



The allocation and management of critical resources in rural China under restructuring: Problems and prospects



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ABSTRACT

Rapid and far-reaching development transition has triggered corresponding restructuring in rural China especially since the turn of the new millennium. Recently, there has been an increasing trend emphasizing regional resources in formulating rural development policy and restructuring rural areas. This paper analyzes the rural restructuring in China affected by the allocation and management of critical resources including human resource, land resource and capital, by establishing a theoretical framework of “elements–structure–function” of rural territorial system. It is argued that rural restructuring is a process of optimizing the allocation and management of the material and non-material elements affecting the development of rural areas and accomplishing the structure optimization and the function maximum of rural development system. Due to the constraints from the maintained urban–rural dualism of land ownership and household registration, the rapid rural restructuring under both globalization and the implementation of the national strategies on industrialization, urbanization, informatization and agricultural modernization, the changes of the allocation of critical resources have brought about many problems and challenges for the future development of rural China, such as the nonagriculturalization, non-grain preference and abandonment of farmland use together with the derelict and idle rural housing land, the weakening mainbody of rural development, the unfair urban–rural allocation of capital and its structural imbalance, and so on. Aiming at how to resolve the problems and adapt to the challenges, it is pivotal to restructure the rural development space, rural industry, and rural social organization and management mainbody. Furthermore, it is necessary to restructure the contours of state intervention in rural societies and economies and allocate and manage the critical resources affecting rural development, from the perspectives of integrating urban and rural resources, improving the efficiency of resources utilization, and fully understanding the influences of globalization on rural restructuring in China.

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1. Introduction

Since the 1990s, rural restructuring has been a hot topic of rural studies (Wilson, 1995; Kiss, 2000; Hoggart and Paniagua, 2001; Xu and Tan, 2002; Tonts and Atherley, 2005; Woods, 2005; Long and Woods, 2011; Fang and Liu, 2015). Rural restructuring is more or less interlinked with rural decline, an inevitable process associated with globalization and urbanization (Markey et al., 2008; Woods, 2013a). Most developed countries including United States, Canada, Japan, South Korea, and some European countries have

experienced this kind of decline as well as rapid rural restructuring (McDonald, 1996; Abafita et al., 2013; Mulgan, 1997; Falk et al., 2003; Woods, 2013a). The experiences of rural restructuring in developed countries show that challenges and subsequent improvements coexisted during the process.

On the one hand, this restructuring process has brought about a series of challenges. For instance, the uneven impact of regional migration and restructuring of employment is transforming rural regions in Europe in different ways, and is bringing about challenges facing rural regions with regard to social services provision (Manthorpe and Livsey, 2009). The territorial restructuring occurs at multiple scales to facilitate the investment in and sale and export of natural resource commodities, and the construction of rural communities usually blends the restructuring of places and spaces

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and the resistance from peasants' struggle for land reform to their indigenous alliance in defense of territory (Brent, 2015). In some European countries, the agricultural and rural capital markets are also facing specific credit constraints related to agricultural assets and rural fixed asset specificities (Bojnec, 2012). The European experiences showed that land consolidation as an isolated tool for rural restructuring in transitional environments may trigger some unfavorable side-effects (Djanibekov et al., 2012).

On the other hand, some endearing improvements have been achieved. For example, in developed countries, consumption turns to be the driving force behind growth and change in many 'post-productivist' rural areas, and landscapes are actively produced to capitalize upon local amenities (van Auken and Rye, 2011). Currently, rural restructuring in the European countryside is shifting from an agricultural and manufacturing-based economy towards a service-centred economy in which the countryside is considered to be a place of consumption instead of a place of production (Rogge et al., 2013). Rural economic restructuring and the expansion of low-density exurban areas and growth of amenity-based rural areas have led to a new form of urban-rural space, which is characterized by the merging of a rural landscape form with urban economic function (Irwin et al., 2009). The process of agricultural restructuring in Europe was characterized by agricultural multifunctionality and entrepreneurial farmers (Morgan et al., 2010). The achievements of South Korea's new countryside movement and Japan's "one village one trademark" revolution have provided useful references for China's rural restructuring (Xie, 2006, 2007; Zhang et al., 2007).

In China, a typical developing country, rapid and far-reaching development transition has triggered corresponding rural restructuring especially since the turn of the new millennium (Long et al., 2011; Long and Liu, 2015). With the influences of globalization and the implementation of the national strategies on industrialization, urbanization, informatization and agricultural modernization (Li et al., 2014b), vast rural China has been profoundly changed due to the recombination of regional development factors and the reshaping of regional industries (Long et al., 2009). It has taken on the status quo of nonagriculturalization and concurrent occupation of rural population, nonagriculturalization and non-grain preference of rural land use, and nonagriculturalization and diversification of rural industry (Long, 2014). Furthermore, it has brought about some problems in some parts of the rural areas, e.g., the flow away of young laborers, the weakening of rural development mainbody, the abandoning of rural land, the hollowing of villages, the shortage of public infrastructure, the desalinating of consanguineous relation as well as the disappearing of cultural memory symbols. Meanwhile, driven by the changes of rural internal factors and the demands of external system, the re-allocation of rural production elements has brought about unprecedented opportunities for rural development. Aiming at the challenges and opportunities during the period of social transformation, the central government has clearly put forward a series of strategic guiding policies concerning realizing rural restructuring and promoting rural development since 2004, e.g., "Building New Countryside" (Long et al., 2010) and "Implementing New-Type Urbanization".¹

Rural restructuring in China might mainly be described in three aspects, i.e., spatial restructuring, industrial reshaping and administrative reorganization (Long et al., 2012). China has undergone rapid economic growth and dramatic industrial restructuring, with

the proportion of the primary, secondary and tertiary industry changed from 15%, 46% and 39% of GDP in 2000 to 10%, 44% and 46% in 2013, respectively (NBSC, 2014a). Research shows that the influential factors of China's industrial structure include domestic consumption propensity, urban-rural disparity, scale of the labor force and capital stock, property right protection, and administrative effectiveness (Dong et al., 2011). However, western scholars argued that human relations affecting different forms of embeddedness, a local or regional phenomenon that generally promotes the restructuring of rural areas, play an important role in industrial restructuring in rural areas (Fløysand and Sjøholt, 2007).

There have been diverse researches concerning spatial restructuring in rural China, e.g., the ways, strategies and its relationship with urban-rural development (Long, 2014; Chen and Zhang, 2009; Liu et al., 2011; Xiao and Ou, 2013; Fang and Liu, 2014). Rural settlements concentration and school mapping restructure are the important forms of this kind of spatial restructuring (Tan and Li, 2013; Zhao and Parolin, 2012, 2014). As for administrative reorganization, the consolidation of villages into a rural community and merging townships into a town logically lead to an amalgamation of administrative units (Long et al., 2012; Lai, 1997; Wang, 2010). Aiming at the effects of rapid urbanization on rural transformation development, a new hierarchical relationship and its administrative system concerning villages and towns in China were suggested (Liu, 2014). Since reconfiguring local government is a quintessential rural development initiative (Douglas, 2005), Gu et al. (2015) advocated the designation of a new type of city in China.

As shown by the practices of rural restructuring of both developed and developing countries, there has been an increasing trend emphasizing regional resources in formulating rural development policy and restructuring rural areas (Zasada et al., 2015). Among the resources affecting rural restructuring, the authors argue that human resource, land resource and capital are critical. Migration plays an increasing role in China's economy by affecting economic restructuring, and results in a series of socio-economic changes including rural restructuring, balanced regional development, and laborer market changes (Li et al., 2014a; Liu et al., 2014). The allocation policy on local resource use such as land and forest directly affected rural household livelihoods in Lao People's Democratic Republic (Fujita and Phanvilay, 2008). Territorial capital investment has been considered as one of main cornerstones for rural development (OECD, 2006). Tolbert et al. (2014) examined the changes in local ownership of traditional financial services and found that the rate of decline had been greatest in most rural counties.

There are abundant researches dealing with resources allocation and rural restructuring in China. For example, Rogers (2014) depicted the inequality pattern of resource allocation in rural restructuring of China's poverty counties, due to local government's betting on the strong, that is it concentrates resources in villages with better existing conditions instead of poorer villages who are in greater need. Cui (2008) argued that the transformation of Chinese economic development relies on the building of a support system based on adjusting and optimizing the supply-and-demand structure of resources. Du (2012) advocated that the optimal allocation of rural human resource help to realize the sustainable development of agriculture and rural economy; however, the situation of the quality of rural human resource in China is not optimistic. The research of Song (2015) showed that the state-collective divide and the urban-rural dichotomy in property rights were restructured in current land development in China, and villagers were able to use various means to take advantage of transitional and favorable deals to gain expected returns. There was distinct regional difference in the allocation of financial resource of rural social security in China (Ye and Qiu, 2015). In the last three decades, administrative factor instead of market factor played a decisive role

¹ The Central Committee of the Communist Party of China and the State Council of China. National Plan on New-type Urbanization (2014–2020) (http://www.gov.cn/zhengce/2014-03/16/content_2640075.htm).

in resources allocation, which was considered the institution bottleneck impeding sustainable rural development in China (Cai, 1999; Chen, 2004, 2013). The efficient allocation of resources contributes to rural development in China, but it is necessary to abate the constraints impeding resources mobility (Wang, 2011a).

It is crucial for rural restructuring to achieve the optimal allocation and effective management of critical resources through coordinating the development elements. While there are numerous studies analyzing rural restructuring and resources allocation and management, relatively little research has been directed towards the theoretical analysis of rural restructuring and the allocation and management of resources. This study is intended to analyze the rural restructuring in China affected by the allocation and management of critical resources, based on a theoretical framework of “elements-structure-function”. This paper is organized in five sections. Following the introduction, a theoretical framework of rural restructuring based on “elements-structure-function” is given. The third section analyzes the status quo and problems of the allocation and management of critical resources in rural China since the turn of the new millennium. In the fourth section, the prospects about future restructuring in rural China are probed. The fifth section discusses relevant policies concerning future rural restructuring in China, and the final section summarizes the results of the analysis.

2. “Elements-structure-function” and rural restructuring: a theoretical framework

2.1. Elements and structure of rural territorial system

Rural territory is a complex system composed of diversified elements, such as natural endowments, geographical conditions, economic base, human resource, cultural customs, and so on. It is the interactions among various elements that make the rural territorial system an open system and exchange material and energy with other adjacent rural system and exterior urban system. Structurally, the rural territorial system may be divided into kernel system and external system as well as object system and subject system. On the one hand, the kernel system consists of some sub-systems, e.g., natural resources, ecological environment, economic development and social development (Wu, 2001). However, the external system mainly includes the regional development policy, industrialization and urbanization (Zhang and Liu, 2008). On the other hand, the object system consists of natural endowments, geographical conditions, economic base and other objective factors which influence the development of rural area; and the subject system is composed of some behavioral mainbodies such as local governments, enterprisers, elites and farmers. Usually, local behavioral mainbody integrates relevant factors of the object system to promote the coordinated development between the sub-systems within the kernel system, and the continuous exchange of material, energy and information between the kernel system and the external system. This kind of exchange of material, energy and information keeps the structure and function of rural territorial system gradually optimized, which forms the driving forces of rural development (Wu, 2001).

2.2. Function of rural territorial system

Rural territory has multi-functions in the aspects of living, production, ecology and culture, which are constantly evolved and varied with the integration of system elements, the optimization of system structure, the change of external environment and the driving of social demand. In the traditional sense, the rural territory carries a certain number of people, and meets the needs of rural areas itself through the production and processing of primary

agricultural products. Besides, it also sustains the running and developing of the city by providing it with resources. Living and agricultural production functions are the primary functions of rural territory. With the increasing frequency of the interaction between urban and rural areas, and the accelerating flow of economic development factors, the rural area begins to share some of the functions of industrial production and service supply, and the connotation of the production function of rural area is gradually enriched.

However, large consumption of water and land resources and subsequent environmental pollution problems grow fast together with the advance of industrialization and urbanization. The ecological function of rural territory has become increasingly prominent because of its high vegetation coverage and low population density, which are pivotal to the mitigation and regulation of natural disasters and the maintenance of biological diversity. And with the growing regional cultural exchanges and increasing cultural homogeneity, the characteristic style of rural settlements, simple folk customs and the unique cultural characteristics have aroused more and more people’s attention, and the rural territory begins to bear the function of inheriting culture.

2.3. A theoretical framework of rural restructuring

During the process of globalization, urbanization and industrialization, with the population, land, industry as the core, the diversified interaction and subsequent marginalization of the material and non-material elements in rural China have shaped rural production and lifestyles and generated considerable changes in the aspects of rural industrial structure, employment structure, consumption structure, land use structure, and social organization structure (Li et al., 2015; Long et al., 2011, 2012). The changes of rural spatial pattern, economic form and social organization structure force local behavior mainbody to make timely adaptation and adjustment (Long, 2014). The essence of rural restructuring is, by assessing the local development conditions concerning resources endowment and industrial basis, local behavior mainbody integrates and allocates the material and non-material elements including human resource, land resource and capital, makes the rural development system trigger elements restructuring, structural optimization and functional evolution, and finally accomplish the restructuring of rural production, living and ecological space, the reshaping of rural industry, and the restructuring of rural social organization and management mainbody (Fig. 1).

