



Is Urban Land Development Driven by Economic Development or Fiscal Revenue Stimuli in China?

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ARTICLE INFO

Keywords:

Urban land development
Economic development
Fiscal revenue
Population urbanization
Land management
China

ABSTRACT

Since the reform and opening-up, urban land development in China mainland has been increasing dramatically with significant regional differences. Using the panel data of municipal districts in 246 cities at the prefectural or higher levels in Chinese mainland from 2004 to 2014, based on the analysis of the differences in land development intensity in municipal districts, a model of factors affecting land development is built to verify whether the urban land development is driven by economic development or fiscal revenue from the perspectives of economic development and fiscal revenue. The conclusions are as follows: first, the intensity of land development varies significantly among municipal districts. The difference in the intensity of land development increases with the increase of city scale. The difference in the intensity of land development in central China is lower than that in eastern and western China. Second, the primary factors affecting the intensity of urban land development are economic growth, population urbanization, and population density. Finally, land transfer revenues also drive the land development in cities at the prefectural or higher levels to a considerable extent, which is proposed as “land finance” (local governments rely on the sale of land use rights to obtain extra-budgetary income to maintain local fiscal expenditure) in the literature.

1. Introduction

Experiencing rapid urbanization, China is the largest developing country in the world. China's urban economy has made great progress since the reform and opening-up in the late 1970s. Since the reform and opening-up, the proceeding of Chinese urbanization has led to a gradual increase in urban land area to meet the increasing demand for land in municipal districts. Since 1990, the Chinese government has issued a series of policies and regulations on land use, and it has endowed local governments with the right of actual control in the expropriation and development of rural collective land. In December 1998, the Regulations on the Implementation of Land Management Law promulgated by the state council stipulated that the municipal and county governments were responsible for the organization and implementation of expropriation of rural collective land. The gradual implementation of the Land Acquisition and Reserve System all over the country in 1997 had established the monopoly of local government in the primary land market within the jurisdiction, and further aggravated the expansion of land development in municipal districts.

Since the beginning of the twenty-first century, with China's further integration into global economy and the improvement of urban

development, urban construction has been accelerating, as well as the land development in municipal districts. The amount of urban built-up land, served as an important input factor in the urban social and economic development process, has been increasing tremendously in recent years (Seto et al., 2011). China's Land Use Control policy affects the change of ecological land into built-up land to a certain extent (Xie et al., 2017). In 1980, the area of urban built-up land in Chinese mainland was 6720 km². In 2015, this area surged to 365,933 km², with an average annual growth rate of 6.123% (Ministry of Land and Resources of the People's Republic of China, 2017). The increasing rate of urban land in China is greater than that of population urbanization. As a result, many problems occurred. First, massive urban expansion has occupied large amounts of arable land and forestland resources, threatening food security in China (Bertaud and Renaud, 1997). In addition, as the main carrier of urban production activities, urban built-up land is influenced by most of the industrial pollutants. For example, the total area of industrial land in China was over 4500 km² in China, accounting for about 19% of urban built-up land. However, the proportion in most developed countries is less than 10% (Ministry of Land and Resources of the People's Republic of China, 2013). Moreover, the massive input of industrial land was accompanied by relatively low

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economic efficiency. To be specific, the industrial GDP generated by per unit industrial land is much less than that in developed countries (Xiong and Guo, 2013).

Urban land use is of great importance for urban development in China, and the effective use of urban land is very important for sustainable city management (Halleux et al., 2012). As economy in China develops, people get richer and they have stronger willingness to pay for environmental protection (Shao et al., 2018). It is a key issue for China to improve both industrial land use efficiency and environmental eco-friendliness in the realization of economic sustainable development (Zhang et al., 2015). As planners of urban development, local governments are responsible for the organization and preparation of urban plan. Therefore, how to effectively control urban land expansion and achieve sustainable urban land use are of great importance. Moreover, an important premise of this work is the overall understanding of development trends, regional differences and influencing factors of urban land expansion, which are illustrated in this paper.

Furthermore, if land development in municipal districts is driven by economic development, a differentiated land supply policy should be formed according to local economic development. If land development in municipal districts is driven by fiscal revenue, the intergovernmental distribution mechanism of fiscal revenue should be reformed (Liu and Alm, 2016). This would ensure that local governments would no longer carry out land development driven by fiscal revenue. However, excessive land development in municipal districts results in declining land use efficiency and outputs (Triantafyllopoulos, 2017). This leads to the inefficient use of urban infrastructure and related services, which cause severe effects on the sustainable urban land use and biodiversity, and the encroachment of farming and ecological land. Thus, the analysis on the spatial and temporal variations in the land development intensity in municipal districts of China is carried on to examine whether urban land development is driven by economic development or fiscal revenue. It provide key scientific basis for the policy recommendations aiming at rationally controlling land development intensity in municipal districts. In addition, it is of great significance to rationally control intensity of urban land development, improve land use efficiency in municipal districts, and keep the necessary cultivated land and green ecological space in the urban area for the improvement of the livable level in municipal districts.

