

The Impacts of Rural Labor Out-Migration on Community Interaction and Implications for Rural Community-Based Environmental Conservation in Southwest China

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Authors' Statement

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Abstract

Recent migration and environment literature shows an increasing demand for better understanding the mechanisms through which human migration affects the natural environment. Community interaction can be an important mediating variable in the relationship between migration and the environment. This study investigates the impacts of rural-to-urban labor migration on community interaction and assesses its potential consequences for environmental conservation in rural origin areas in Chongqing Municipality of Southwest China. Empirical data were collected through key informant interviews and household surveys in four rural communities in Chongqing. We examine the effects of rural labor out-migration on local communities by analyzing the differences between household groups with different labor migration statuses regarding participation in general and environment-related community activities. The results suggest that rural migration presents both detrimental and beneficial potentials for community interaction in rural origin areas. These findings have direct implications for community-based natural resource management in rural China.

Key words: migration and environment, mediating factor, community participation, community-based natural resource management, Chongqing

Introduction

The relationship between population and the environment constitutes a major field in the study of human-environment interactions. As one of the key components of population dynamics, migration has become increasingly important in the population and environment research. Recent migration and environment literature shows a growing demand for better understanding the mediating social and economic mechanisms through which migration affects the natural environment. Common property resource institutions, social capital, and social resilience are identified as important intervening variables in explaining the complex and contextually specific effects of migration on the environment (e.g., Adger et al. 2002; Cassels, Curran, and Kramer 2005; Curran 2002; Ostrom et al. 1999). All these factors represent important forms of human organization and relations and logically converge at the concept of community. However, the migration-environment mediating factor framework has not systematically incorporated relevant community theories such as the interactional field theory of community (Wilkinson 1991).

Although migration and community are intuitively viewed as reciprocally related research areas, the theoretical and empirical linkages between the two remain underdeveloped (Brown 2002). Incorporating a community perspective into the migration scholarship advances our understanding of social, economic, and environmental causes and consequences of migration. Additionally,

community is a key element of natural resources management, particularly in small town and rural settings. Local communities play a fundamental role in environmental conservation and efforts toward social, economic, and ecological well-being. Since environmental conservation is directly linked to the health and sustainability of the natural resource base, exploring the community concept in the migration and environment research provides a good opportunity for productive synthesis.

There are varying levels of theoretical and empirical consistency regarding the concept of community in both migration and environmental conservation studies. Nearly all types of community definition involve social interactions, common ties, and a shared place (Hillery 1955; Wilkinson 1991). The interactional conceptualization of community provides a coherent theoretical framework for synthesizing research on migration, community, and the environment. According to interactional theory, community is an emergent process among people who share a common territory and interact with one another on various matters reflecting common needs and interests (Wilkinson 1991). Based on this interpretation, community interaction can be conceptualized as a key mediating variable in the relationship between migration and the environment. The process of building local capacity for community actions oriented to common interests constitutes community development (Wilkinson 1991). The impacts of migration on community social interaction and the capacity

for collective action can serve as a good predictor of the subsequent positive or negative environmental outcomes of migration (Qin and Flint 2012).

The effects of migration on community interaction in areas of destination and origin are often complex and vary depending on community contexts. This study uses field data collected through key informant interviews and household surveys to investigate the influences of rural-to-urban labor migration on rural community interaction in Chongqing Municipality of Southwest China. Following an overview of previous studies on the impacts of migration on community, we examine the relationship between rural labor out-migration and community interaction by comparing community participation and involvement of household groups with different labor migration statuses. Further, we discuss the impacts of rural out-migration on community interaction in rural origin areas, with direct implications for local community-based environmental conservation.

Impacts of Migration on Community

This study contributes to the further synthesis of migration and community studies. Migration is affected by community structure and organization and, in turn, directly or indirectly changes community dynamics in destination and origin areas. Most literature on community impacts of migration tends to focus on destinations and the United States context; such consequences at places of origin, especially those in developing countries, remain largely an understudied problem.

Research on the large-scale turnaround migration to small towns and rural areas since the 1970s in the United States has highlighted resulting structural disturbances to the stability of rural destination communities (Price and Clay 1980). Migration to rural communities can overload local community institutional infrastructure when demands of migrants exceed the carrying capacity of community services. Researchers found that newcomers usually differed from long-time residents in socioeconomic backgrounds, values, and needs (Graber 1974; Green et al. 1996; Nelson 1997; Smith and Krannich 2000; Stinner and Toney 1980). Several survey-based studies also assessed the social impacts of migration on community by comparing recent migrants with longer-term residents in terms of community satisfaction and participation and generally found less satisfaction and involvement among migrants (Brown, Geersten, and Krannich 1989; Matarrita-Cascante et al. 2006; Stinner and Toney 1980). Rank and Voss (1982), however, contended that over time, migrants became as involved in their destination communities as long-term residents.

Much of the limited research on the effects of migration on community in origin areas is conducted in the setting of rural areas and focuses on social relationships in migrant sending communities. Previous studies suggest rural migration may have a negative effect on origin communities by disrupting local social interaction and cohesion (Elrick 2008; Li 2006; Reichert 1981, 1982). Nevertheless, a number of studies have revealed that migration may also generate

positive outcomes for local community development in rural origin areas of developing countries (e.g., Conway and Cohen 1998; Flora 2006; Goldring 1996; Rudel 2006).