In general, rural restructuring is a coupling and coordinating process of various rural development elements, in which the human resource, land resource and capital complement and constrain each other, and constitute the three critical resources affecting the development of rural areas. The “person” is the most initiative factor in the development of rural areas. A certain quantity and quality of the population not only provide intellectual support for rural economic development, but also through the organization, coordination and demonstration of local behavior mainbody, to intervene land use behavior and promoting rural spatial restructuring (Long, 2014). Land is the spatial carrier of socio-economic development. Through consolidating the low-efficient utilized land, promoting land use transfer and appropriate scale management, the space for the development of modern agriculture, nonagricultural industries even urban development can be provided. Capital plays an important role in economic development and industrial cultivation during the process of rural restructuring, and exerts important influences on the nonagriculturalization of rural population, land use transition and the enhancement of rural self-development ability. The key to rural restructuring is to optimize the allocation and management of the critical resources

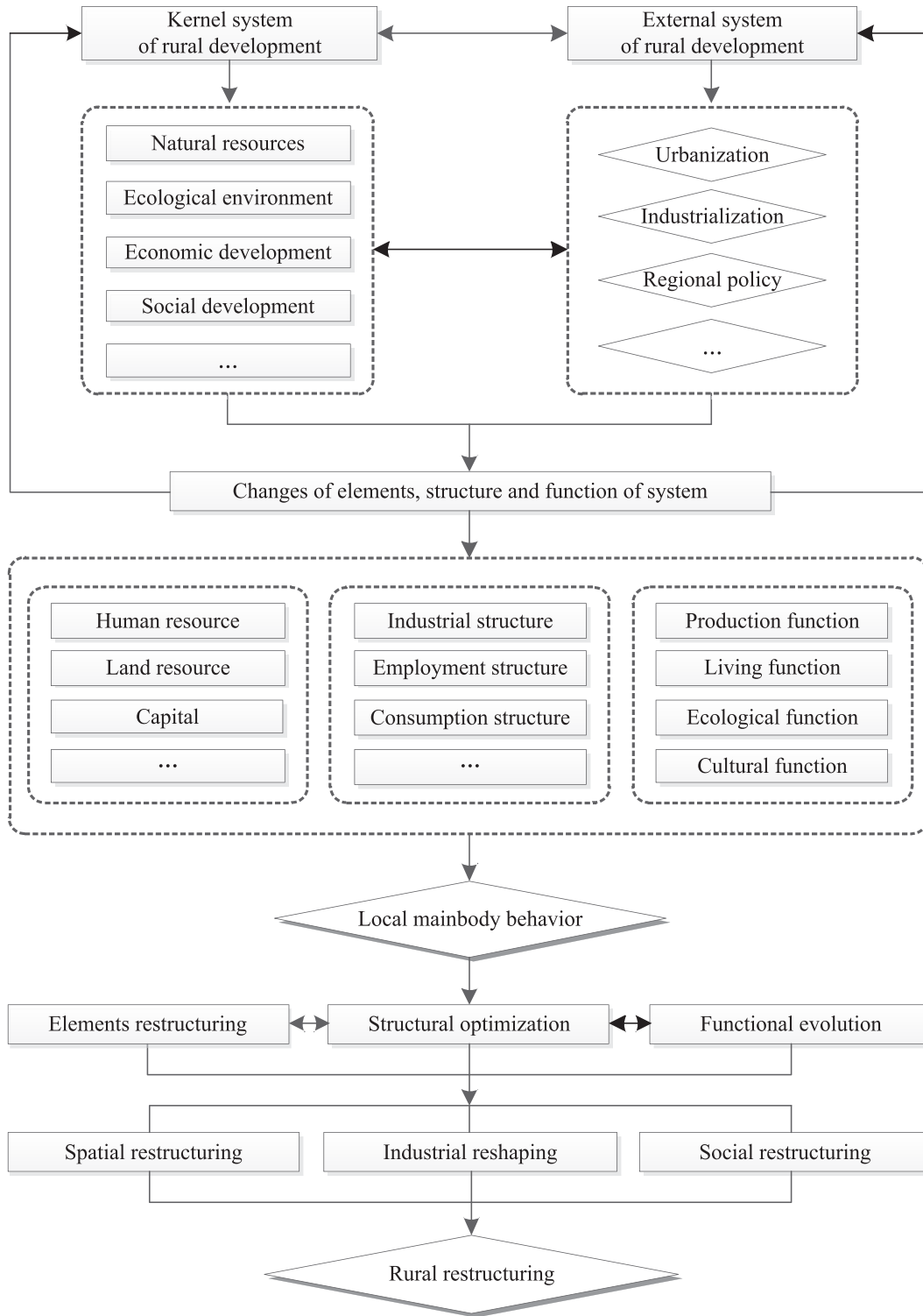


Fig. 1. A theoretical framework of rural restructuring based on "elements-structure-function".

including human, land and capital and realize the structure optimization and the function maximum of rural development system.

3. Status quo and problems of the allocation and management of critical resources in rural China since the turn of the new millennium

3.1. Human resource

From 2000 to 2013, China's urbanization rate has increased from

36.22% to 53.73%, with an annual growth of 1.25%. The inflow of rural population is one of the main impetuses of this rapid advancement of urbanization (NBSC, 2014a). During the same period, rural resident population has decreased from 808.37 million to 629.61 million and rural registered population from 942.44 million to 876.01 million (NBSC, 2001b; 2014c). Under China's special household registration system, the difference value between rural registered population and rural resident population keeps on increasing (Fig. 2). This number amounted to 246.4 million in 2013, accounting for 33.70% of urban resident population and 39.14% of rural resident population that year. The difference value can also be used to represent the quantity of population who flow into the urban area but without their household registration changed (Liu et al., 2011). Enormous outflow of rural population has brought about changes on rural population structure and human resource deployment accordingly.

3.1.1. Changes of rural population structure

In 2014, there were 273.95 million peasant laborers² in China, including 105.74 million local peasant laborers³ and 168.21 million migrant peasant laborers.⁴ The latter took up 61.4% of the total number. The average age of peasant laborers was 38.3 with people aged 20 to 49 accounting for 79.4%; male took up 69% and female 31%.⁵

Most migrant laborers are young. Due to their migration, there is a clear tendency towards infantilization and aging of the population in rural area. For population aged 0–14, the proportion of rural area was 5.09% higher than that of urban area in 2010; for aged 20–49, 8.52% lower than that of urban area; aged 50–59, almost the same; aged above 60, 3.30% higher (Fig. 3). The outflow of rural population has exacerbated the aging process in rural area. In 2000, the population aged above 60 took up 10.91% in rural area, 1.23% higher compared with the proportion of 9.68% in urban area (PCOSC and NBSC, 2002). In 2010, the proportion of population aged above 60 has risen to 14.98% in rural area and 11.68% in urban area, 4.07% and 2% higher in comparison with those in 2000,



Fig. 3. The proportion of resident population in rural area and urban area in different age structure in China in 2010 (Source: PCOSC and NBSC, 2012).

respectively (PCOSC and NBSC, 2012). From the above, it is obvious that aging process in rural area is much faster than that in urban area.

The migration has not only affected the age structure, but also changed the intellectual structure of the population in rural China. The migrant laborers have been led by better educated people, causing a “brain drain” that has seen rural communities lose their most active population segment (Table 1).

3.1.2. Changes of human resource deployment

The outflow of rural population and the consequent influence on rural population structure have changed human resource deployment such as village cadres, health technicians and agricultural labor force etc. in rural China.

(1) Deployment of village cadres

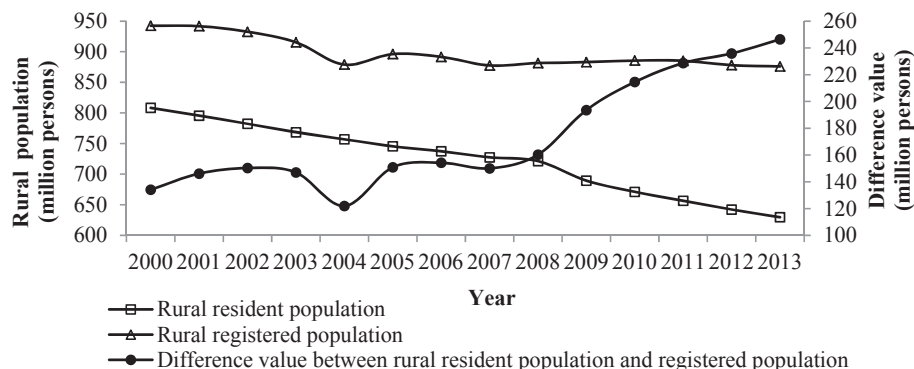


Fig. 2. Changes of rural registered population and rural resident population in China from 2000 to 2013 (Sources: NBSC, 2001–2014a, 2001–2006b, 2007–2014c).

² Peasant laborer indicates a laborer has rural household registration, and engages in non-agricultural industry or migrates out for a job for six months or more in a year.

³ Local peasant laborer indicates a laborer who is employed in the town or country where his/her household was registered at.

⁴ Migrant peasant laborer indicates a laborer who is employed in a place except for the town or country where his/her household was registered at.

⁵ Peasant Laborer Monitoring Report in 2014 (http://www.gov.cn/xinwen/2015-04/29/content_2854930.htm).

Based on sampling survey on cadres of 124 villages in 13 provinces including Hunan, Jiangxi and Yunnan carried out by authors' research team in 2015, most village cadres are old and of the total, staff aged 40–60 takes up 75.82%, while aged 50–60 at 37.36% and above 60 at 10.99%. Old cadres are more familiar with rural work and agricultural activities, but they tend to be close-minded, blinkered and lack of management and innovation ability. As young men generally choose to work outside and don't have too much recognition on cadres' work, there is insufficient force

Table 1
The educational attainment of rural population and peasant laborers in China (%).

Educational attainment	Rural population in 2010	Peasant laborer		Migrant peasant laborer in 2014	Local peasant laborer in 2014
		in 2010	in 2014		
No schooling	9.45	1.3	1.1	0.9	1.6
Primary school	33.17	12.3	14.8	11.5	18.1
Junior secondary school	46.25	61.2	60.3	61.6	58.9
Senior secondary school	8.77	15	16.5	16.7	16.2
College and higher level	2.36	10.2	7.3	9.3	5.2
Junior secondary school and higher level	57.38	86.40	84.10	87.60	80.30
Senior secondary school and higher level	11.13	25.20	23.80	26.00	21.40

Source: PCOSC and NBSC, 2012; Peasant Laborer Monitoring Report in 2010 and 2014^a.

^a Peasant Laborer Monitoring Report in 2010 (http://www.snzg.cn/article/2011/1228/article_26965.html); Peasant Laborer Monitoring Report in 2014 (http://www.gov.cn/xinwen/2015-04/29/content_2854930.htm).

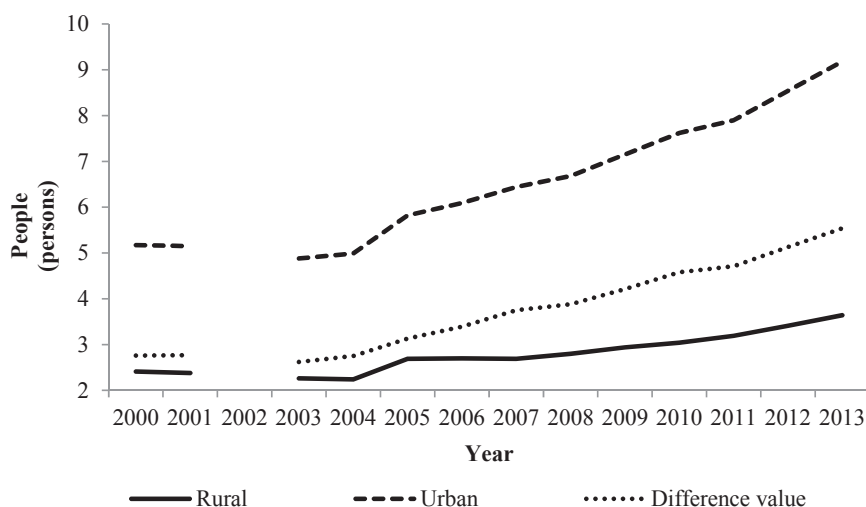


Fig. 4. The number of health technicians per thousand people in rural area and urban area of China during 2000–2013 (Sources: MHC, 2001–2002, 2004–2012; NHFPCC, 2013–2014; lacking of the data in 2002).

reserve of primary organization in rural area with village cadres under 40 years old only accounting for 13.19%.

In the view of educational attainment, there are 69.23% of cadres with junior and senior secondary school education, 29.67% with college and higher level. Most cadres with college and higher level education don't stay a long time and some of them are assigned by towns, hence there exist problems like lack of work experience, short tenure and discontinuity of work etc. The family income of village cadres is mainly from agriculture, and 58.6% of them have a per capita annual income under 5000 RMB yuan (exchange rate US\$ to RMB yuan: 1–6.35), far behind the national rural per capita net income which was 8896 RMB yuan in 2013. This situation indicates that village cadres played a limited role in the village development and prosperity.

(2) Deployment of rural health technicians

There were 9.79 million health workers nationwide in 2013 (NHFPCC, 2014). Rural and urban shared almost the same proportion, i.e. 54.15% in the rural and 45.85% in urban. However, rural health technicians are relatively insufficient and increase slowly (Fig. 4). In 2013, the number of health technicians was 3.64 per thousand people in rural area, equivalent of 69.07% of that in the whole country and 39.65% in the urban area (NHFPCC, 2014). Among the technicians, the number of licensed (assistant) doctor was 1.48 per thousand people in the rural, equivalent of 88.62% of

that in the whole country and 46.39% in the urban area. Due to inadequate attraction to talents, country doctor has been the main part of service in village clinics. In 2013, country doctor took up 70.9% in the village clinics while licensed doctor only 20.56%.

(3) Deployment of agricultural labor force

With the development of industrialization and urbanization in China, rural labor force has transferred from agricultural to non-agricultural sector constantly. The agricultural labor force is declining while non-agricultural population is rapidly increasing. From 2000 to 2013, the proportion of population engaged in primary industry has declined from 50% to 31.4%. As opposed to this, non-agricultural population keeps on growing in rural area. Rural labor force engaged in non-agricultural industries has increased 48.53 million cumulatively since 2008, among whom 20.73 million are local laborers.⁶ The average annual growth of local non-agricultural employment is 2.96 million.⁶

The flow of rural laborer to non-agricultural sectors has not only reduced the number of agricultural labor force, but also brought about significant changes to age structure of agricultural workers.

⁶ Peasant Laborer Monitoring Report in 2009 (http://www.stats.gov.cn/ztc/ztfxf/xfbq/201003/t20100319_16135.html); Peasant Laborer Monitoring Report in 2014 (http://www.gov.cn/xinwen/2015-04/29/content_2854930.htm).

In 2010, the proportion of “21–30 years”, “31–40 years”, “41–50 years” and “above 50 years” accounted for 16.7%, 19.3%, 26.4% and 34.6%, respectively, of the total agricultural labor force, while that of the total non-agricultural labor force was 35.9%, 23.5%, 21.2% and 12.9%, respectively. Therefore, with the rising of age structure, it presents the characteristics of increasing agricultural labor force and decreasing non-agricultural labor force (Fig. 5). The proportion of China's agricultural workers has reached to 32.5% for laborers aged above 50 and 11.2% for those above 60 in 2006 (LTOSNAS and NBSC, 2009). The proportion of laborers over 60 years old is 3% higher than that in 1996.⁷ However, the percentage has risen to 34.58% for laborers aged above 50 and 13.64% for those above 60 in 2010 (PCOSC and NBSC, 2012).

This phenomenon of aging of rural labor force has also been proved in our case surveys. For instance, there were 252 villagers in He village, Ganguyi town, Baota district, Yan'an city, Shaanxi province in 2015. Among them, 67 people were engaged in agricultural production with 76.12% over 50 years old, 37.31% over 60 years old and 17.91% over 70 years old. With the socio-economic development and technical progress, it is an inevitable trend to decrease the number of agricultural labor force. However, problems like insufficient input of production means and manpower, great difficulty in popularizing agricultural science and technology, brought by aging rural labor force and low education level, have had a negative effect on the advance of production efficiency and development of modern agriculture.

