



# Understanding rural housing abandonment in China's rapid urbanization



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## ABSTRACT

Rural housing abandonment (RHA) is happening on a large scale in China and accumulatively leads to the phenomenon of village hollowing. This paper conducts a microscopic analysis on the influencing factors of individual decision making in the process of RHA through an empirical study on Pi County in southwest China. Our multi-level logistic regression shows that RHA is mainly influenced by the pulling forces of urban economy and the deteriorated physical condition of rural houses. We discuss that how these factors exert their influence is further linked with the institutional barriers in China that impede the free movement of residents and properties between urban and rural systems, which distorts individual choices towards RHA. Therefore, we suggest policies that promote the equalization of rural and urban residents and recognize the need for the free transfer of rural land and property, as well as the need to develop tools that effectively predict the emergence of RHA.

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## 1. Introduction

Housing abandonment is a significant problem in many cities in North America, Europe and other countries, especially those with population loss (Cohen, 2001; Skogan, 1990; Spelman, 1993; Sternlieb, Burchell, Hughes, & James, 1974). In spite of the different contexts and processes, a similar phenomenon is now taking place on a large scale in transitioning rural China. It is estimated that China's rural population decreased by 241 million between 1995 and 2014 in the trend of urbanization (National Bureau of Statistics of China, 2015 #79) and millions of square meters of rural houses were left unoccupied or abandoned. Similar to what Sternlieb et al. said about this phenomenon in urban cores, that "residential abandonment is the final symbol of all the urban ills of our society" (Sternlieb et al., 1974), housing abandonment in rural China is also raising red flags to the sustainable development of local communities (Cui, Li, & Liu, 2011; Liu & Liu, 2010). The problems include not only a deteriorated physical environment, weakened community ties and an increased risk of crime (Spelman, 1993), as witnessed in the urban version of this phenomenon, but

also an inefficient use of rural land which could otherwise be reclaimed and restored for agricultural use (Wang, Liu, & Chen, 2010), given the fact that the arable land per capita in China is only 40% of the world's average (Sun, Liu, & Xu, 2011).

Accumulatively, the abandonment of individual houses may lead to the so-called 'village hollowing', a recent rural geographical phenomenon that has received significant attention in China. Village hollowing refers to the degenerative evolution of a vacant and declined village core caused by the abandonment of old residential buildings in the inner village, while the village fringe becomes favourable for new dwellings (Liu, Yu, Chen, & Long, 2010). This process gradually transforms a village from a homogenous settlement to a heterogeneous one (Liu & Liu, 2010). The overall effect is the expansion of rural settlements despite of rural depopulation (Liu & Liu, 2010). In contrast to the rural population loss of 241 million from 1995 to 2014 in China, the rural residential area increased by 14 million hectares (China Statistical Yearbook).

It is estimated that the migration of labour force from rural to urban China will continue in the long term (Cao, Chen, Pang, Zheng, & Nilsson, 2012). Therefore, the issue of rural housing abandonment (RHA) and village hollowing have received a lot of attention from researchers in recent years. However, most existing work focuses on the national (Liu, Fang, & Li, 2014; Liu, Yang, & Li, 2013;

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Long, Li, Liu, Woods, & Zou, 2012; Song & Liu, 2014), provincial (Song, 2016; Yang, Liu, Long, & Qiao, 2015) or town scale (Li, Liu, Long, & Cui, 2014; Liu, Liu, Chen, & Long, 2010; Liu, Yang, Long, Gao, & Wang, 2014; Sun et al., 2011), while the microscopic analysis on the aspect of individual behaviour has garnered much less attention. This paper therefore aims to increase the understanding on the mechanism of this rural geographical phenomenon by first proposing a conceptual framework for household's decision making on RHA, and then statistically analysing the roles of various influencing factors suggested by the framework. For this purpose, a multi-level regression model is constructed based on first hand data collected in Pi County, Sichuan Province in southwest China. In the discussion, we further explore the linkage between the identified determinants and related institutional arrangements of China that distort farmers' behaviour towards RHA.

The rest of the paper is organized as follows. Section 2 provides a review of the existing literature on housing abandonment and village hollowing in rural China and proposes a conceptual framework of RHA based on existing research. Section 3 introduces the study area, the data and method used. Section 4 presents the results of statistical analysis. Section 5 discusses the identified determinants and relevant policy implications. Section 6 is the conclusion.

