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ECOTOURISM SERVICE PROVISION AND INCOMES OF RURAL HOUSEHOLDS. THE CASE OF BEIJING IN CHINA¹

Key words: ecotourism, decision modelling, poverty alleviation, household income, China, Beijing

ABSTRACT. This study focuses on the choice of rural residents to provide ecotourism services and the effects on their household income as a path to alleviate urban-rural income discrepancy using survey data collected in villages located in Beijing in China. The empirical modelling of the decision to offer ecotourism services originated from the framework of the random utility model (RUM). The decision equation and income equation are estimated using the logit and ordered logit techniques, respectively. The calculated probability changes based on the estimated regression coefficients provide measures of the likelihood of choosing to provide services or factors related to the change in rural household income. Older residents, those with children in a household, and those having relatively more income are less likely to decide to provide ecotourism services. Factors affecting income are identified in another equation. Income increases if a rural resident completed high school, is married, or male, but decreases as resident age increases. The probability changes are largest for households with a relatively lower income (excluding any income from ecotourism services), although the specific probability changes vary by household income level. Improvement in income is possible for households engaged in ecoservice provision and is facilitated by enhancing education of residents. However, low income households are unlikely to engage in tourism services and appear to be run by older, less educated residents.

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INTRODUCTION

Diversifying off-farm income has been shown to reduce pressure on the environment [McGehee, 2009]. In particular, adopting ecotourism has provided farmers with additional income, encouraging farming practices consistent with sustainability and environmentally friendly measures [Marenya, Barrett 2007]. The adoption of ecotourism can contribute to rural poverty reduction. Remarkable economic growth lifted more than 800 million people above poverty (defined as less than USD 1.90 of daily expenditures per person [Ferreira et al. 2015]) in China since 1978. Still, China has 1.7% of the population (10.7 million people) classified as living in poverty [NBSC 2018]. About 66% of the poor live in the mountainous regions of China [Maoying 2003], where job opportunities are scarce. Additionally, income inequality in rural China has been rising [Wan, Zhou 2005], contributing to illegal logging, forest land conversion to farmland, and over-exploitation of forest resources. Revenues from ecotourism can generate income and compensate the local population for the restricted access to natural resources [Tisdell 1996]. Although the link between the provision of ecotourism services and local population income has been recognized [Sustainability Watch 2009] and attempted in China [Tisdell 1996], there has been a lack of studies exploring the character of that relationship using empirical data.

In Sichuan and Yunnan provinces, the two most prominent destinations in China [Li et al. 2018], ecotourism improved economic prosperity. Ecotourism offers the best employment opportunity in terms of village earnings and other related benefits [Hunta et al. 2015] and additional employment generates multiplier effects in the local community [Sangpikul 2017]. It counteracts China's unequal development and stimulates regionally decentralized development [Wen, Tisdell 2001]. Furthermore, ecotourism could reduce migration of rural poor to major cities [Schellhorn 2010].

China National Tourism Administration (CNTA) together with the Reform Commission of China (NDRC) have issued "The National Ecotourism Development Plan (2016-2025)" [Zhong, Liu 2017]. In 2017, 550 billion CNY² were dedicated to developing tourism across rural China. The industry saw a 30% rise of gross output from 1.15 trillion CNY in 2017 to 1.5 trillion CNY in 2018, and the number of trips to forests grew by 15% to 1.6 billion in 2018 [China Daily 2019].

Very few studies examined the farm household participation decision in ecotourism. With the complete banning of commercial logging in China, ecotourism could be an alternative source of income for farm households, especially those located in areas with a high proportion of forested land. An earlier study revealed that Beijing forests provide ecosystem services for its residents, valued at 339.71 million CNY. The recreation benefits, in particular, were valued at 671.6 CNY/ha, or 2.15% of the total forest value [Xie et al. 2010].

² CNY – Chinese yuan.

This paper attempts to identify factors influencing villager decision to participate in the provision of ecotourism services and explores how participating in ecotourism affects household income. The study uses survey data collected in the fall of 2019 in Beijing. The Beijing selection is justified by the populous metropolis and large surrounding rural and forested areas suitable for urban resident participation in ecotourism. The study applies a random utility concept and latent dependent variable techniques to measure effects of personal, household, and farmstead features on the decision to sell ecoservices and on rural household incomes in villages engaged in ecotourism service provision in forest areas in Beijing.