To sum up, with the globalization, industrialization and urbanization, a large number of rural people have migrated to urban areas in China since the beginning of the new century. The outflow of young high-quality workforce has not only changed the population structure and human resource allocation in rural area, but also caused problems such as lack of talents, less-educated human resource, weakened mainbody of development. The change in human resource deployment has broken the traditional social structure and agricultural production mode (Liu et al., 2011), and will have profound impact on the utilization of land resource, the development of rural industry, the restructuring of rural social

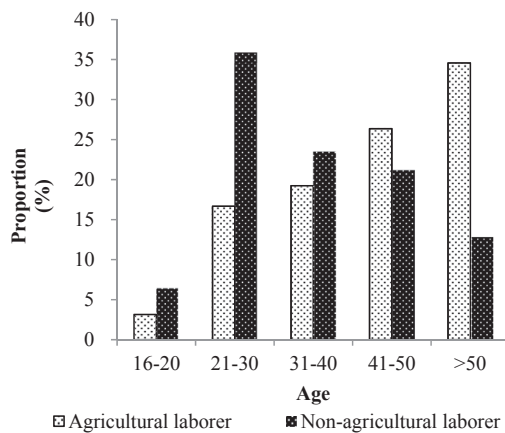


Fig. 5. Comparison of age structure between agricultural labor force and non-agricultural labor force (Sources: PCOSC and NBSC, 2012; China's Sixth Population Census Data, Peasant Laborer Monitoring Report in 2010). Peasant Laborer Monitoring Report in 2010 (http://www.snzg.cn/article/2011/1228/article_26965.html).

⁷ The First National Agricultural Survey Data (http://www.stats.gov.cn/tjsj/pcsj/nypc/dyncnypc/200308/t20030826_39928.html).

governance system, etc.

3.2. Land resource

Driven by rapid industrialization and urbanization and related socio-economic changes and innovations, tremendous changes have occurred in the aspects of the structure, mode and efficiency of land use in rural China, as evidenced by the non-agriculturalization and non-grain preference of farmland use, farmland abandonment, transfer of land use right, rural housing land expansion and village hollowing.

3.2.1. Allocation of farmland resource

(1) Nonagriculturalization, non-grain preference and abandonment of farmland use

China's farmland resource keeps on decreasing with the expansion of the city and the increasing demand of industrial land. There were 121.72 million ha of farmland in China at the end of 2008 (MLRC, 2009). China's farmland has reduced by 11.48 million ha during 2000–2008.⁸ After taking out the increased area from land consolidation, reclamation and development, there was a net decrease of 7.49 million ha of farmland in China. Besides disaster destroyed farmland, implementation of Grain-for-Green program (Long et al., 2006), agricultural structure adjustment etc., non-agriculturalization of farmland use, which refers to the process of changing from agricultural land with lower economic benefits into construction land with higher economic benefits, is an important reason for the decrease of farmland. During 2000–2008, the area of nonagriculturalized farmland has accumulated to 1.90 million ha, accounting for 25.31% of the net decreased area of farmland (MLRC, 2001–2009). The rate of nonagriculturalization of farmland⁹ has accumulated to 1.52%, with an annual average of 0.16%. From the spatial distribution of nonagriculturalization of China's farmland, during 2000–2008, nonagriculturalization of farmland was most rapidly advanced in developed regions like Shanghai, Beijing, Zhejiang and Tianjing with the rate of nonagriculturalization of farmland up to 14.1%, 12.84%, 8.54% and 7.3%, respectively; while the speed was slower in western and northeastern China such as Ningxia, Shaanxi, Yunnan, Tibet, Guizhou, Jilin, Inner Mongolia, Xinjiang, Hainan and Gansu etc. with the rate of non-agriculturalization of farmland all less than 1%.

The non-grain preference of farmland use refers to the phenomenon that farmland is used for planting cash crops instead of grain, which can be reflected by the fluctuation of grain sown area and yield. The grain sown area was 111.96 million ha in 2013 with an increase of 3.22% compared with that in 2000, and the proportion in agricultural crop sown area reduced from 69.39% to 68% (NBSC, 2001a; 2014a). On the whole, there were not too many changes on grain sown area in China. However, the phenomenon of non-grain preference of farmland use is prominent in some areas with the largest reduction of grain sown area occurred in Beijing, Zhejiang, Shanghai and Fujian, and the proportion has decreased by 48.46%, 45.50%, 34.89% and 34.26%, respectively. Corresponding to grain sown area, the grain yield in above mentioned four regions has declined by 33.34%, 39.73%, 34.40% and 22.27%, respectively

⁸ In China, there are obvious differences in the data statistical caliber between the second land use survey finished in 2009 and the first land use survey finished in 1996. In addition, data of land use change survey of all provinces have been updated to 2008. So, the time span of land use data in this study is from 2000 to 2008.

⁹ The rate of nonagriculturalization of farmland means the proportion of non-agricultural farmland in a region during a certain period in the total farmland area of the region in the beginning year of study period.

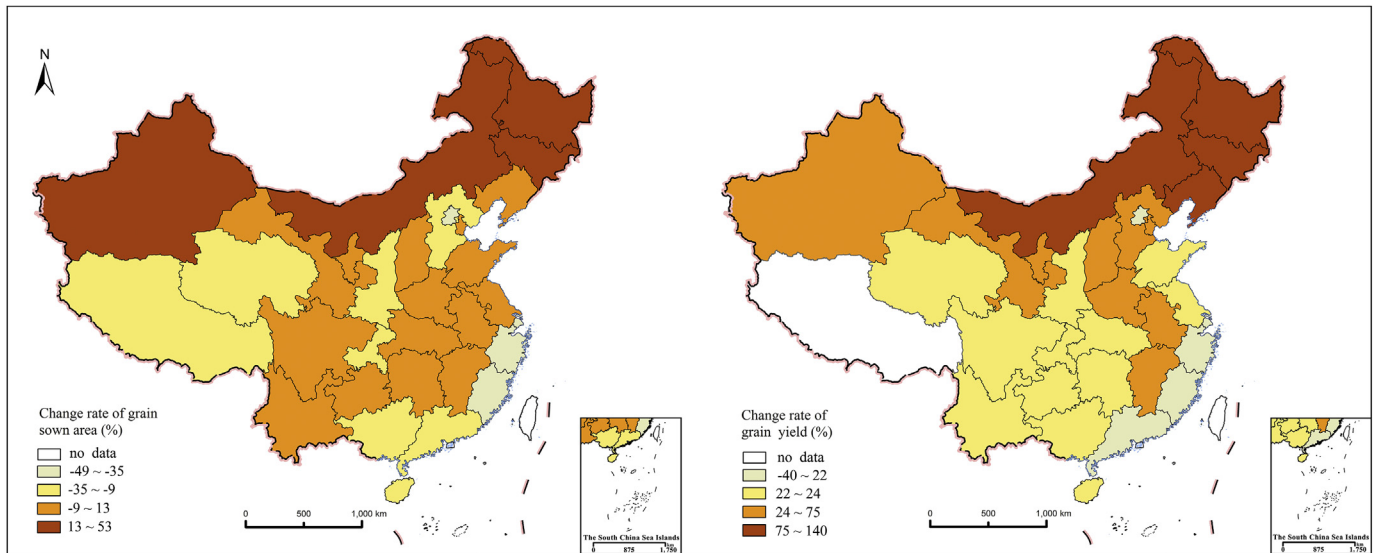


Fig. 6. Change rate of China's grain sown area and yield during 2000–2013 (Sources: NBSC, 2001a; 2014a).

(Fig. 6).

The non-grain preference of farmland use is intimately linked with the transfer of rural population, the change of the spatial pattern of farmland resource, the change of the structure of food consumption, the adjustment of agricultural structure etc., but its direct driving force lies in the relatively low benefits of grain-growing (Wang and Liu, 2009). The total cost of grain production has risen from 356.18 RMB yuan per mu¹⁰ in 2000 to 1026.19 RMB yuan per mu in 2013, with an average annual growth rate of 7.85% (NDRC, 2007; 2014). The benefits of grain-growing have been continuously squeezed by the increasing cost, which caused low enthusiasm in planting grain among peasants.

The abandonment of farmland refers to the status of leaving arable land derelict or underutilized due to halted and reduced farming. Driven by the rising wages and incomes from non-agricultural employment and the jacking up opportunity cost of farming, the economic value of farmland has been reduced due to redistribution and migration of rural labor force (Shao et al., 2015), which has consequently brought about extensive utilization of farmland such as “paddy field from double cropping to single cropping”, “poplar expansion and cropland shrinkage” (Zhao et al., 2012), abandonment of farmland etc. This problem is particularly prominent in hilly and mountainous area with poor farming conditions and difficult in achieving laborer substitution (Shao et al., 2015). According to incomplete statistics, there were up to 161 research sites with such phenomenon, involving 107 counties (cities) covering 21 provinces (autonomous regions and municipalities) in China in the last two decades (Shi and Li, 2009). For instance, in 2014, in Muyang town of Yunnan province, there were 749 ha of abandoned area with abandonment proportion taking up 25%; in Yulin city of Shaanxi province, there were 80.8 thousand ha accounting for 13.9% (Cheng and Fang, 2015).

The issue of China's nonagriculturalization, non-grain preference and abandonment of farmland use, is a reflection of the changes of rural man-land interrelations on land use structure and mode under the background of rural transformation development, and is the change of allocation of land resource caused by the adjustments of land use structure and mode which are made by rural

household from economic rationality based on scarcity degree and relative price of changed production elements. However, the phenomenon of regional nonagriculturalization and non-grain preference of farmland use, will ensure the pressure on national food security be passed to the main grain producing areas in the northern and central China. The center of gravity of China's grain production has taken on the changing trends of “heading northwards and moving to the central” and “heading northwards and marching westwards” (Liu et al., 2009a; Wang and Liu, 2009). The original situation of “transporting grains from the South to the North” has been evolved into that of “sending grains from the North to the South (Liu et al., 2009a), which has important influences on the regional social economy and ecology such as aggravating the contradiction of water and land resources in traditional agricultural areas in central China, potential eco-environment risk in the activity of “increasing grain yield through reclamation of arable land” in ecologically fragile areas of northern China, soil hardening and soil fertility decline caused by overloading operations of land resource in northeastern China.

The phenomenon of “Upside down” between grain production contributions and economic income level has intensified the imbalance of regional economic development between the East and the Midwest, the developed areas and underdeveloped areas (Wang and Liu, 2009). The abandonment of farmland is the equivalent of fallow cropping system which is conducive to the recovery of farmland soil to some extent (Shi and Li, 2009), but it is not only a great waste of land resource, but also an expression of an urgent need to strengthen regional resource allocation and regulatory means under such a kind of man-land interrelations imbalance between land supply and demand and serious shortage of land resource in China.

(2) Land transfer

The migration of rural labor force and the introduction of new production tools have brought about changes of marginal productivity of different elements and requirements for re-allocation of agricultural production resources. Land transfer is a process of re-allocation and optimization of rural contracted land use right among different management mainbody. The transfer of rural contracted land use right began to appear in early 1980s and for a

¹⁰ One mu equals 666.67 m² or 1/15 ha.

long period of time, the area of transfer has accounted for about 4.5% of the household contracted farmland in general (Chen, 2009). As proposed in the Notice on How to Do a Good Job in the Transfer of Rural Contracted Land Use Right of Peasant Household issued by the Central Committee of the Communist Party of China (CPC) in December 2001, it was allowed to transfer the contracted land use right on the basis of stabilizing the household contract management system. And since then, the transfer scale of farmland has been enlarged and the progress been advanced gradually. During 2000–2009, the average transferred farmland has been increased from 0.62 mu to 1.06 mu per household with its proportion in household contracted farmland increased from 8.34% to 14.89% (PROC and MAC, 2010). The total transferred area of household contracted farmland has reached to 22.74 million ha in 2013, with an increase of 7.54 million ha compared with 2012 and an increase rate of 22.5%, which accounted for 25.69% of the total area of household contracted farmland (MAC, 2014).

The speed of China's land transfer is closely related to the small-scale and fragmentation of farmland management under household contract responsibility system. The area of each field plot was averagely 1.26 mu in household contracted farmland in 2000 (PROC and MAC, 2010). The intensive large-scale management has been strengthened in farmland running in recent years, but the fragmentation of farmland management has not been changed fundamentally. In 2009, the area of each field plot was averagely 1.74 mu in household management farmland, with the pieces of farmland "below one mu", "1–3 mu", "3–5 mu" and "above 5 mu" accounting for 58.78%, 27.8%, 7.32% and 6.1%, respectively, of the total pieces of average household management land (Fig. 7). The fragmentation of farmland was more serious in western and eastern China than that in central China, with the pieces of farmland "below one mu" in the eastern, central and western China taking up 66.14%, 49.08% and 61.89%, respectively, of the total pieces of average household management land (PROC and MAC, 2010). The small-scale management of farmland has increased the communication and transaction costs of land transfer, which has restricted the scale of land transfer and has resulted in the regional difference of land transfer.

The scale and speed of farmland transfer has presented obvious regional differences under the background of enlarged transfer scale of farmland, with the proportion of transfer is higher in fertile areas, developed areas and regions with higher transfer of rural laborers and lower in the central and western areas. In 2006, the

proportion of households participating in the transfer of farmland is up to 44.49%, 28.01%, 26.76%, 23.93%, 23.88% respectively in Shanghai, Heilongjiang, Zhejiang, Beijing, Fujian, while the proportion is only 3.68%, 3.81%, 4.06%, 4.68%, 5.03% respectively in Henan, Shandong, Hebei, Gansu, Shaanxi (Fig. 8). In the central and western China, peasant income is highly dependent on land output due to underdeveloped non-agricultural industries and lack of employment opportunities. In such situation, they are unwilling to rent out their farmland. In addition, there is such a situation in some regions as difficult transfer and abandonment of farmland because of high input cost of renting caused by low quality of farmland and underdeveloped irrigation and water conservancy facilities.

Moreover, it is unsustainable for the profit mode of renting land for grain growing on account of low benefit of grain growing and mounting leasing price. The non-grain preference of farmland use is prominent in land transfer with the blinded introduction by some local government of industrial and commercial enterprises who has rent large area of farmland for planting economic crops or developing non-agricultural industry for a long time. In 2013, there were 12.85 million ha of transferred land for food crops only with a proportion of 56.52% in the total transferred farmland (MAC, 2014). Based on the survey on "non-grain" growing of transferred land, the rate of "non-grain" growing of transferred land has reached to 61.1% in the four major grain producing areas including Hebei, Henan, Shandong and Anhui provinces (Zhou, 2014).

