

Financial Pressure, Economic Stimulus and Land Transfer with the Aim of Attracting Investment—Empirical Evidence Based on Micro Data of Industrial Land

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Although China's local governments are facing greater financial pressure, they often sell industrial land at low prices to attract investment. Local government land transfer strategies reflect driving mechanisms of officials' behavior. Based on the micro data of about 340000 industrial land sales in 289 prefecture-level cities in China from 2006 to 2015, this paper divides industrial land transfer into two categories, namely land transfer with the aim of attracting investment and normal transfer, according to whether the transfer price is lower than the minimum price stipulated by central government. The paper explores the strategies of industrial land transfer under financial pressure and the motivation differences of officials with the help of changes in local land transfers after the introduction of economic stimulus policies. It is found that financial pressure will significantly reduce local industrial land transfer with the aim of investment attraction. However, after the introduction of economic stimulus policies, although financial pressure has increased, the influence of financial pressure on local governments' investment-induced land transfer behavior significantly weakened due to the increase of out-of-system financing channels, thus industrial land transfer with the aim of attracting investment has increased significantly. From the perspective of promotion incentives of officials, officials with longer term were more inclined to sell industrial land to attract investment. Therefore, it is necessary to rationally arrange the financial resources and powers of central and local governments, to adapt reasonable macro control method and strategy, and to build an official evaluation system that meets the needs of high-quality development.

Keywords: financial pressure, land transfer with the aim of attracting investment, industrial land transfer, economic stimulus, promotion incentive

1. Introduction

In China, the behavior of local governments is deeply influenced by the central

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policy orientation. The central government emphasizes that “development is the first priority”, and the local governments have launched fierce competition for the development of economy, and have become the main driving force of China’s rapid economic growth. Influenced by the assessment for promotion, local officials regard promoting local economic development as their primary goal, and attracting investment an important way to achieve the goal. In the competition for investment, low-cost transfer of industrial land has become an important stylized fact, known as the “bottom-line competition” strategy of land transfer (Yang *et al.*, 2014), which is the “land transfer with the aim of attracting investment” discussed in this paper.

In reality, the financial pressure is an important factor forcing the local government to implement the strategy of “land transfer with the aim of attracting investment”. The financial pressure faced by local governments in China has a long history: after the reform of tax sharing system, with “financial power transferred upward, and responsibility retained”, the fiscal gap of local governments has been expanding day by day. In the process of rapid urbanization, the commercial land and residential land can undoubtedly bring higher transfer income,¹ therefore, the local government needs to make a choice among different types of land transfer. In addition, in the fierce government competition, investors have higher and higher requirements for land use. In order to meet the conditions of land delivery, the initial investment of local government “attracting investment with land” is increasing.² In many prefecture-level cities, even if the industrial land is sold at the lowest price stipulated by the state, it cannot cover the corresponding costs paid by the local government in the early stage.³ Therefore, rational local officials will consider the constraints of financial pressure in land management decisions, weigh the costs and benefits of different types of land transfer, and maximize the benefits of land which is an important economic resource of the local government.

However, the policy orientation of the central government influences local governments’ behavior. Once the central government decides to relax the monetary

¹ Local governments have certain authority in determining land use. Article 20 of *Law of the People’s Republic of China on Land Administration* stipulates that “the general plan for land use shall be examined and approved at different levels”. “The general plans for land use of cities where the people’s governments of provinces and autonomous regions are located, cities with a population of more than one million and cities designated by the State Council shall be submitted to the State Council for approval after being examined and approved by the people’s governments of provinces and autonomous regions.” “General plans for land use other than those specified in the second and third paragraphs of this article shall be submitted to the people’s governments of provinces, autonomous regions and municipalities directly under the central government for approval level by level; among them, the general plans for land use of townships (towns) may be approved by the people’s governments of cities divided into districts or autonomous prefectures authorized by the provincial people’s governments.”

² At present, in order to attract investment, the cultivated land should meet the following standard of land leveling, and providing electricity, access, water supply, communication, drainage, heat, and gas.

³ The authors collected the information in the field research.

policy and expand the economy, the original decision-making behavior of the local government will be adjusted according to the new incentive and constraint conditions, which is reflected as follows: due to the increase of financing channels outside the system, the local government's concern about financial pressure has been greatly reduced. In fact, the economic stimulus policy issued by the central government in 2008 has brought about a huge amount of credit, and spawned a large number of financing channels represented by local government financing platform, which led to the rapid expansion of local financing scale. In the face of the sudden relaxation of the credit environment and large-scale project expenditure planning, the local government will focus more on attracting investment and project construction, and further increase the land transfer with the aim of attracting investment.

For local officials, in the fierce "promotion tournament", attracting investment is the most accessible ladder to political achievements. However, as mentioned above, sufficient financial funds are needed as the initial development cost. Under the constraint of financial pressure, the implementation of the strategy of "land transfer with the aim of attracting investment" will be restricted. At this time, the local government has to restrain its motivation of attracting investment. Once the external environment changes, such as the introduction of economic stimulus policies and the relaxation of local financing constraints, the restrictive effect of financial pressure will be greatly weakened, so the previously suppressed motivation of attracting investment will break out and large-scale "land transfer with the aim of attracting investment" will be implemented.

Obviously, the internal driving force of local government's "land transfer with the aim of attracting investment" comes from the promotion incentive of officials, so the factors that affect the promotion of officials will also affect their investment promotion behavior. Therefore, this paper infers that the term of office of local officials will affect the investment-induced land transfer. The change of local financing environment brought by economic stimulus policy provides a perspective for exploring this driving mechanism.

This paper focuses on the following issues: how does the financial pressure faced by local governments affect the price strategy of industrial land transfer? If the financing environment changes, will the local government change the industrial land transfer strategy? What are the deep reasons for the adjustment of transfer strategy? Based on the microdata of industrial land transfer in prefecture-level cities from 2006 to 2015, this paper constructs a fixed effect panel data model, and examines the industrial land transfer strategies of local governments under financial pressure with the exogenous shocks of macro economic stimulus policies, and discusses the impact of official characteristics on land transfer strategies.