Typically, rural out-migration in the developing world context is labor specific and occurs on a seasonal or circular basis (Brown 2002). This bidirectional migration process can influence origin communities through building and transforming the social networks between sending and receiving communities. Each act of migration potentially produces a new set of social ties between origin and destination areas. Thus, migration becomes a self-perpetuating process after the volume of migrant network connections in an origin area reaches a threshold level (Massey 1990). Rather than breaking the existing local social bonds in areas of origin, migration may strengthen social ties across places despite substantial geographic distances. Seasonal and circular migrants in developing countries are usually still considered as much a part of origin communities as those remaining residents (Flora 2006). The extended ties of rural communities to external society through migration can enhance communities' capacity for collective action. By engaging beyond localized "spaces of dependence" into wider "spaces of engagement" via the migration process (Cox 1998), rural communities can expand social interaction spaces to a broader scale.

In summary, migration and community are two interrelated domains of social structure and process. Migration produces complex effects on various

aspects of community development at both destinations and origins. This study contributes to current migration and community research by empirically examining the impacts of migration on community interaction and exploring possible implications for community-based environmental conservation in rural origin areas in Southwest China. The research focuses on the household level to understand the consequences of rural labor out-migration for local community interaction and collective action. Previous studies on migration and community suggest that migrants differ from non-migrants in many respects and that migration has complex and context-contingent impacts on community processes. This study investigates the effects of labor out-migration on rural community interaction by analyzing whether rural households with different labor migration status can be distinguished in terms of participation in general and environment-related community activities and whether the results vary across study communities.

Methods

Study Area and Communities

Four rural communities in Chongqing Municipality of Southwest China were purposively selected for this study. Chongqing is a hilly and mountainous region where soil erosion and environmental degradation are severe problems. It currently has the highest proportion of rural work force participating in rural-to-

urban labor migration in China. Much of this large-scale labor migration process is circular or seasonal in nature. Moving to cities for work for varying lengths of time has been adopted as a critical livelihood strategy by many rural households in China (Hare 1999). For the most part, rural Chongqing serves as a prime example of the massive phenomenon of circular rural-to-urban labor migration in China, with general implications for other developing countries which are experiencing similar patterns of rural migration. Therefore, the combination of the high magnitude of rural labor migration and marginal biophysical conditions makes Chongqing an important study area for assessing the impacts of rural out-migration on local communities and the subsequent trends for rural community-based environmental conservation.

The four rural communities studied were Bailin Village in Beibei District, Banliao Village in Wansheng District, Dacao Village in Kaixian County, and Tuanjie Village in Qianjiang District (Figure 1). They were selected for study using a two-stage criterion-based approach to ensure the final set of communities had varying social, economic, and environmental conditions. The subordinate districts and counties of Chongqing were first grouped into four subregions based on ecological and socioeconomic characteristics. One village from each economic subregion was then purposively selected according to two criteria: (1) high rural-to-urban labor migration rate; and (2) an abundance of natural resources in and around the village. This research design helped to ensure a set of

representative communities and facilitated comparison of similarities and differences among study communities with respect to the effects of rural labor out-migration on community interaction and potential environmental considerations.

[Figure 1 here]

Bailin Village is a community of approximately 2,320 people situated in a hilly area near the Jinyun Mountain National Protected Area.¹ It is located closer to the center of Chongqing Municipality and has a more diverse economy than the other three study communities. Bailin is the site of several small-scale manufacturing enterprises, and, thus, a large number of local residents take up off-farm work inside or near the village. Nevertheless, long-distance labor migrants still account for a large majority of those who are engaged in non-agricultural jobs.

Banliao is a village with a population of 3,080 and abounds with farmlands and forest resources. Its economy is mainly based on agriculture and surface mining. This village was formed by merging the old Banliao with a neighboring village, and is well linked with the nearby Qingnian Township and the city zone of Wansheng District. More than half of the labor force of Banliao circulates to work in urban areas within Chongqing or on the east coast of China. A reservoir with a storage capacity of 9.5 million cubic meters is currently under construction in Banliao. This raises a series of issues including house relocation

and compensation for expropriated farmlands for villagers living in the reservoir area.

Dacao and Tuanjie villages are in relatively remote mountain areas of Chongqing Municipality. Dacao had a population of 3,016 in 2008. It lies on the northeastern border of Kaixian County, which has been well-known for its high magnitude of rural labor out-migration throughout Chongqing and even the whole country. Tuanjie Village is the only study community with a high ethnic minority presence. Nearly half of its population of 2,328 consists of *Miao* and *Tujia* minority people.² Both Dacao and Tuanjie are predominantly agricultural communities, whereas labor migration to cities forms the major income source for a majority of rural households. Destination areas for rural labor migrants from these two villages are generally concentrated in east-southeast coastal provinces such as Zhejiang, Shanghai, and Guangdong.

Data Collection

A mixed-methods approach was used to collect and analyze data for this study (Tashakkori and Teddlie 1998). Secondary socioeconomic and biophysical data from Chongqing yearbooks, environment reports, and government agencies facilitated research site selection and provided a structural backdrop for the study area. A preliminary investigation using key informant interviews was conducted to explore the range of community interaction experiences and enhance contextual

understanding of the impacts of rural labor out-migration across the four study communities. In summer 2008, 15 initial key informant interviews were completed using a multiple-group and modified snowball sampling methodology in the four communities (Luloff 1999). The results of the interviews informed the development of a household survey, which was administered with a total of 345 randomly selected rural households across the four study villages using a face-to-face questionnaire interview technique in Fall 2008 (see Qin 2010 for further details of survey administration). The household surveys investigated community participation rates, labor migration experiences, and basic characteristics of the sampled rural households. In order to provide further detailed information to facilitate the interpretation of survey findings, additional in-depth interviews with 26 key informants were conducted across the study area along with the household survey. Informants were asked to comment on the experiences, perceptions, and actions of their communities as a whole. All interviews were audiotaped, transcribed, and thematically analyzed (Dunn 2000). Representative quotations from informant interview responses are used below to highlight commonly held perspectives.³

