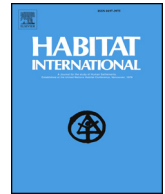




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Trans-regional compensation mechanism under imbalanced land development: From the local government economic welfare perspective

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ABSTRACT

Since 1990's China has issued a series of unbalanced land development policies for safeguarding food security and protecting farmland from overdevelopment, which brings about serious imbalanced development among regions. Thus initiating a trans-regional compensation mechanism to enhance balanced regional development is urgent. This paper attempts to shed the light on relationship between farmland protection and land finance from the perspective of local government economic welfare, and builds a trans-regional fiscal payment mechanism to balance farmland protection and economic development among provinces or autonomous regions or municipalities. Based on the data of China's second national land survey, a comprehensive level of farmland which takes the quantity, quality and ecological attributes of farmland into account, the relationship between farmland protection and land finance, and the trans-regional fiscal payment are quantified. The results indicate that (1) farmland protection for local government has a negative relationship with fiscal revenue accumulation, and an increase in per unit comprehensive value of farmland decreases about 11.474 Yuan (1.82USD) of per capita land revenue; (2) there are 17 farmland deficit regions mainly in East coastal China which should pay 26.1778 billion Yuan (4.14 billion USD) for overdevelopment and 14 farmland surplus agricultural dominant provinces mainly in Mid China which can gain a compensation of 35.0415 billion Yuan (5.54 billion USD) for underdevelopment (farmland protection). The study may contribute to the innovation of economic compensation policy of farmland preservation and reform of horizontal transfer fiscal payment.

1. Introduction

It is widely acknowledged that non-restricted private land development activities will not bring the social optimal land use model (Bosselman, David, & Banta, 1973). Aiming at realizing the efficacy and fairness of spatial allocation of land resources, zoning is one of the most widespread tools adopted by governments around the world. In America, farmland has been classified by zoning into White Land for non-agricultural use and Green Land with restriction development so as to protect the quality and quantity of prime farmland since 1960's (Gardner, 1977). The Red Functions Area and Green Functions Area in the Netherlands, which are implemented by provincial regional spatial planning and municipal spatial planning respectively, date back to 1994 when the public had a strong concern about ecological attributes of farmland (Louwa, Krabbenb, & Priemus, 2003). Germany also uses spatial planning to regulate the Baugebiet (restricted development area) and Nichtbaugebiet (non-restricted development area) as well (Chen, 1998). Unlike North America and West Europe, East Asia is densely populated and rapid growing region, where food self-sufficiency and

economic development are two important targets facing the governments. Zoning, consequently, through government-led spatial planning to identify development areas and restricted areas is pervasive in Japan (1980's), South Korea (1980's) and Chinese Taiwan (1990's) (Chen & Wu, 2005).

As one of the fast growing East Asian economies, China has followed the similar development pattern with East Asian counties and experienced different development strategies for almost four decades since the reform and opening up. The priority strategy of Coast economic development in 1980's, is regularly followed by so called T-shaped development of Yangtze River and coastal region in early 1990's, West development in 1990's, Revitalization of North Eastern China in 2003 and Construction of resource saving and environment friendly Society in Mid China in 2007. All above development strategies highly rely on land input mainly converting from farmland. In order to make full use of regional comparative advantage of economic development and maintain stable food supply, China's government has enacted laws concerning land development and preservation. At the same time, a series of unbalanced land development policies such as the

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comprehensive land use planning, the land use regulation (*tudi yongtu guan zhi*) and the main functional area planning (*zhuti gongneng quhua*), etc (Cai & Zhang, 2010) have been formulated. According to types of land use, the imbalanced land development can be divided into imbalanced rural land development and imbalanced urban land development. The former can be subdivided into imbalanced agricultural input intensity and imbalanced non-agricultural development depending on land use conversion. Among these restrictions, what China central government concerns seriously is rural-urban land conversion.

Rural-urban land conversion provides space and input for China's urbanization. Accelerated urbanization increased the consumption of high-quality farmland in China (Long, Liu, Hou, Li, & Li, 2014; Wei, Pijanowski, & Tayyebi, 2015). In order to reduce ever-growing farmland loss, guarantee national food security and protect ecological environment, the Chinese central government has begun to implement strict centralized regulations over the conversion from farmland into non-agricultural construction land since the 1990s (Deng & Liu, 2011; Ho & Lin, 2004; Lin & Ho, 2003; Wu, Shan, Guo, & Peng, 2017; Yang & Li, 2000). Thus, it brings serious imbalanced land development between the development dominant and preservation oriented regions.

The fairness debate on windfall gains from land development and wipeout loss associated with land preservation has aroused a global concern for 40 years (Gardner, 1977). The initiative practice of transfer of development rights (Bailey & Ogg, 1977; Barrows & Prenguber, 1975, 1976) and purchase of development right in the United States (Johnston & Madison, 1997; McConnell, Kopits, & Walls, 2005) and Europe (Micelli, 2002; Renard, 2000) have been applied to solve the above mentioned equity issue resulting from unbalanced land development of zoning or spatial planning. However, only a few similar trials at local level in China coastal highly developed area including Zhejiang, Jiangsu and Shanghai (Wang, Tao, & Tong, 2009; Zhang, Wang, Li, & Ye, 2014) are on the way because of weak local fiscal ability.