The possible academic contributions of this paper are as follows. First, most existing studies on local land transfer and investment promotion are based on

macro data. Based on the microdata of 340000 cases of industrial land transfer in 289 prefecture-level cities, this paper provides more reliable data and measurement methods for accurately measuring the “land transfer with the aim of attracting investment” strategy of local governments. Second, with the help of exogenous macroeconomic policy shocks, this paper examines the changes of local government’s economic behavior under the relaxation of financing environment, and discusses the influence mechanism of local government’s “land transfer with the aim of attracting investment” from the perspective of official promotion.

The rest of this paper is arranged as follows. The second part is related literature review and research hypotheses; the third part is the model design, variable definition and data explanation of the empirical research; the fourth part is the empirical test and robustness test of the main hypotheses; the fifth part is the analysis of local government’s strategy under the promotion mechanism; the last part supplies the conclusion and policy recommendations.

2. Literature Review and Research Hypotheses

2.1. Financial Pressure and “Land Transfer with the Aim of Attracting Investment”

Facts have proved that in the decades of rapid economic development in China, capital is the most important driving factor (Zhang and Chen, 2006; Newman *et al.*, 2015). In the early stage of reform and openingup, China was short of necessary capital and technology. Therefore, attracting investment has become an important way for local governments to develop economy (Anderson *et al.*, 2019).

As land is an important factor of production in the manufacturing industry, the use of preferential land policies to attract investment has become an important means for local governments to attract investment. After the promulgation of the *Law on Land Administration* in 1986 and the *Provisional Regulations on the Transfer and Transfer of the Right to Use of State-owned Land in People’s Republic of China* in 1990, local governments have mastered the right of collection and management of collective land and the monopoly right of land transfer, which empowers local governments to have an appealing means of attracting investment — “land transfer with the aim of attracting investment” (Wang and Yang, 2016; Yang and Yang, 2016). This policy often means preferential land transfer price, which can directly reduce the production cost of enterprises and thus reduce their investment risk, which is of great attraction to enterprises (Liu, 2018).

It is generally believed that local governments transfer land mainly for two purposes: one is to use land to attract investment and achieve the goal of local economic development (Yang *et al.*, 2014), that is to “attract investment with land”; the other is to use land to obtain high financial revenue to cope with financial pressure (Sun and Zhou, 2013), which is commonly referred to as “land finance”. Then, for

local officials, to manage land resources, it is necessary to make trade-offs between alleviating financial pressure and attracting investment (Fan, 2015).

In fact, the existence of financial pressure will greatly affect the implementation of the strategy of attracting investment with land. Before the transfer of land, the local government needs to requisition and develop the relevant land in advance, carry out various infrastructure construction, and turn the raw land into mature land. This process needs a lot of government funding support. Moreover, the price of land transferred for attracting investment is very low, often less than 1/5 or even 1/10 of the cost (Liu, 2010). The result is that the land transfer income is far from enough to make up for its development costs, and local governments need to make up for the revenue from commercial land transfer or bank loans. To alleviate the financial pressure, local governments will choose to borrow large-scale with the income from land transfer as the guarantee, or give priority to land transfer to real estate development enterprises with higher bid price, so as to increase the house price to obtain high taxes related to real estate (Tang and Ma, 2017).

Obviously, the local land resources are limited. If the local government sells a large amount of industrial land at a low price to attract investment, it will lead to the reduction of commercial land transfer and the decrease of total land revenue, which will aggravate the financial pressure. This shows that financial pressure restricts the behavior of local governments to sell industrial land at low prices. Accordingly this paper proposes Hypothesis 1.

Hypothesis 1: Financial pressure will cause local governments to reduce the scale of industrial land transfer.

2.2. The Behavior Change of Local Governments Affected by Central Policies

Under the current institutional background of our country, the behavior of local governments will change with the change of central policies. The central government formulates the general policy of national reform and development, gives clear boundary for explicit support and prohibition, and leaves a certain discretionary zone, that is, the policy is “intentionally vague”, giving the local governments some space for innovation and adaptation. Under the guidance of the central policies, local governments will make some innovations on the basis of their actual situations (Feng *et al.*, 2019), and choose to make positive or negative responses to the central policy after considering their own interests. For example, in the face of the upward transfer of financial rights brought about by the reform of tax sharing system, local governments will not only passively increase the number of government employees and reduce efforts for taxation, but also actively raise debt, sell land to attract investment and increase fiscal revenue (Wang *et al.*, 2018).

The implementation of China’s economic stimulus policy in 2008 provides a good

condition of exogenous policy shock for this paper to test the local government's strategy of attracting investment with land under financial pressure. This paper uses the data of budget revenue and expenditure to measure the financial pressure. According to this method, the economic stimulus policy in 2008 will undoubtedly aggravate the financial pressure of local governments. In the "four trillion" investment plan, the central government only provided 1.18 trillion yuan, and the rest was to be provided by local governments (Li *et al.*, 2013). The expenditure of various project planning was reflected in the budget, which directly led to the aggravation of budgetary financial pressure. According to Hypothesis 1, this would have a negative impact on the local government's land transfer with the aim of attracting investment.

But the reality is that after the implementation of the economic stimulus policy, the area of local governments' land transfer with the aim of attracting investment has increased. On the one hand, with the introduction of ten measures to expand domestic demand and ten supporting industrial plans, the project planning of local governments has increased greatly. The implementation of projects often requires investment promotion, which increases the pressure of local government to attract investment, so the area of land transfer with the aim of attracting investment increases. On the other hand, the economic stimulus policy has also improved the financing and credit environment of local governments, greatly reduced the difficulty of local governments to obtain bank loans, and significantly improved their ability to raise funds (Kandilov *et al.*, 2016). However, this part of revenue is often not included in the budget management, so the budget revenue has not increased significantly. That is to say, in addition to the normal budget revenue channels, the financing channels outside the local government system have been greatly widened, so the constraint of financial pressure on local investment behavior can be relaxed.

