China’s new rural “separating three property rights” land reform results in grassland degradation: Evidence from Inner Mongolia

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**ABSTRACT**

China is currently implementing the “separating three property rights” (STPR) reform to consolidate rural land. This reform divides rural land property rights into three components: nontradable ownership, nontradable contractual rights and tradable land use rights. The STPR reform adopts the rental of grassland use rights, a market-oriented approach, as the main arrangement for grassland consolidation. However, this arrangement may undermine the cornerstones of grassland restoration, which are the security of grassland property and payments for ecosystem services (PES) policies. As an alternative to the market-oriented approach, cooperatives are also encouraged to consolidate grassland use rights. We used a natural experiment approach to systematically examine how two different land consolidation arrangements affected key grassland ecosystem services in Inner Mongolia. In rented grasslands, all ecosystem services except provisioning services degenerated severely. Traded grassland use rights were perceived as insecure, which led to predatory land use by tenants. In contrast, cooperative-managed grasslands showed no serious degradation in ecosystem services. However, these cooperatives limited their group size by chief kinship to avoid the free-rider problem; thus, they are unlikely to become a primary channel of grassland consolidation. Because PES policy subsidies are still allocated to grassland contractors rather than to tenants, these policies are irrelevant to the conservation of rented grasslands. Based on our analysis, we suggest several ways to improve this new rural land property reform to avoid a major wave of grassland degradation in China.

1. Introduction

Over the past several decades, China has struggled to reconcile the contradictions between establishing a market economy and maintaining social justice during its rural reforms (Huang & Rozelle, 1996; Lin, 1992). Because of the country’s market orientation (Cao, 2000; Harvey, 2005), the core target of reform has been to clarify the property rights system through privatization and monetization and then to achieve a free-flowing and marketable allocation of rural land (Zhou, 2004). This approach is based on the “economic efficiency principle” of rural land property reform (Yang et al., 1992). However, the Chinese government must also follow the “social justice principle,” which entails maintaining the public-owned land system and protecting rural people’s livelihood (Chen & Han, 2002). Since 1978, China has tried to strike a balance between the two principles and has focused on compromise in new institutional arrangements to gradually reform its rural land property rights system (Ho, 2001).

The first milestone of rural land reform was the household responsibility system (HRS), a dichotomous system of property rights (Lin, 1988). Under the HRS, the ownership of rural land belongs to the collective, whereas the “contractual and use rights” belong to rural people, leaving rural people free to manage their household-contracted land. The HRS facilitated the rapid increase of food production in China beginning in the 1980s (Lin, 1992). Within a few decades after the establishment of the HRS, stocking rates doubled or even tripled in the northern pastoral regions, especially in Inner Mongolia (Jiang et al., 2006, Supplementary information 1), which led to widespread overgrazing (Kang et al., 2007; Li et al., 2012). Meanwhile, the HRS caused the collapse of community cooperation (Li & Huntsinger, 2011), leading to the loss of traditional ecological knowledge (Zhang et al., 2013), and
reduced the mobility and flexibility of pastoralists (Li et al., 2007; Li & Li, 2012). Additionally, before 2002, the government could legally adjust household-contracted land (Ma et al., 2015); thus, the land contractual and use rights of rural people were not secured, which discouraged sustainable land use practices by local herders (Thwaites et al., 1998). As a result, overgrazing, loss of mobility and land property insecurity have caused large-scale grassland degradation in China over the past three decades (Li et al., 2007), resulting in declines of biodiversity, primary productivity, and key ecosystem services (He et al., 2012b; Qi et al., 2012; Tong et al., 2004) and the worsening of environmental problems, such as desertification and dust storms (Kang et al., 2007; Wu et al., 2015).

To confront these problems of land degradation, the Chinese government accepted a popular theory that “securing land property is required to achieve the goal of conserving rural lands” (Fraser, 2004; Hanna et al., 1995). In 2002, the central government legislated against any adjustment to household-contracted land property rights. At the same time, the government enacted several payments for ecosystem services (PES) policies to support the recovery of degraded grasslands, including the “returning grazing land to grassland” policy and the Beijing and Tianjin Sandstorm Source Control Program (Yeh, 2009). These PES policies determined the “proper carrying capacity” for each grassland region (Nyima, 2015), encouraged herders to reduce grazing intensity, and compensated them for their economic losses with governmental subsidies. In practice, herders are motivated by these policies to conserve their own grassland. These policies slowed down the increase of stocking rates (Liu et al., 2017; Supplementary information 1), promoted grassland conservation and reduced the frequency of sandstorms (Lü et al., 2011). A national survey reported that herders requested that the government maintain a long-term and stable PES policy (Han et al., 2011). Therefore, since 2011, the central government of China has implemented a national PES policy known as “the subsidy and reward policy for grassland ecological conservation.” The Grassland Monitoring and Supervision Center (GMSC), part of the China Ministry of Agriculture, declared that the average overgrazing rate of national grasslands declined from 44% to 17% during this PES policy period from 2011 to 2015 (GMSC, 2016). Currently, the strengthened grassland property rights and PES policy subsidies are widely considered the cornerstone of China’s grassland management system (Wu et al., 2015). However, these fundamental policies may lose their effectiveness under the current rural land reform.