3.2.2. Allocation of rural construction land

With a large number of rural labor force flowing into the city, it is expected that the rural construction land in China will be decreased. However, on the contrary, it takes on a trend of rural construction land increase with rural population decline, subjecting to the constraints of current household registration system, rural social security system and rural land use policy (Long et al., 2012). From 2000 to 2007, China's average annual growth of rural housing land amounted to 16 thousand ha, with an annual growth rate of 0.1%. In terms of regional differences, rural housing land increased rapidly in the eastern and the western of China, with an annual growth rate of 0.19% and 0.15%, respectively. While the growth rate in northeastern China was only 0.07%, even a slight decrease trend in central China. During 2000–2007, there was an obvious increasing trend of rural housing land in some provinces such as Tibet, Zhejiang, Hebei, Xinjiang, Ningxia, Qinghai and

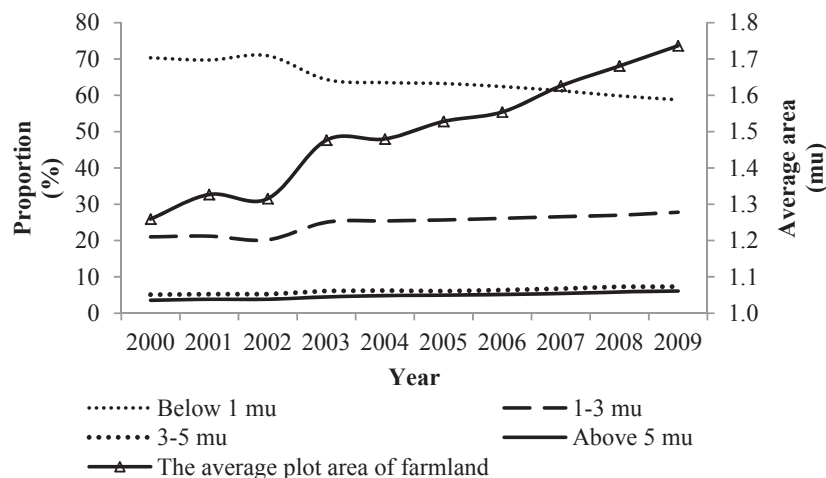


Fig. 7. The proportion of the pieces of farmland with different sizes in total pieces of average household management land and the average plot area of farmland during 2000–2009 (Source: PROC and MAC, 2010).

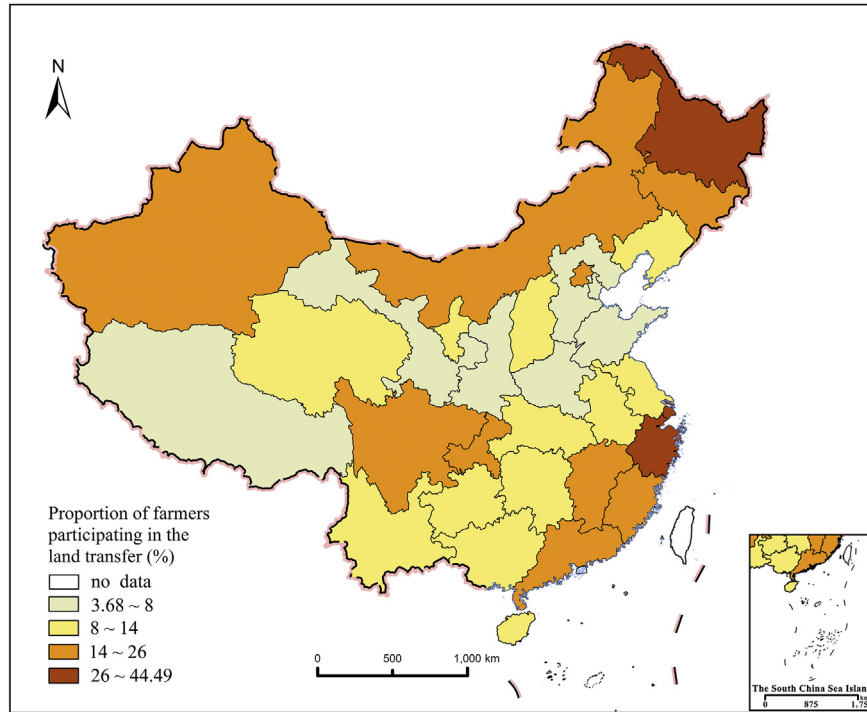


Fig. 8. The proportion of farmers participating in the land transfer in the provinces of China in 2006 (Source: LTOSNAS and NBSC, 2009).

Tianjin; while it was decreased in Shanghai, Jiangxi, Anhui, Gansu, Chongqing and Shaanxi.

The overall increasing trend of rural housing land, together with the decrease of both rural resident population and registered population, made the per capita rural housing land rapidly increased. During 2000–2007, per capita rural housing land in terms of rural resident population and rural registered population increased by 12.68% and 4.4%, which exceeded 50% and 25% of the national standard of 150 m², respectively. The change of China's rural housing land per capita in terms of rural registered population took on a trend of rapid growth in eastern developed areas, slight decline in central and western areas, and little change in north-eastern China (Long et al., 2013). The change of China's rural housing land per capita in terms of rural resident population showed a rapid increase in the eastern developed areas and the central and western areas from which a lot of rural laborers migrated out (Long et al., 2013). In this aspect, most provinces

experienced a growth process except for Shanghai and Tibet. In the provinces with a growth trend, Chongqing, Hebei, Jiangsu, Hunan and Beijing had an annual growth rate of more than 3% (Fig. 9).

The status quo of coexisting rural population decline and rural construction land increase caused the low efficiency of rural housing land use. In 2007, there were 27 provinces whose rural housing land per capita in terms of rural resident population exceeded the national standard, and 23 provinces whose rural housing land per capita in terms of rural registered population exceeded the national standard. The authors' field investigation carried out in May 2015 in Yangqiao village, Yucheng city, Shandong province, showed that the phenomenon of village hollowing was shocking. Yangqiao village had 237 houses, 83 of which were idle or derelict, accounted for one-third of the total rural housing land area of this village, and 70% of the households in the village have more than one house. Under the background of rapid urbanization, the change of man-land interrelation and settlement

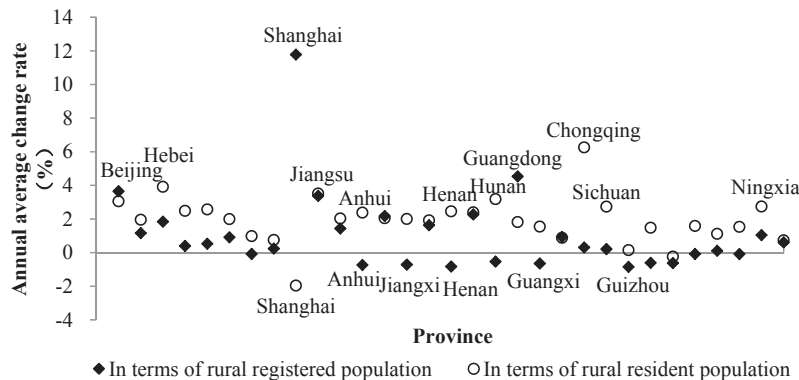


Fig. 9. The annual average change rate of rural housing land per capita in terms of rural resident and registered population during 2000–2007 (Source: The Department of Land and Resources of related provinces).

spatial structure caused village hollowing and related socio-economic problems (Liu et al., 2009b; Long et al., 2012). The research of the Institute of Geographic Sciences and Natural Resources Research, CAS, indicated that the potential of increasing farmland via consolidating hollowing villages in China was 7.6 million ha under the background of pushing forward urbanization in batch (Liu et al., 2011).

In order to accomplish the optimal allocation of land resource, the central government promulgated the land use policy of “Linking up Increased Urban Construction Land with Decreased Rural Construction Land” and “The National General Land Use Planning (2006–2020)”, both emphasizing the consolidation of rural construction land, especially that in the hollowing villages. The central government tried to solve the contradiction between the spatial constraints for increasing urban construction land and the inefficient use of rural construction land through the innovation of land consolidation policy (Liu, 2010). For these, national and local governments have carried out considerable land consolidation projects at different scales. However, the implementation of these land consolidation projects has brought about some problems (Liu, 2010), such as excessively emphasizing on construction land quota, blindly pursuing land finance and land consolidation potential, engaging in violent demolition of rural houses and violating farmers’ desire, depriving the development rights of the farmers, etc. (Zhang, 2014; Long et al., 2012).

3.3. Capital

Capital plays an important role in promoting the development of rural economy and increasing the income of farmers. Since 2000, the national financial department has gradually increased the intensity of the capital supporting for rural development. The expenditure at national level for supporting rural development rose from 123.15 billion RMB yuan in 2000 to 1376.3 billion RMB yuan in 2013, with the proportion in national fiscal spending from 7.75% to 9.82% (NBSC, 2000d; 2013d). Recently, some agricultural leading enterprisers and industrial and commercial enterprisers have gradually increased their investment into the rural, which have led to a rapidly increase in rural investment. To some extent, the fund shortage problem impeding rural development has been alleviated. However, it is still problematic in the aspects of insufficient capital for developing rural public infrastructure and affairs, limited supply of rural financial capitals, and low efficiency of capital use due to the system obstacle concerning its allocation and management.

3.3.1. Allocation of capital for developing rural public infrastructure and affairs

In recent years, the national financial expenditure has been gradually inclined to promoting the development rural social affairs, to achieve the equalization of basic public services. Compared with 2007, the spending of rural social affairs development increased by 3.27 times in 2013, accounting for 43.89% of the total expenditure for rural development (NBSC, 2007d; 2013d). But compared with the urban, the capital investment for developing rural public infrastructure and affairs is still inadequate. The structural imbalances of capital allocation for developing public infrastructure and affairs between the urban and the rural as well as among different areas were too evident.

(1) Allocation of public financial funds for infrastructure construction

In China, the disequilibrium phenomenon of the allocation of public financial funds for infrastructure construction between the

urban and the rural is obvious, that of the rural is far lower than the urban. In 2001, per capita public financial investment for infrastructure construction at the levels of village, country, town, county and city was 20, 62, 169, 374 and 658 RMB yuan, respectively. The investment into the city was 33.2, 10.6, 3.9 times of that into the village, country and town, respectively. The investment into the county was 18.9, 6.0 and 2.2 times of that into the village, country and town, respectively. From 2001 to 2013, per capita public financial investment for infrastructure construction at different levels took on an increasing trend, with a growth of 223, 431, 885, 2424 and 3679 RMB yuan to village, country, town, county and city, respectively (Fig. 10). However, the investment growth of village, country and town was relatively slow, only accounting for 6.06% and 9.02%, 11.72% and 11.72%, 24.06% and 36.53% that of city and county, respectively. Inadequate investment into rural public infrastructure construction has brought about many negative effects on the improvement of the living standards of farmers, the development of the rural market system and the introduction of new elements in favor of agricultural production.

(2) Allocation of educational finance

In 2000, the per student educational finance spending of local rural junior secondary school and primary school were 884.41 and 647.01 RMB yuan, accounting for 73.01% and 81.63% that of the local ordinary junior secondary school and primary school, respectively. From 2000 to 2011, the educational finance for local junior secondary school and primary school increased rapidly. Compared with the year 2000, per student educational finance spending of rural junior secondary school and primary school in 2011 has increased by 7.41 and 7.84 times, respectively. However, due to the imbalance education funding allocation between the urban and the rural, the difference between local ordinary primary and secondary schools and rural primary and secondary schools per student education spending was gradually expanded (Fig. 11). From 2000 to 2011, the difference of per student educational finance between local rural junior secondary school and ordinary junior secondary school increased from 326.91 to 739.64 RMB yuan, and that between local rural primary school and ordinary primary school expanded from 145.62 to 398.53 RMB yuan.

From the perspective of the regional allocation of per student education finance in local rural primary and secondary schools, the gap among different provinces was obvious. In 2013, Beijing, Tianjin, Shanghai, Jiangsu, Zhejiang and other developed provinces had a higher per student education finance, but some central and southwestern provinces, e.g., Henan, Hunan, Hubei, Jiangxi, Guangxi and Guizhou had a less share. In recent years, with the implementation of preferential policy about national public affairs for the western China, the education investment of Tibet, Xinjiang, Inner Mongolia, Ningxia, Qinghai provinces have increased rapidly (Fig. 12). In general, per student education finance of China’s local rural primary and secondary schools appears higher in the eastern, northwestern and northeastern areas, while that in the southwestern and central areas is relatively low.

3.3.2. Allocation of financial capital

China’s rural financial capital market has been developed slowly, and the difficulty of obtaining loans and the high cost of loans are common problems faced by rural households. Due to the characteristics of long-term investment and slow return of agricultural project, together with many uncertain factors and high risk make the financial institutions lack investment enthusiasm for rural area, and move their attentions to the large and medium-sized cities. As a result, rural areas get less financial support than the

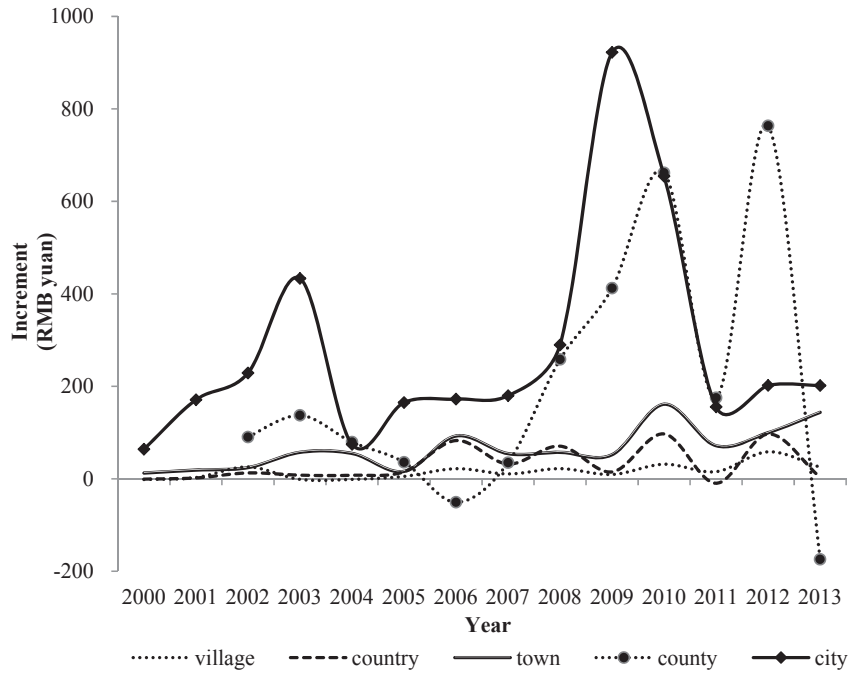


Fig. 10. The increment of per capita public financial investment for infrastructure construction at the levels of village, country, town, county and city during 2000–2013 (Sources: MHURDC, 1999–2013; lacking of the data at county level in 2000 and 2001).