Measurement of Variables

Dependent Variable

Community interaction was operationalized as household participation in community activities, which was used as the dependent variable for the statistical analysis of the household survey data. It was measured using seven general community activities and three community actions particularly related to environmental management, all of which are commonly used in the literature on community participation and involvement (e.g., Flint and Luloff 2007; Matarrita-Cascante et al. 2006; Rank and Voss 1982). Respondents were asked whether in the past 12 months they (or anyone in their households, including labor migrant members) had participated in a series of community activities. These questions were tailored to local context of the study area and were designed to prevent overlapping among activity variables. Responses were coded into dichotomous values: “0” for no participation and “1” for participation. Results from exploratory factor analysis suggest one key underlying dimension among the 10 community activities (factor loadings in parentheses below). A composite community interaction variable was created by summing responses to the following questions (Cronbach's alpha reliability coefficient = .672):

- (1) attended a local community event, like a school performance, film show, or village festival (.514);

- (2) contacted a public or village official about some general community issue of concern (.563);
- (3) worked with others in the community to deal with some community issue or problem (.675);
- (4) attended a villager meeting about general community issues (.642);
- (5) participated in a community organization (.523);
- (6) voted in a local election or referendum (.356);
- (7) served as member of the village administration committee, member of the local political party branch, village group head, or villager representative (.804);
- (8) participated in community efforts to preserve natural resources (.651);
- (9) attended a public hearing or meeting about environmental or natural resource issues in the community (.678); and
- (10) contacted a village official or a governmental agency to get environmental information or to complain about an environmental problem (.770).⁴

Independent Variable

Household labor migration status was the independent variable for the analysis of migration impacts to community interaction. Comparing migrant households and non-migrant households with respect to socioeconomic and

environment-related characteristics has been an important research strategy for investigating the social, economic, and environmental consequences of migration. Migrant and non-migrant households in a specific study are exposed to the same socioeconomic and biophysical contexts. The method of comparing the two household groups is largely equivalent to a pseudo-experimental research design in which non-migrant households are employed as a control group so that the impacts of migration on migrant households can be assessed relative to those not participating in migration.

The labor migration status of a surveyed household was determined based on basic information collected on all of its members. Since the household survey collected information about community participation of rural households in the past 12 months, the two-year period immediately prior to the time of survey was chosen for determining the labor migration status of households. Thus, a time sequence was built into the relationship between labor migration of household member(s) and household participation in community activities. Rural households with at least one member working in an urban area for most of the time during the two years prior to the survey were classified as labor-migrant households, and non-labor-migrant households otherwise. According to this criterion, the aggregate survey dataset included 179 labor-migrant households and 166 non-labor-migrant households.⁵

Control Variables

A number of household sociodemographic variables were included in the analysis as controls to obtain a more accurate assessment of the effects of labor migration on households' involvement in community interactional activities. The household sociodemographic characteristics included in this study were years of residence, household size (total number of members), number of laborers in a household, mean age of labor members, and mean educational level of labor members.⁶ Educational attainment was measured by eight different levels in the survey: (1) little or no formal education; (2) some formal education but less than an elementary school degree; (3) elementary school degree; (4) junior high school degree; (5) senior high school degree; (6) middle level professional, technical, or vocational school degree (between the secondary and the higher education levels); (7) two-year associate college degree; and (8) four-year college degree or above.

Statistical Analysis Methods

The quantitative analysis of the household survey data was conducted in three phases. Initially, descriptive statistics and one-factor analysis of variance (ANOVA) with post hoc Tukey's test were used to describe survey sample characteristics and examine community variations on household sociodemographic and community participation variables (results not included here for brevity; see Qin 2009 for details). Next, differences between labor-

migrant and non-labor-migrant households with respect to participation in community activities and sociodemographic characteristics were assessed with the independent t -test. Finally, analysis of covariance (ANCOVA) was used to compare the differences between the two household groups in community participation, while controlling for the effects of the five household sociodemographic variables. This technique is similar to multiple regression analysis but is statistically more effective and meaningful here given the nature of major variables in the analysis (a scaled outcome variable, a categorical predictor, and multiple continuous or scaled covariates). Post-hoc analysis was also run using the Multiple Classification Analysis (MCA) procedure to show the adjusted differences between labor-migrant and non-labor-migrant households on the community interaction indicator.

Both the bivariate (using t -test) and the multivariate (using ANCOVA and MCA) analyses were carried out for the aggregate dataset and for each study community. Since the sample sizes for community-level analysis were relatively small, the statistical power is low for detecting significant differences between labor-migrant and non-labor-migrant households in community participation. Given the exploratory nature of this research, the critical p -value for assessing statistical significance analysis was set at .10 instead of the more conventional .05 threshold.

Results

Thematic Content Analysis of Key Informant Interviews

The qualitative information for our analysis was drawn from the following interview questions: (1) “What are the major local community activities?” (2) “Are there any community activities in managing/protecting the local environment and natural resources?” (3) “How has labor out-migration affected rural households’ participation in general community activities?” and (4) “How has labor out-migration affected local community natural resource management?”

There was general consensus among respondents indicating a lack of community activities in the study area. Many attributed this to limited community resources and the rural economic reform which replaced the People’s Communes regime with the Household Responsibility System (HRS):⁷

There are only a few community activities, because organizing these events depends on the economic strength of the village. We do not have enough resources in these aspects. The village at most holds some meetings or calls people together for some things such as building a road (Bailin).

We do not have many community activities. This is because farmland has been assigned to households for many years. Rural households basically take care of their own business, and generally every household just operates on an individual basis (Tuanjie).

Since rural labor migrants usually have family members left behind in the origin villages, most key informants felt little migration effect on labor-migrant households' participation in community activities. The following quotes suggest the remaining members of labor-migrant households still actively take part in community projects, albeit often through contribution of money:

Labor migration does not have any influence on the participation in public activities of the village. Labor migrants' relatives are still at home. If they need money, the migrants can send back some. They still take part in community affairs, even if only old folks are left at home (Balin).

