



Institutional changes, land use dynamics, and the transition of rural settlements in suburban China: A case study of Huishan District in Wuxi city

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ABSTRACT

The significant impacts of restructuring on the transition and land use dynamics of rural settlements in China has long been a subject of academic inquiry. We applied a conceptual framework encompassing relations between institutional changes, actors' behaviors, and land use changes to investigate the dynamic trajectories and institutional mechanisms of rural land use in Huishan, a suburban district located in eastern China. We argue that by reshaping local actors' behaviors, institutional changes and national strategies have significantly influenced the transition of China's rural settlements. Over a period of about two decades, rural settlements in Huishan underwent expansion followed by shrinkage in recent years, which has resulted in a gradual decrease in the total scale of land use. A parallel trend of rural economic diversification has prompted a shift in the previously residential land-based structure of land use toward a more diversified structure mainly entailing residential and industrial land. However, with the macroeconomic downturn and the return of migrant laborers to their home regions, rural hollowing and the reluctance of local actors to consolidate residential land may pose severe future challenges for these settlements. In conclusion, we suggest that appropriate regulatory policies for rural settlements in transition that incorporate key requirements such as increasing employment and rehabilitating derelict rural construction land are required.

1. Introduction

Commencing in the late 1970s, rural China has undergone a rapid and far-reaching developmental transition that has induced extensive changes within rural settlements (Long, Tu, Ge, Li, & Liu, 2016). Affected by China's dual systems of land ownership and household registration (*hukou*) in urban and rural regions and globalization which has been recognized as the key factor for rapid industrialization and urbanization in China, the evolution trajectories of rural settlements are distinct from those in other developing countries in the Global South and in developed Western countries both in scale and speed (Chisholm, 2009; Long, Li, Liu, Michael, & Zou, 2012; Louis, 1997; Natalia & Lee-Ann, 2015; Paul & Johan, 2011; Woods, 2011; Zhu, Zhang, Li, & Zhu, 2014). Thus, commencing from the 1980s, issues associated with the transition of Chinese rural settlements have attracted considerable scholarly attention.

Objectively, contrasting with the term of rural transition which are mainly featured by fundamentally restructuring of the population, employments, economy, social classes, landscape, and so on

(Hoggart & Paniagua, 2001; Kiss, 2000; Long et al., 2012), the transition of rural settlements are closely associated with the terms of spatial pattern and land-use. Against a background of rapid industrialization and urbanization, previous studies have examined several dimensions of rural settlements transition, ranging from the evolution of their spatial morphology, distribution rules, and driving forces and interacting mechanism in typical regions in eastern coastal plain areas, western Loess Plateau, and southwest mountainous areas (Li, Long, Liu, & Tu, 2016; Liu, Yang, Long, Gao, & Wang, 2014; Long, Zou, & Liu, 2009; Su, Zhang, Zhang, Zhi, & Wu, 2011; Yang, Xu, & Long, 2016; Zhou et al., 2013), the hollowing of rural settlements caused by a reduction in rural residential population but a corresponding increase in rural homesteads (Li, Wang, Liu, & Long, 2014; Liu, Liu, Chen, & Long, 2010; Song & Liu, 2014), the consolidation and regulation of idle and derelict rural residential land (Li et al., 2014; Long et al., 2012) and the formation of 'villages-in-city' (*chengzhongcun*) linked with rural migrant labors (Chen, Ye, Cai, Xing, & Chen, 2014; Long et al., 2012) to identifying diverse transition of rural settlements function associated with land-use changes (Chen & Jin, 2015; Xi, Wang, Kong, & Zhang,

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2015; Zhu et al., 2014). At the same time, quantitative methods have been used to support the rural development researches, especially spatial analysis approaches that include but are not limited to buffer analysis, kernel density, and average nearest neighbors have also been adopted widely to measure the spatial distribution characteristics of rural settlements and reveal the relationships between the spatial distribution of rural settlements and physical geographical environment and socioeconomic conditions at different levels (Chen, Gao, & Chen, 2016; Yang et al., 2016). Furthermore, complicated geo-computation techniques, including neural networks, geographically weighted regression and other spatial statistical models have effectively been applied to identify the driving factors and underlying mechanisms of the transition of rural settlements (Chen & Jin, 2015; Tan & Li, 2013; Yang et al., 2016).

In line with these existing literature, we can get a relatively good understanding of the transition of rural settlements. However, because of limited access to data and materials, most of these studies entailed the use of transect data. Consequently, the long-term evolution of rural settlements and systematic institutional analysis of rural transition processes have not received adequate attention. In light of this gap, and considering Huishan District in the city of Wuxi as a case study, this study had the following objectives. The first was to determine the spatiotemporal trajectories of the transition of rural settlements using a lens that could accommodate spatial expansion/shrinkage and restructuring. The second was to investigate institutional forces associated with the transition of rural settlements. The third was to explore the challenges faced by local authorities relating to the transition of rural settlements.