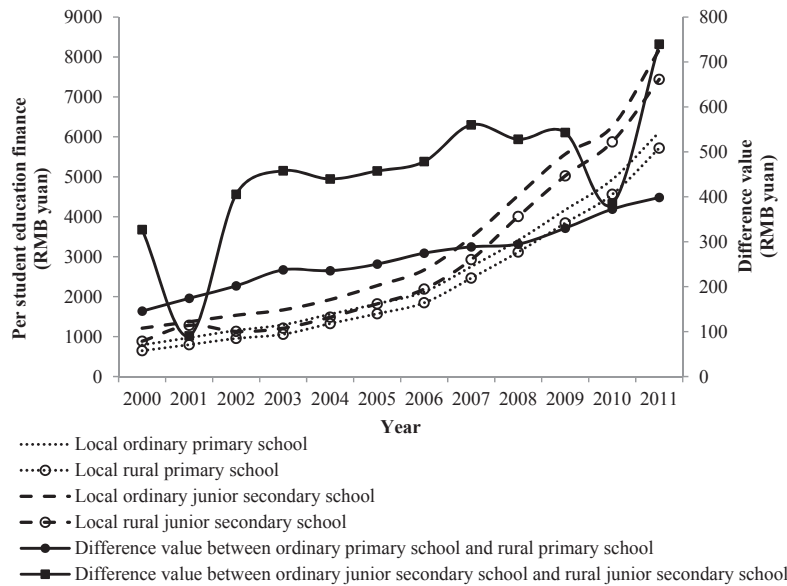


Fig. 11. The differences of per student educational finance between local rural and ordinary junior secondary school and primary school during 2000–2011 (Source: MEC, 2001–2012).

cities, which can be reflected by two indices of the difference of and the ratio of per capita loans between the urban and the rural. From 2000 to 2008, the absolute size of the difference of per capita loans between the urban and the rural rose from 4121.39 yuan to 8106.72 yuan (in constant price of 2000), and the average value of the ratio of that was 13.17:1, which means that the urban can get the financial support 13 times more than that of the rural (Wang, 2011b). However, the ratio of per capita loans between the urban and the rural in the central and western provinces was higher than that in the eastern provinces (Fig. 13), and it showed that the development of rural financial capital market in the central and

western regions was more sluggish.

Due to the under-developed rural financial market and lacking of effective mortgage goods for most households and rural enterprises, the difficulty for their obtaining loans from formal financial institutions is increased. Therefore, loans from informal financial institutions, e.g., private and folk lending become the main channels of rural financing. For instance, the household loans from banks and credit cooperatives only accounted for 37.09% of the cumulative amount borrowed in 2009, while the amount of private loans was 61.68% of that (PROC and MAC, 2010). However, private finance exposed many problems such as high interest rate,

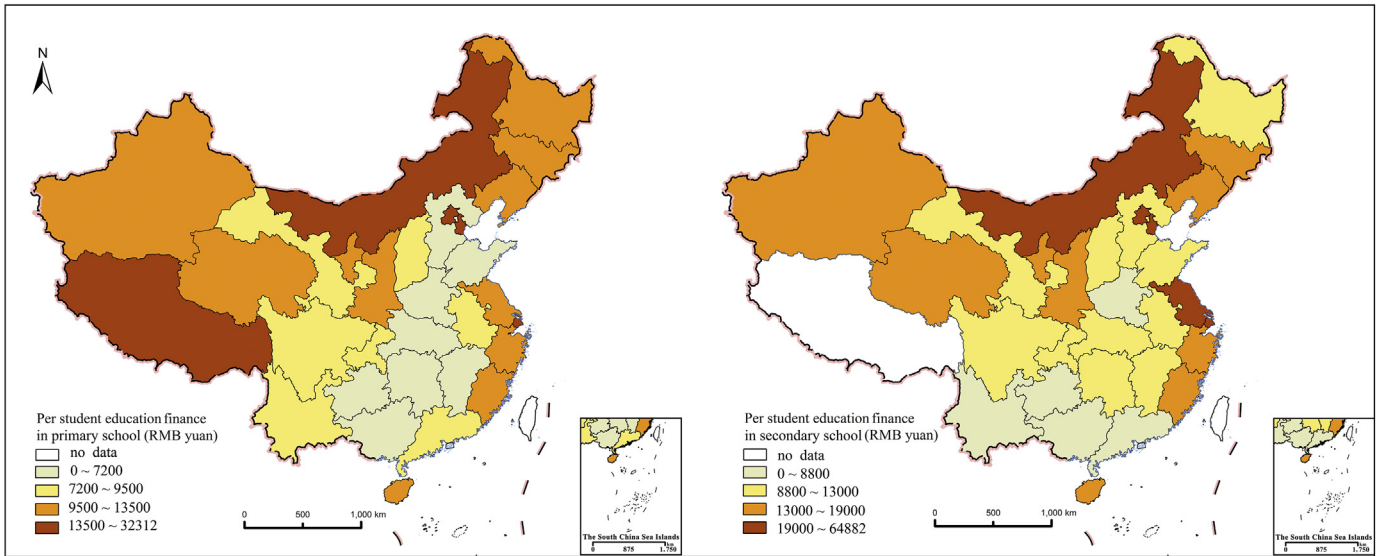


Fig. 12. The regional pattern of per student education finance of China's local rural primary and secondary schools in 2013 (Source: MEC, 2014).

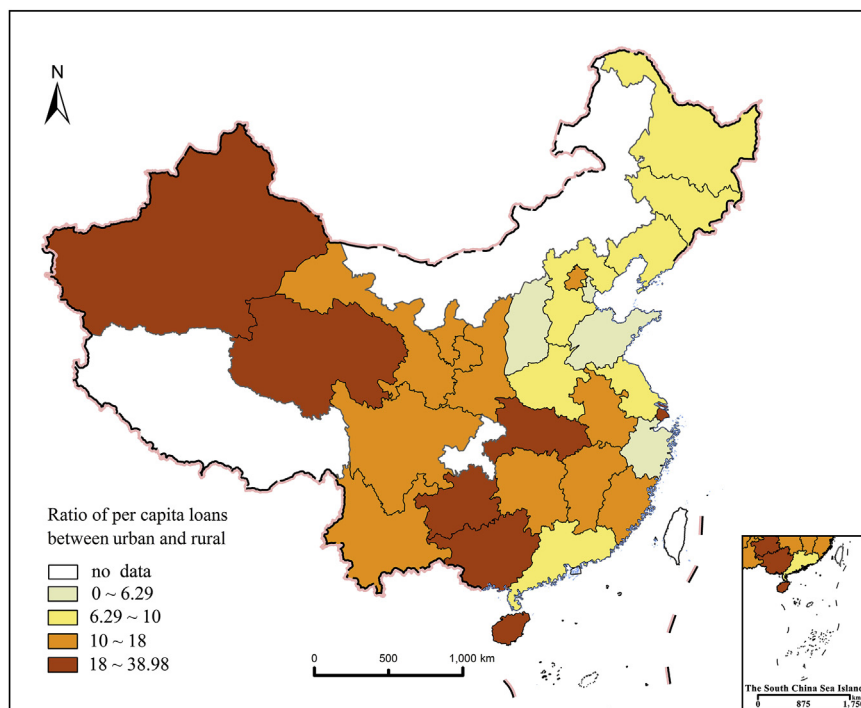


Fig. 13. The ratio of per capita loans between the urban and the rural at provincial level (Source: Wang, 2011b).

disordered management, lacking of legal protection, and so on. Insufficient loans from formal financial institutions make rural development in a capital shortage state for a long time, and it has constrained the development of China's rural economy, to some extent.

3.3.3. Industrial and commercial capital

The shortage of funds has long been the bottleneck afflicting China's rural development. Aiming at the status quo of funding shortage in China's rural development, some industrial and

commercial capitals are continuously flowing into rural market taking the advantages of land transfer policy being implemented by the central government, which promotes the development of agricultural scale management and agricultural products processing. In 2013, 9.44% of transferred farmland in China was contracted by industrial and commercial enterprises (MAC, 2014). In Zhejiang province, the accumulated industrial and commercial capitals invested into modern agriculture have exceeded 20 billion RMB yuan during 2010–2013 (He et al., 2013). To some extent, investing industrial and commercial capital into agriculture makes up for the

shortage of financial capital. However, approximately 10% of the enterprises withdrew afterwards on account of the out-dated rural financial service system, the shortage of technician, and the unstable land circulation contract (He et al., 2013). In addition, due to the profit pursuing nature of capital, industrial and commercial capital involved in rural development will probably result in some new issues and contradictions such as the resources flow from rural to urban, the radical changes of land use, etc.

As for the existing problems of rural capital allocation, they can be reflected in several aspects including the insufficient investment in public resources, the limited supply of rural financial capital and the imbalance allocation between the rural and the urban. Additionally, the system obstacle of fund allocation and management, which causes multiple management and repeated investments, imposes a great effect on the efficiency of capital utilization. As the No.6 Auditing Results Announcement in 2008 based on 50 counties' audit investigation results of central specialized fund in supporting agriculture showed that the specialized fund was distributed into many departments step by step and it covered numerous projects involving various fields. Consequently, it was difficult to concentrate limited financial resources to solve critical issues. Among the 50 counties chosen to check, the total of central specialized fund was 2.387 billion RMB yuan and it was dispersedly invested into 45.5 thousand projects.¹¹ According to The State Council's 2013 Auditing Working Report Concerning Central Budgetary Implementation and Other Financial Revenue and Expenditure, 'farming, forestry and water' category includes 66 special projects and they were controlled by 50 departments and bureaus of nine competent departments at central administration level. At the local level, they were related to 20 provincial competent departments.¹² All kinds of problems, such as the function cross, disunited policy requirements, unsmooth information communication among departments, multiple management and multi-channel distribution of the specialized fund, contribute to the repeated projects setting and contents duplicating (Zhang, 2014). Furthermore, capital input at national level has not effectively solved the subsistent obstacles in a real sense. Pilots of New Countryside Construction and stronger villages probably attain more projects and supporting funds depend on their higher popularity (Rogers, 2014).

In conclusion, the insufficient investment in public resources, the limited supply of rural financial capital and the imbalance allocation between the rural and the urban and other problems are becoming increasingly serious. Considering the production element attribute and scarcity of capital, capital input from government fiscal expenditure, financial credit, and industrial and commercial capital play an important role in leading the flowing of land, technology, laborer and other production elements. Owing to the shortage of funds and the tremendous gap of capital allocation between the rural and the urban, productive resources, the high quality medical and educational resources will be centralized in cities and developed areas inevitably. Thus, polarization effect can also prohibit the development of rural areas and underdeveloped areas, so as to enlarge the imbalance resources allocation among different regions.

4. Prospects on rural restructuring based on resources optimal allocation

Under the background of globalization, industrialization, urbanization, informatization and agricultural modernization, the interaction and allocation changes of human resource, land resource, financial capital and other rural critical development elements have brought about many challenges for China's rural development. Owing to the phenomenon that a growing number of prime rural laborers flow into cities, serious brain drain arises in rural area. Rural human resource tends to be low level, and the mainbody of rural development has been weakened continuously. Affected by the change of rural labor force, the increased grain production cost, the decreased economic value of agriculture land use and the existing institution defect, the phenomenon of non-agriculturalization, non-grain preference and abandonment of farmland use has become increasingly prominent. The changes of rural labor force and agricultural mechanization level give rise to the requirement of reallocating land contractual management right between different management mainbodies. However, restricted by many factors such as the underdeveloped non-agricultural industry and land fragmentation, the situation of land transfer allows of no optimism. At the same time, due to the unsound household registration system, imperfect rural social security system, the unsmooth rural homestead circulation and other related factors, large-scale labor force transformation is not linked to the reduction of rural housing land. Instead, the existing obstacles embrace the expansion of rural housing land, as evidenced by widely spread vacant and derelict rural settlements. In addition, the unfairness and structural imbalance of capital allocation owing to rural–urban dual system cause rural development resources further occupied by the urban, and rural self-development ability further weakened. Integrating and restructuring rural space, industry and social organization is in great urgency to solving the problems and challenges resulted from the changes of the allocation of human resource, land resource and financial capital.

4.1. Spatial restructuring

A majority of China's rural settlements are in a natural evolution state, characterized by the spatial distribution of 'small scale, scattered and chaos'. The scattered distribution of rural settlements, rural-to-urban migration and consequent idle and derelict rural construction land have contributed to a series of problems. On the one hand, production elements would be depleted in the flow process due to chaos production space and the cost of economic development would be increased. On the other hand, it is difficult to put the optimal allocation of rural public infrastructure and socialization services into implementation. The shortage of scale benefit and output efficiency originated from public resources investment occurs in some areas. What appears to be in serious insufficiency is the allocation of educational, medical and public infrastructures in some parts of rural China. Hence, rural development placed under the contours of rural–urban territorial system is of vital necessity to improve town–village spatial system and restructure the rural spatial pattern.

Initially, town–village planning system should be established based on coordinating urban–rural development. It is crucial to build the spatial agglomeration axis and the structure network of town–village planning, taking into account the development scale, spatial distribution, territorial function and main transportation artery network, so as to form a three-level rural settlements system composed of central town, major town and central village (or community). On the basis of the node effect of central town and major town, there should be a greater concern to giving full play to

¹¹ The Auditing and Investigating Results of 50 Counties About the Use of Central Specialized Fund in Supporting Agriculture (No. 6 Document in 2008 issued by National Audit Bureau of China) (<http://www.audit.gov.cn/n1992130/n1992150/n1992500/2302050.html>).

¹² The State Council's 2013 Auditing Working Report Concerning Central Budgetary Implementation and Other Financial Revenue and Expenditure (<http://www.audit.gov.cn/n5/n26/c64269/content.html>).

the radiation and driving function of central town and major town, to lay a material foundation for in-situ urbanization and employment in industrial park by accelerating the construction of central town and major town, intensifying the cultivation of characteristic industry, improving public service facilities, enhancing comprehensive service function, and strengthening the agglomeration function of towns.

Then, it is essential to restructure the production, living and ecological space in the village at the micro level by carrying out land consolidation. Meanwhile, it is feasible to put the unified planning of residential district, industrial district, basic farmland protection region and ecological region into implementation according to the principle of relative centralization and resources optimal allocation (Chen and Zhang, 2009). Aiming at the status quo of scattered, disordered and hollowing rural housing land, based on natural environment, socio-economic development, cultural customs and other various territorial differences, probing the institution innovations and regional model of pushing forward hollowed village consolidation and central village construction is helpful for rural spatial restructuring. While the implementation of village combination which guides peasants to centralized community or administrative village, has been recognized as an effective way to economizing administrative resources and improving the social service efficiency of public resources. Furthermore, the scientific assessment on the suitability of public facilities and infrastructures allocation and strengthening rural infrastructure construction have been favored to restructure a livable rural living space (Long, 2014). However, as for the scale and spatial layout of central village and town, as well as construction and housing design of the central community, local government should give sufficient consideration to the factors such as natural environment carrying capacity, regional production mode, industry development orientation and living custom of local residents, and it is essential to probe the rural spatial restructuring models in different areas, e.g., plain agricultural area, mountainous and hilly area, urban and suburban area, under developed area and developed area. Aiming at eliminating the fragmentation of agricultural land management, village combination, rural housing land consolidation as well as agricultural land consolidation should be carried out, and establishing large-scale high standard basic farmland is helpful for providing space for agricultural scale management and agricultural production base construction. In order to restructure intensive and efficient rural production space and promote nonagriculturalization industry agglomeration development, making existing scattered, disorderly and small-scale industries centralized in a place with perfect infrastructures is an effective way (Long, 2014). In addition, the restructuring of environmental friendly and harmonious rural ecological space needs to push forward no public hazard agricultural production, establish ecological interception system, strengthen the comprehensive treatment of pollutants, and improve ecosystem corridor.