It can be seen that after the introduction of the economic stimulus policy, although the financial pressure in local government budgets has intensified, due to the increase of project planning and the improvement of financing environment, the area of local government's land transfer with the aim of attracting investment has increased. Therefore, this paper proposes Hypothesis 2.

Hypothesis 2: The implementation of economic stimulus policy weakens the negative impact of financial pressure on local governments to attract investment with land.

2.3. The Driving Mechanism of Local Government Attracting Investment with Land

According to the existing research, attracting investment with land can be regarded as the rational response of local officials to political incentives. In China, the level of local economic development is taken as the primary evaluation index for official promotion, which makes local governments face fierce promotion tournaments, and

local governments compete to develop economy to seek promotion (Chen *et al.*, 2005; Zhou, 2007). Some researchers found that the promotion incentive of local officials is the main motivation to promote the growth of urban construction land (Chen *et al.*, 2017), and the promotion motivation leads local officials to lay more stress on attracting investment with land.

The promotion opportunities of officials are closely related to their own characteristics. Generally speaking, the older the officials are, the smaller the political incentives are; and the longer the tenure, the greater the political incentives (Smart and Strum, 2013). The factors that affect the promotion of local officials will have a profound impact on the strategy of attracting investment with land. It is found that, in the first year after taking office, municipal officials will significantly increase land transfer (Yu *et al.*, 2015). The municipal Party committee secretaries who have been promoted after leaving office will be more interested in obtaining fiscal revenue through land transfer (Jia *et al.*, 2016). In addition, when an official is in office for a longer term, especially over three years, it will prompt the local government to transfer more industrial land (Yang *et al.*, 2016).

According to the above analysis, the local officials' transferring land with the aim of attracting investment is derived from their promotion incentive, so the personal characteristics of local officials will have an impact on the local land transfer with the aim of attracting investment. Therefore, this paper proposes Hypothesis 3.

Hypothesis 3: The personal characteristics of local government officials will affect the local land transfer with the aim of attracting investment.

3. Research Design

3.1. Construction of the Econometric Model

In the construction of industrial land transfer model, the endogeneity can be divided into the following two aspects: on the one hand, in the random error terms, there may be factors affecting both financial pressure and industrial land transfer, leading to the problem of missing variables. To solve this problem, this paper adopts the bi-directional fixed effect model of panel data to control the error caused by factors that do not change with individual and time. In addition, this paper also controls a series of socio-economic variables that may affect fiscal pressure in the model, so as to reduce the problem of missing variables as much as possible.

On the other hand, while financial pressure affects the transfer of industrial land, the latter also affects the size of financial pressure in turn, which will lead to reverse causality. Therefore, in order to eliminate the endogeneity caused by the reverse causality, the financial pressure variable is lagged for one period in the model. On this basis, this paper establishes an econometric model of the impact of financial pressure

on the transfer of industrial land by local governments:

$$land_{i,t} = \alpha + \beta_1 yali_{i,t-1} + \sum \gamma controls_{i,t} + \eta year_t + \delta city_i + \varepsilon_{i,t} \quad (1)$$

In the equation, the subscript i represents the prefecture-level city, and the subscript t represents the time. $land_{i,t}$ is the industrial land transfer area of prefecture level city i in the year t . $yali_{i,t-1}$ is the lag term of financial pressure, indicating whether prefecture-level city i is facing financial pressure in year $t-1$. The dummy variables $year_t$ and $city_i$ are fixed effects of time and the prefecture-level city, $controls_{i,t}$ represent other factors that may affect the transfer of industrial land in prefecture-level cities. $\varepsilon_{i,t}$ is a random error term. If the coefficient β_1 of $yali_{i,t-1}$ is significantly negative, then Hypothesis 1 is tenable.

When the economic stimulus policy in 2008 is used as the exogenous impact of the relaxation of local credit environment, the duration of the policy may be controversial. In fact, while the central government began to implement economic stimulus policies at the end of 2008, most of the supporting policies of local governments actually took place in 2009 due to the problem of budget preparation. Therefore, this paper chooses to set the dummy variable of economic stimulus as 0 in 2008 and before and 1 in 2009 and later years, and establishes the following estimation equation:

$$land_{i,t} = \alpha + \beta_1 yali_{i,t-1} + \beta_2 zhengce_t + \beta_3 (yali_{i,t-1} \times zhengce_t) + \sum \gamma controls_{i,t} + \eta year_t + \delta city_i + \varepsilon_{i,t} \quad (2)$$

where $zhengce_t$ is the dummy variable indicating whether economic stimulus policy occurs. In view of the fact that the policy implementation time chosen in this paper may mix the negative effects caused by the financial crisis, the impact is opposite to the positive impact of the economic stimulus policy studied in this paper. As long as the estimate of coefficient β_2 is positive, it means that the economic stimulus policy can bring significant positive impact, and β_2 may be underestimated but not overvalued. The remaining variables are defined as described above. After the implementation of the economic stimulus policy, if the gap in the area of land transferred with the aim of attracting investment between the city facing financial pressure and the city without financial pressure has significantly narrowed, that is, the coefficient of cross product β_3 is significantly positive, it means that Hypothesis 2 is tenable.

3.2. Variable Definition

3.2.1. The Measurement of Land Transfer with the Aim of Attracting Investment

This paper studies the local government's investment promotion behavior from the

perspective of transferring land with the aim of attracting investment. In reality, the strategy of “transferring land with the aim of attracting investment” is mainly reflected in the transfer of industrial land. In terms of different land uses, compared with commercial land and residential land, the industrial land is transferred at the lowest price,¹ but the largest area of such land is transferred.² Most literature on the transfer of industrial land analyzes the local land management strategy with the area of transferred land or the number of transfers (Yang and Yang, 2016; Yang *et al.*, 2014), or measures the intervention of local government on land transfer with the proportion of listing relative to auction (Wang and Yang, 2016).

