<i>Secretary</i>	2432	0.58	0.49	2373	0.62	0.49

Data source: China City Statistical Yearbook, local yearbooks, municipal official websites, and official websites.

4.3. Model Specification

To estimate the effect of local leaders' promotion pressures on real estate investments, we employ the fixed-effects panel model with the following form:

$$investment_{i,t} = \alpha_0 + \alpha_1 pressure_{i,t} + X_{i,t} + year_t + city_i + \varepsilon_{i,t} \quad (5)$$

where the dependent variable $investment_{i,t}$ represents the investment in real estate market in city i and year t , the independent variable $pressure_{i,t}$ represents the promotion pressure of the local leader of city i in year t , and $X_{i,t}$ represents a vector of the control variables. Specifically, two categories of control variables are incorporated. First is the individual characteristics of local leaders, such as age, education, experience, and tenure, as described in Table 1. The squared terms of *retire* and *tenure* are also included to control for the potential nonlinear effects. Second are the local macroeconomic variables, such as GDP per capita, population, and fiscal revenue per capita. $year_t$ and $city_i$ represent year and city fixed effects, respectively. Finally, $\varepsilon_{i,t}$ is the error term.

5. Empirical Findings

5.1. Baseline Results

Table 2 reports the results from the baseline regression (i.e., Equation (1)). The results in Columns (1)–(3) are estimated with separate regressions by using subsamples of mayors, and Columns (4)–(6) use subsamples of municipal party secretaries. Columns (1)–(4) control for promotion pressures, personal characteristics of local leaders, macroeconomic characteristics, and year and city fixed effects. Columns (2)–(5) add macroeconomic variables. Columns (3)–(6) further add two variables that measure the occupational experiences of local leaders. Throughout Columns (1)–(6), we can find a significant and positive coefficient of pressure, which suggests that promotion pressures faced by local leaders are positively associated with investments in the real estate market. Thus, H1 is supported.

Table 2. Promotion pressures of local leaders and real estate investments.

	Mayors			Municipal Party Secretaries		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Pressure</i>	0.02 * (1.88)	0.02 * (1.80)	0.02 ** (2.05)	0.02 * (1.87)	0.02 ** (1.97)	0.02 * (1.83)
<i>Retire</i>	−0.09 * (1.80)	−0.06 (1.09)	−0.06 (1.16)	−0.09 ** (2.14)	−0.09 ** (2.09)	−0.12 ** (2.53)
<i>Tenure</i>	0.04 ** (2.31)	0.05 ** (2.48)	0.04 ** (2.38)	0.04 ** (2.30)	0.04 ** (2.28)	0.04 ** (2.30)
<i>Education</i>	−0.02 (1.33)	−0.02 (1.39)	−0.02 (1.56)	−0.01 (0.80)	−0.02 (1.39)	−0.02 (1.30)
<i>Engineering</i>		−0.06 * (1.77)	−0.06 * (1.69)		−0.15 *** (3.77)	−0.16 *** (3.87)
<i>Economist</i>		0.02 (0.61)	−0.06 * (1.69)		0.04 (1.13)	−0.34 (0.85)
<i>Committee</i>			0.05 ** (2.16)			−0.02 (0.81)
<i>Secretary</i>			−0.00 (0.19)			0.03 (1.29)
Macroeconomic variables	Y	Y	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.78	0.78	0.78	0.80	0.80	0.80
Observations	2425	2339	2326	2216	2104	2082

Note: t-values are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

5.2. Robustness Checks

We conducted two robustness checks for the main results. First, we redefined the dependent variable as the value invested in real estate per capita, which considers the varying population scale across cities. Second, we excluded the samples in the year of global financial crisis (i.e., 2008), as the real estate market was especially susceptible to the national economy. Column (1) of Table 3 reports the results from the alternative definition of the dependent variable, and Column (1) shows the results from the subsamples by dropping the observations from 2008. The results in Table 3 consistently show that the coefficient of pressure remains positive and statistically significant.

Table 3. Results of robustness checks.