Over the past few decades, more than 250 million rural people in China have left their land and villages to start a new life in factories and cities (Long et al., 2009; Long et al., 2011; Long et al., 2012). These people, officially designated “rural migrant workers,” were once food providers but have now become net food consumers. The amount of farmland abandoned or rented out by rural migrant workers has undergone an explosive increase over the past ten years. The National Ministry of Agriculture reported that the proportion of rural land across the whole nation that was rented out was 4.5% in 2006, 17.8% in 2011, and 33.3% in 2015 (Han, 2016). These social changes have created pressure for China to develop modern intensified agriculture through huge capital investments, cutting-edge technologies, and innovative management systems (Zhao et al., 2012). As part of these reforms, the fragmented household land system must be consolidated to meet the needs of modern agribusiness (Long et al., 2010). A social justice problem has also emerged: even when rural migrant workers work and pay taxes in cities, the national household registration system still identifies them as rural people; thus, they are not entitled to social welfare in the cities where they live (Li, 2008), and their social security depends mainly on the household-contracted land that they have left behind. The Chinese government must prevent rural migrant workers from losing their household-contracted land until their social security is otherwise provided for (Long et al., 2010; Mäelys et al., 2009). Therefore, the central government rejected the “complete privatization proposal” in current rural land reform (Chen & Han, 2002).

To solve this dilemma, China has gradually developed a new rural land reform plan known as “separating three property rights” (STPR). The STPR reform does not affect the public ownership of rural land but divides the households’ contractual and use rights into two parts: nontradable household contractual rights and tradable rural land use rights (Han, 2016). This institutional arrangement is designed as a compromise between ensuring rural people’s social security and meeting the demands of modern agribusiness. The STPR is not a brand-new policy for China; similar policies have been tentatively implemented in agriculture and pasture areas in many provinces since 2003 and under many names, such as “farmland transfers” or “grassland transfers” (Gongbuzeren et al., 2016). However, studies in Chinese agricultural regions have shown some negative effects of trading farmland use rights. Land tenants, who have land use rights but not household contractual rights, tend to prefer short-term gains to long-term sustainable harvests from their rented farmlands. For example, farmers applied less organic fertilizer to rented farmlands than to farmlands they owned (Gao et al., 2012). While tenants manage rented farmlands and produce food, they are usually not eligible to receive any subsidies from the agricultural authorities (Huang et al., 2011). Thus, subsidies cannot adjust tenants’ management behaviors and lose their effectiveness in relation to rented farmlands. These negative effects of trading farmland use rights may also occur in pastoral regions.

As an alternative to the market-oriented approach, political leaders and scholars have promoted a community-based cooperative approach to consolidate grasslands (Deng et al., 2010; Tang & Gavin, 2015). The supporters of this cooperative approach believe it can rebuild public management of grasslands through grassroots democracy, restore traditional knowledge in rangeland management, and realize the sustainable use of grasslands (Cao & Du, 2011). However, many scholars have criticized rural cooperatives in present-day China as “fake” cooperatives that fraudulently obtain governmental subsidies and organize very few cooperative affairs (Yang & Chen, 2013). Therefore, the effectiveness of the cooperative approach remains uncertain and must be proved in practice.

The central government authorizes local governmental agencies to create detailed regulations for executing the STPR reform. According to public choice theory, local officials are self-serving individuals whose chief interest is not to achieve regional sustainable development or to better serve the local people but rather to gain their own promotion and benefits (Blumm, 1994). In practice, the legislative process and environmental management performed by local governments are usually distorted by the officials’ focus on their performance evaluation, which determines their promotion and other benefits (Wang, 2013). Therefore, some scholars view the legislative process of local government as “a slot machine” because it is unpredictable or arbitrary (Blumm, 1994). We cannot assume that local governments will implement the STPR reform with no compromises.

We hypothesize that the STPR reform undermines current fundamental grassland conservation policies and causes new environmental management problems in pastoral regions (e.g., Inner Mongolia) – that is, the new rural reform leads to the unintended intensification of grassland degradation. To test the above hypothesis, this study is designed to address the following questions: (1) How do family-managed, cooperative-managed, and tenant-managed (rented) grasslands differ in terms of the kind and amount of key ecosystem services they provide? (2) What causes the differences in ecosystem services among the three types of management group? (3) What insights and implications can this study provide to improve China’s rural reform policy for pastoral regions? We frame our questions in terms of ecosystem services, which are benefits that people derive from nature, because this concept links ecology and economics and bridges science and policy (Costanza et al., 1997; Millennium Ecosystem Assessment, 2005).
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