In reality, local governments rely on price competition to realize the strategy of attracting investment with land. The lower the land transfer price, the stronger the ability of local governments to attract investment (Fan and Mo, 2014). In 2006, the Ministry of Land and Resources issued the *National Minimum Price Standard for the Transfer of Industrial Land*, which divided the industrial land grades across the country and stipulated the minimum transfer price of corresponding grades. This standard is stipulated by the state after comprehensive evaluation according to the economic development status of various regions and other factors, and will not be affected by various interest motives of local governments, so the index is relatively objective. This provides a good reference standard for accurately defining the behavior of local government to transfer land with the aim of attracting investment. Therefore, according to whether the price of each industrial land in prefecture level city is equal to or lower than the minimum price standard, the total transfer area of industrial land (*zong*) is divided into two categories: area of industrial land transferred with the aim of attracting investment (*yidiyinzi*) and area of normal industrial land transfer (*zhengchang*). Specifically speaking, when the local government transfers industrial land according to the minimum price standard or even lower than the minimum price standard, it is defined as the industrial land transfer with the aim of attracting investment; when the land is transferred at a price higher than the minimum price standard, it is defined as the normal industrial land transfer.³

¹ Data come from *China Land and Resources Bulletin 2010–2016*. Taking the end of Q4 of 2016 as an example, the land price of commercial services, residential land and industrial land in 105 major monitoring prefecture-level cities in China were 6937 yuan/m², 5918 yuan/m² and 782 yuan/m², respectively.

² According to *China Land and Resources Bulletin 2010–2016*, from 2010 to 2016, the proportion of the industrial land area with the lowest land price in the total land transfer area is roughly equivalent to the sum of the proportions of commercial land and residential land.

³ In the *Notice of the Ministry of Land and Resources on Adjusting the Implementation Policy of the Lowest Price Standard for Industrial Land Transfer* issued in 2009, it is stipulated that the industrial projects with priority development and intensive land use determined by various provinces (districts and cities) can be implemented according to no less than 70% of the standard corresponding to the land grade of the place where they are located when determining the bottom price of land transfer. In addition, the local governments have also formulated the policy of transferring industrial land at low price according to the Notice.

3.2.2. Measurement of Financial Pressure

For the concept of financial pressure, there is no clear and unified definition. However, it is generally believed that financial pressure is the gap between local government revenue and its expenditure responsibility, which measures the degree of mismatch between local financial resources and administrative power. There are two ways to measure the financial pressure. The first is to measure the change of financial pressure by policy shocks. For example, the income tax share proportion is used to reflect the change of financial pressure (Chen *et al.*, 2017); the change of land market value-added tax share is used to explain the change of pressure (Xi *et al.*, 2017); the “replacing business tax with value-added tax” is used as the exogenous impact of the change of financial pressure (Cao *et al.*, 2019); or the impact of the change of Minister on the financial pressure of the city where the Minister came from is analyzed (Fan, 2015).

The second is to construct financial pressure indicators. Commonly used indicators include the ratio of budget revenue and expenditure gap to budgetary revenue (Tang and Ma, 2017), and fiscal self-sufficiency rate, that is, the ratio of local fiscal revenue to local fiscal expenditure (Cao *et al.*, 2019). Some researchers fully consider the impact of local government debt, and use the default rate of potential government debt to describe the degree of financial pressure (Zhu *et al.*, 2019), or use the degree of vertical fiscal imbalance as the proxy variable of financial pressure (Chu and Chi, 2018). Cao *et al.* (2014) believed that the government’s financial pressure mainly comes from distributable welfare, and the financing capacity of local governments has an important impact on local financial pressure. Therefore, they use unexpected extra budgetary revenue to measure the pressure, and take into account the influence of economic growth and the proportion of real estate investment in GDP, which contains more abundant contents.

This paper attempts to combine the above two ideas, first of all, refers to Cao *et al.* (2014) to construct financial pressure variables, as follows:

$$\frac{(yszr_{i,t} - yssr_{i,t})}{yssr_{i,t}} = \alpha + \beta_1 \log(GDP_{i,t}) + \beta_2 \frac{FDC_{i,t}}{GDP_{i,t}} + \beta_3 gongyezhanbi_{i,t} + \varepsilon_{i,t} \quad (3)$$

With the proportion of the difference between the budget expenditure $yszr$ and the budget revenue $yssr$ ¹ of the local government i in the year t in the budget revenue, the paper regresses the logarithm of local government GDP, the ratio of FDC of real estate investment in GDP and the proportion of output value of secondary industry in GDP. The aim is to eliminate the systematic and cyclical effects of economic growth, real

¹ In 2011, China cancelled the extra budgetary revenue and expenditure, and brought them all into the budget management system. Therefore, after 2011, the statistical scope of budgetary revenue and expenditure has been adjusted to general public budget revenue and general public budget expenditure.

estate investment and local industrial structure on fiscal pressure. On this basis, using the method to construct the government pressure variable proposed by Li and Xu (2013), the sample with positive residual error is recorded as 1, otherwise it is 0. Discretization of financial pressure will lose some information, but its advantage is that it is not easily affected by extreme value, and it can reflect the change of financial pressure more obviously. In addition, because this paper studies the impact of financial pressure on local land transfer with the aim of attracting investment, if the debt expenditure such as land development and land transfer income are included in the index of financial pressure, the two-way causal effect will directly lead to endogeneity, causing deviation in the conclusion. Therefore, this paper does not include the local debt, but still chooses the budgetary revenue and expenditure gap to measure the financial pressure.

3.2.3. Other Control Variables

According to the existing research (Yang and Yang, 2016; Zhang and Chen, 2006), transferring land with the aim of attracting investment may be affected by factors such as economic strength, industrial structure, and market development degree. Therefore, this paper selects the following control variables:

(1) Per capita GDP (*perGDP*). It is a good proxy variable of local economic strength. The stronger a city's economy, the stronger its residents' consumption ability, and the larger the scale of the consumption market, the easier it is to create profits for enterprises, and the more successful it should be to attract investment with land.