Members of labor-migrant households are active in participating in community work. Labor can be contributed in place of cash. There is no such circumstance in which we cannot find any people from labor-migrant households, or they are not willing to contribute money (Dacao).

Although interview responses revealed most labor migrants kept strong connections with their communities of origin and regularly returned to rural resident households, perceived impacts regarding labor migrants' community participation varied to some extent. Some respondents readily commented on the negative effects of labor migrants' long absence on their participation in community activities.

This definitely has effects. They [labor migrants] are not at home. How can they participate? If they were home, they would normally attend

community events, such as community meetings. Now, they have gone out, so there are [negative] effects (Banliao).

Some, however, viewed labor migrants' participation in local community activities in positive ways:

They [labor migrants] still actively contribute to community projects such as road construction. They send money back to their relatives for hiring laborers to take part in the projects. They still feel highly responsible for their community (Tuanjie).

A community leader from Tuanjie also cited good communication between the village administration committee and labor migrants as a reason of limited negative migration influences on their community interaction:

The effects are not very large. We have stayed in contact with labor migrants via telephone. Usually we call them. Every year when they come back to the village, we hold a meeting with them to see where people can make money and what types of work they should take. We will then use this information to guide others to find something to do (Tuanjie).

Across study villages, many interviewees shared recognition of an absence of community organizations addressing natural resource management and conservation. The implementation of the HRS and the constrained resources of local village administration committees were again often mentioned as major causes for this phenomenon:

Now there is no such thing as the combination of collective and individual resource management. There is only separate operation and no collective practices. Now, the village does not care whether you plant seedlings or not or whether you use chemicals to kill pests or not (Bailin).

This [labor out-migration] should have effects on community natural resource management. However, the village administration committee has not organized or managed many collective activities. Our human resources are very limited. After the two villages were merged into one, we have endless work to do every day, and do not have time to organize such things (Banliao).

Given the existing natural resource management condition in the study area, it is not surprising that most interviewees were not aware of salient effects of labor out-migration on local community-based resource management activities.

The following quotes articulate this common perspective:

There is not any effect. What effects should it [labor migration] have?

Every household is a single unit. It just farms its own land, and nobody will intervene. This [labor migration] will not cause any disturbance to community resource management (Dacao).

The leaving of laborers has not brought any changes on local resource management. According to the current management system, there are not

any changes. It does not matter for resource management whether these people are in the village or not (Bailin).

While labor migration impact regarding collective natural resource management was not a significant topic of discussion for local residents, some were worried about potential problems that labor out-migration may cause in the cases of community environmental conservation projects and environmental emergencies such as wildfire:

This may have some effects. Why? After all the young laborers leave, only older people and children stay at home. If the village organizes any resource management activities, there will not be enough labor (Dacao).

The village has not organized anything except for forest fire prevention. Labor migrants are not home, so you cannot go call them for fighting the fire. They are far away. If anything happened, there would be [negative] effects (Bailin).

In sum, the results of key informant interviews provide mixed evidence regarding the effects of rural labor out-migration on participation in general community and environment-related activities. There are both coherence and variation in perceived impacts within and across study communities. The interview quotes provide rich details of local perspectives and experiences which are complementary to the household survey results presented in the next two sections.

Bivariate Comparisons of Household Groups on Community Participation

Results of comparisons of labor-migrant and non-labor-migrant households on community participation for the aggregate dataset and for study communities are shown in Table 1. Overall, labor-migrant households did not differ significantly from non-labor-migrant households on the composite index of community interaction for the aggregate dataset. When the 10 different types of community actions were compared separately between the two household groups, a significant difference was found only for attendance in local community events. The participation rate for this activity of labor-migrant households was significantly lower than that of non-labor-migrant households. The difference between the two household groups regarding participation in community organizations almost reached statistical significance. In addition, significant differences were identified for all five household sociodemographic characteristics (results not included here for brevity; see Qin 2009 for details). Labor-migrant households, on average, lived longer in the community, were larger in size, and had more labor age members than non-labor-migrant households. In general, laborers from labor-migrant households tended to be younger and more educated than those from non-labor-migrant households.

[Table 1 here]

Findings of the bivariate comparison analysis of community participation variables varied across study communities (Table 1). For Bailin Village, no

significant difference existed between labor-migrant and non-labor-migrant households on the constructed community interaction indicator or any of the 10 community activity variables. Non-labor-migrant households on average participated in more community activities than labor-migrant households in Dacao Village, but this difference did not attain statistical significance. However, Dacao labor-migrant households were significantly less likely than non-labor-migrant households to contact public officials or village leaders about community issues and to participate in community organizations. For Tuanjie Village, the labor-migrant household group had a significantly higher community interaction level than the non-labor-migrant household group. More specifically, the participation rates for contacting public or village officials about general community and environmental issues of Tuanjie non-labor-migrant households were significantly lower than those of Tuanjie labor-migrant households. In contrast to Tuanjie, in Banliao Village, non-labor-migrant households had significantly higher levels of community interaction than labor-migrant households. This is largely due to the differences between the two groups in participating in local community events, villager meetings, and community efforts to preserve natural resources. Banliao labor-migrant households had significantly or nearly significantly lower rates of participation for these activities when compared to non-labor-migrant households.