## 2. Literature review and the conceptual framework

Various forms of rural decline have been observed in many countries during the process of urbanization and industrialization, including, but not limited to, Europe, North American, Australia and Japan. As massive urbanization progressed in the years following World War II, depopulation of rural communities, inefficient agricultural production and the abandonment of property were widespread in the rural areas of developed countries (Bjonra & Aarsaether, 2009; McGreevy, 2012; Stead, 2011). The appeal of the countryside decreased rapidly, which led to increasing insufficiencies in public infrastructure and other services in many parts of rural areas in Western Europe. In some parts of Central and Eastern Europe, there were even some 'dying villages' (Reichert-Schick, 2010). In China, though the socio-economic and institutional contexts are different, similar trend of rural decline is observed in the background of urbanization and RHA is a prominent of such trend.

The negative impacts of RHA and village hollowing on China's sustainable rural development are at least three-fold. First, the shortage of arable land is exacerbated (Liu, Liu, & Qi, 2015). China's population increased from 1185 million to 1360 million between 1993 and 2013, while during the same period China's total farmland decreased by 10.26% (National Bureau of Statistics of China, 2014). Abandoned houses inefficiently take up land that could otherwise be reclaimed as farmland (Tian, 2003). Second, abandoned homes impose a negative influence on the appearance and living environment of villages. More specifically, abandoned houses increase the risk of fire and present hygiene problems. Third, the abandoned and deteriorated conditions undermine the group consciousness of rural communities, which poses challenges to the health of rural society.

Due to the lack of official data on RHA, it is difficult to obtain a direct estimation of the total volume and spatial distribution of abandoned houses in China. However, researchers have resorted to various relevant statistics or self-conducted surveys that provide helpful insights into the issue. Li et al. used Landsat TM satellite image to analyse rural housing land change from 2000 to 2010 and the influencing factors in the process (Li, Long, Liu, & Tu, 2015).

Song et al. conducted a survey on the hollowing degree of 162 sample villages across the country and found that the national average hollowing degree is 10.15% (Song, Chen, & Zhang, 2013). Only 22.22% villages have no abandoned houses and about 70% of villages show slight to moderate RHA (Song et al., 2013). Song et al. integrated the data of registered rural population and rural settlement area with a decoupling model, which showed that village-hollowing caused a strong negative decoupling relationship between rural settlement area and the rural population between 2000 and 2005 (Song, Chen, & Zhang, 2014; Song & Liu, 2014).

In terms of the driving factors, most empirical research focused on the national, provincial or village scale, while the microscopic analysis on the individual decision making has gotten much less attention. In this research, we first propose a conceptual framework for the mechanism of RHA based on the findings of existing research, and then zoom in to the influencing factors at the microscopic household level according to the framework.

The conceptual framework is shown in Fig. 1, in which RHA is considered as an outcome of the interactions between various socio-economic factors within the rural-urban system as well as the physical and socio-political conditions of the rural sub-system (Long & Li, 2012). First of all, the movement of labour forces towards urban areas and urban economic sectors in the process of urbanization and industrialization forms the context of RHA. The movement is synthetically affected by various 'pulling' and 'pushing' forces from both the urban and rural sides. On one hand, income enhancement opportunities from non-agricultural employment in urban areas 'pull' the labour forces from rural areas to towns and cities. On the other hand, factors such as the high cost of permanent settlement in cities and the affinity to the large family and the local community also work as counter effects that 'push' rural labour forces back (Liu, Liu, et al., 2010). A household may end up in a status of permanent/complete, or temporary/incomplete migration as a balanced outcome of these pushing and pulling forces.

There can be multi-mechanisms that turn farmers' tendency of migration into the act RHA. The most straightforward situation is that a household permanently migrate to towns and cities and leave their rural dwellings abandoned (Liu, Liu, et al., 2010). However, existing research show that RHA is in many cases related with incomplete migration and the tendency of earning money in cities but spending money back at home. The increased income from non-agricultural jobs provides farmers with the desire and financial means to upgrade their dwellings (Liu, Liu, et al., 2010; Long, Li, & Liu, 2009; Song, Chen, Zhang, & Wu, 2012; Song et al., 2013). Two other types of factors are at work in the process, the physical condition of a house and the level of rural governance, according to existing research. First, houses built earlier with small floor area and with low quality materials may not satisfy the upgraded housing needs of farmers and potentially subject to abandonment (Long et al., 2009). Second, when the rural governance is loose at land use control, farmers are able to gain approval from the village head (or without any approval at all) with ease and occupy a new piece of land in the village fringe with minimum restrictions while the former dwelling is left vacant (Liu, Liu, et al., 2010; Long et al., 2009; Song et al., 2014; Song & Liu, 2014).

In the rest of the paper, we are going to build a multi-level regression model on the processes described above and examine the significance and relative contribution of these factors with our empirical data. Besides, the share of the two mechanisms of linkage between migration and RHA is further examined with a survey on the direction of movement of house abandoners.

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