(2) Proportion of output value of secondary industry in GDP (*gongyezhanbi*). It shows the local industrial pattern and development ideas. The higher the proportion, the more inclined the local government to exchange industrial land supply for investment.

(3) Fixed asset investment (*gudizichan*). This variable represents the development potential and investment environment of a city: the larger the number, the more perfect the local infrastructure construction, the stronger the agglomeration effect of enterprises, which will accelerate the expansion of the scale of land transfer with the aim of attracting investment.

(4) Human capital stock (*shishengbi*). This paper chooses the ratio of students and teachers in the city as the proxy variable of local human capital. Generally speaking, the higher the level of human capital is, the higher the labor cost will be, which will have a negative impact on attracting investment with land.

3.3. Data Sources and Descriptive Statistics

3.3.1. Data Sources

The data of industrial land transfer in prefecture-level cities is from China land

market network.¹ Due to the missing of land transfer data before 2006, and the lack of information in a small number of prefecture-level cities, the research time is determined as 2006–2015. In addition, this paper eliminates the samples of Beijing, Shanghai, Tianjin and Chongqing as the administrative levels of the four cities are different from those of prefecture-level cities, and there may be systematic differences in their behaviors. To sum up, this paper selects the data of more than 340000 industrial land transfers in 289 prefecture-level cities from 2006 to 2015. In addition, the social and economic data of prefecture-level cities are from CSMAR financial data database, and the data of municipal Party committee secretaries are from CSMAR official data database.

3.3.2. Data Description

From the perspective of industrial land transfer area, before 2008, it showed a steady and rising trend. In 2008, affected by the financial crisis, there was a sharp decline. After the introduction of economic stimulus policy, the area of industrial land transfer began to rise rapidly in 2009. From the perspective of transfer price, before 2008, the growth rate of industrial land transfer price was only slightly lower than that of other types of land. After 2008, the growth rate of land transfer price approaches zero, while the price of industrial land shows a negative growth,² “transferring land with the aim of attracting investment” being more prominent. As can be seen from Figure 1, the area of industrial land transferred to attract investment has increased significantly after 2009.

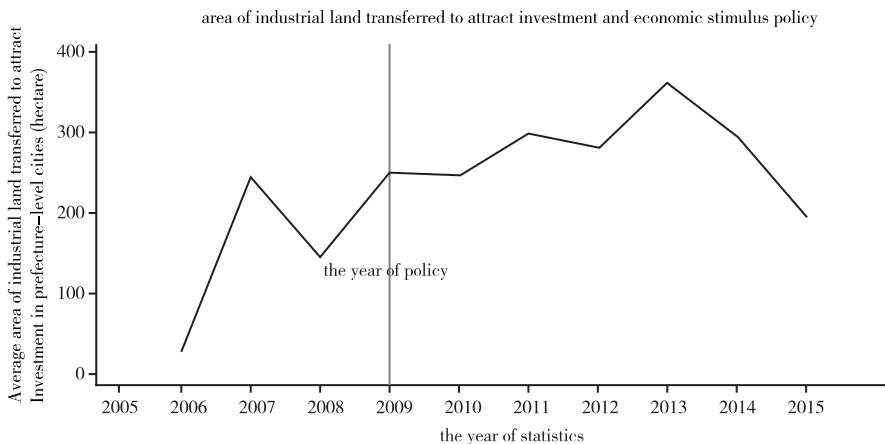


Figure 1. Changes in the Area of Industrial Land Transferred to Attract Investment

¹ <http://www.landchina.com/>.

² The specific data are from *China Land and Resources Bulletin 2010–2016* and *China Land, Mineral and Marine Resources Statistical Bulletin 2017*.

The data of financial pressure show that, in 2008, the number of cities under financial pressure decreased significantly, as shown in Figure 2, which can be attributed to the rapid growth of fiscal revenue in the first half of 2008. When the Ministry of Finance analyzed the reasons for the increase of income in the first half of 2008, it was found that the main reason was that the profits of enterprises increased significantly in 2007, which led to the final settlement and payment of enterprise income tax in the first half of 2008.¹ However, since 2009, with the implementation of various investment plans of the economic stimulus policy, the local expenditure pressure increased, while the fiscal revenue showed a downward trend, and the local financial pressure continued to maintain at a high level. This shows that it is appropriate to take 2009 as the starting year of economic stimulus policy.

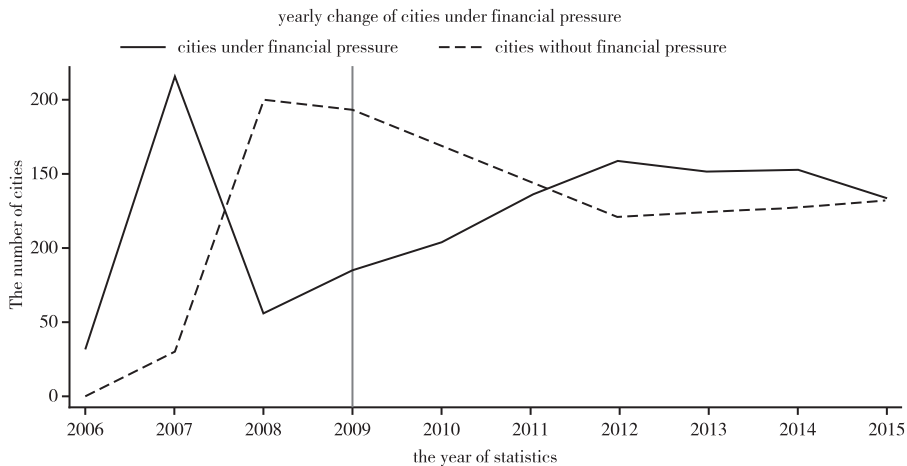


Figure 2. Changes in the Number of Cities under Financial Pressure

It can be seen that after the introduction of the stimulus policy, despite the increasing financial pressure, the area of land transferred to attract investment has also increased significantly. To a certain extent, this shows that the restraint of financial pressure on the local government to attract investment with land has been weakened. This may be because various financing channels outside the system provide sufficient funding sources for local governments after the introduction of the policy. As a result, local governments deal with financial pressure differently, and they are no longer living within their means as they used to be.

