

# *Review of Shanghai's Green City Policy*

## *– A Discussion Based on Land Price Theory*

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**Abstract:** This paper studies the impact of green city policy on land price change in Shanghai. We find that the displacement of industry zone will cause the land supply surplus in short run in moving out area, which will lead to the decrease of land price. In moving-in area, the price in long run and short run is completely opposite with moving out area. Land price theory is reviewed regarding its explanatory power in understanding the relation between change in price of land and external factors. The theory is utilized in reviewing of green city policy in Shanghai and its influence over the change in land price concerning industrial zones. While the green city policy is expected to have a number of positive effects on the city, including improving air quality, reducing greenhouse gas emissions, and creating a more livable environment, it is found to have some negative effects, such as increasing the cost of living and reducing the amount of available land.

**Keywords:** land price theory, green city policy, urbanization

### 1. Introduction

Shanghai, one of the largest and most rapidly growing cities in China, has embarked on an ambitious green city policy aimed at promoting sustainable development and environmental conservation. Under this policy, various measures have been implemented to reduce pollution, enhance energy efficiency, and create a more livable urban environment. This paper seeks to examine the impact of Shanghai's green city policy on industrial land, utilizing the land price theory put forth by David Ricardo. By analyzing the dynamics of land value and rent in the context of the green city policy, we can gain insight into how this policy has reshaped the industrial land market and influenced the strategic decisions of businesses operating in Shanghai. Through this analysis, a clearer understanding of the relationship between the green city policy and industrial land can be achieved, providing valuable insights for urban planners, policymakers, and businesses alike.

The implementation of the green city policy in Shanghai has had significant implications for the dynamics and value of industrial land, as analyzed through David Ricardo's land price theory. Ricardo, a renowned economist of the 19th century, developed a theory on rent and land value that provides valuable insights into understanding the dynamics of industrial land prices. According to Ricardo, land possesses a unique characteristic in economic analysis, as its supply is fixed and cannot be increased. This scarcity gives rise to the concept of economic rent, which refers to the surplus income

that landowners receive beyond what is required to cultivate or utilize the land. Ricardo identified several factors that influence land prices. Firstly, he emphasized the significance of location, recognizing that land in more desirable or accessible areas tends to command higher prices. In the case of Shanghai's green city policy, the emphasis on creating a more environmentally friendly and livable urban environment may have prompted changes in the desirability and accessibility of certain industrial land locations. Secondly, Ricardo highlighted the role of improvements and investments made on the land. When industrial infrastructure, such as transportation networks or environmental facilities, is developed in an area, it enhances the productivity and value of the land. Consequently, the implementation of Shanghai's green city policy, which involves the development of eco-friendly infrastructure and enhanced energy efficiency, may have positively influenced the value of industrial land within those areas.

Additionally, Ricardo's theory considers changes in demand for land. Economic growth, population dynamics, and shifts in industry sectors can impact the demand for industrial land. As Shanghai experiences rapid urbanization and economic development, the demand for industrial land may have fluctuated, leading to changes in its value. By examining these principles of Ricardo's land price theory in the context of Shanghai's green city policy, we can gain valuable insights into how the policy may have affected the dynamics and value of industrial land. Understanding these impacts is crucial for comprehending how businesses operating in Shanghai make strategic decisions related to their land usage and investment.

In the following sections, we will delve deeper into the objectives and key features of Shanghai's green city policy, analyzing the measures implemented and discussing their impact on land use patterns, as well as further exploring the relationship between the policy and the dynamics of industrial land prices in Shanghai.

## 2. Overview of Shanghai's green city policy

The use of emissions trading in China is of particular interest to researchers and practitioners. China is not only the largest CO<sub>2</sub> emitter, but also has the largest amount of emissions regulated under ETS. Low-carbon innovation helps to break out of path dependency from a carbon-intensive economy and existing energy infrastructure, it creates a stock of technologies to hedge against future uncertainties in climate mitigation essential for achieving policy targets to stabilize global temperature.

The objective of this policy is to achieve lower carbon emissions. However, it has been found in an empirical research based on data from 289 cities in China that green policy is negatively correlated with urbanization rate, secondary industry, urban land, and population density [1]. In other words, the introduction of green policy may negatively affect the economic-wise development. It may restrict the development of industrial side and may even drag the economic development of Shanghai, so government will choose way can both reduce carbon emissions in Shanghai and won't limit economic growth. So green policy has stimulated economic growth in northwestern China and less welcome in southeastern China [1]. Key features of the policy is displacement of industrial. Greening value is closely related to space, forming industrial agglomeration in the receiving area of primary sector of the economy [1]. So government may use displacement of industrial and emissions to reduce carbon emissions. This will reduce carbon emissions in Shanghai and build up green city. Also displacement industry zone will also cause the change of the function of the original industrial zone [2]. It can free up space for further development of central business zones and supplementary industries. So the function change the carbon emissions will also reduce to some extent, and the establishment of business won't harm to the economy.