2. Literature review

With the rapid urban land development around the world, many studies have analyzed the mode, the trend, the regional differences and the determinants of urban land expansion at the national, regional, provincial and city scales (Gibson et al., 2015; Wei et al., 2017; Gao et al., 2014; Chen et al., 2016; Xie et al., 2018a). Shao et al. explored the effect of high-speed rail (HSR) on service industry agglomeration (Shao et al., 2017). Some researchers argue that we should pay more attention to the social, economic and ecological problems caused by the rapid expansion of urban land, which may have seriously hindered the sustainable urban development (Li et al., 2014). Tan et al. (2005a,b) believed that the rapid urban land expansion, especially in many developing countries, has become the main reason that leads to frequent environmental problems and unbalanced regional economic development. Additionally, we need to adopt targeted policies through analyzing the regional differences in urban land expansion as urban development and social economic situation in different regions are quite different (Kityuttachai et al., 2013). Therefore, in order to bring forward effective policy recommendations and realize sustainable urban development, it is very important to analyze the development trend of urban land expansion at national and regional levels and explore its influencing factors.

Regarding the driving factors of urban land expansion, regional economic development and local government finance are two major contributors (Li et al., 2017). Due to huge income gap, migrant workers

are powerfully attracted by the booming economic development in a relatively developed city, and it leads to large-scale economic agglomeration in cities. The Report on China's Migrant Population Development (2015) pointed out that, by 2020, the migrant population in China will gradually grow to 291 million, of which 220 million will be migrants from rural to urban areas (Lu and Xie, 2018). On the one hand, it improves urban economic development efficiency. On the other hand, it raises land demand, leading to further urban land expansion (Su et al., 2015). With regard to other economic influencing factors Harvey (1985), notes that profits were maximized because of the expansion of urban land, which is resulted from the capital investments. Seto and Kaufman (2003) showed that the ratio of the output efficiency of agricultural land use to that of urban land use is the most important factor determining urban expansion. Other influencing factors include the monetary and time cost of commuting, urban population, industrial structures, urbanization, resident income levels, and fiscal decentralization etc. (Wheaton, 1977; McGrath, 2005; Lu et al., 2011; Wong et al., 2005; Brueckner, 2000). From the macroeconomic perspective, Seto et al. (2011) believed that the growth of per-capita GDP was the most important factor driving urban expansion in China. Deng et al. (2010) found that economic growth played an important role in driving urban expansion. Other scholars have explored the effects of macroeconomic policies, for example, industrialization, investment, construction of basic transportation infrastructure, and urban planning policies on land development (Liu et al., 2005; Xu and Zhu, 2008; Yang et al., 2017).

The governments are the main leaders of urban construction in China. Governments' revenue and other relevant fiscal factors will greatly affect the speed of urban construction and urban land expansion (Yang et al., 2017). Some studies have analyzed the effect of fiscal factors affecting urban development. Logan and Molotch (2007) argued that urban land expansion was mainly dominated by political, commercial, and economic elites who sought for the "exchange value" of land. Lin and Wei (2002) suggested that fiscal decentralization, marketization, and globalization together promote the urban land expansion in China. Wu (2003) believed that in the process of transforming from production-oriented governance to entrepreneurial cities that sought for fiscal revenue balances, cities in China should manage land transfer revenue to adapt to the decentralization of Chinese government and the marketization of service functions. Qian and Roland (1998) proposed the hypothesis of "Federalism with Chinese Characteristics". According to the hypothesis, the reform of tax-sharing system that "withdraw financial power from local governments while duties and responsibilities remain" strengthened the centralized fiscal power of central government, while resulted in large fiscal gaps in the fiscal revenue and expenditure of local governments. In this case, local governments, especially urban governments, had to raise funds by themselves to maintain economic growth, and land transfer revenue became the primary source of extra-budgetary revenues. Furthermore, some scholars have explored this topic from the perspective of land finance. In their view, under the current tax-sharing framework, urban land development directly increased the fiscal revenues of local governments, and urban land development has entered a rapid cycle (Wang et al., 2010; Huang et al., 2013).

Although the above studies both home and abroad have laid a basis for the systematic study of factors affecting urban land expansion in China (Tan et al., 2005a,b), there remains some limitations. For example, the pre-assumption that land development was driven by fiscal revenue, exploring the impact of specific factors on land finance from a single perspective, and using the data of cities at provincial or prefectural levels to conduct empirical analyses. Therefore, based on analyzing the overall trends and regional variations in urban land development in China, adopting a comprehensive model including indexes such as economic development, urbanization, fiscal self-sufficiency, and fiscal revenue, in this paper we analyzed whether the urban land development in China was driven by economic development or

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