The statistical description of the main variables is shown in Table 1. It can be seen

¹ The Ministry of Finance announced that the fiscal revenue and expenditure in September had increased in both central and local governments, http://www.gov.cn/gzdt/2008-10/20/content_1125986.htm, 10-20-2018.

from the table that the average transfer area of industrial land with the aim of attracting investment is smaller than that of normal industrial land. According to the definition of this paper, cities facing financial pressure account for about 49% of the total sample, slightly less than those without financial pressure.

Table 1. Descriptive Statistics of Main Variables

	Number of samples	Mean value	Standard deviation	Minimum value	Maximum value
Logarithm of area of land transferred to attract investment	2151	4.835768	1.400809	0	8.892073
Logarithm of normal transfer area	2118	5.567622	1.341033	0.0049924	8.804871
Logarithm of total transfer area	2212	6.11241	1.14545	0.0798273	9.234074
Financial pressure	2212	0.4914105	0.5000393	0	1
Budget expenditure	2212	2234303	2165539	78549	3.52e+07
Budget revenue	2212	1305497	1932294	20824	2.73e+07
Proportion of real estate investment (%)	2211	0.1002435	0.0684775	0.0072504	0.9447118
Logarithm of GDP per capita	2212	9.838231	0.6931831	7.992995	12.54409
Proportion of output value of secondary industry in GDP (%)	2212	50.2512	10.19912	15.17	90.97
Logarithm of fixed assets investment	2212	15.1825	0.8209616	10.26436	17.14229
Logarithm of human capital	2212	2.625349	0.2598681	1.481007	7.080046
Tenure	2178	2.802571	1.698861	1	10

4. Main Estimated Results

4.1. Test of the Impact of Financial Pressure on Transferring Land with the Aim of Attracting Investment

Equation (1) tests the changes of industrial land transfer when local governments face financial pressure, and Table 2 reports the corresponding regression results. The empirical results show that the existence of financial pressure has a significant negative impact on the three types of industrial land transfer. Specifically, the financial pressure on local governments will lead to a decrease of 14.6% in the transferred area of industrial land, 11.7% in the area of normal industrial land, and 13.7% in the total area of industrial land. Obviously, the negative impact of financial pressure on the transfer of industrial land with the aim of attracting investment is more prominent. It is clear that

the existence of financial pressure will indeed affect the local government's behavior of transferring land with the aim of attracting investment, that is, Hypothesis 1 is tenable.

Table 2. Financial Pressure and Industrial Land Transfer

	(1)	(2)	(3)
	Logarithm of area of land transferred to attract investment	Logarithm of normal transfer area	Logarithmic of total transfer area
Financial pressure	-0.146**	-0.117**	-0.137***
Constant	-4.492	-4.436	-2.780
Sample size	2151	2118	2212

Note: *, **, and *** represent the significance level of 10%, 5% and 1% respectively, and the standard error is shown in brackets. Time, individual fixed effect and control variables are controlled. The control variables include: per capita GDP, the proportion of secondary industry output value in GDP, fixed asset investment and human capital stock.

4.2. Test of the Relationship between Financial Pressure, Economic Stimulus and Local Government's Transferring Land to Attract Investment

In order to study the change of the constraint effect of financial pressure on local land transfer with the aim of attracting investment after the introduction of economic stimulus policy, this paper carries out regression analysis according to the model setting of Equation (2), and the empirical results are shown in Table 3.

Column (1) of Table 3 shows that for cities without financial pressure, the implementation of economic stimulus policy will lead to an increase of 127.2% in the area of land transferred with the aim of attracting investment, while for cities facing financial pressure, the effect of economic stimulus policy is as high as 179.2%. After the implementation of the economic stimulus policy, the constraint of financial pressure on the behavior of transferring land to attract investment has been greatly weakened, or even nearly disappeared, and this effect has been reduced from -57% to -5%. The above results show that the implementation of economic stimulus policy significantly reduces the negative impact of financial pressure on local government's behavior of transferring land to attract investment, which means Hypothesis 2 is tenable.

As can be seen from column (2) of Table 3, for the normal industrial land transfer, the economic stimulus policy also has a significant positive impact on it, but the relaxation of financial pressure caused by the stimulus policy is very weak and not significant. Obviously, the financial pressure brought by the economic stimulus policy has weakened, especially for the transfer of industrial land with the aim of attracting investment.

Table 3. Regression Results of Fiscal Pressure, Economic Stimulus and Land Transfer with the Aim of Attracting Investment

	(1)	(2)	(3)
	Logarithm of area of land transferred to attract investment	Logarithm of normal transfer area	Logarithm of total transferred area
Economic stimulus policy	1.272***	3.326***	2.901***
Financial pressure	-0.570***	-0.201*	-0.339***
Financial pressure $\times$ economic stimulus policy	0.520***	0.103	0.248**
Constant	-6.581*	-7.908***	-5.996***
Sample size	2151	2118	2212

Note: *, **, and *** represent the significance level of 10%, 5% and 1% respectively, and the standard error is shown in brackets. Time, individual fixed effect and control variables are controlled. The control variables include: per capita GDP, the proportion of secondary industry output value in GDP, fixed asset investment and human capital stock.

4.3. Robustness Test

4.3.1. Placebo Test of Policy Time

Since there is still some controversy over the timing of the economic stimulus policy, a placebo test is conducted. The results are shown in Table 4.