The Paris agreement aimed to keep the global average warming below 2 degrees, above pre-industrial levels [3]. Most believe that these targets are not achievable unless there is cooperation between the largest polluters and those emerging economies. It caused by some countries may try to

find some ways to get the emissions target done [4]. Government can use exchange of carbon emissions to reach the target. The country which emit an excess amount of carbon can buy the pollution permit from others country which country have surplus quota. So it means that the country won't control the amount of carbon emit because of they can buy the permits from other country which have low carbon emission. The carbon emission is hard to reduce. The use of emissions trading in China is of particular interest to researchers and practitioners. China is not only the largest CO<sub>2</sub> emitter, but also has the largest amount of emissions regulated under ETS [5]. However, this way won't lead to a big success, because the country which is rich enough can buy enough quota to emit carbon. But regional assessments to determine feasibility, timeliness, and effectiveness are limited and rarely account for the interactive effects of future climate, atmospheric CO<sub>2</sub> enrichment, nitrogen deposition, disturbance from wildfires, and management actions on forest processes [3]. So the total amount of carbon emissions won't decrease too much that government should take new measures. Government of Shanghai can try to ask society to educate the public to establish awareness about environment protection in their daily life. It can reduce the carbon emissions in people's daily life. Then the now technology can play a vital role. Low-carbon innovation helps to break out of path dependency from a carbon- intensive economy and existing energy infrastructure it creates a stock of technologies to hedge against future uncertainties in climate mitigation essential for achieving policy targets to stabilize global temperature [5]. Also displacement of carbon emissions can also reduce carbon emissions. Because the industry zone move to other place so it can reduce the carbon emissions in Shanghai and reach the objects. However in the short run, the displacement of carbon emissions may led to a surplus of the land of original industry zone [6]. But it can really reduce carbon emissions in Shanghai in an extremely extent. Behavior shaping for polluters is more valued than is trade volume in the carbon market by the Chinese government [5]. So Chinese government should pay more attention on reduce the total carbon emission instead of reach the pollution quota [7].

It reach the object of reduce carbon emissions will led to the change of the land price. According to the foregoing paragraph, displacement of carbon emissions may led to land surplus in short run. So it means that the supply of land increase faster than demand, so the land price will decrease in a short term [8]. However in the long run, government may sell the land to private landowners to develop. So it will cause private developers willing to pay a high price to but the land and develop it to be a business zone or living area. So in the long term, these area's function will change, more people will move to their live or work, demand of the land will increase. So the price will also increase with the demand of land, so it will cause an increase of land prices in Shanghai in the long term.

### 3. Impact on industrial land in Shanghai

According to the green city policy in Shanghai, displacement of industry zone will cause the land supply surplus in short run in moving out area. Depending on land use data extracted from satellite images, air photos, and historic land use maps which produced by local experts, we find that industrial land in the central area of Shanghai increased from 1947 to 1993 but decreasing from 2002 to 2016 [8]. In moving in area, the price in long run and short run is completely opposite with moving out area. Because government may sell the new land to people who need it in a relatively high price. Because the business or the public who just move out of the old industry zone may need a new place or to produce or live so they need to buy new land immediately, the demand will increase sharply. And the new area is also close to Shanghai, so it can attract more people willing to buy it in a high price. So the land price will increase in short run. Industrial land revitalization shows redevelopment activities on previously industrial land. The relocation of industrial factories in the central areas of a city generates a significant amount of vacant land underutilization, which could cause a raise in crime rates and reduction of living conditions [1]. In long run, the demand of the land may decrease, because the land may already sold out and the business or the public may also find place to work or live, so

the demand will reduce. Also some firm may also sold the empty part of their land so the supply will also increase. So in the long run, land price will increase.

#### 4. Conclusion

This paper has found the relation between the green city policy and the change of land price. Displacement will cause industry zone move to other place. In short run because of the supply of land increase, land price will decrease. In long run, because of government sell the land to private sector, demand of land increase, land price increase. This paper also points out that exchange of carbon has limited success to reduce carbon emission. In conclusion, this paper has found that the green city policy has a significant impact on the change of land price. The displacement of industry zone will cause the land supply surplus in short run in moving out area, which will lead to the decrease of land price. In moving in area, the price in long run and short run is completely opposite with moving out area. Because government may sell the new land to people who need it in a relatively high price. Because the business or the public who just move out of the old industry zone may need a new place or to produce or live so they need to buy new land immediately, the demand will increase sharply. And the new area is also close to Shanghai, so it can attract more people willing to buy it in a high price. So the land price will increase in short run. In long run, the demand of the land may decrease, because the land may already sold out and the business or the public may also find place to work or live, so the demand will reduce. Also some firm may also sold the empty part of their land so the supply will also increase. So in the long run, land price will increase.

There also have some limitations. The different regulation from different regions may restrict the change of the land price, this may cause the change of land price indiscipline. Also the paper didn't use too much data to shows the law of change of the land price. This paper can help Shanghai government to set a better green city policy which can both help to reduce carbon emission and promote economic growth. Also this paper can give Shanghai government a notice to make some preparations for the change of the land price. And it can also help industrial businesses not to need to reduce production. So it can widely help to promote green city and keep industry production.

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