Multivariate Analyses

Bivariate analyses also revealed significant associations between household labor migration status and sociodemographic variables. A multivariate ANCOVA helps to examine the relative effect of labor migration on a rural household's participation in community activities while holding all the household sociodemographic characteristics constant. Table 2 presents the summary of the ANCOVA on participation in community activities for the aggregate dataset and for individual communities. The focus of analysis here is on the relationship between household labor migration status and the community interaction variable rather than the total explained variances of the models. As shown in Table 2, the effect of household labor migration on community participation was not statistically significant for the aggregate dataset. This means that overall there was no significant difference between labor-migrant and non-labor-migrant households with respect to participation in community activities while controlling for basic sociodemographic characteristics.⁸ The MCA table (Table 3) shows that the relationship of household labor migration status to community participation is stronger (the difference in household group means increased from .16 to .37) after the adjustment by household sociodemographic variables, but still does not achieve statistical significance.

[Table 2 and Table 3 here]

The same process of the ANCOVA and MCA conducted with the aggregate data was used for examining the differences in community participation between labor-migrant and non-labor-migrant households for each study community. Table 2 and Table 3 also show a comparison of the aggregate and community analytical models. Results for Bailin and Dacao villages are consistent with those from bivariate analyses. Although the difference in subgroup mean community participation scales increased after adjustment in both community models, no significant effect was found for household labor migration status (albeit not far from statistical significance for Dacao). For Tuanjie Village, the mean difference of labor-migrant and non-labor-migrant households decreased to a small degree (from .86 to .79) when accounting for variations in household sociodemographic measures, but the relationship between household labor migration and community participation was no longer significant. It appears that the significant community interaction difference between the two household groups found in the bivariate analysis for Tuanjie Village is explained away by the sociodemographic controls.

Finally, for Banliao households, household labor migration still had a significant influence on participation in community activities (though slightly weaker than in the bivariate analysis) while controlling for the effects of household sociodemographic characteristics. The MCA procedure also confirmed that household labor migration status retained its statistical strength as an

independent variable in Banliao even after adjusting for household control variables. There was initially a .96 difference in the mean community participation scores of Banliao labor-migrant and non-labor-migrant households. This difference increased somewhat to 1.00 when adjusted for the sociodemographic controls. Non-labor-migrant households had significantly higher level of community interaction than labor-migrant households in Banliao Village.

Discussion

Impacts of Rural Labor Out-Migration on Community Interaction

This study examines the effects of migration on community interactional capacity within the context of four rural villages experiencing substantial rural-to-urban labor migration. Results of qualitative and quantitative analyses reveal that rural labor out-migration has mixed influences on rural community interaction processes. More concretely, this study suggests both negative and positive possibilities of labor out-migration for community interaction in rural origin areas.

Most key informants indicated a dearth of community activities in their villages and felt only limited influences of labor migration concerning this aspect. While no significant difference was found between labor-migrant and non-labor-migrant households on the complex community participation indicator for the aggregate data, the analysis showed that labor-migrant households, in general, had

significantly or marginally significantly lower participation levels for local community events and community organizations than non-labor-migrant households. The analysis by community also suggested that labor migration reduced rural households' community involvement in Banliao Village. There, labor-migrant households were less likely than non-labor-migrant households to participate in most of the community activities, particularly local community events and villager meetings. The bivariate comparisons for Dacao Village also revealed that labor-migrant households were significantly less likely than non-labor-migrant households to join in community organizations and to contact public or village officials about general community issues.

These findings are not surprising given the fact that migrants are usually away from their home villages for months. Elrick (2008) maintains the long absence of migrant members has a detrimental effect on social interaction and social cohesion in rural origin communities. Out-migration of key family laborers generally constrains labor-migrant households' ability in participating in many community activities. As rural people migrate to cities for jobs and other needed resources, their attachments to local community may decline (Wilkinson 1986). Labor-migrant households may become less involved in the community since they gain an alternative source of income and depend less on local resources for their living. In addition, the increased connections with outside society brought by out-migration may deemphasize the role of rural villages in these households' sphere

of social interaction. Thus, over time, labor-migrant households may become detached from local community issues and activities.

Community actions often emerge in response to external threats (Tilly 1973). The presence of a government-organized reservoir construction project in Banliao Village may increase overall community activeness, but not to the same extent for labor-migrant and non-labor-migrant households. In-depth interviews also showed that, being overwhelmed by tasks and work assigned by local government, the village administration committee of Banliao took little action to reach out to labor migrants away from home. Therefore, labor migration appeared to have a strong negative effect on community interaction in this village.

In the other three study communities, labor migration was not found to significantly negatively influence community participation of rural households. In fact, the quantitative analysis for Tuanjie Village suggested a positive relationship between labor migration and households' community involvement, though the effect was statistically weak when controlling for basic household sociodemographic characteristics. In Tuanjie Village, members of the community administration committee maintained regular contact with most of the labor migrants and held discussion meetings with them when they returned from cities. The analysis of survey data found that Tuanjie labor-migrant households were significantly more likely than Tuanjie non-labor-migrant households to contact public or village leaders about community issues and environmental problems. In

addition, key informant interviews across study communities indicated that remaining family members of labor-migrant households still actively participated in community infrastructure work such as road construction and irrigation system maintenance. These results suggest that labor migration may have a potential beneficial influence on community interaction in rural areas, not just the intuitively expected negative effect.

The circular nature of rural-to-urban labor migration adds an additional level of complexity to the relationship between rural out-migration and local communities and challenges the simplistic notion of migration as a unidirectional process that disrupts rural community interactions and activities. Circular migration is a particularly suitable tool for rural household strategies to optimize the exploitation of both rural and urban resources (Paerregaard 1997). Since most rural households in developing countries can be viewed as “multi-spatial” (Tacoli 1998), temporary rural-to-urban labor migration does not necessarily disturb the social interaction of migrant households in rural origin areas. On the contrary, circulation can serve as an important mechanism for supporting rural household livelihoods and for sustaining village-based social networks (Flora 2006). In a sense, the reciprocal connections between origin and destination areas generated in the labor migration circuit link together rural and urban sectors.

