



# The spatio-temporal patterns of urban–rural development transformation in China since 1990



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## ABSTRACT

China has undergone a dramatic transition echoed the unprecedented urbanization and economic growth since the late 1970s. The current research on urbanization has overlooked the transformation consistency between urban and rural areas. Although the Chinese central government has focused on improving rural residents' livelihood, it is still far from achieving coordinated urban–rural development. This paper provides a comprehensive assessment of China's urban–rural development transformation (URDT) based on three indicator systems, namely the urban–rural development level (URDL), the urban–rural structure level (URSL), and the urban–rural coordination level (URCL). Findings from this investigation show that universal and intense URDT has taken place in China over the last two decades. This has been accompanied by growth of URDL and URSL and deterioration of URCL. There are, however, obvious spatial disparities in the different aspects of URDT. The western and northeastern regions of China have experienced slower transformation than other regions between 1990 and 2010. Correlation analysis among the sub-index shows that coordinated urban–rural development needs a certain initial socioeconomic level and moderate changes of URDL and URSL. This paper suggests that more attentions should be paid to rural areas and lagging areas in central and western China. Given the regional disparities of URDT, the most effective way to achieve urban–rural integration in China is by taking the overall considerations of development policies of both region and urban–rural areas aimed at various urban–rural development transformation characteristics.

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## 1. Introduction

It has been recognized that urban–rural interactions exist in the form of mutual linkages (population, goods, capital and information), and sector linkages manifesting rural activities that take place in cities and activities that are usually classified as urban taking place in the rural areas (Tacoli, 1998). These linkages and a hybrid form of spatial complex have blurred the rural–urban division such as the existence of “desakota” in the Asian context (McGee, 1989). In some other empirical investigations, three space models produced by urban–rural interaction have been deployed, i.e., city–regions, exurbia, and ‘urbanization’ in the countryside

accompanied by ‘ruralization’ in the city (Woods, 2009). Though these interactions play vital role in promoting urban–rural development, the spatial structure and effects from different scales of global forces, the state and local agent make different urban–rural societal transformations (Antrop, 2004; McGee, 2008; Tacoli, 1998).

Being a traditional agricultural country of strong rural roots, China has been experiencing economic, social and institutional transformations (Liu, Lu, & Chen, 2013; Long, Zou, Pykett, & Li, 2011). Between 1958 and 1978, urban and rural socioeconomic systems were totally independent in China. The linkages between urban and rural areas were severely controlled. During the so called centrally planned era, population movement was forbidden except few means of studying, marriage etc., and the prices of agricultural products were underestimated. Since the reform and opening up in 1978, rural development in China has been promoted by the introduction of the household responsibility system and the development of township enterprises. Particularly, after the famous speech addressed by Deng Xiaoping in the south of China in 1992,

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the Chinese government accelerated the urban development and the construction of industrial zones (Wei, 2015). The institutional reforms including the establishment of the socialist market economy and the loose of migration policy have largely promoted free flow of production factors. The changing institutional roles have strengthened urban–rural interaction and linkage under different situation of urban–rural development as well (Li & Hu, 2015). We also witnessed a large volume of migration from rural to urban areas in China during the transition period. The total number of migrants was estimated to be 230 million in 2011, 80% of whom were from rural background (Wang & Fan, 2012). According to China's National New urbanization plan, China's urbanization ratio will reach 60% by 2020, indicating that there will be more than 13.6 million people migrating from rural areas to urban areas every year.

Generally, urban and rural areas in post-reform China have been experiencing dramatic transformation across a range of indicators such as population migration, land use and landscape changes, economic growth and living style (Chen, Zhang, Liu, & Zhang, 2014; Li, Chen, Wang, & Liu, 2014; Liu, Kuang et al., 2014; Li, Li, Hans, & Liu, 2015; Li, Long, Liu, & Tu, 2015; Li, Zhang, Hans, & Liu, 2015; Lin, 2007; Long, Liu, Hou, Li, & Li, 2014; Siciliano, 2012). These transformations have dramatically changed the urban–rural territory system, and posed challenges to urban–rural integrated development. And scholars have paid considerable attentions on the issues of urban–rural disparity, urban–rural conflicts and rural hollowing (Li, Zhang, & Liu, 2013; Liu, Liu, Chen, & Long, 2010; Terry, Yue, Vjörn, & Li, 2007; Yu, Wu, Zheng, Zhang, & Shen, 2014). However, more work is still needed to examine and understand the status and dynamic of urban–rural relationship in transitional China. What is the spatio-temporal pattern of the urban–rural development transformation? How should we assess this transformation? This paper attempts to investigate the urban–rural development transformation (URDT), its spatial patterns in China and urban–rural development policies with respect to different spatial patterns as well. Specifically, the aims of this paper are: (1) to construct a conceptual framework and to establish indicator systems that can measure URDT in China; (2) to analyze the spatiotemporal characteristics and internal relationships of China's URDT; and (3) to discuss some of the major policy implications for achieving coordinated urban–rural development.

