



An assessment of farmers' satisfaction with land consolidation performance in China



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ABSTRACT

Rural land consolidation has been a very important and efficient development tool all over the world for a century and is now an indispensable instrument for rural sustainable development in China. The Chinese central government has devoted large sums of money to rural consolidation projects each year in an effort to help protect cultivated land, to improve agricultural production, to enhance the socio-economic development of rural communities, and to help build rural landscapes. However, little attention has been paid to evaluating the performance of land consolidation projects from the view of community members, which is sorely needed. Household satisfaction with land consolidation projects is a key indicator of consolidation performance. Understanding the factors that influence household satisfaction is an effective way of dealing with problems in the interactions between land restructuring and human behaviors in rural areas and can help improve project performance. This paper examines the performance of land consolidation in terms of rural households' levels of satisfaction in rural China and analyses the most influential factors of satisfaction. Data were gathered via questionnaires and analyzed with a probit model. Results indicated three significant points. First, overall satisfaction rate was 76.5%, meaning that most rural households in the regions of Hangzhou, Changsha, and Guiyang were satisfied with land consolidation projects. Second, 11 factors significantly affected rural residents' satisfaction with consolidation. These factors included farmers' level of education, employment characteristics, family size, input level of agricultural production, agricultural produce transportation methods, level of agricultural mechanization, the characteristics of land transfer in the village and within their own families, the perceived importance of land consolidation, their level of social insurance support, and their participation in rural production cooperatives. Third, six of these factors had positive effects on performance; four had negative effects, and one (employment characteristics) demonstrated a significant influence.

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1. Introduction

Throughout history and with successive generations of farmers, agricultural lands in many regions of the world have been severely

fragmented through inheritance practices, land management policies and even forces of nature. This intergenerational division of farmland has resulted in inconsistent land uses, reduced agricultural productivity, soil erosion and water mismanagement (Niroula and Thapa, 2005). In response to these problems, land consolidation (LC) has become a common practice in recent decades in societies that have undergone hundreds or thousands of years of land division and apportioned land uses, and where population pressures continue to weigh heavily on food production. Land consolidation entails readjusting unfavorable land divisions from small plots into more scale-appropriate and usable parcels of farmland that are more manageable, agriculturally productive and conservable (Pařakarnis and Maliene, 2010).

Rural LC is now a global phenomenon. Most observers agree that it is an essential tool for reducing land fragmentation, improving land use efficiency and improving agricultural production (Burton,

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1988; Coelho et al., 1996; Coelho et al., 2001). It is also more commonly seen as a comprehensive measure of rural development and an approach to sustainable rural development (Burton, 1988; Huang et al., 2011; Lerman and Cimpoies, 2006). Coelho et al. (1996) view LC as a spatial problem-solving technique. Research by Kupidura et al. (2014) indicates that it may be a useful instrument for shaping rural landscapes. Long (2014) argues that LC is an indispensable way of spatially restructuring rural China, a method that encourages and supports rural productivity, livelihoods, quality of life and the rural ecology.

Land consolidation is a very important part of rural reform in many countries, especially in Western and Central Europe. However, land consolidation projects (LCPs) are costly rural development actions, the merits of which are still questioned by some observers (Coelho et al., 2001). To address this concern and to explore the value of LCPs, several studies have been done in Europe to analyze the effects of LC in Cyprus (Burton and King, 1982; Burton, 1988), the Netherlands (Van Den Noort, 1987), Portugal (Coelho et al., 1996), Spain (Crecente et al., 2002), Moldova (Lerman and Cimpoies, 2006) and the Czech Republic (Sklenicka, 2006). These studies provided new knowledge and perspectives about LC for other countries to utilize in their own assessments of the value and outcomes of rural land reforms. According to these studies, the economic, social, ecological and psychological effects of LC have been positive and have provided a standard evaluation framework for other regions of the world. The Cypriot LC evaluation process has become a normative model in the Mediterranean (Burton, 1988). The comparison method of ex-ante and ex-post experiences appears to be an effective way of analyzing the substantial changes brought about by LC (Coelho et al., 2001; Crecente et al., 2002).

Although the results generally indicate that as a legislative instrument for restructuring rural land resources, LC has been quite successful in most cases. However, it must be noted that the objectives, methodologies and procedures of LC can differ significantly between countries and cultures, owing to particular place-based environmental, historical, social and political conditions (Eichenauer and Joeris, 1994; Bonfanti et al., 1997; Borec, 2000; Crecente et al., 2002; Lisec et al., 2014). There is, therefore, a need for a wider empirical base of studies that help understand LC performance in western and eastern contexts.