	Value Invested in Real Estate Per Capita		Excluding Observations in 2008	
	Mayors	Municipal Party Secretaries	Mayors	Municipal Party Secretaries
	(1)	(2)	(3)	(4)
<i>Pressure</i>	0.02 ** (2.05)	0.02 * (1.83)	0.03 ** (2.20)	0.02 * (1.73)
<i>Retire</i>	−0.06 (1.16)	−0.12 ** (2.53)	−0.06 (0.94)	−0.15 *** (2.88)
<i>Tenure</i>	0.04 ** (2.38)	0.04 ** (2.30)	0.04 ** (2.14)	0.05 *** (2.80)
<i>Education</i>	−0.02 (1.56)	−0.02 (1.30)	−0.03 * (1.80)	−0.02 (0.89)
<i>Engineering</i>	−0.06 * (1.69)	−0.16 *** (3.87)	−0.07 * (1.80)	−0.15 *** (3.37)
<i>Economist</i>	0.03 (0.82)	0.03 (0.85)	0.03 (0.71)	0.04 (0.97)
<i>Committee</i>	0.05 ** (2.16)	−0.02 (0.81)	0.05 * (1.93)	−0.01 (0.56)
<i>Secretary</i>	−0.00 (0.19)	0.03 (1.29)	−0.01 (0.37)	0.02 (0.82)
Macroeconomic variables	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Adjusted R-squared	0.77	0.79	0.78	0.80
Observations	2326	2082	2054	1826

Note: t-values are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

5.3. Further Analyses

Our previous results suggest that local leaders who compete for promotion actively interfere in the real estate market. We now examine the possible heterogeneity effect of promotion pressures among local leaders at different ages and from different regions. First, local leaders at different ages may respond distinctively to promotion pressures in terms of interference in economic activities. To test this hypothesis, we divided the samples into two groups based on the ages of the local leaders, young and older local leaders. Young local leaders are defined as those whose ages are lower than the mean value, and older local leaders are those whose ages are higher than the mean value.

Table 4 reports the results by using subsamples divided by the age of local leaders. The results show that promotion pressures exert a different effect on the real estate investments between young and older local leaders. Specifically, for young mayors or municipal party secretaries, promotion pressures have a significantly positive effect on their interventions in the real estate market. However, the effect of promotion pressures is insignificant for older mayors or municipal party secretaries. These findings provide supportive evidence on H2.

Second, leaders who are born locally and those who are born elsewhere might have different motives and degrees of interventions in economic activities for personal benefits because they have different emotional attachments to the local area and local social capital. To test this hypothesis, we divided the samples into two groups according to the hometowns of the leaders. The leaders who were born locally are classified as “native” and as “non-native” otherwise. In our sample, the majority of local leaders are born locally. Specifically, 1643 of 2054 mayors and 1432 of 1826 municipal party secretaries are native.

Table 5 reports the results by using subsamples divided by the hometowns of the local leaders. We can see that the coefficient of *pressure* is significant and positive for native leaders (Columns (1) and (3)), whereas it is insignificant for non-native leaders (Columns (2) and (4)). In other words, promotion pressures push native leaders who are born locally to invest more in the real estate market. However, if the leaders are non-native, then

promotion pressures do not motivate the leaders who are not born locally to invest heavily in the real estate market. Thus, H3 is supported.

Table 4. Promotion pressures of different age group.

	Mayors		Municipal Party Secretaries	
	Young	Old	Young	Old
	(1)	(2)	(3)	(4)
<i>Pressure</i>	0.04 ** (2.36)	0.02 (1.07)	0.03 ** (2.20)	0.03 (1.28)
<i>Tenure</i>	0.07 ** (2.22)	0.05 ** (2.04)	0.07 *** (2.64)	0.02 (0.73)
<i>Education</i>	0.01 (0.46)	−0.08 *** (3.27)	−0.00 (0.01)	0.00 (0.12)
<i>Engineering</i>	−0.06 (1.37)	−0.11 (1.45)	−0.19 *** (3.40)	−0.10 (1.30)
<i>Economist</i>	−0.03 (0.54)	0.04 (0.66)	0.02 (0.30)	0.04 (1.21)
<i>Committee</i>	0.07 ** (2.24)	0.03 (0.82)	−0.05 * (1.68)	0.00 (0.03)
<i>Secretary</i>	−0.00 (0.13)	−0.03 (0.85)	−0.05 (1.43)	0.03 (0.72)
Macroeconomic variables	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Adjusted R-squared	0.77	0.79	0.79	0.73
Observations	1326	1003	1238	910

Note: t-values are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5. Promotion pressures of different hometown groups.