This study contributes to the existing literature by expanding the knowledge of influential factors affecting farmer decisions to participate in providing ecotourism services, emphasizing areas with substantial shares of forests. A key feature of ecotourism is that it involves travel to natural areas with conserved environments and differs from the mass tourism frequently focused on sightseeing prominent historical or entertainment sites and vacation spots. Additionally, ecotourism provides a boost to local, predominantly rural or remote, economies [Sustainability Watch 2009]. The main contribution of the paper is the use of rigorous methods to identify factors influencing the decision to provide ecotourism services and those affecting household income in villages located in areas frequented by ecotourists. The quantification of the changes in probabilities of providing ecoservices and the household shift to a higher income bracket enriches existing literature. Finally, the paper focuses on services provided by individuals rather than those offered by community-based national parks in China and emphasizes the role of individual engagement in ecoservice provision. Insights gained from the study allow for recommendations for the promotion of ecotourism in rural areas of China aimed at the improvement of quality of life, job creation, reduction of agricultural practices potentially damaging to the natural environment, and lessening the pressure of domestic migration from rural to urban areas in search of additional income. Ecotourism regions with substantial forest areas incentivise local communities to preserve and maintain forest resources [Zambrano et al., 2010] and thus extending environmental benefits. With daily life gradually normalizing following the Covid-19 pandemic, opportunities for urban residents to take part in ecotourism expand and allow villagers to capitalize on their proximity to natural scenery.

BACKGROUND

Ecotourism is linked to the natural environment and various dimensions of sustainability. Jacobus Franciscus Koens et al. [2009] and Kanchana Wickramasinghe [2012] emphasized ecotourism relevance to sustainable development in rural areas. Ecotourism can support local sustainable development and Maheshwar A. Rao [2002] noted the adverse effects of tourism if sustainable development is not achieved. Sat Prakash Bansal and Jaswinder

Kumar [2012] emphasized the relationship between sustainable development and tourism. Tuğba Kiper [2013] highlighted the potential risks of tourism in natural areas and summarized principles and guidelines to achieve economic, environmental and social sustainability. Noori Kamran and Farhad Zand [2013] analysed the impact of rural tourism on sustainable village development in Kermanshah province using, among others, SWOT analysis, and suggested a sustainable development path for the region. The specificity of ecotourism in China reflects a deep-seated concept of the unity between nature and human beings [Wen, Ximing 2008].

Ecotourism's popularity accelerated in the 1980s [Rooks 2022]. In contrast to mass tourism, nature is the primary attraction in ecotourism. The size of the ecotourism market worldwide is projected to increase from USD 181.1 billion in 2019 to USD 333.8 billion in 2027 [Statista 2022]. The figures are a fraction (3.9%) of the total global leisure travel expenditures, estimated at USD 4,692 billion in 2019 [Statista 2022]. Tourism earnings have been growing at an annual rate exceeding 10% through 2019 [Trading Economics 2022], but the growth rate of ecotourism in China is similar. Ecotourism is important because Chinese prefer to visit forested areas [People's Daily Online 2021], including mountainous forests such as those in Beijing.

Ecotourism not only benefits conservation but also has a positive impact on the welfare of local people. Ecotourism services range from being a tour guide to retailing [Mugizi et al. 2017]. However, the current study focuses on ecotourism that is similar to the specific Chinese form of rural tourism called "nong jia le" that resembles agritourism. This form of tourism emphasizes privately-owned small enterprises (restaurants) featuring fresh food from farms, appreciation of traditional lodging, and experiencing farm activities. Both agritourism and ecotourism are considered similar concepts in this paper, but the current study emphasizes forested areas rather than agricultural fields [Chao 2012].

Many studies found that ecotourism and rural tourism play an essential role increasing villagers' income and stimulating the local economy. Past studies, depending on the specific objectives of the research, applied various methodologies to investigate the economic impact of tourism. Eric Tchouamou Njoya and Neelu Seetaram [2018] used dynamic computable general equilibrium analysis to show that tourism in rural areas can be an engine for poverty reduction. However, its benefits were unevenly distributed and hence contributed to the widening poverty gap. John Wagner [2013] used the social accounting matrix (SAM) model to approximate the regional economic multiplier brought by ecotourism. The study showed that the economic impact on the region is small due to a large percentage of commodities and inputs that are imported. Studies on factors affecting villager decisions to participate in the provision of ecotourism services often applied a latent dependent variable modelling such as logit or probit regression models. The current study explores factors that improve a rural household income in areas where opportunities exist to participate in ecotourism service provision to visitors from an adjacent major urban metropolis.

CONCEPTUAL FRAMEWORK

The villager is assumed to be motivated to provide ecotourism services by the desire to maximize own utility. The observable consequence of the decision is the actual performance of services, which is recorded as 0/1 outcome. The random utility model (RUM) has been frequently used in modeling discrete alternatives [Cascetta 2009]. The application of the RUM assumes that choices are discrete events, utility associated with decisions is treated as a random variable and varies among individuals, and individuals make a rational choice to obtain the highest utility. Specifically,

$$u_{ij} = v_{ij} + e_{ij} \quad (1)$$

where the utility of farmer i and option j is composed of a deterministic observed component v_{ij} and an unobserved stochastic error component e_{ij} .

The probability of farmer i choosing choice set j is the probability that the perceived utility of j exceeds other available alternative choice sets. A rational farmer will select an option providing the greatest utility:

$$P_{ij} = P_r(u_{ij} > u_{ik}) \text{ for all } j \neq k \quad (2)$$

EMPIRICAL MODEL OF CHOOSING TO PROVIDE ECOSERVICES

Farmer utility maximization due to the decision to engage in ecotourism service provision is given as:

$$\text{Max}\{E(U(\pi_i)) = f(X_i)\} \quad i = 1, \dots, n \quad (3)$$

where $U(\pi_i)$ represents the expected utility of the i -th farmer from the decision to participate and $f(X_i)$ is a function of the observable factors related to i -th farmer.

