Adaptive choice of livelihood patterns in rural households in a farm-pastoral zone: A case study in Jungar, Inner Mongolia

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ABSTRACT

From a dynamic process perspective, this study examined households' adaptive choice of livelihood patterns in the context of changing rural China based on a 12-year continuous household survey in Jungar Banner. By referring to households' diversified income and vocation, we classified rural livelihood patterns into planting oriented, stockbreeding oriented, half labour and half peasant, non-agriculture oriented, and labour-losing. Results show that different livelihood patterns exhibit distinctive disparities and geographical regularities. Stockbreeding oriented and non-agriculture oriented livelihood patterns are relatively more lucrative. The former was traditionally widely adopted by rural households and the latter has become the most popular in recent years, while the other three patterns are emerging or transitional ones. Then we explored the internal mechanisms of households' livelihood choices using a multinomial logit model. Results indicate that human capital and physical capital were key factors affecting the differentiation of livelihood patterns, and natural capital was the premise for livelihood pattern transformation. Based on a series of policy interventions, the overall trends in livelihood transitions revealed that the proportion of stockbreeding oriented households and half labour and half peasant households sharply decreased, while the proportion of non-agriculture oriented households and labour-losing households largely increased, and the proportion of planting oriented households increased slightly with their management style transforming from extensive to intensive and specialized. Therefore, government interventions must conform to the transition trends and be tailored to fit different livelihood patterns by adjusting and enforcing each type of capital.

1. Introduction

Rural livelihoods have been hotly discussed by academics during the past decades. They are collectively recognized as an individual's or household's means of earning a living that is a combination of the individual's and/or household's assets, including activities, resources and access to these, while also being mediated by institutions and social relationships (Chambers and Conway, 1992; Sen, 1997; Carney, 1998; Scoones, 1998; Block and Webb, 2001; Ellis, 2002; Tang et al., 2013). Different households tend to adopt various livelihood patterns (See Table 1) under different circumstances, which may be determined by multiple factors (Ellis, 2002, 2007), such as geographical conditions, natural resources availability, social economy, policy and institutions, and folk customs. Scholars have generally classified and described household livelihood patterns based on income composition and vocation (Sunderlin et al., 2005; Kibwage et al., 2009; Babulo et al., 2008, 2009; Tesfaye et al., 2011; Soltani et al., 2012; Alemu, 2012), geographical location (Xu et al., 2012; Fang et al., 2014), access to different kinds of capital (McLennan and Garvin, 2012; Duguma, 2013), household capital abundance (Howe and Mckay, 2007; Kamanga et al.,2009; Mahdi et al.,2009; Dhakal et al., 2011; Veisi et al., 2014) and other comprehensive factors (Ansoms and McKay, 2010; Liu and Liu, 2016). Despite many studies on rural livelihood patterns, there is no one-size-fits-all method for livelihood classification, and the existing methods need further improvement. In addition, most studies are based only on snapshots, without reflecting the dynamic change of household livelihoods (Ellis, 2002; Mushongah and Scoones, 2012; Liu and Liu, 2016).

Since the implementation of reform and opening-up in 1978, China has been undergoing rapid urbanization and industrialization, resulting in profound changes in vast rural areas (Liu et al., 2011), agricultural restructuring (Long and Woods, 2011),

Table 1
Summary of selected studies on livelihood pattern/morphology.

Livelihood patterns	Classifying basis	Authors	Study area
Hunting and gathering, Swidden cultivation, Sedentary agriculture at the forest frontier	Income composition and vocation	Sunderlin et al. (2005)	developing countries
Tobacco growing, Non tobacco growing	Income composition and vocation	Kibwage et al. (2009)	Kenya
Less dependent, Moderately dependent, Highly dependent, Very highly dependent on forest collection	Income composition and vocation	Babulo et al. (2008,2009)	Ethiopia
Business-based, Crop-based, Forest-based, Livestock-based, and Diversified strategies	Income composition and vocation	Tesfaye et al. (2011)	Ethiopia
Forest/Livestock, Mixed, Non-farm/Commercial strategies	Income composition and vocation	Soltani et al. (2012)	Iran
only farming, farming and non-farming, only non-farming, and non-labour	Income composition and vocation	Alemu (2012)	South Africa
Households of River valley settlement, Semi-mountain settlement, High-mountain settlement, Resettlement	Geographical location	Fang et al. (2014)	China
Households in Typical steppe, Meadow steppe, Desert steppe, Farming-pastoral zone	Geographical location	Xu et al. (2012)	China
Small-scale woodlot, Homestead tree and shrub growing, Boundary tree and shrub growing	Access to different kinds of capital	Duguma(2013)	Ethiopia
Parceleros(acquired land through land distribution programs), Ganaderos(acquired land through sale or inheritance)	Access to different kinds of capital	McLennan and Garvin (2012)	Costa Rica
Poor group, Medium income group, Less poor group	Capital abundance	Kamanga et al. (2009)	Malawi
Average depth of poverty, Extreme poverty	Capital abundance	Howe and Mckay (2007)	Rwanda
Poor household, Medium household, Rich household	Capital abundance	Dhakal et al. (2011)	Nepal
Low income group, Middle income group, High income group	Capital abundance	Mahdi et al. (2009)	Indonesia
Better-off group, Average group, Poor group	Capital abundance	Veisi et al. (2014)	Iran
Off-farm employment-oriented, Balanced, Offfarm, Idle, Professional, Conventional	off-farm employment andland transfers	Liu and Liu (2016)	China
Rural entrepreneurs, Association type, Resource-rich, Resource-poor in fertile regions, Isolated, Female-headed group	Comprehensive standard	Ansoms and McKay (2010)	Rwanda