The analysis herein suggests that rural origin villages still constitutes an essential part of the living space of labor-migrant households. The interactional

theory of community provides a particularly useful explanatory framework for the positive possibilities of labor migration for rural community development. There is a strong locality dimension to the interactional conception of community (Wilkinson 1991). The shift from a social systems view to a social field perspective in interactional community theory also goes beyond the limitation of conceptualizing communities with strict boundaries (Wilkinson 1970, 1991). Community field is an unbounded and dynamic process of social interactions. It represents the collective capacity of local residents to improve their own well-being (Wilkinson 1991). The original rural community field can be extended beyond local boundaries by the external ties and linkages developed through circular labor migration. The set of social and economic relationships maintained by urban labor migrants with rural origin villages gives rise to a transboundary community field cutting across rural and urban areas. Although the conception of transboundary community leads to the fluidity of territorial boundaries, its field of interaction is anchored in the rural areas of origin. Since rural dependency on and distance from urban centers are considered as serious barriers to community interaction in rural areas (Wilkinson 1986), the community field expanding across “spaces of engagement” (Cox 1998) should contribute to the potential of rural community development.

Potential Consequences for Rural Community-Based Environmental Conservation

Community interaction and the capacity for collective action constitute the essence of a community-based approach to environmental conservation (Flint, Luloff, and Finley 2008). The diverse impacts of rural-to-urban labor migration on rural community interaction are inherently linked to the potential consequences of labor out-migration for rural environmental conservation in China. Rural China has seen radical changes in natural resource management institutions in the past three decades. The rapid transition from the People's Communes regime to the HRS has given rise to a large disruption of local community processes. The two-tier HRS emphasizes the combination of individual household operations and collective community actions on paper. However, our key informant interviews reveal the aggregate social and economic organization of rural communities is largely neglected in everyday life. Meanwhile, this speedy shift from highly organized communal management to relatively independent household economies has resulted in fragmented resource management by individual households. In the study communities and many other rural areas in China, there is no locally formulated mechanism to manage village collective resources.

Results of both the key informant interviews and household surveys suggest a blended picture of labor out-migration impacts on community-based environmental conservation in rural China. Although the differences between

labor-migrant and non-labor-migrant households concerning participation in community environmental management activities are mostly small and non-significant at the aggregate and the community levels, some are worth noting in terms of magnitude and direction, and a few did attain or almost attain statistical significance (Table 1). Tuanjie labor-migrant households had higher participation rates than non-labor-migrant households for the three community actions specifically related to environmental or natural resource issues, while the opposite was true for Banliao Village. The non-significant differences between the two household groups at the aggregate level could be due to the offsetting relationships (differences in opposite directions) found across the study communities.

Qualitative data from the interviews showed that local residents did not attest to any substantial impacts of labor migration on environment and natural resource management in the communities. Where there is no community-based natural resource management system, rural labor out-migration does not appear to have any direct influences on the collective resource management in rural origin areas. However, as community interactional capacity holds a fundamental role in community-based environmental conservation, the labor migration effects on rural community participation essentially relate to grass-roots community initiatives in local natural resource management. When labor migration leads to lower level of community interaction in rural areas, the prospect of local

community-based natural resource management is further limited. To the extent that rural labor out-migration extends the local community field, it contributes to the dual objectives of rural community development and sustainable natural resource management.

Conclusions and Implications

Responding to calls for advancing the understanding of the mechanisms through which migration impacts the environment, this study empirically investigates the effects of labor out-migration on community interaction and analyzes the potential consequences for environmental conservation in four rural villages in Chongqing Municipality, Southwest China. The results indicate that the effects of rural labor out-migration on households' community participation varied across study villages. Analysis at the community level showed that rural labor migration was negatively and significantly related to household participation in community activities for Banliao, but not for the other three study communities. For Tuanjie, the analysis actually suggested a positive influence of labor out-migration on the community involvement of rural households. These results demonstrate that rural labor out-migration may constrain the participation level of migrants and migrant households for community activities, though good opportunities exist for constructing and maintaining a rural community field

extending beyond local boundaries in a broader regional context (Flint, Luloff, and Theodori 2010).

Community development is essentially a purposive process to improve social interactions and the community field structure (Wilkinson 1991). A direct practical implication of these results for rural community development is to develop policies which enhance the positive effects of rural-to-urban labor migration on community interaction while limiting the negative ones. Both the key informant interviews and the survey data suggested interactional capacity was generally low across the study communities. This may increase local vulnerability to socioeconomic and environmental changes caused by the labor out-migration process.

There is little effort to tie the people who share common interests in local place and community together in contemporary rural China. Rural community development is naturally interrelated with the System of Village Self-Governance in China. Village administration committees can play an essential role in promoting active dialogue and collective problem solving among local residents. Fostering the improvement of community capacity for interaction and collective action in rural areas needs to be incorporated as a key component in the ongoing New Rural Construction Program in China.

Moreover, labor migration should be viewed as an opportunity instead of a problem for rural community development. It is of great importance to encourage

the productive linkages between labor migrants to cities and residents remaining in rural areas and facilitate labor migrants' contribution to rural community development (for example, through strengthening the labor migrant network and mobilizing remittance funds for community projects). Bringing labor migrants and non-migrant villagers together to address common community problems is a critical step in improving rural community well-being. Nevertheless, although the potential contribution of rural labor out-migration to rural community development can be significant, it cannot substitute for the state's responsibility in investing in infrastructure construction and social welfare in rural areas. Any long-term benefits brought by labor migration will depend on adequate institutional support from different levels of government.