Chinese LC has occurred rather quickly during the past two decades within the context of China's unique social system, land tenure traditions, cultural and natural environment, and development progress. China's rural milieu is so extensive and complicated, consolidation seems to go on indefinitely. As well, the debate about the performance of LCPs is still intense and ongoing in academic circles.

No matter how it is defined or regardless of its benefits, the interplay between land consolidation and farmers is becoming more frequent and obvious. As well, the inherent and reciprocal relationships between households and land consolidation have become increasingly complex and pivotal (Luo et al., 2014), which necessitates a re-evaluation of LC's performance in rural areas. How can the success of land consolidation be evaluated? From an engineering or structural perspective, the material output of large parcels of arable land, the irrigation systems, and road infrastructure are important. Such a perspective, however, is often the product of government oversight rather than a more pragmatic approach, which is to satisfy the urgent production needs of the farmers. This study focuses on the latter.

There is widespread acceptance that the success of LC depends largely on farmers' satisfaction and adoption (Yaslioglu et al., 2009; Kupidura et al., 2014; Lisec et al., 2014). China is a large developing country significantly affected by LC. Formalized rural restructuring and consolidation have been developed for almost 30 years in

China, with 124,085 projects being initiated and funded nationwide from 2006 to 2010 (Yan et al., 2015). By the end of 2010, more than 2.76 million hectares of arable land had been consolidated (Jiang et al., 2015). However, problems still exist. For instance, more attention has been paid to LCPs and their execution than to the farmers and the long-term use and monitoring of the consolidation exercise, enhancing the inefficiencies of the system. From a long-term perspective, the current LC model is overly concerned with the structural performance of project management rather than community-oriented value performance (Luo, 2013), which has led to conflicts in land consolidation efforts.

Public performance evaluation theories indicate that production and service should be evaluated based upon public satisfaction and what can be defined as high-performance services. The performance evaluation of LC is no exception. Imbalances between supply and demand in rural land consolidation can be addressed scientifically, beginning with an understanding of household satisfaction and internal impact assessments, the results of which can be used to improve rural community satisfaction and further the cause of sustainable development. Therefore, using a probit model this paper aims to increase understanding of the supply and demand elements of LC and rural households' satisfaction with these efforts to improve LCP evaluations and foster higher levels of sustainable development.

2. Chinese land consolidation

The implementation of LC in China can be traced to the 1950s (Wang, 1997), but it became a serious government effort in 1987 owing to future prospects of food supply and security in light of a growing population (Jiang et al., 2015). These rural reform efforts were launched in 1988 with the land development program known as Comprehensive Agricultural Development (CAD), which was enacted to tackle the problems caused by earlier institutional reforms in Chinese agriculture, particularly the Household Responsibility System (HRS), in the late 1970s and early 1980s (Wu et al., 2005). In the initial stage, LC aimed to solve the problems of small operational scales in agricultural production (Davis et al., 2001; Niu and Chen, 1991), land fragmentation (Long, 2014) and a lack of long-term investment in irrigation networks and technology. With land rights readjustments and funding from the central government, some 44.46 billion RMB were invested in the project from 1988 to 1998 and increased steadily thereafter (Wu et al., 2005). In this stage, restructuring efforts focused almost entirely on fragmented and scattered land (Yan et al., 2015), and being part of the CAD program, there were no professional institutions, laws and formalized projects to manage or guide the amalgamation process (Huang et al., 2011). As a result, no performance evaluations were undertaken.

Land consolidation entered into the second stage (the present phase) in the mid-1990s, during the era of China's rapid urban development and industrialization (Long, 2014). Prior to this, a dramatic reduction in arable land and serious land degradation had become a serious and urgent social and ecological problem (Jiang et al., 2015). In the current stage, LC has become the central government's primary land management focus. In 1998, the Ministry of Land and Resources established a sub-agency known as the National Land Consolidation and Rehabilitation Center (NLCRC), which oversees LCPs. Branches of the NLCRCs were set up in each province and municipality to assist the central NLCRC in managing LC nationwide. In the late 1990s, the NLCRC launched the first cluster of national land consolidation projects (Huang et al., 2011; Long, 2014), ushering in the now commonplace practice. Between 2006 and 2010, 124,085 LCPs encompassing a total area of 110,600 km² were supported by national and provincial governments (Zhang

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