4.2. Industrial reshaping

The industrial development imposes great effects on widening farmers' employment channel, transforming land use mode, enhancing rural economic strength and self-developing ability, and industrial reshaping is becoming increasingly important in rural restructuring. The improvement of rural economic strength makes it possible for operating rural spatial restructuring and social restructuring. Especially, in the current environment of the decelerated growth of world economy, regional development mode transformation and industrial structure adjustment, great changes have taken place in rural socio-economic system. These changes have resulted in the reduction of laborer employment,

subsequently a growing number of peasant-workers were returned to home to get or wait employed. The Chinese government has taken a series of corresponding measures to prevent the impacts of economic downturn on peasant's employment and income. For instance, proactive fiscal policy was implemented through expanding the central fiscal expenditures and the local government issuance of new bonds; the national strategy of "Mass Entrepreneurship and Innovation" was carried out,¹³ and supporting the entrepreneur of the home-going peasant-workers¹⁴; reform of the fiscal and taxation system was accelerated in order to further reduce the cost of enterprise start-up and operating¹⁵; the right of rural land use was confirmed gradually which is beneficial to increase farmers' property income¹⁶; strategy of new-type urbanization was implemented to settle the former agricultural population who have migrated to the cities¹⁷; targeted measures were taken in poverty alleviation and the efforts in helping the vulnerable groups were strengthened.¹⁸ However, fostering open and thriving industrial system is crucial to enhancing the ability of absorbing employment and increasing income. Hence, restructuring the rural economic engine with the core of industrial cultivation is one of the fundamental issues of rural restructuring.

To cope with the new trend of economic operation and meet the needs of rural-urban development transformation, the development model of rural industry should be established on the deep analysis of regional advantages and external market demands. Additionally, improving the development model based on the dynamic grasp of macro development situation is good for complying with the external development environment. Currently, rural ecological function and cultural function should be emphasized in the process of industrial reshaping in order to meet the demands of transforming personalized and diversified consumption market. Characteristic agricultural industry, industry providing services for retired and old people, industry preserving people's health, ecotourism industry and other rural economic development models should be encouraged to pour vigour into rural development. Taking advantages of the great potential for high quality, green and ecological agricultural product market, more attentions should be paid to support the breeding, industry base construction, postharvest processing, market circulation and brand cultivation of characteristic agricultural products. It is urgent to establish characteristic industry bases that connected with the related leading enterprises by supporting some leading enterprises with great ability in driving local industry development. Then, the benefit sharing mechanism that connects leading enterprises with farmer

¹³ Opinions of the State Council on Some Policies and Measures to Promote Mass Entrepreneurship and Innovation (No. 32 Document in 2015 issued by the State Council of China) (http://www.gov.cn/zhengce/content/2015-06/16/content_9855.htm).

¹⁴ Opinions of the State Council on Supporting the Entrepreneur of the Home-Going Peasant-Workers (No. 47 Document in 2015 issued by the State Council of China) (http://www.gov.cn/zhengce/content/2015-06/21/content_9960.htm).

¹⁵ Opinions of the State Council on Further Promoting the Employment and Entrepreneurship in the New Situation (No. 23 Document in 2015 issued by the State Council of China) (http://www.gov.cn/zhengce/content/2015-05/01/content_9688.htm).

¹⁶ Guidance of the State Council on Carrying Out the Mortgage Loans Pilot of the Management Rights of Rural Contracted Land and Farmer's Housing Property (No. 45 Document in 2015 issued by the State Council of China) (http://www.gov.cn/zhengce/content/2015-08/24/content_10121.htm).

¹⁷ The Central Committee of the Communist Party of China and the State Council of China. National Plan on New-type Urbanization (2014–2020) (http://www.gov.cn/zhengce/2014-03/16/content_2640075.htm).

¹⁸ Opinions of the State Council on Further Mobilizing All Aspects of Social Resources to Participate in Poverty Alleviation and Development (No. 58 Document in 2014 issued by the State Council of China) (http://www.gov.cn/zhengce/content/2014-12/04/content_9289.htm).

cooperation and peasants should be established to strengthen the organic combination of production, processing and sale, so as to realize the specialization, standardization, intensive and scale production. As for the policy dimension, supporting various market mainbodies and improving rural investment environment is expected to be emphasized to create the conditions for capital inflow. Meanwhile, there should be a great concern to formulating a series of preferential policies involving land use, tax deduction, getting loans, prime rate and infrastructure complement, to promote rural industrial development and reshaping.

4.3. Social restructuring

Along with the advancing of globalization, urbanization and industrialization, as well as the implementation of village relocation and combination, the foundation maintaining Chinese traditional rural society consists of agricultural civilization, village culture and family clanship has been broken. Generally, traditional village community has been disassembled, and local rural development is facing some serious problems, such as outflow of rural population, the downfall of organization system and distortion of value system, which subsequently have caused some rural social chaos concerning eroticism, gambling and drug. There is an urgent need to reconstruct rural social structure emphasizing particularly on the organization system and rural management mainbody.

4.3.1. Improving the governance system of rural social organization

Enormous rural “brain drain” has brought about the function decline and talent shortage of autonomous organization in rural areas of China. Especially with the cancellation of the agricultural tax nationwide in 2006, the public affairs service function of rural grassroots administrative organization has been further weakened, which has caused the loss of channels and platforms for defending the internal order and attending external conversation in the name of collective action. The reconstruction of the governance system of rural social organization is one of the important means of rural social restructuring. The following two aspects are crucial to reconstruct the governance system of rural social organization. On the one hand, government should fully play the guiding role in macro decision-making and public resources allocation, so as to arouse the initiative spirit of peasants, enterprises and social organizations to participate in the rural planning and construction (Liu, 2008). On the other hand, in order to make up for the supervising vacuum of government administrative intervention, the autonomy function of primary mainbody should be strengthened through promoting the establishment of diverse rural organization system, e.g., village committee, economic organizations, social intermediary organizations, public service organizations at the grassroots level, mass organizations, and so on. In terms of autonomous organization construction of village committee, the leadership team construction needs to be strengthened by improving the mechanism of cadre selection and encouraging local elite to govern the village, so as to enhance the ability of village management. Meanwhile, the balance mechanism of rural democracy at the grassroots should be established through perfecting the villagers’ congress system, which is an important measure to ensure that villagers can participate in public affairs and play a supervisory role well (Zhang, 2009). In addition, developing various economic organizations including farmer cooperatives is an effective approach to make the farmers access to market, and to transform original rural community based on geographical relationship and kinship into more stable partnership one based on common goals and interests.

4.3.2. Cultivating new-type agricultural management mainbody

Due to relatively low benefit from grain planting and outflow of rural workforce, China’s agricultural laborers presented such characteristics as part-time, aging and low education attainment. Current allocation of human resource has induced a negative effect on improving the efficiency of agricultural production and promoting the development of modern agriculture. As opposed to this, with the implementation of rural land transfer, new agricultural management mainbody is appearing, such as professional investors, family farms, farmer cooperatives and so on. Statistical data from the Ministry of Agriculture indicated that there were 877 thousand family farms in China by the end of 2012, with operating farmland of 176 million mu, accounting for 13.4% of China’s total farmland. The average operation scale of family farms amounts to 200.2 mu, which was nearly 27 times that of per peasant household contracted farmland area¹⁹. By the end of 2013, professional large investors operating more than 50 mu exceeded 2.87 million.²⁰ Aiming at the situation that traditional agricultural management mainbody is weakening, it is urgent to explore professional farmer registration system and cultivate new-type agricultural management mainbody (Zhang, 2014). Besides, it is also important to foster other industry talents in rural areas. The local government should encourage civil organizations and economic groups to train rural entrepreneurs, and try to form a normalized training mechanism to cultivate rural talents. At the same time, in order to guarantee the legitimate rights of rural innovator and entrepreneurs, the related interest distribution mechanism should be perfected so as to fully display all kinds of rural talents’ demonstration effect on innovation and entrepreneurship.

5. Discussion

5.1. Restructuring the contours of state intervention in rural societies and economies

The inefficient, structural imbalance and unfair allocations of the critical resources are closely related to the defect of current institution system and policy restrictions. However, the restructuring of rural space, industry and society is not only directly or indirectly in relation to land use, finance, social security and other institutions of resources allocation, but also has connection with the macro policy environment. As a consequence, it is urgent to enhance the efficiency of resource utilization and promote the free flowing of the production elements, so as to accomplish the optimal allocation and efficient management of rural critical resources. For this purpose, it is necessary to restructure the contours of state intervention in rural societies and economies (Woods, 2012), by coordinating urban and rural development, pushing forward the reform of rural land property rights system, deepening the reform of rural financial system, and improving related policy and technical systems of rural planning.

5.1.1. Promoting the bidirectional flowing of urban-rural development elements

The long-term urban-rural dual system in land, household registration and social welfare, etc. is regarded as the root of the structural imbalance of rural-urban development elements and low efficiency of resource allocation. On the one hand, urban-rural dual

¹⁹ The number of family farms has reached to 877 thousand, the average scale is more than 200 mu (<http://www.xinnong.net/news/20130605/1097368.html>).

²⁰ 26% of the contracted farmland in China has been transferred, and the Ministry of Agriculture of China claimed that land transfer cannot be compelled (http://news.xinhuanet.com/fortune/2014-02/23/c_119460477.htm).

system has brought about the unidirectional flowing of production elements and the widening gap between the rural and the urban, which caused resources excessively concentrated in urban area and resulted in 'urban diseases'; on the other hand, it also gave rise to 'rural diseases' characterized by the rapidly aging and weakening of rural development mainbody, the increasingly vacant and derelict of rural construction land, the rapid nonagriculturalization of rural production elements (Liu, 2013), and the extreme shortage of rural development funds. Consequently, innovating the system and mechanism of coordinating urban and rural development will play an important role in breaking the dual track urban-rural structure, changing the situation of rural production elements outflowing and promoting the bidirectional flowing of urban-rural development elements (Long et al., 2013). Under the background of implementing new-type urbanization, accelerating reform in the rural-urban dualism of land ownership and household registration and promoting the equalization of basic public services should be emphasized to balance urban and rural development. Meanwhile, the platform for equal exchanges of urban-rural development elements (Liu et al., 2013), which aims at providing institution guarantee for the optimal allocation and equal exchanges of land, laborer and public service resources, should be established timely to promote urban-rural mutual development.

In view of the problems of current rural development such as outflow of human resources, shortage of production funds and deficiency of endogenous development power, cultivating rural industry and strengthening public infrastructure construction should be highlighted in order to improve rural employment absorptive capacity and production elements gathering ability, and optimize the macro environment boosting inflow of laborers and capital. In addition, establishing the green channel through reinforcing the policy support is essential to attract high-quality human resources and funds from urban area. For instance, promoting rural land attending the market transactions, and allowing immigrants from the urban purchasing homestead and operating rural land by leasing; docking urban and rural public service system, and ensuring that the treatment like health care, social security, etc. is unchanged so as to eliminate the immigrants' worries; constructing reasonable flowing mechanism of urban-rural talents, e.g., teachers, medical and agricultural technical personnel, and giving them some incentives in wages, career development, etc.; and adopting some preferential policies in credit, taxation, land and other aspects to promote social capital flowing into the rural.

5.1.2. Pushing forward the reform of rural land property rights system

The current ambiguous rural land property rights and incomplete power bring about the unsmooth transfer of land as well as the serious influence on rural land use efficiency, spatial optimal allocation efficiency and the feasibility of transforming peasant's land assets to land capital. Especially, the obstacles existed in pushing forward scale management of farmland and the effective circulation of discarded rural housing land are becoming the bottleneck factors of stabilizing agricultural production, ensuring food security, protecting peasant's rights and interests and hindering production elements flowing into rural from urban. Therefore, there is an urgent need to push forward the reform of rural land property rights system. Rural land system reform should be carried out under the framework of collective ownership of rural land. Based on setting up respective rights system for land ownership, land use right and land profit right, an overall framework for property right system reform is expected to be established via confirming land rights, clarifying collective hierarchy and defining collective membership qualification to lay a solid foundation for optimally allocating land resource and endowing the

peasant with actual land property rights. During the process of transforming land contractual management right and land use right into real right, the following three aspects are crucial to guarantee the right of the member of rural collective economic organization. Firstly, rural property value and profit assessment mechanism should be established. Besides, making a comprehensive evaluation of the productive value, ecological value and cultural value of the land is indispensable. Furthermore, correctly handling the allocation of added value income of capitalized land must be paid high attention. Aiming at the status quo of rural-to-urban migration and subsequent idle and derelict rural housing land, the establishment of rural homestead circulation and transfer mechanism in the context of urban-rural integration development is an effective way to accomplish the optimal allocation of land resource. Considering the rural laborers who transfer as migrant birds and the fact that rural collective land still undertakes the responsibility for ensuring peasant's basic life and satisfying residential need, land contract right and the withdrawing mechanism of rural housing land should be combined with related matching security system, so as to further improve current social security system, household registration system, educational system, medical insurance system, housing system and other related systems.

5.1.3. Deepening the reform of rural financial system

In recent years, several top-priority annual number one policy documents of the Chinese government were devoted to rural financial reform. Nevertheless, rural financial system is still the weakest link in the whole national financial system. The difficulty in getting loans due to the lack of mortgage or guarantee contributes to the capital shortage issue constraining the further development of rural industry. In order to develop modern scale agriculture, the government should increase the agro-oriented special funds and lure more credit capital and social capital to be invested into rural area. At the same time, financial institutions are encouraged to issue bond specially used for farmers, agriculture and rural areas (so called "San Nong" in Chinese) and make the access control policy of rural finance relaxed to some extent. Rural commercial finance, policy-based finance, private finance and other financial components should be put on their proper place through making clear and complete related policies and regulations (Zhang, 2014). Especially, more financial support should be inclined to rural small and tiny enterprises, and the support to the credit loan for agricultural scale management and intensive management should be strengthened, so as to satisfy the financial need of family farm, specialized household, farmer cooperation organization, leading enterprises of agricultural industrialization and other new-type agricultural managing mainbodies. Aiming at the issue that it is difficult for farmers to get loan mortgage and guarantee, it is necessary to innovate mortgage guarantee mode by accepting rural land contractual management right, homestead land use right and forest ownership as loan mortgages. In addition, developing rural credit cooperation organization and establishing village-level cooperative financial guarantee fund are also feasible ways to resolve the problems.