The findings of this study also have implications for natural resource management and policy in rural China. Our discussion suggests that rural-to-urban labor migration may exacerbate the fragmentation of rural natural resource management by reducing community social interaction in some rural origin areas. However, the circular labor migration process may improve the overall community interaction level in rural areas through extending local community field. Sustainable environmental management and economic development in rural China demand a shift from the overemphasis on fractional household operations to a real household-community co-management structure in rural natural resource policies. Policies focusing on promoting community development in rural areas

through labor migration are integral to building local collective capacities for rural environmental conservation. Moreover, since community interaction is at the core of community-based natural resource management, the advancement of the community-based approach to environmental conservation will in turn foster community development in rural China.

Finally, this study has methodological implications for future research on migration and community. Although this study provides empirical evidence for the context-specific impacts of migration on community interaction in rural origin areas, it is still not clear what community characteristics and circumstances account for the potential positive or negative consequences. In the present study, the measurement of labor migration and community interaction was set at the household level and in the setting of migrant sending communities. Further research at the community and the individual levels in broader contexts is needed for a more complete understanding of the effects of labor migration on rural community interaction.

At the community level, a key factor associated with both migration and community development is community equality. Community equality is a necessary condition for the emergence of community. Inequality seriously disrupts open social contacts among local residents that are required for the development of community interaction (Wilkinson 1986). Uneven distribution of income and assets within communities also undermines local capacity for

collective natural resource management (Adger et al. 2002). Since migration and remittances initially tend to widen income inequalities and show more of an equalizing effect over time in areas of origin (Taylor et al. 1996), it is important to conduct longitudinal studies of the effects of labor out-migration on rural community equality and community interaction.

At the individual level, despite their physical absence from home for varying lengths, labor migrants to cities do not necessarily have lower level of community participation than those remaining in rural villages. By directly examining labor migrants' social and economic ties with their relatives in rural home, their participation in community activities at places of origin, and their interaction with other migratory workers from the same home villages in destination cities, we can improve our understanding of the relationships among rural-to-urban labor migration, community interaction, and community-based environmental conservation in rural China.

Notes

¹ The general description of the four study villages is based on field data collected from administration committees of these communities.

² Key informant interviews from Tuanjie Village showed there were no observable differences among *Han*, *Miao*, and *Tujia* people in terms of socioeconomic characteristics, labor migration patterns, and natural resource management practices.

³ All the key informant interviews were conducted in Chinese. Representative quotes presented in the article are direct translations of corresponding interview transcripts by the lead author.

⁴ Because of the binary character of community participation variables in the survey, the factor analysis here was based on tetrachoric correlations rather than the conventional Pearson correlations. We first used the %POLYCHOR macro in SAS 9.1 to create a matrix of tetrachoric correlations among the 10 variables. The resulting correlation matrix was then read into SPSS 18.0 and was analyzed with the FACTOR procedure using principal components extraction and varimax rotation. Since the Cronbach's alpha value of the community participation scale did not increase with any item deleted, all 10 questions were included in this composite measure of community interaction.

⁵ Several households selected for the survey had former members who already moved permanently to cities and did not return on a seasonal or circular basis.

These persons were not treated as part of the households and were excluded from the survey. Therefore, all the labor-migrant households in the survey were characterized by circular labor migration experiences involving regular returns of migratory workers to their places of origin. Ten households in the dataset did not have any labor migrant members at the time of survey but had someone with labor migration experience in the past. We grouped them as non-labor-migrant households in this study, but acknowledge the heterogeneity within this household group. The effect of this factor on the analysis should be limited due to the relatively small size of this subgroup of non-labor-migrant households.

⁶ Since the community activities listed in the survey could be taken by migratory worker members of labor-migrant households when they return to home communities, rural labor migrants were included in the measurement of the three laborer-related characteristics for these households.

⁷ Before the economic reform that started in the early 1980s, rural natural resources such as land and forests in China were managed through the People's Communes system. In the commune regime, farmers were organized to collectively use and manage farmlands and other resources. During the economic reform, the commune system was replaced by the HRS. Under this system, though farmlands remain collectively owned in the name of the village communities, long-term use rights to farmlands were assigned to individual rural households. Farmers are free to make decisions about agricultural production and

land management for their contracted plots of farmland. Over time, the HRS was used to govern other natural resources such as grasslands and forestlands.

⁸ Among the five household sociodemographic controls, mean age and mean educational level of labor members were significantly related to community interaction in the aggregate ANCOVA model. Rural households with older or more educated labor members tended to participate more in community activities. In the multivariate analysis for individual communities, mean educational level of labor members was the only control variable that had significant effect (positively and significantly related to community participation for Dacao and Tuanjie).

