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Influences on rural migrant workers' selection of employment location in the mountainous and upland areas of Sichuan, China

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A B S T R A C T

This study examines the current employment location selection of rural migrant workers in mountainous and upland areas of Sichuan, China. The analysis employs both representative survey data of 400 households and geographical data calculated using a 30 m Digital Elevation Model (DEM) and Geographic Information System (GIS). A binary and multinomial logistic regression model is used to analyse the influences on employment location selection of rural migrant workers, where the factors considered include personal, household, and community characteristics as well as natural and employment environments. Dividing off-farm employment locations into five categories, we find that 14.98% of rural migrant workers migrated to their home village; 10.98% migrated out of their home village but remained in their home town; 12.81% migrated out of their home town but remained within their home county; 15.47% migrated out of their home county but remained within their home province; and 45.76% migrated out of their home province. Employment location selection of rural migrant workers is found to be significantly influenced by the travel time required to reach a town, the cultivated land area per capita of a worker's household, the worker's age, whether an employer provides housing or meals, and the RDLS (relief degree of land surface) of the worker's home village. Gender is found to affect the likelihood of labourers taking off-farm employment in their home villages but does not appear to influence movement to other migrant locations. A multinomial regression approach is undertaken to analyse rural out-migration to the five migrant locations considered, an approach that reveals considerable heterogeneity that is concealed by the dichotomous approach employed in most previous studies. The study thus contributes to our understanding of rural out-migration in mountainous and upland areas.

1. Introduction

Since the reforms and increased openness of China beginning in the 1980s, large-scale population migration and rapid urbanisation in China have attracted domestic and international scholarly interest (Chiang et al., 2012; Ma, 2012; Willmore et al., 2012; Fan, 2011; Zhu and Luo, 2010). Rural labourers are the subjects of urbanisation at the micro-level, and their migration behaviour directly affects the overall process of urbanisation (Willmore et al., 2012; Zhang and Song, 2003) and the development of the rural economy (Arslan and Taylor, 2012; Zhang 2010; Delgado-Wise and Covarrubias, 2007). Selection of employment location is the key determinant of movements of the rural non-farm population (Ding et al., 2005; Wei et al., 2003). It is thus important to examine rural migrant workers' choices of employment location and the factors that affect these choices.

The influences on rural migrant workers' selection of employment location can be divided into internal (individual) and external (environmental) factors. Among the internal factors are age, gender, and education. For example, older individuals tend to select off-farm employment near their home villages, while younger individuals prefer more distant regions (Gan and Shi, 2007). Several studies have explained these patterns from a life cycle perspective (Li, 2003). Additionally, the proportion of males in rural off-farm employment exceeds that of females. However, according to Li's

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study (2003) female workers are more likely than male workers to select distant regions for employment. Studies have also shown that rural labourers with relatively high educational levels are more likely than less educated labourers to be employed outside of their home town (Chen et al., 2006; Fu and Gabriel, 2012; Thissena et al., 2010). Moreover, well-educated, well-off villagers with sound political backgrounds are more likely to take up off-farm employment in or adjacent to their home villages (Lei and Lu, 2005). Regarding household characteristics, the presence of young children in the household prevents the household labour force from taking up off-farm employment far from home. At the same time, the presence of elderly relatives who can care for children promotes labour mobility. Additionally, limited areas of cultivated land encourage rural labourers to migrate to urban areas to seek off-farm employment (Mullan et al., 2011; Alasia et al., 2009; Gray, 2009; Shi et al., 2007).

The main external influences on rural migrant workers' selection of employment location include social networks, the economy, and the environment. Under the influence of networks of social organisations, economic factors, and regional neighbours, employment location selection by rural migrant workers exhibits regional clustering (Ding et al., 2005; Zhao, 2003). Meanwhile, social networks at the household level can enhance the mobility of rural labourers, allowing them to span long distances in their selection of employment locations (Zhang et al., 2008). Several studies have used the "push–pull" theory to analyse the factors that influence the selection of off-farm employment in large cities. The "push" factors include unemployment, poor jobs, and low income; the "pull" factors mainly include new employment opportunities and attractive incomes (Chase, 1999; Hare, 1999; Li and Han, 2010; Sridhar et al., 2013). In studies of rural areas with more developed economies (e.g., coastal areas), the "double-pull" model is more popular. In this model, rural pull (local employment opportunities, income levels, social security, and substantial plots of land to farm) significantly outweighs urban pull (distant employment opportunities, income levels, and personal values). Thus, the regional labour force tends to select off-farm employment in small and medium-sized cities and towns located nearby (Lin, 2006; Qi et al., 2012).