5.1.4. Improving related policy and technical systems of rural restructuring planning

In terms of regulation and policy, under the framework of National Urban and Rural Planning Law implemented in 2008, local regulations combining with the practice of rural construction can be formulated to provide operational policy basis for rural spatial restructuring (Chen and Zhang, 2009). As for planning techniques, a scientific rural planning focusing on regional scale needs basing on the integrated study of the elements, function, mechanism and model concerning rural development. Based on various territorial

types, phases and capacities of rural development, the techniques and standard compiling rural planning system corresponding to different territorial types and developing phases can be developed involving some kernel fields, e.g., industry cultivation, village combination and consolidation, rural environment renovation, and resources allocation taking urban-rural integration into account. Additionally, it is necessary to perfecting current rural planning technical system focusing on town-village system and village layout.

5.2. Critical analysis of strategies for rural economic development based on the efficient use and management of resources

5.2.1. Scientifically appraising the role of industrial and commercial capital invested into the countryside

In 2013, the top-priority annual number one policy document of the Chinese government argued that the industrial and commercial capital should be invested into rural China to develop the planting and breeding industries in an entrepreneurial manner. The CPC Central Committee's Decision on Major Issues Concerning Comprehensively Deepening Reforms adopted at the Third Plenary Session of the 18th Central Committee of CPC further emphasized the industrial and commercial capital should be encouraged and guided to be invested into the countryside to develop modern planting and breeding industries, introducing modern productive factors and management mode to agriculture. In fact, the industrial and commercial capital invested into agriculture is a double-edged sword and has brought about both positive and negative effects on agricultural development in China. On the one hand, it accelerated the transformation of traditional agriculture and promoted the development of modern agriculture. On the other hand, partial industrial and commercial capital invested into rural areas has engaged in non-agricultural industries through occupying large-scale farmland and exacerbated the phenomenon of non-agriculturalization and non-grain preference of farmland use. In some areas, partial industrial and commercial capital took its advantages of capital, technology and scale management and produced a crowding-out effect so that the employment opportunities and market shares of local farmers were occupied, instead of adequately leading the farmer to develop industry (Zhang, 2014); however, local resources were depleted. Aiming at the negative effects caused by industrial and commercial capital, strict access control and regulatory regime should be established at national level to manage the farmland lease behavior of commercial and industrial enterprises. As to the capital attraction and industry choice, local government should make an overall appraisal for the social, economic, and environmental effects of industrial and commercial capital on rural development, emphasizing on the leading role of enterprises in improving farmers' income and promoting local economic development. In addition, the mechanism on interests coupling between farmers and enterprisers should be built to prevent the phenomenon of revenue and profit leakage caused by the introduction of industrial and commercial capital, and ensure that it actually help to improve farmers' income and promote the rural economic development.

5.2.2. Rationally treating the socio-economic and ecological value of land resource allocation

Since the beginning of the 21st century, the phenomena of nonagriculturalization and non-grain preference of farmland use and village hollowing have gradually become the highlights in rural China. It is the result of land resource allocation among different industrial sectors and various planting structures, which is dominated by the rational behavior of market mainbody, and also reflects the efficiency of resources allocation. However, accompanied

with the increasing of economic value, the values of farmland in the aspects of social security and ecosystem services were lost. Meanwhile, it has brought about negative effects on national food security, ecological security and social stabilization. To address the issue of low-efficient utilization and allocation of farmland and rural construction land and to adapt to the changes of marginal productivity and market needs due to the variations in production elements, the central government implemented relevant policies, such as the "Transfer of Management Right of Contracted Land in Rural Areas" and the "Linking up Increased Urban Construction Land with Decreased Rural Construction Land". The government interventions aimed at promoting the orderly flow and optimal use of scarce resources. The policies concerning Transfer of Management Right of Contracted Land in Rural Areas and scale management are in favor of improving the agricultural production efficiency and establishing a platform for the development of modern agriculture. However, the large scale production of agriculture will infringe the interests of small scale households in some places. The policy of Linking up Increased Urban Construction Land with Decreased Rural Construction Land was designed originally to reconcile the contradiction between the insufficient supply of urban construction land and inefficient and extensive use of rural construction land. However, it led to the loss of development right of farmers and made the land transfer expense become an important financial source for local government (Zhang, 2014). Considering the living security function of farmland and the habitat function of rural housing land, how to balance the economic value and social security function of rural land? Besides the allocation efficiency and economic value of rural land, the social security value and ecosystem services value of which also need to be paid more attention.

5.3. Fully understanding the influences of globalization on rural restructuring in China

Globalization, on the basis of the socialization of production and internationalization of division of labor and with worldwide flow and combination of production elements as its core, is a process of international interdependence and interconnection arising from increasingly frequent political, economic and cultural exchanges among different countries, regions and nationalities (Woods, 2005, 2007, 2013b; Barcus and Werner, 2013). As one of the important developing countries, China has made full use of its cheap labor resources and abundant natural resources to participate in the global economic activities since the turn of the new millennium (Li, 2010). The reconfiguration of production elements like laborer, capital and technology has exerted an increasingly profound impact on China's rural economy, society, culture, etc.

The flow of goods and capital at a global scale is a prominent feature of globalization. China's traditional agriculture used to have the features such as single planting structure, scattered distribution and small scale operation, and a low level of organization and standardization. Affected by the rising of the price of the means of agricultural production, land rent and laborer cost, the cost of agricultural products in China is increasing, especially for primary agricultural products like wheat and corn which are lack of competition compared with the international prices of the similar products. Driven by global commodity market system, the internationalization of agricultural product configuration and the influx of foreign bulk grain and oil products with super quality and competitive price have brought about unprecedented impacts on China's traditional agriculture, and at the same time have provided favorable opportunities for the structural adjustments and the standardization, management systematization and modernization of agricultural production. The globalization of capital market has

accelerated the pace of industrialization and urbanization in coastal area of China (Long and Woods, 2011), and the labor-intensive industrial clusters and foreign trade grounded attracted the trans-regional transfer of large number of rural surplus laborers, which exacerbated China's one-way flow of rural labor force and non-agriculturalization process of agricultural population transfer, and have further exerted profound influences on the transformation of agricultural development, utilization of land resources, construction of social organization, and inheritance of local culture in rural China. In addition, under the background of globalization, the synchronous propulsion of China's industrialization, urbanization, informatization and agricultural modernization has accelerated the penetration of modern culture and technology, and the radiation of urban production and life style, which effectively promoted the transformation of Chinese countryside from traditional agricultural society to modern industrial and urbanized society. Meanwhile, the local Chinese rural cultural order has suffered the double impacts from both the global culture and urban culture. In some rural areas, the national and regional culture is facing the risk of loss, and consanguineous relationship, ethical value, and the family cohesion and stability of traditional rural society have encountered unprecedented threat.

Globalization is an objective process of the development of human society. Facing to the challenges and opportunities brought about by globalization to China's rural socio-economic configuration, the Chinese government should take effective measures to actively participate in the global economic system and strengthen the rural spatial, industrial and social restructuring by taking the optimal allocation of resources as orientation, especially it should attach great importance to the construction of modern agricultural industrial system, and optimize the agricultural industrial structure, product structure and quality structure and speed up the construction of market information system, quality standard system, inspection and quarantine system of agricultural products. At the same time, the government should improve the systematization level of farmers and expedite the specialization, industrialization and large-scale production of agricultural management by taking leading enterprises and professional associations as the carrier. In recent years, in order to meet the needs of agricultural production and changes of international market, the Chinese government have carried out a series of measures aiming at promoting agricultural development, e.g., offering planting grain direct subsidy and other subsidies for purchasing agricultural machinery, the means of agricultural production and superior seeds.²¹ In addition, it should play an active part in international coordination and rule-making, gradually establish the agricultural support protective system in conformity with both the national conditions and international rules in order to create a good external environment for its agriculture to participate in international cooperation and competition.

6. Conclusions

Rural territory is an open system consists of diversified elements including natural endowments, geographical conditions, economic base, human resource, cultural customs, etc. Meanwhile, rural territorial system is composed of kernel system and external system as well as object system and subject system, and takes on multi-functions in the aspects of living, production, ecology and culture.

The essence of rural restructuring is a process of optimizing the allocation and management of the material and non-material elements affecting the development of rural areas, including human resource, land resource, capital, etc., and accomplishing the structure optimization and the function maximum of rural development system.

Since the turn of the new millennium, with the influences of globalization and implementation of the national strategies on industrialization, urbanization, informatization and agricultural modernization, the changes of human resource, land resource and capital allocation have brought about many problems and challenges for the development of rural China, due to the constraints from the maintained rural–urban dualism of land ownership and household registration. These problems and challenges are protruding in the following aspects: rural human resource allocation takes on the trend of low level and the mainbody of rural development is weakening; nonagriculturalization, non-grain preference and abandonment of farmland use together with the derelict and idle rural housing land result in low efficiency of rural land use; unfair urban–rural allocation of capital and its structural imbalance gradually weaken the self-development ability of rural China.

Aiming at how to resolve the abovementioned problems and adapt to the challenges due to the changes of allocation of critical resources including human, land and capital, it is pivotal to restructure the rural development space, rural industry, and rural social organization and management mainbody. However, this restructuring process is directly or indirectly related to a series of resource allocation system and macro policy environment concerning land, finance, social security, etc. Therefore, it is necessary to restructure the contours of state intervention in rural societies and economies and allocate and manage the critical resources affecting rural development, from the perspectives of integrating urban and rural resources and improving the efficiency of resources utilization, and fully understanding the influences of globalization on rural restructuring in China.

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References

- Abafita, J., Mitiku, F., Kim, K.R., 2013. Korea's Saemaul Undong (new village movement): a model for rural development in Ethiopia? *J. Korean Soc. Int. Agric.* 25 (3), 217–230.
- Barcus, H.R., Werner, C.A., 2013. Transnational migration, globalization, and local economic change in western Mongolia: an examination of new rural development challenges in the 21st century. In: Cawley, M., Bicalho, A.M.S.M., Laurens, L. (Eds.), *The Sustainability of Rural Systems: Global and Local Challenges and Opportunities*. The Commission on the Sustainability of Rural Systems (CSRS) of the International Geographical Union (IGU) and the Whitaker Institute, National University of Ireland Galway, pp. 143–151.
- Bojnec, S., 2012. Agricultural and rural capital markets in Turkey, Croatia and the FYR of Macedonia. *Agric. Economics-Zemledelska Ekon.* 58 (11), 533–541.
- Brent, Z.W., 2015. Territorial restructuring and resistance in Argentina. *J. Peasant Stud.* 42 (3–4), 671–694.
- Cai, Y.L., 1999. Geographical study on sustainable agriculture and rural development. *Adv. Earth Sci.* 14 (6), 602–606 (in Chinese).
- Chen, W.S., 2013. Exerting the decisive role of market in allocating rural land resource. *China Rural. Discov.* 8 (4), 15–17 (in Chinese).
- Chen, X.H., 2009. Strengthening the management and service over rural land circulation. *Rural Operation Manag.* 1, 6–11 (in Chinese).
- Chen, X.H., Zhang, L.L., 2009. Strategies of rural spatial reconstruction and planning in underdeveloped areas: a case study of Chizhou city, Anhui province. *J. Chizhou Coll.* 23 (6), 42–46 (in Chinese).
- Chen, X.W., 2004. Resources allocation and rural development in China. *Chin. Rural.*

²¹ Guidance on Adjusting and Improving Policy of Three Agricultural Subsidies (No. 31 Document concerning agriculture and rural development in 2015 issued by Ministry of Finance of China) (http://www.mof.gov.cn/pub/gansu/lanmudaohang/zhengcefagui/201505/t20150522_1237885.html).