Table 4. Results of Policy Placebo Test

	(1)	(2)	(3)	(4)
	2008	2009	2010	2008—2010
Economic stimulus policy (2008)	1.256***			1.225***
Economic stimulus policy (2009)		1.272***		0.323***
Economic stimulus policy (2010)			1.507***	-0.347**
Financial pressure	-0.623***	-0.570***	-0.360***	-0.627***
Financial pressure $\times$ economic stimulus policy (2008)	0.524**			0.0971
Financial pressure $\times$ economic stimulus policy (2009)		0.520***		0.436*
Financial pressure $\times$ economic stimulus policy (2010)			0.311**	0.0547
Constant	-6.056*	-6.581*	-6.494*	-6.523*
Sample size	2151	2151	2151	2151

Note: *, **, and *** represent the significance level of 10%, 5% and 1% respectively, and the standard error is shown in brackets. Time, individual fixed effect and control variables are controlled. The control variables include: per capita GDP, the proportion of secondary industry output value in GDP, fixed asset investment and human capital stock.

Columns (1), (2) and (3) in Table 4 show that when 2009 is taken as the time of policy implementation, the cross-product term is significant at 1% confidence level; if 2008 or 2010 is taken as the time of policy implementation, the item can only be significant at 5% confidence level. This conclusion may still be controversial. Therefore, this paper puts the three policy time variables and their cross-product terms with financial pressure into one equation for regression. The results are as shown in column (4) of Table 4. The cross-product terms of policy dummy variables in 2009 are significant at 10% confidence level, and the rest are no longer significant. This also shows that it is reasonable to set the time of policy as 2009.

4.3.2. Redefinition of the Variable of Financial Pressure

The empirical study of this paper makes a two-dimensional analysis of the financial pressure variable, setting that the positive value is 1, otherwise it is 0. As a result, the definition of samples near the critical value of 0 is controversial. Therefore, this paper chooses to exclude the middle 50% of the samples, only keep the samples below 25% quantile and more than 75% quantile, and then repeat the previous benchmark regression. The results are shown in Table 5. It can be seen that the coefficient size and significance level of regression results slightly change, but remain significant, and have no impact on the conclusion of this paper. This also proves that the definition of variables is scientific and the conclusion is robust.

Table 5. Estimated Results of Changes in the Definition of Financial Pressure

	(1)	(2)	(3)
	Logarithm of area of land transferred to attract investment	Logarithm of normal transfer area	Logarithm of total transferred area
Economic stimulus policy	1.527***	3.235***	2.529***
Financial pressure	-0.478**	-0.158	-0.363**
Financial pressure $\times$ economic stimulus policy	0.533**	0.237	0.343**
Constant	1.171	-5.017	-3.940
Sample size	1023	998	1072

Note: *, **, and *** represent the significance level of 10%, 5% and 1% respectively, and the standard error is shown in brackets. Time, individual fixed effect and control variables are controlled. The control variables include: per capita GDP, the proportion of secondary industry output value in GDP, fixed asset investment and human capital stock.

4.3.3. Other Robustness Tests¹

The definition of the variable of land transfer with the aim of attracting investment

¹ Due to the space limitation, the regression results of this part are not reported in the paper, and are available on request.

as an important explained variable in this paper may be controversial. The minimum price of industrial land transfer stipulated by the state in 2006 has also undergone a series of adjustments. In 2009, the *Notice of the Ministry of Land and Resources on Adjusting the Implementation Policy of the Lowest Price Standard for Industrial Land Transfer* pointed out that the land price of industrial projects in line with the priority of local development and intensive land use can be implemented at no less than 70% of the minimum transfer price. Therefore, this paper adopts the new standard to define the land which is transferred at lower than 70% of the minimum transfer price as the industrial land transfer with the aim of attracting investment. Then, the benchmark regression of this paper is repeated. The results show that the regression coefficient and significance are basically consistent with the previous analysis, and the conclusion has not changed.

5. Different Behaviors of Local Governments in Transferring Land with the Aim of Attracting Investment under Promotion Incentive

As discussed above, the local government's behavior of transferring land with the aim of attracting investment is restricted by financial pressure, and the implementation of economic stimulus policy has weakened this negative impact to a large extent. The authors believe that this change comes from the promotion incentive faced by local officials. Local officials have strong motivation to attract investment with land transfer because of promotion incentive, which is more likely to be transformed into practical action after the introduction of economic stimulus policy. Based on this, this paper explores this mechanism from the perspective of political characteristics of officials.

Tenure system is an important aspect of the official system. If the term of office is too short, the officials cannot learn the local actual situation in depth, and they cannot formulate policies that are in line with the actual situation, which is not conducive to the development of local economy. If the term of office is too long, the officials will have too close ties with the local government, which will easily breed rent-seeking and corruption. Therefore, the Party Constitution stipulates that the term of office of the municipal Party committee secretaries of local governments is generally five years, and in principle, it shall not exceed two terms. In the fourth and fifth year of the term of office, performance appraisal is generally conducted to determine whether the Secretary of the municipal Party committee will be promoted or not. Therefore, local officials will adjust the behavior of attracting investment with land transfers to achieve promotion according to the corresponding system. Some researchers have found that there is a U-shaped relationship between the tenure of municipal officials and the transfer price of industrial land, that is, the transfer price of industrial land first decreases and then increases with the increase of tenure of prefecture-level city officials, and the lowest point appears in the tenure of about 5 years (Tian *et al.*, 2019).

Therefore, this paper chooses the length of the term of office as the proxy variable of the

political characteristics of officials, and investigates the impact of the tenure of municipal Party committee secretaries on the local behavior of attracting investment with land transfers. This paper deletes the sample of officials whose tenure is no more than one year. This is because for the sample whose tenure is only one year or less, their land transfer with the aim of attracting investment may be due to the influence of former officials. The influence of new officials is relatively small, which cannot reflect the behavior motivation of new officials. Therefore, this part of samples will affect the robustness of empirical conclusions. Based on the above analysis, the following equation is constructed:

$$\begin{aligned} land_{i,t} = & \alpha + \beta_1 renqi_{i,t} + \beta_2 zhengce_t + \beta_3 renqi_{i,t} \times zhengce_{i,t} \\ & + \sum \gamma controls_{i,t} + \eta year_t + \delta city_i + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where, the variable $renqi_{i,t}$, as a proxy variable of officials' political characteristics, is added to the cross-product term with the economic stimulus policy. Similarly, the time fixed effect and the area fixed effect are also controlled in the equation.