Under China's highly centralized system, trans-regional fiscal payment institution may be the principal policy tool to ease unbalanced land development. The focus on trans-regional compensation mechanism of farmland protection is twofold. On one hand, some scholars regard social and ecological as well as economic value of farmland as compensation basis (Zhang, Ou, & Gao, 2007, 2008). On the other hand, the others consider the value of farmland development right as compensation standard (Ren, 2009) and discuss local practice of transferable land development to realize windfall gains for wipeout loss in China (Tong, Yan, & Wang, 2012; Wang & Tao, 2009; Wang et al., 2009; Wang, Wang, & Tao, 2011; Wang, Tao, Wang, & Su, 2010; Zhang & Li, 2011; Zhang et al., 2008; Zhang et al., 2014). However, the above two focal points are based on the land value itself rather than the stakeholders of farmland protection. The stakeholder, particularly local government is the primary driver of economic development and implementer of farmland policy. Therefore, establishing transfer fiscal compensation mechanism from the perspective of local government economic welfare is of importance. This study attempts to fill this gap both in literature and practice.

Data from Ministry of Land and Resources (MLR) showed that land leasing revenue (*tudi churangjin*) accounted for 76.6% of local fiscal revenue in 2010. Subsequently, the state of revenue and expenditure released by Ministry of Finance (MOF) in 2014 indicated that revenue coming from land sale still made up more than half of the local public finance income. These figures demonstrate the fact that local governments heavily depend on revenue generating from land sale (He, 2011). However, there is a conflict between farmland protection and land leasing revenue accumulation. The restriction of rural-urban land conversion would hinder the local governments' revenue generation, and then have influence on the economic interests. Therefore, a trans-regional fiscal payment mechanism based on the quantitative relationship between farmland protection and land finance needs to be established. Its implementation can be helpful to ease the windfall-wipeout dilemma (Gardner, 1977) of stakeholders brought by the

imbalanced land development.

This study aims to structure a trans-regional compensation mechanism from the perspective of local government economic welfare. The specific objectives are to: (1) explore the influencing mechanism of farmland protection on land finance; (2) quantify the farmland protection level by taking quantity, quality and ecological attributes into account, and then categorize the 31 provincial administrative units into surplus areas and deficit areas; (3) measure the amount of farmland protection compensation for building a trans-regional fiscal payment mechanism.

The remainder of this article is divided into four sections. The next section explores the trans-regional compensation mechanism under imbalanced land development as well as the relationship between farmland protection and land finance theoretically. In the third section, a description of methodological approach and data sources is provided. The fourth section, the empirical analysis of this work, will quantify the relationship among farmland protection, land finance, and the trans-regional fiscal payment. Conclusions and further study are discussed in the final section. The study may contribute the literature of farmland preservation and fiscal transfer payment, and provide a policy reform path for the fiscal transfer payment system and economic compensation mechanism in addressing the trade-offs between farmland protection and economic development in China and other developing countries.

2. Theoretical framework

As we know, China abides by a centralized up-down political governance structure under which the central, provincial, prefecture city, county and township administrative levels are hierarchically well organized. Different administrative governance bodies hold different responsibilities and fiscal revenue generation. The Central government is responsible for national and international affairs by abundant fiscal resource. However local government, especially provincial government plays a vital role in economic development, food supply and environment protection. Economic development is an internal affair and can accumulate fiscal revenue, but the food supply and environmental protection including farmland preservation for the provincial government may have spillover effects, which means an increase in extra responsibility. The mismatch of responsibility and fiscal income has discouraged provincial government for farmland and environmental protection since the decentralized fiscal reform in 1994. Owing to the shortage of local revenue, almost every province or autonomous region or municipality is not willing to preserve farmland but to seize the opportunity to develop during the game of national land planning.

As shown in Fig. 1, locality A and Locality B represent two sharp

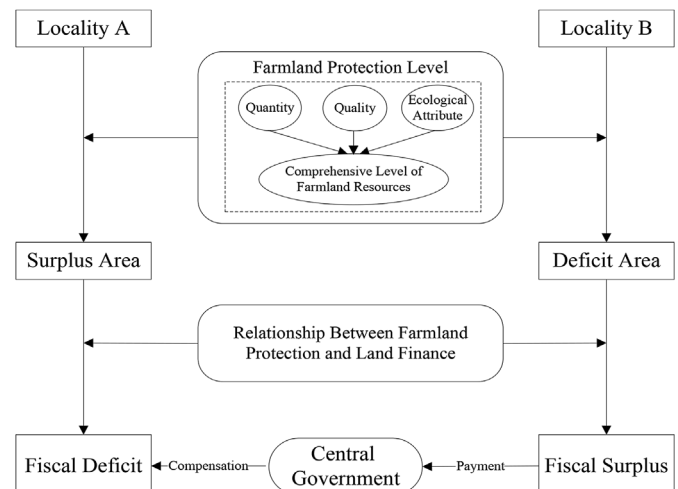


Fig. 1. Theoretic logic of trans-regional compensation mechanism.

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