



Understanding grassland rental markets and their determinants in eastern inner Mongolia, PR China



Shu-hao Tan*, Bo Liu, Qiao-yun Zhang, Yong Zhu, Jia-hui Yang, Xin-jie Fang

School of Agricultural Economics and Rural Development, Renmin University of China, Zhongguancun Street 59, Haidian District, 100872 Beijing, PR China

ARTICLE INFO

Keywords:

Grassland rental markets
Eastern inner Mongolia
Imbalances in factor proportions
Bivariate probit model

ABSTRACT

Grassland rental markets function as a venue for balancing production factors of herder households. This paper jointly determines the socioeconomic factors affecting herders' grassland rent-in and rent-out behaviors by applying Bivariate Probit Model with clustering standard errors on 422 households' data from Eastern Inner Mongolia. Results reveal that imbalances in "people-grassland (grass)-livestock-productive assets" are the major determinants of the herder households' participation in grassland rental markets. Given other factors, an increase of 10 thousand yuan in a household' productive assets renders an increase/decrease in their rent-in/rent-out participation likelihood by 1.0% and 2.0%, respectively; an increase of 100 standard sheep unit may bring about 4% increase in rent-in participation and 0.6% decrease in rent-out participation; an increase of 100 hm² in hayfields may decrease and increase the likelihood of rent-in and rent-out participation by 13% and 3%, respectively; an increase of 1.0% in ratio of non-livestock income may decrease propensity of rent-in by 0.34%, and increase propensity of rent-out by 0.2%. In addition, the education and Chinese level of household head, and the available family labor encourage participation in grassland rent-in market. Main findings help facilitate better allocation of herders' livelihood assets by participating the functional grassland rental markets.

1. Introduction

Theoretically and empirically, land rental markets have proved to be effective for improving efficiency, equity and welfare at the farm household level by providing a vehicle to equalize factor proportions (Feder, 1985; Tesfaye and Adugna, 2004; Otsuka, 2007; Jin and Jayne, 2013). While studies on farmland rental markets are abundant worldwide (e.g. Haile-Gabriel, 2000; Rahman, 2010; Holden et al., 2009) and across China (e.g. Xu and Guo, 2011; Gao et al., 2012; Yan and Huo, 2016), relatively few studies are found on grassland rental markets.

Within the literature on grassland rental markets, most previous studies have mainly applied descriptive and case study methods (e.g. Lai and Li, 2012; Yin et al., 2014), focusing on several samples. The studies applying quantitative methods based on sufficient sample size at herder household level are limited (Wang et al., 2007; Xue et al., 2010; Hu et al., 2014). Among the available ones, Xue et al. (2010) compare the willingness to rent land between 151 farmers and 274 herders in agricultural areas, semi-agricultural and semi-pastoral areas in Erdos city, Inner Mongolia. Wang et al. (2007) examine the driving factors of the land rental behavior of farmers and herders also in semi-pastoral areas by applying an economic model. However, it is not clear how the data used in the analyses were collected and from where. Applying

single regression models with contracted and rented grassland area as the only two regressors, Hu et al. (2014) examine the impacts of grassland rental markets on the ecological environment by using data on 209 herder households collected in Inner Mongolia and Gansu Province.

In these studies, there is little evidence on the reasons why herder households would want to rent in or/and rent out grasslands in pastoral areas, where the implementation of the Household Responsibility System (HRS) has aggravated imbalances in the livelihood assets of herder households (Tan and Tan, forthcoming). According to our field surveys, grassland rental markets are more widespread than previously realized. Considering that Chinese government has encouraged and further regulated land transfer in rural areas since 2005 (MoA, 2005), whereas the rural land (including grassland) transfer markets are not well developed as expected, it is practically significant to understand the grassland rental markets and their determinants for promoting the development of effective grassland markets. Besides, the study intends to test if conclusions derived from cropland rental markets hold for grassland rental markets. These are the main motivations for the current study.

To address these points, the study analyzes the data of 2011 from 422 herder households in eastern inner Mongolia. Bivariate Probit

* Corresponding author.

E-mail address: shuhaotan@ruc.edu.cn (S.-h. Tan).

model is used to examine the determinants of grassland rental markets by distinguishing between rent-in and rent-out markets. To our knowledge, this is the first study to apply such a large sample to explore the grassland rental markets and their driving factors in pure pastoral areas of China. Differing from farming areas, data collection in vast grassland areas with a sparse population is both time-consuming and costly. The study is expected to provide policy implications for fostering efficiency, equity and welfare-oriented grassland markets. The paper is structured as follows: Section 2 presents a theoretical framework followed by a brief introduction to the regulations on grassland transfer/rental markets in Inner Mongolia in Section 3; data and methods are introduced in Section 4; Section 5 discusses the results and Section 6 concludes the paper.

2. Theoretical framework

Grassland is one of the herder households' indispensable productive factors, which together with other production factors, such as labor and capital, makes livestock production possible. However, the Household Responsibility System (HRS) implemented in pastoral areas of China since the beginning 1980s has caused unbalanced production factors, resulting in disproportionally combined "people (labor)-grassland (grass)-livestock-productive assets" (Tan and Tan, forthcoming). As a consequence, grassland management falls into the so-called *fencing dilemma* (Yang, 2010; Liu, 2008). This section will first introduce how the HRS was implemented and what the current grassland fragmentation looks like; then we will explore the major determinants of grassland rental markets based on the farm household model theory and related literature.