## 2. Research base: urban–rural development transformation

Transformation can be defined as a gradual, continuous process of societal change where the structural character of society (or a complex sub-system of society) transforms (Martins & Romans, 2005). China is in an era of fast transformation in which its urban–rural territorial system undergoes changes related to its regional society, economy, institution and its effects on environment. The urban–rural development transformation (URDT) can be defined as the ongoing process of urban–rural factors flow, structure change and development mechanism transformation. This highlights a transition from isolated socioeconomic structures towards a more coordinated development between urban and rural areas (Liu, Hu, & Li, 2014). URDT is facilitated and accelerated by population urbanization, economic growth, capital accumulation and government management. Economic growth and social economic change promote factors flow and gather and structural changes between urban and rural areas which also lead to urban–rural sector interaction. These forces make impact on the changes of urban–rural development relationship (Fig. 1).

Economic growth has promoted urban expansion and rural population flow in the industrial society; this reconstructs the urban–rural territorial system. The obvious characteristics are the transformation of industry structure and employment structure,

accompanied with changes of the space form and landscape. The dualistic model explained economic growth and stated a sector explanation of urban–rural relations (Lewis, 1954; Todaro, 1969). With the surplus rural laborers moving from the traditional rural subsistence sector to a modern urban industrial sector in the developing countries, the equilibrium between urban and rural society would be achieved. However, urban–rural contrast studies triggered debates focused on the resource allocation between agriculture and industry, or the urban and rural sector, and between urban and rural policies (Douglass, 1998; Lipton, 1993). The division of urban–rural management and the control on factor flows lead to partial transformation in China, and the urban-biased policy has been shown to be detrimental for a healthy relationship between urban and rural China (Li & Hu, 2015; Li, Wang, Zhu, & Zhao, 2014). We hold that urban and rural areas should develop equally in the transitional progress.

The research on URDT is centered on the dynamic of urban–rural relationship and its social economy. In this paper, URDT in urban–rural territorial system is categorized into socioeconomic growth, structural changes and relationship transition. Its assessment involves three major components: the development status of distinctive region; the urban–rural structural level, such as industry, social and consumption structures; and the condition of a coordinated urban–rural relationship. URDT appraisal is diagnosed from changes of three aspects in a given region: the urban–rural development level (URDL); the urban–rural structure level (URSL), and the urban–rural coordination level (URCL).

The URDL reflects regional economic and social conditions, which are not only the former base, offering the possibility for urban–rural development transformation, but also a new condition for the latter development. The URSL reflects the structures of population, industry, employment and land use, which represents the inner spatial pattern and its functionality in the urban–rural region. The urban–rural structure suitable to corresponding economic level shows a good transformation. On the contrary, in many developing countries of Africa, Asia and Central and South American, excessive people clustering and unlimited spread of cities without strong economic growth brought serious city disease. The URCL reflects the ability and status of integrating urban–rural development, and integrated effects of regional resources allocated to urban and rural areas. URCL is a comprehensive evaluation of whether the urban–rural relationship is better or not (Long et al., 2011). We assume that when URDL is relatively low, urban–rural development lacks sufficient motivation to transform and its structure and disparity change slowly; and when URDL gradually increases, the urban–rural development creates a stage of fast transformation. This would result in economic society, consumption and urban–rural structures to rapidly change and urban areas to become intensive and complex features. However, if there is a lack of suitable strategies, policies and planning to promote rural development, URCL would diminish due to the rural brain drain, infrastructure deficiencies, lack of funds and low education levels in the rural areas. When URDL is at a high level, urban–rural development would be in a stabilization process, with a low rate of change for the urban–rural social economy and its structures, and it would have closer linkages to fulfill people's demand such as for rural amenity and rural lifestyles.

## 3. Research methodology and data

### 3.1. Index system of the evaluation of URDT

URDT can be measured from three aspects including URDL, URSL and URCL. The indicator systems corresponding to each aspect were established to enable comprehensive assessment. The indicator

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