The regression results are shown in Table 6. Column (1) of Table 6 shows that before the implementation of the economic stimulus policy, local officials with longer tenure are less likely to attract investment with land transfers: Each additional year of the tenure of local officials will decrease local investment by 8.12%. However, after the implementation of the economic stimulus policy, this inhibitory effect has turned into a promoting effect. Each additional year of the tenure of local officials will increase local government's investment by land by 2.38%.

Table 6. The Impact of the Tenure of Officials on the Strategy of Attracting Investment with Land Transfers

	(1)	(2)	(3)
	Logarithm of area of land transferred to attract investment	Logarithm of normal transfer area	Logarithm of total transferred area
Economic stimulus policy	1.362***	3.649***	2.803***
Tenure	-0.0812*	-0.0348	-0.0623**
Tenure x economic stimulus	0.105**	0.0327	0.0652*
Constant	-11.37***	-9.051***	-8.375***
Sample size	1540	1515	1583

Note: *, **, and *** represent the significance level of 10%, 5% and 1% respectively, and the standard error is shown in brackets. The control variables include: per capita GDP, the proportion of secondary industry output value in GDP, fixed asset investment and human capital stock.

Through the analysis of the variable of tenure, the authors found that in more than 90% of the sample the tenure is between 1~5 years, that is, within the first term. In the first term, the promotion possibility of municipal Party committee secretary will

increase with the increase of tenure. This means that the longer the tenure of local officials, the greater the possibility of promotion, the stronger the motivation of local officials to transfer land with the aim of attracting investment, but the existence of financial pressure limits such behavior. The implementation of the economic stimulus policy weakens the negative impact of financial pressure, and effectively increases the land transfer with the aim of attracting investment in order to get promotion. Therefore, there exists the promotion incentive behind the different behavior of local governments' transferring land with the aim of attracting investment, that is, Hypothesis 3 is tenable.

6. Conclusions and Policy Recommendations

This paper attempts to explore the local governments' strategy of "transferring land with the aim of attracting investment" by using the two factors of financial pressure and economic stimulus, and to reveal the promotion incentive behind the strategy. Using the micro data of land transfer from 2006 to 2015 of China land market network, this paper constructs a fixed effect panel data model for empirical analysis and finds as follows.

(1) Financial pressure has a significant negative impact on the scale of local governments' land transfer with the aim of attracting investment. Whether in the early stage of land collection and development, or later preferential treatments and subsidies, the implementation of local strategy of transferring land with the aim of attracting investment needs the corresponding government funding support. Therefore, if the local financial pressure is greater, the scale of such land transfer will be significantly reduced.

(2) After the introduction of the economic stimulus policy, the constraint of financial pressure on local governments' transferring land with the aim of attracting investment is obviously weakened. This is mainly because after the implementation of the stimulus policy, the local government's extra budget financing ability has been greatly improved, thus greatly alleviating the constraint of financial pressure. Therefore, the motivation of local officials to attract investment with land transfers under financial pressure can be successfully transformed into practical action.

(3) The motivation of local government to transfer land with the aim of attracting investment is derived from the promotion incentive of local officials. Specifically speaking, the longer the tenure of an official is, the more likely he is to be promoted, and the stronger the motivation of attracting investment with land transfers. However, only after the implementation of economic stimulus policy, can this motivation be fully released and translated into practical action. In the absence of economic stimulus, this motivation will be constrained by financial pressure, and it is not manifested.

Based on the above conclusions, this paper puts forward the following policy recommendations.

First, under the current decentralization system in China, the financial pressure of local governments is a reality and will exist for a long time. Moderate relief of local financial pressure helps to give full play to the enthusiasm and initiative of local economic development. Therefore, we should further deepen the reform of the financial system and reasonably arrange the financial resources and powers between the central and local governments. Specifically speaking, on the one hand, we can moderately strengthen the central government's financial responsibility and reduce the local expenditure responsibility accordingly. On the other hand, we should reform the inter-governmental financial distribution system and give local governments greater fiscal right, such as stabilizing the share of value-added tax between the central and local governments at 50%:50%, and gradually transferring consumption tax to local governments.

Second, we should pay attention to the strength and methods of the macro policies to stimulate growth, and should not be too strong or "one size fits all". This is because, in the face of the central government's intention to expand the economy rapidly, local governments driven by their political achievements often respond positively and increase their weights in the implementation of policies. As a result, the constraints of financial pressure on local governments are suddenly relaxed, and as a result, unchecked efforts for attracting investment are triggered. Therefore, in the face of economic downward pressure, the new round of monetary policy should be flexible and moderate. At the same time, it should cooperate with other macro policies to make a good combination of policies to avoid sharp fluctuations.

Third, in the new era of pursuing high-quality development, we should build a more scientific and comprehensive local cadre assessment system. For a long time, the amount of investment is often an important performance index of local government officials.¹ In the future, the *Regulations on the Assessment of Party and Government Leading Cadres*² should be implemented, shifting cadre assessment from one-sided emphasis on economic aggregate to the evaluation of the structure and quality of investment promotion, and a multi-dimensional performance evaluation system covering technological innovation and industrial upgrading should be established. Only by effectively improving the endogenous incentives of local officials can we build a long-term mechanism of "improving quality and efficiency" of economic development, so as to guide the efficient use of local land resources.

¹ In fact, when some local governments hold a meeting at the end of the year, the seats of the leaders of the districts and counties are arranged according to the amount of investment.

² In April 2019, the general office of the CPC Central Committee printed and issued the *Regulations on the Assessment of Party and Government Leading Cadres*, which clearly pointed out that it is necessary to "improve the performance appraisal for promoting high-quality development, and reasonably set the assessment indicators and weights for the actual performance of economic and social development according to local conditions".

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