2.1. The HRS and subsequent grassland subdivision

Historically, grasslands in China have mainly been managed communally (Bao, 2003; Ao, 2009). Although the farmland reform took place at the end of 1970s, the HRS grassland tenure reform was also implemented several years later in pastoral areas (Banks et al., 2003). It is distinguished into livestock distribution and grassland distribution, while grassland distribution can be further distinguished by two phases. The first phase occurred at the beginning of 1980s (in Hulun Buir, some villages were not distributing grassland until the beginning of 1990s), with all kinds of communal livestock (e.g. sheep, goats, horses, cows, or camels, etc.) allocated to households simultaneously. For most villages, grasslands owned by the state or by collectives (only in Inner Mongolia) were distributed to herder groups, with one group composed of less than ten households. The second phase occurred in the second half of 1990s, when grasslands were further distributed into individual households. Each household is allowed to use the contracted grasslands for 30 years.

Differing from the farmland distribution which was normally based on family size, labor force, land quality and distance of plot to homestead, etc., grassland distribution not only considered family size, the most important factor, but also took into account the livestock size, access to drinking water sources and infrastructure. Normally, each village could choose one of the two rules in terms of their preferences, i.e., "people six, livestock four (*ren liu xu si*)" or "people seven, livestock three (*ren qi xu san*)", which means that 60% or 70% of the grassland area in the village was divided based on village population, and the remaining 40% or 30% grassland area was divided based on livestock size.

This greatly fragmented the grasslands. For example, in one of our surveyed villages, the 10,000 ha of grassland was co-managed by 6 village groups with 180 households. All the grassland was divided into 15 patches among the 6 village groups: each group had one patch for summer/autumn pasture, one for winter/spring, and each three neighboring groups shared a public forage land; besides, the whole village shared one patch as public pasture. Afterwards, the tenure

reform and subdivision fragmented the summer/winter patch of group 4 into 20 plots for its 20 households (Tan and Tan, forthcoming). Assuming each household holds one plot, the average plot size would be about 55 ha. Compared with the original 666 ha per patch, the grasslands are now severely fragmented. Even worse is, considering the drinking water source, each plot has a very long and narrow access to water. In an extreme example found in Xilin Gol, some plots are as long as 20 thousand meters but as narrow as only 50 m (Tan and Tan, forthcoming).

When children mature, more subdivisions occur within families, rendering widespread grassland fragmentation. As presented above, the HRS was implemented since the beginning of 1980s, when some young herders were not on the list as they were born after the first phase of grassland distribution. But now they have their own families, which need grasslands to support. According to our field surveys in the major pastoral areas of China, on average, each herder household has 2.2 plots (excluding summer pastures which is co-managed by communities in some areas such as Tibetan Qinghai and Sichuan), and some households have 7–8 plots. Plot size varies from 40 to 77 ha with the smallest one less than 0.13 ha; average distance of plots to homesteads is 16–18 km with the furthest one of 157–320 km; and the average distance to the nearest water source being 3.2 km with the longest one of 150 km.

It is worthwhile to mention that since 1960s to 1970s, herders have been settled down in many grazing areas. Normally, they selected winter/spring pastures with better water access and infrastructure as settlements, and moved to summer/autumn pastures where transportation is worse and they had to live there with tents for several months during summer and autumn (e.g., since the beginning of June to the end of September). Normally, the plots used as winter/spring pastures are close to homesteads and those used for summer/winter pastures are far. In some cases, the summer pastures locate in the mountains of several hundred kilometers away.

Grassland fragmentation causes unbalanced production factors, i.e. people (labor)-grassland (grass)-livestock-productive assets cannot be combined proportionally, rendering the aforementioned *fencing dilemma*. A figure from Hai (2014) shows that grassland subdivision between two brothers, originally in one family, not only further fragmenting land, but also alienating their relationship. In between grasslands, they individually fenced their own part instead of sharing one fence.

Grassland rental markets may allow herder households to better match their grassland resources with other production factors and are expected to develop in pastoral areas. This has been found in farming areas where farmland rental markets have developed steadily, from 7% in 2001 (Zhang and Wan, 2007) to 30% currently throughout the country (Li, 2015). In areas with relatively developed market infrastructure and commercialization of agriculture, farmland rental markets involve more than 50% farm households (Yan and Huo, 2016). This trend also holds in other developing countries (Haile-Gabriel, 2000; Tesfaye and Adugna, 2004; Rahman, 2010).

2.2. Determinants of grassland rental markets

Determinants of land rental markets are mainly derived from the farm household model theory. According to this theory, farmers are assumed to maximize their utility under the constraints of budget, time and institutions (Sadoulet and De Janvry, 1995). This forms the basis of most empirical studies of examining the reasons why farm household would participate in land rental markets. According to such literature (e.g. Tesfaye and Adugna, 2004; Deininger and Jin, 2008; Rahman, 2010), the generally accepted driving factors of land rental markets include household demographics and factor endowments. These driving forces were established earlier by Feder and Deininger (1998) and Gebeyehu (1999), and confirmed by many researchers later (e.g. Holden et al., 2011; Chamberlin and Ricker-Gilbert, 2016). Among household demographics, age captures three elements with regard to

Download English Version:

<https://daneshyari.com/en/article/6460779>

Download Persian Version:

<https://daneshyari.com/article/6460779>

[Daneshyari.com](https://daneshyari.com)