	Mayors		Municipal Party Secretaries	
	Native	Non-Native	Native	Non-Native
	(1)	(2)	(3)	(4)
<i>Pressure</i>	0.03 *** (2.60)	0.03 (1.15)	0.03 ** (2.22)	0.00 (0.25)
<i>Retire</i>	0.05 (0.86)	0.21 (1.41)	−0.02 (0.39)	0.23 *** (3.06)
<i>Tenure</i>	0.05 *** (2.57)	−0.00 (0.01)	−0.02 (0.85)	0.11 *** (4.23)
<i>Education</i>	−0.03 * (1.88)	−0.04 (0.75)	−0.03 (1.30)	0.02 (0.58)
<i>Engineering</i>	−0.05 (1.13)	−0.21 ** (2.26)	−0.14 *** (2.62)	−0.05 (0.56)
<i>Economist</i>	−0.03 (0.54)	−0.24 ** (2.46)	0.11 ** (2.00)	0.02 (0.24)
<i>Committee</i>	−0.03 (1.31)	0.15 ** (2.40)	0.00 (0.13)	−0.21 *** (3.95)
<i>Secretary</i>	0.00 (0.17)	−0.13 * (1.87)	0.06 ** (1.99)	−0.05 (1.01)
Macroeconomic variables	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Adjusted R-squared	0.81	0.68	0.79	0.79
Observations	1643	657	1432	630

Note: t-values are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

6. Conclusions

Economic decentralization has been considered a key to China's economic success in the past decades, but local governments have limited political autonomy. The promotions of local leaders are almost completely decided by the central government, and economic growth has been regarded as the most important indicator for evaluating the abilities and performances of local leaders. Consequently, local leaders have strong incentives to stimulate economic growth. The significant and positive effect of real estate investment on economic growth has been well documented in previous studies. The real estate industry has long been regarded as a pillar industry of the national economy in China, and a real estate-led economic growth model is prevalent. This study sheds new light on the determinants of the rapid development of China's real estate market from the perspective of market intervention by local leaders.

By combining data of local leaders, including municipal party secretaries and mayors, manually collected from the local yearbooks and data of investments in the real estate market and macroeconomic variables, we examine how the promotion pressures of local leaders affect the growth of local real estate markets. Our results show that local leaders' promotion pressures have a significantly positive effect on the investments in the real estate market. In view of the dominant role of local leaders in the decision-making process of the local government, we further examine the heterogeneity effect of promotion pressures among local leaders with different personal characteristics. We find that the effect of promotion pressures differs across the different ages of the local leaders; the effect is significant and positive for young leaders and insignificant for older leaders. Furthermore, promotion pressures have a significant and positive effect on local real estate development if the leader was born locally. Nevertheless, the effect becomes insignificant if the leader is not a native.

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Notes

- ¹ The Chinese political hierarchy consists of several levels of local governments, from the central to the township government (Figure 2). Under the central government, there exists provincial level governments (ministries, provinces, centrally administered cities, and ethnic autonomous regions) (He 2006).
- ² See <https://www.xinghe.gov.cn/information/xinghe7049/msg2334735249492.html>, accessed on 10 June 2022.
- ³ We need to point out that arguments were operated before the COVID-19 pandemic.
- ⁴ Sub-provincial city is a special prefecture-level city that is ruled by a province but is administered independently in regard to the economy and law. The mayor of a sub-provincial city is equal in status to a vice-governor of a province. The status is below that of a municipality, which does not belong to any province but is above other, regular prefecture-level cities, which are completely ruled by their provinces.

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