2. Background and theoretical issues

China's rapid urbanization and industrialization processes have been accompanied by a radical restructuring of land use in rural settlements (Liu et al., 2010; Long et al., 2009). On the one hand, though there has been a gradual decline in rural population, improved living conditions have led to a sharp increase in the scale of land use in rural settlements (Liu et al., 2010; Long, Zou, et al., 2009; Long et al., 2016; Tian, Yang, & Zhang, 2007). On the other hand, economic diversification has correspondingly led to a significantly more diverse land-use structure within rural settlements (Zhu et al., 2014). Simultaneously, the land use dynamics of Chinese rural settlements have entailed a hybrid process encompassing a multitude of activities conducted by numerous local actors who usually are the stakeholders involved in the rural transformation in certain district (Gao, Chen, & Yuan, 2017; Liang, Chen, & Gu, 2002; Long et al., 2012). Sometimes, the local actors are also explained as the local behavior mainbodies, e.g., local governments, social organizations, local elites, ordinary households and so on, who can integrate the inner and external factors and promote the rural region development initiatively (Esparcia, Escibano, & Serrano, 2015; Long et al., 2016).

In this regards, by providing some incentives closely associated with reshaping actors' behaviors, institutional changes involving policy reforms and new regional, even national development strategies tend to have significant impacts on the land use dynamics within Chinese rural settlements. As shown in Fig. 1, the responses of Chinese peasants to the implementation of the household responsibility system (HRS) and *hukou* reform have largely been positive (Chen, Yang, & Dan, 2008). The HRS has resulted in a significant increase in agricultural productivity (Ding, 2002; Sicular, 1995) and has effectively provided laborers with relief far from farm work, enabling them to engage in nonagricultural work to arise income level. Consequently, increasing numbers of rural households have invested in renovating their houses, which in turn has prompted an unprecedented expansion of residential land in rural China (Long et al., 2012).

With the launching of a new fiscal contracting system in the mid-1980s, the development of township and village enterprises, following

by industrialization, has been enthusiastically promoted by local authorities from county to village levels in rural China (Zhou & Tan, 2014; Zhu et al., 2014). Consequently, the number of township and village enterprises in rural China and their share of the national manufacturing output have rapidly increased along with the expansion of rural land used for nonagricultural industries (Zhu et al., 2014). By the mid-1990s, China's orthodox fiscal contracting system had been dismantled and replaced by a tax-sharing system (Qian & Weingast, 1997). This shift was, however, achieved gradually through a process that increased revenue sharing and decentralized fiscal responsibilities to local governments (Chen et al., 2016). This process consequently motivated local governments to seek higher budgets or extra-budget revenues to develop local economies (Gao, Wei, Chen, & Chen, 2014).

The vertical competitions existing between the higher level governments and the lower ones have been evident during the decentralization era, namely a GDP and urbanization-oriented performance evaluation system for local governments (Gao & Yuan, 2017). Meanwhile, the lagging behind of China's political reforms in relation to its economic reforms has significantly contributed to the impacts of the "jurisdictional economy" on the use of spaces (Zhang & Wu, 2006). Given that manufacturing is the main revenue source for local governments, local authorities at lower administrative levels are more likely to lease out rural land to development zones at lower prices, and to subsequently attempt to attract investments and migrants to realize their urbanization aspirations (Bai, Shi, & Liu, 2014; Liu, Zhou, & Shao, 2012). Consequently, extensive sprawling of land for housing and nonagricultural industries has been remarkable in rural China.

From the end of 1990s, rapid industrialization and urbanization have resulted in rapidly urban land expansion (Li, Wei, & Zhou, 2017; Li, Wei, Liao, & Huang, 2015), and consequently led to increasingly conflicts between construction land demand and protection of farmland throughout China (Lichtenberg & Ding, 2009). In 2006, a policy of increasing urban constructional land by decreasing rural residential land (*zengjian guagou*) was promulgated by the central government aimed at alleviating the contradiction between increasing demands for constructional land in urban areas and inefficient land use in rural areas (Long et al., 2012). The national strategy of building new countryside also prompted increasing financial investments in infrastructure development in rural areas, fostering some new non-agricultural industries relating to rural tourism in these areas (Long et al., 2016). Moreover, there are powerful political incentives for local officials to increase revenues by acquiring rural land to expand developed areas and attract industrial projects into rural areas (Gao et al., 2014). As a result, there has been a gradual increase in land used for public service, commercial, and ago-tourism purposes at the expense of land for rural housing.

To sum up, concurrent with processes of continual institutional changes and local actors' behavioral adjustments, land-use patterns in rural settlements have been radically transformed in recent decades. On the one hand, the total scale of land use for construction in rural areas rapidly increased, though this trend has been reversed, with a shrinkage being evident in recent years. On the other hand, the structure of land use for construction has been diversified, while land use for housing has correspondingly decreased. Therefore, we argue that the continuous inflow of migrant laborers from Western China to developed coastal regions may cause a slowing down of the hollowing of rural settlements in the latter region.

3. Data and methodology

3.1. Study area

As depicted in Fig. 2, Huishan is a suburban district of the city of Wuxi, which is located in one of the most developed regions (Sunan) of coastal China. The study area encompassed 56 villages lacking any urban or township zones under the jurisdiction of 6 towns/subdistricts

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