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Figures and Tables

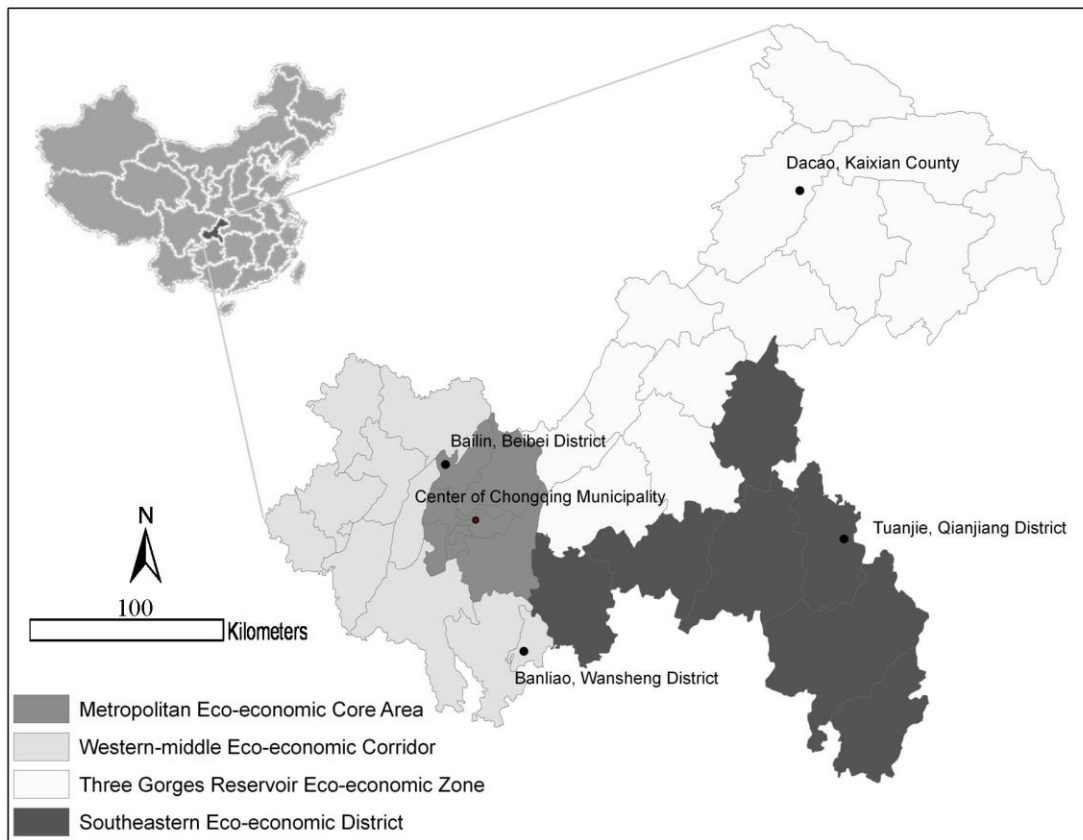


Figure 1. Map of Study Communities in Chongqing Municipality, Southwest China. Reprinted with kind permission from Springer Science+Business Media: Human Ecology, Rural-to-Urban Labor Migration, Household Livelihoods, and the Rural Environment in Chongqing Municipality, Southwest China (Qin 2010:679).

Table 1. Bivariate comparisons of household groups on community participation using the independent *t*-test for the aggregate dataset and for study communities

Variables	Overall (N=345)		Bailin (N=87)		Dacao (N=86)		Tuanjie (N=85)		Banliao (N=87)			
	NLM ^a (N=166)	LM ^a (N=179)	NLM (N=41)	LM (N=46)	NLM (N=38)	LM (N=48)	NLM (N=45)	LM (N=40)	NLM (N=42)	LM (N=45)		
Participation in community activities	4.16	4.00	4.39	4.41	mean		4.17	3.58	3.46*	4.32*	4.68*	3.72*
Attended a local community event	32 ^(*)	24 ^(*)	41	26	percent		32	22	21	32	36*	16*
Contacted a public or village official about some general community issue of concern	37	37	39	43	44 ^(*)	27 ^(*)	29*	51*	36	30		
Worked with others in the community to deal with some community issue or problem	22	20	20	26	32	22	25	19	14	14		
Attended a villager meeting about general community issues	84	80	68	70	88	82	81	86	100**	81**		
Participated in a community organization	21 ^b	15 ^b	44	35	17 ^(*)	4 ^(*)	8	5	18	12		
Voted in a local election or referendum	94	96	95	100	90	89	92	97	100	98		
Served on the village administration or local party branch, or as village group head or villager representative	13	12	12	11	12	11	10	14	16	12		
Participated in community efforts to preserve natural resources	43	42	44	46	32	31	40	51	57 ^c	40 ^c		
Attended a public hearing or meeting about environmental or natural resource issues	47	49	46	46	41	51	31	46	68	53		
Contacted a village official or a governmental agency to get environmental information or complain about an environmental problem	22	26	29	39	29	18	8*	30*	23	16		

^a NLM="non-labor-migrant households", LM="labor-migrant households"

^b p-value=.108

^c p-value=.109

** significant at the .01 level; * significant at the .05 level; ^(*) significant at the .10 level

Table 2. Summary of the ANCOVA on community participation for the aggregate dataset and for study communities

Variables	Overall (N=345)		Bailin (N=87)		Dacao (N=86)		Tuanjie (N=85)		Banliao (N=87)	
	F-score	p-value	F-score	p-value	F-score	p-value	F-score	p-value	F-score	p-value
Labor migration status	1.906	.168	.552	.459	2.572	.113	2.426	.123	3.806(*)	.055
Years of residence	.048	.826	.493	.485	.032	.858	.075	.785	.160	.690
Household size	1.653	.199	1.945	.167	.317	.575	.814	.370	.000	.986
Number of labor members	.036	.850	.467	.496	.003	.954	.284	.596	.062	.803
Mean age of labor members	3.044(*)	.082	1.397	.241	1.133	.290	.059	.809	.838	.363
Mean educational level of labor members	18.249***	.000	2.196	.142	13.731***	.000	7.932**	.006	1.115	.294
Multiple R	.24		.30		.41		.39		.28	
Multiple R square	.06		.09		.17		.15		.08	

*** significant at the .001 level; ** significant at the .01 level; * significant at the .05 level; (*) significant at the .10 level

Table 3. Summary of the MCA of community participation for the aggregate dataset and for study communities

Variables	Overall (N=345)		Bailin (N=87)		Dacao (N=86)		Tuanjie (N=85)		Banliao (N=87)	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
mean										
Labor migration status:										
Non-labor-migrant Households	4.16	4.26	4.39	4.63	4.17	4.33	3.46	3.49	4.68	4.70
Labor-migrant households	4.00	3.89	4.41	4.20	3.58	3.43	4.32	4.28	3.72	3.70
Eta/Beta	.04	.09	.01	.10	.13	.20	.23	.21	.24	.25