structural employment transformations (Mullan et al., 2011; Hu et al., 2011; Liu, 2014), and specialized farming and technology innovations (Siciliano, 2012; Long et al., 2012). In light of these changes, rural households have not only dramatically altered their livelihoods in the agricultural sector (Tang et al., 2013), but also transferred largely into non-agricultural sectors (Mullan et al., 2011; Hu et al., 2011; Liu, 2014), bringing forth some new livelihood patterns in rural areas (Liu and Liu, 2016). In the existing literature, most studies have tried to explore these changes and transitions of rural livelihoods by using bi- or multi-temporal comparative analysis methods (Radel et al., 2010; Mushongah and Scoones, 2012; Ulrich et al., 2012; Tang et al., 2013; Zhen et al., 2014), while some studies used long-term time series analyses based on interviewee's data recall through household surveys (Liu and Liu, 2016). However, as livelihood transition is a continuous process, neither the comparative survey-based analysis nor the recall analysis is sufficiently accurate. Liu and Lan (2015) evaluated the impact of the Grain for Green policy on rural livelihood diversification in the past 15 years, but such impacts could be biased or incomplete because household livelihoods can be influenced by multiple factors instead of a single policy (Ellis, 2002, 2007). As livelihood choices and transitions in rural households are complicated consequences of dynamic response to multiple socio-economic changes, long-term investigations based on comprehensive information are needed (Mattison and Norris, 2005).

This paper contributes to the current literature on households' livelihood with a dynamic analysis of households' choices and livelihood pattern in the context of rapid changes in rural China based on continuous household surveys for 12 years. The study area, Jungar Banner, Inner Mongolia, is the most representative case for rural livelihood transition research. It is located in the farm-pastoral zone of Northern China, which has a complex landscape made up of large, intersecting swathes of grassland and farmland (Zhao, 1953). In the transition zones, the planting industry and grassland husbandry have spatially overlapped through time (Cheng, 1999; Zhao et al., 2002). Rural livelihoods in this area

are historically dominated by animal husbandry combined with "planting for animal husbandry" (Ren et al., 1995). Due to rapid urbanization and industrialization coupled with ecological deterioration caused by excessive human activities, for example mining, rural livelihoods have experienced great changes and transitions during the past decades (Han et al., 2004; Liu et al., 2009). These transitions accelerated after the implementation of the Grain for Green program in 2002 (Tang et al., 2013; Liu and Lan, 2015). Hence, we conducted a long-term household survey from 2002 to 2013 to trace the transitions of rural livelihoods in Jungar Banner. By investigating households' income composition and living means we refined the livelihood patterns in the farm-pastoral zone and analyzed the disparities and occurrence regularity of different livelihood patterns. Based on proper livelihood typology, we attempted to reveal the mechanism of livelihood decision-making, which considers livelihood capitals as internal influential factors (Scoones, 1998; Kibwage et al., 2009; Fang et al., 2014), and socio-economic context driving the dynamic processes of livelihood transition as external influential factors (Xu et al., 2006; Liu and Lan, 2015).

This study aims to close the research gap in which few studies have systematically and dynamically investigated the internal and external factors influencing rural livelihood transition. The specific objectives of this paper are (1) to identify and classify the main livelihood patterns of rural households in the face of socioeconomic transitions in the farm-pastoral region of Jungar, (2) to survey and analyze the mechanism for choosing livelihood patterns from the household perspective based on a livelihood capitals assessment that is adopted from the Department for International Development (DFID); and finally (3) to analyze the evolutionary processes and trends of different livelihood patterns and tease out the external factors/events driving these transitions. Section 2 of this paper describes the study area and context, while Section 3 outlines the study framework and detailed methodology. Section 4 describes the characteristics of each livelihood pattern, presents the decision-making mechanism of households, and elaborates on the dynamic