Importantly, previous research has examined the distances workers travel to take up off-farm employment and analysed labour flow from rural areas to large cities. However, little research has focused on the different employment locations selected by rural migrant workers. Additionally, previous studies have primarily used qualitative description rather than quantitative methods to analyse rural out-migration. Finally, research is lacking on rural migrant workers' selection of employment locations in mountainous and upland regions with poverty issues (Liu et al., 1999).

The present study focuses on the mountainous and upland rural regions of Sichuan, China. Agriculture and animal husbandry are the main economic activities in this area, and many workers migrate to these regions seeking off-farm jobs. Rural labour migration is more common in this area than in other parts of China, owing to geographic and economic factors.

The objective of this paper is to improve our understanding of the patterns and factors that influence the flow of rural individuals from poor mountainous areas of China to the nation's cities. In addition, as China is pursuing policies to promote the growth of large, medium, and small cities, this paper can also help identify which policies might be most successful in this regard. Using sample survey data, we first describe the flow of workers from households in poor rural areas to China's cities. In this research, 'rural migrant workers' refers to individual who worked off-farm for six months or longer during the year examined. Workers are categorised by their locations: home village (HV); home town but outside home village (HT); home county but outside home town (HC); home province but outside home county (HP); and outside home province (OHP). The paper then documents correlates between workers and specific location selections. These correlates are drawn from five sources: individual, household, and community characteristics and natural and employment environments.

The paper, it should be noted, has some limitations. First, the paper is relevant only to Sichuan and not to other provinces. Second, the indexing of the factors involved in employment location selection cannot include all relevant variables, which may lead to bias. This weakness, however, can be mitigated by selecting those variables that best reflect the effects of personal, household, and community characteristics and natural and employment environments. Third, due to a lack of measurable and/or reliable data, the study does not consider the influence of social networks on various rural migrant worker streams. Fourth, the paper examines only correlations between the identified factors and employment location selection. No causality is claimed for the correlates and outcomes presented in this paper.

2. Data

2.1. Study area

The study area is located at the headwaters of the Yangtze River in southwest China, a region covering approximately 485,000 km^2, with a total population of 81.38 million and a rural population of 69.38 million. Mountains and hills account for 90% of the total land area, while plains take up only 5.3%. More than 60% of the region has an elevation of over 1000 m. The study area is characterised by a subtropical monsoon climate with a mean annual rainfall of approximately 1200 mm. The per capita net income for rural households in 2007 was 3546 yuan (US $455), 14.3% below the national average.

2.2. Data source

The data used in the paper were collected from a survey of rural off-farm employment in the Sichuan Province by the authors and their collaborators in mid-2008. The field work team conducted the data collection effort in five counties, 10 townships, 20 villages, and 400 rural households. The counties were first divided into five groups in descending order of per capita gross value of industrial output (GVIO). (GVIO was used based on the finding of Rozelle (1996) that GVIO is among the best predictors of standard of living and development potential and is often more reliable than net rural per capita income). With one county randomly selected from each group, five counties—Guangyuan, Guangan, Shehong, Zigong, and Jiangyou—were selected from 181 counties. Next, within each county, we chose two townships following the same procedure used to select counties. Thus, two villages were selected from each sample township, and a total of 20 villages in Sichuan were surveyed. Divided by landform type, the 20 sample villages included 15 upland villages and five mountain villages (Fig. 1). Finally, 20 rural households were randomly selected from a list of household heads in each sample village. Thus, a total sample of 400 households was obtained.

In each sampled household, trained local interviewers administered a household questionnaire to the household head or another knowledgeable adult who served as a proxy respondent for other adult household members and departed migrants. The questionnaire focused on the characteristics of the rural labour force in terms of age, gender, educational level, cultivation area per