- Econ. 1, 4–9 (in Chinese).
- Cheng, X.B., Fang, Y.L., 2015. Study on the reasons and countermeasures of farmland abandonment in China. *Mod. Agric. Sci. Technol.* 10, 343–345 (in Chinese).
- Cui, W., 2008. The study of the relationship between economic development and resources function and their allocation effect. *Contemp. Econ. Manag.* 30 (4), 16–20 (in Chinese).
- Djanibekov, N., van Assche, K., Bobojonov, I., Lamersa, J.P.A., 2012. Farm restructuring and land consolidation in Uzbekistan: new farms with old barriers. *Europe-Asia Stud.* 64 (6), 1101–1126.
- Dong, X.B., Song, S.F., Zhu, H., 2011. Industrial structure and economic fluctuation-evidence from China. *Soc. Sci. J.* 48 (3), 468–477.
- Douglas, D.J.A., 2005. The restructuring of local government in rural regions: a rural development perspective. *J. Rural Stud.* 21 (2), 231–246.
- Du, W.X., 2012. The policy choice of rural human resources optimization allocation from the perspective of sustainable agricultural development. *J. Shijiazhuang Univ. Econ.* 35 (1), 101–104 (in Chinese).
- Falk, W.W., Schulman, M.D., Tickamyer, A.R. (Eds.), 2003. *Communities of Work: Rural Restructuring in Local and Global Contexts*. Ohio University Press, Athens.
- Fang, Y.G., Liu, J.S., 2014. The modification of North China quadrangles in response to rural social and economic changes in agricultural villages: 1970–2010s. *Land Use Policy* 39, 266–280.
- Fang, Y.G., Liu, J.S., 2015. Diversified agriculture and rural development in China based on multifunction theory: beyond modernization paradigm. *Acta Geogr. Sin.* 70 (2), 257–270 (in Chinese).
- Fløysand, A., Sjøholt, P., 2007. Rural development and embeddedness: the importance of human relations for industrial restructuring in rural areas. *Sociol. Rural.* 47 (3), 205–227.
- Fujita, Y., Phanvilay, K., 2008. Land and forest allocation in Lao People's Democratic Republic: comparison of case studies from community-based natural resource management research. *Soc. Nat. Resour. An Int. J.* 21 (2), 120–133.
- Gu, C.L., Li, Y., Han, S.S., 2015. Development and transition of small towns in rural China. *Habitat Int.* 50, 110–119.
- He, J.W., Wang, Z.H., Zhang, J.L., 2013. Strengthening the guidance of industrial and commercial capital into agriculture: thinking and suggestion. *Manag. Adm. Rural Coop.* 125 (7), 14–17 (in Chinese).
- Hoggart, K., Paniagua, A., 2001. What rural restructuring? *J. Rural Stud.* 17 (1), 41–62.
- Irwin, E.G., Bell, K.P., Bockstael, N.E., Newburn, D.A., Partridge, M.D., Wu, J.J., 2009. The economics of urban-rural space. *Annu. Rev. Resour. Econ.* 1, 435–459.
- Kiss, E., 2000. Rural restructuring in Hungary in the period of socio-economic transition. *Geojournal* 51, 221–233.
- Lai, Q.Y., 1997. After the dismantling of districts and merging of townships, the management structure of rural education must not change. *Chin. Educ. Soc.* 30 (2), 71–73.
- Leading Team Office of the Second National Agricultural Survey under the State Council (LTOSNAS), National Bureau of Statistics of China (NBSC), 2009. *The Compilation of the Second National Agricultural Survey Data*. China Statistics Press, Beijing.
- Li, X.J., 2010. *Rural Development of Central China*. Science Press, Beijing (in Chinese).
- Li, Y., Liu, H., Tang, Q., Lu, D.D., Xiao, N.C., 2014a. Spatial-temporal patterns of China's interprovincial migration, 1985–2010. *J. Geogr. Sci.* 24 (5), 907–923.
- Li, Y.R., Long, H.L., Liu, Y.S., 2015. Spatio-temporal pattern of China's rural development: a rurality index perspective. *J. Rural Stud.* 38, 12–26.
- Li, Y.R., Wang, J., Liu, Y.S., Long, H.L., 2014b. Problem regions and regional problems of socioeconomic development in China: a perspective from the coordinated development of industrialization, informatization, urbanization and agricultural modernization. *J. Geogr. Sci.* 24 (6), 1115–1130.
- Liu, S.Q., Xie, F.T., Zhang, H.Q., Guo, S.L., 2014. Influences on rural migrant workers' selection of employment location in the mountainous and upland areas of Sichuan, China. *J. Rural Stud.* 33 (1), 71–81.
- Liu, Y.S., 2008. Research progress in innovation ideas and modes of building new countryside in China. *Geogr. Res.* 27 (2), 479–480 (in Chinese).
- Liu, Y.S., 2010. To ensure farmers benefit from land consolidation. *People's Dly.* 2010-11-12, 13 (in Chinese).
- Liu, Y.S., 2013. New-type urbanization should cure "rural diseases". *People's Dly.* 2013-09-10, 5 (in Chinese).
- Liu, Y.S., 2014. New thoughts on returning to hometown. *People's Dly.* 2014-03-11, 5 (in Chinese).
- Liu, Y.S., Liu, Y., Zhai, R.X., 2009b. Geographical research and optimizing practice of rural hollowing in China. *Acta Geogr. Sin.* 64 (10), 1193–1202 (in Chinese).
- Liu, Y.S., Long, H.L., Chen, Y.F., Wang, J.Y., 2011. Research Report on Rural Development in China: Hollowed Village and its Renovation Strategy. Science Press, Beijing (in Chinese).
- Liu, Y.S., Lu, S.S., Chen, Y.F., 2013. Spatio-temporal change of urban-rural equalized development patterns in China and its driving factors. *J. Rural Stud.* 32, 320–330.
- Liu, Y.S., Wang, J.Y., Guo, L.Y., 2009a. The spatial-temporal changes of grain production and arable land in China. *Sci. Agric. Sin.* 42 (12), 4269–4274 (in Chinese).
- Long, H.L., 2014. Land consolidation: an indispensable way of spatial restructuring in rural China. *J. Geogr. Sci.* 24 (2), 211–225.
- Long, H.L., Heilig, G.K., Wang, J., Li, X.B., Luo, M., Wu, X.Q., Zhang, M., 2006. Land use and soil erosion in the upper reaches of the Yangtze River: some socio-economic considerations on China's Grain-for-green programme. *Land Degrad. Dev.* 17 (6), 589–603.
- Long, H.L., Li, Y.R., Liu, Y.S., Woods, M., Zou, J., 2012. Accelerated restructuring in rural China fueled by "increasing vs. decreasing balance" land-use policy for dealing with hollowed villages. *Land Use Policy* 29 (1), 11–22.
- Long, H.L., Li, Y.R., Liu, Y.S., Zhang, X.N., 2013. Population and settlement change in China's countryside: causes and consequences. In: Cawley, M., Bicalho, A.M.S.M., Laurens, L. (Eds.), *The Sustainability of Rural Systems: Global and Local Challenges and Opportunities*. The Commission on the Sustainability of Rural Systems (CSRS) of the International Geographical Union (IGU) and the Whitaker Institute, National University of Ireland Galway, pp. 123–133.
- Long, H.L., Liu, Y.S., 2015. A brief background to rural restructuring in China: a forthcoming special issue of *Journal of Rural Studies*. *J. Geogr. Sci.* 25 (10), 1279–1280.
- Long, H.L., Liu, Y.S., Li, X.B., Chen, Y.F., 2010. Building new countryside in China: a geographical perspective. *Land Use Policy* 27 (2), 457–470.
- Long, H.L., Woods, M., 2011. Rural restructuring under globalization in eastern coastal China: what can be learned from Wales? *J. Rural Community Dev.* 6 (1), 70–94.
- Long, H.L., Zou, J., Pykett, J., Li, Y.R., 2011. Analysis of rural transformation development in China since the turn of the new millennium. *Appl. Geogr.* 31 (3), 1094–1105.
- Long, H.L., Zou, J., Liu, Y.S., 2009. Differentiation of rural development driven by industrialization and urbanization in eastern coastal China. *Habitat Int.* 33 (4), 454–462.
- Manthorpe, J., Livsey, L., 2009. European challenges in delivering social services in rural regions: a scoping review. *Eur. J. Soc. Work* 12 (1), 5–24.
- Markey, S., Halseth, G., Manson, D., 2008. Challenging the inevitability of rural decline: advancing the policy of place in northern British Columbia. *J. Rural Stud.* 24 (4), 409–421.
- McDonald, M.G., 1996. Farmers as workers in Japan's regional economic restructuring, 1965–1985. *Econ. Geogr.* 72 (1), 49–72.
- Ministry of Agriculture of China (MAC), 2011–2014. *China Agriculture Statistical Report*. China Agriculture Press, Beijing.
- Ministry of Education of China (MEC), 2001–2014. *China Educational Finance Statistical Yearbook*. China Statistics Press, Beijing.
- Ministry of Health of China (MHC), 2001–2002. *Chinese Health Statistical Yearbook*. Peking Union Medical College Press, Beijing, pp. 2004–2012.
- Ministry of Housing and Urban-Rural Development of China (MHURDC), 1999–2013. *China Urban-Rural Construction Statistical Yearbook*. China Planning Press, Beijing.
- Ministry of Land and Resources of China (MLRC), 2001–2009. *China Land & Resources Almanac*. MLRC, Beijing.
- Morgan, S.L., Marsden, T., Miele, M., Morley, A., 2010. Agricultural multifunctionality and farmers' entrepreneurial skills: a study of Tuscan and Welsh farmers. *J. Rural Stud.* 26 (2), 116–129.
- Mulgan, A.G., 1997. Electoral determinants of agrarian power: measuring rural decline in Japan. *Polit. Stud.* 45 (5), 875–899.
- National Bureau of Statistics of China (NBSC), 2000–2013d. *China Rural Statistical Yearbook*. China Statistics Press, Beijing.
- National Bureau of Statistics of China (NBSC), 2001–2006b. *Chinese Population Statistics Yearbook*. China Statistics Press, Beijing.
- National Bureau of Statistics of China (NBSC), 2001–2014a. *Chinese Statistical Yearbook*. China Statistics Press, Beijing.
- National Bureau of Statistics of China (NBSC), 2007–2014c. *Chinese Population and Employment Statistics Yearbook*. China Statistics Press, Beijing.
- National Development and Reform Commission (NDRC), 2007. *The Compilation of Cost-benefit Data of China Agricultural Products 2007*. China Statistics Press, Beijing.
- National Development and Reform Commission (NDRC), 2014. *The Compilation of Cost-benefit Data of China Agricultural Products 2014*. China Statistics Press, Beijing.
- National Health and Family Planning Commission of China (NHFPCC), 2013–2014. *Chinese Health and Family Planning Statistical Yearbook*. Peking Union Medical College Press, Beijing.
- OECD, 2006. *The New Rural Paradigm: Policies and Governance*, OECD Rural Policy Reviews. Organisation for Economic Co-operation and Development (OECD), Paris.
- Policy Research Office of CPC Central Committee (PROC), Ministry of Agriculture of China (MAC), 2010. *Compilation of Survey Data in Fixed Observation Sites of Rural China*. China Agriculture Press, Beijing.
- Population Census Office under the State Council (PCOSC), National Bureau of Statistics of China (NBSC), 2002. *Tabulation on the 2000 Population Census of the People's Republic of China*. China Statistics Press, Beijing.
- Population Census Office under the State Council (PCOSC), National Bureau of Statistics of China (NBSC), 2012. *Tabulation on the 2010 Population Census of the People's Republic of China*. China Statistics Press, Beijing.
- Rogers, S., 2014. Betting on the strong: local government resource allocation in China's poverty counties. *J. Rural Stud.* 36, 197–206.
- Rogge, E., Dessein, J., Verhoeve, A., 2013. The organisation of complexity: a set of five components to organise the social interface of rural policy making. *Land Use Policy* 35, 329–340.
- Shao, J.A., Zhang, S.C., Li, X.B., 2015. Farmland marginalization in the mountainous areas: characteristics, influencing factors and policy implications. *J. Geogr. Sci.* 25 (6), 701–722.
- Shi, T.C., Li, X.B., 2009. Farmland abandonment in Europe and its enlightenment to

- China. *Geogr. Geo-Information Sci.* 29 (3), 102–103 (in Chinese).
- Song, J., 2015. Official relocation and self-help development: three housing strategies under ambiguous property rights in China's rural land development. *Urban Stud.* 52 (1), 121–137.
- Tan, M.H., Li, X.B., 2013. The changing settlements in rural areas under urban pressure in China: patterns, driving forces and policy implications. *Landsc. Urban Plan.* 120, 170–177.
- Tolbert, C.M., Mencken, F.C., Riggs, T.L., Li, J., 2014. Restructuring of the financial industry: the disappearance of locally owned traditional financial services in rural America. *Rural. Sociol.* 79 (3), 355–379.
- Tonts, M., Atherley, K., 2005. Rural restructuring and the changing geography of competitive sport. *Aust. Geogr.* 36, 125–144.
- van Auken, P.M., Rye, J.F., 2011. Amenities, affluence, and ideology: comparing rural restructuring processes in the US and Norway. *Landsc. Res.* 36 (1), 63–84.
- Wang, C.C., 2011a. Analysis of rural land transfer, labor resource allocation and farmer's income growth based on rural households investigations in 17 provinces in China. *J. Agrotechnical Econ.* 1, 93–101 (in Chinese).
- Wang, T., 2011b. Estimation and analysis on discrepancies of financial resource allocation in China's urban and rural areas. *Econ. Problems* 8, 95–98 (in Chinese).
- Wang, J.Y., Liu, Y.S., 2009. The changes of grain output of gravity and its driving forces in China since 1990. *Resour. Sci.* 31 (7), 1188–1194 (in Chinese).
- Wang, L., 2010. The problems and countermeasures in rural China after merging townships into town. *Practice* 6, 29–30 (in Chinese).
- Wilson, O.J., 1995. Rural restructuring and agriculture-rural economy linkages: a New Zealand study. *J. Rural Stud.* 11 (4), 417–431.
- Woods, M., 2005. *Rural Geography: Processes, Responses and Experiences in Rural Restructuring*. Sage, London.
- Woods, M., 2007. Engaging the global countryside: globalization, hybridity and the reconstitution of rural place. *Prog. Hum. Geogr.* 31 (4), 485–507.
- Woods, M., 2012. New directions in rural studies? *J. Rural Stud.* 28 (1), 1–4.
- Woods, M., 2013a. Regions engaging globalization: a typology of regional responses in rural Europe. *J. Rural Community Dev.* 8 (3), 113–126.
- Woods, M., 2013b. Grounding global challenges and the relational politics of the rural. In: Cawley, M., Bicalho, A.M.S.M., Laurens, L. (Eds.), *The Sustainability of Rural Systems: Global and Local Challenges and Opportunities*. The Commission on the Sustainability of Rural Systems (CSRS) of the International Geographical Union (IGU) and the Whitaker Institute, National University of Ireland Galway, pp. 27–35.
- Wu, C.J., 2001. Problems of the Sustainable Development of Agriculture and Rural Economy in China: Case Studies of Agricultural Area of Different Types. China Environment Science Press, Beijing (in Chinese).
- Xiao, J.C., Ou, W.X., 2013. Study on the spatial restructure in the coordinated urban and rural development: a case study of Suqian city. *China Land Sci.* 27 (2), 54–60 (in Chinese).
- Xie, A., 2006. A new perspective to solve the issues concerning agriculture, rural areas and farmers': economics analyses and policy proposals. *Seoul J. Econ.* 19 (3), 315–316.
- Xie, A., 2007. Experience of South Korea's new countryside movement and using it for reference in China. *J. Graduate Sch. Chin. Acad. Soc. Sci.* 4, 11–16 (in Chinese).
- Xu, W., Tan, K.C., 2002. Impact of reform and economic restructuring on rural systems in China: a case study of Yuhang, Zhejiang. *J. Rural Stud.* 18, 65–81.
- Ye, J.G., Qiu, X.J., 2015. In the study of the Chinese rural social security financial resource allocation problems and countermeasures. *Hebei Acad. J.* 35 (4), 127–131 (in Chinese).
- Zasada, I., Reutter, M., Piorr, A., Lefebvre, M., Palomab, S.G., 2015. Between capital investments and capacity building-development and application of a conceptual framework towards a place-based rural development policy. *Land Use Policy* 46, 178–188.
- Zhang, F.G., Liu, Y.S., 2008. Dynamic mechanism and models of regional rural development in China. *Acta Geogr. Sin.* 63 (2), 115–122 (in Chinese).
- Zhang, X.S., 2009. The basic experiences of China's rural reform in last three decades. *China Rural. Discov.* 1, 1–7 (in Chinese).
- Zhang, X.S., 2014. Reconstruction of New-type Urban-rural Relationship. *Social Science Academic Press, Beijing* (in Chinese).
- Zhang, Y.Q., Guo, X.Y., Qin, Z.W., 2007. "One village one trademark" revolution in Japan and its inspiration to the new countryside construction in China. *J. Northeast Agric. Univ. Soc. Sci. Ed.* 5 (6), 11–14 (in Chinese).
- Zhao, D., Parolin, B., 2012. School mapping restructure in rural China: achievements, problems and implications. *Asia Pac. Educ. Rev.* 13 (4), 713–726.
- Zhao, D., Parolin, B., 2014. Merged or unmerged school? School preferences in the context of school mapping restructure in rural China. *Asia-Pacific Educ. Res.* 23 (3), 547–563.
- Zhao, Y.L., Li, X.B., Xin, L.J., Hao, H.G., 2012. Driving forces of "poplar expansion and cropland shrinkage" in the North China Plain: a case study of Wen'an County, Hebei Province. *Geogr. Res.* 31 (2), 323–333 (in Chinese).
- Zhou, H.L., 2014. How to walk out the dilemma of "non-food" phenomenon in land circulation. *Land Resour.* 8, 24–25 (in Chinese).