Since the dependent variable or "participation" is restricted to 1 for participants and 0 for non-participants, a logit technique is a suitable estimation approach. Farmer decision to provide ecotourism services is $y_i = 1$, otherwise $y_i = 0$. The probability the i -th farmer chooses to provide ecotourism services is:

$$P_i = P(y_i = 1/X_i) = 1/[1 + \exp(-f(X_i))] \quad (4)$$

where P_i is the participation probability given the explanatory variables X_i .

Assuming a linear function of $f(X_i) = X_i \beta_i$, β_i is the coefficient of the regressor X_i [Bagi, Reeder 2012]. Because the coefficient β_i is not linearly related to probability P_i , it takes the form of the logarithm of odd ratio, i.e., the ratio of probability (P_i) of providing or not providing services ($1 - P_i$) [Obeng, Weber 2014]:

$$\ln(P_i/1 - P_i) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \quad (5)$$

EMPIRICAL MODEL OF HOUSEHOLD INCOME DETERMINANTS

The motives behind the provision of ecotourism services is the desire to generate income. A key determination of the empirical model is linked to the method of measuring rural household income. In the current study, a multi-category scale measures income from very low to very high in pre-determined intervals. The purposeful order of scale suggests the choice of an ordered logit technique to estimate the empirical relationship between an income category and a set of explanatory variables. The observed ordinal dependent variable is represented by and expressed as a function of a continuous variable y_i^* :

$$y_i = \begin{cases} 1 & \text{if } y_i^* < \alpha_1 \\ 2 & \text{if } \alpha_1 \leq y_i^* < \alpha_2 \\ 3 & \text{if } \alpha_2 \leq y_i^* < \alpha_3 \\ \vdots & \\ J & \text{if } \alpha_{j-1} \leq y_i^* \end{cases} \tag{6}$$

where J is the number of discrete outcomes of y_i , and $\alpha_1, \dots, \alpha_{j-1}$ are threshold values between $-\infty$ and ∞ .

The probability of being in a particular outcome or income category for $1 \leq i \leq J$ is given by the following equation:

$$\begin{aligned} P(y_i = j|x_i) &= P(\alpha_{j-1} \leq y_i^* \leq \alpha_j) \\ &= P(\alpha_{j-1} - x_i\beta \leq \varepsilon_i \leq \alpha_j - x_i\beta) \\ &= F(\alpha_j - x_i\beta; \theta) - F(\alpha_{j-1} - x_i\beta; \theta) \end{aligned} \tag{7}$$

Here, F is the cumulative distribution function (CDF) of ε_i , and the allows to use of the maximum likelihood estimation framework. The log of likelihood function can be expressed as:

$$\log L = \sum_{i=1}^N \sum_{j=1}^J z_{ij} \log[F(\alpha_j - x_i\beta; \theta) - F(\alpha_{j-1} - x_i\beta; \theta)] \tag{8}$$

where z_{ij} is defined as:

$$z_{ij} = \begin{cases} 1 & \text{if } y_i = j \\ 0 & \text{else} \end{cases} \tag{9}$$

The estimated coefficients are converted to probability changes of household income falling into one of the specified categories in response to changes in the explanatory variable. The statistically significant probabilities are measures helping to distinguish the relative importance across socio-demographic respondent and household features, and farm and farmstead attributes.

DATA AND VARIABLE SELECTION

The Chinese government announced a program of developing key villages for rural tourism in July 2019. The program was implemented by the Provincial Department of Culture and Tourism and the Provincial Department of Reform Commission [Jiangxi News 2019]. Of the 320 villages chosen across the country, seven of them are located in Beijing [Jiangxi News 2019]. The Beijing municipal government has been actively involved in the promotion of ecotourism as a mechanism to narrow income disparity between its rural and urban residents [Liu, Wong 2019]. The seven selected villages are located in different districts in Beijing and each village is a good representation of their respective district. Residents in each village were randomly selected to participate in the survey gathering the data. Two villages were chosen to conduct the pre-testing, and five villages for the actual data collection.

Out of the seven villages, two were the site of the pre-tests, and five were visited for data collection. Hanjiachuanhenan, Beigou, Gubeikou, Liugou, Huangshandian, Liuzhuanghun, and Lingshui were site of the pretests and used for collecting data. All were scattered across six different districts in Beijing. The villages were grouped based on the type of tourism that each village exhibited, including nature-based tourism and cultural/recreational-based tourism. Three villages, Hanjiachuanhenan, Beigou and Gubeikou, were considered nature-based as they are situated in mountainous areas and were well known for their hiking activities. Beigou and Gubeikou were only a few kilometres away from the ancient Great Wall, while Hanjiachuanhenan was in close proximity to the famous Lianhuashan forest park.

The pre-test involved a semi-structured, open-ended, face-to-face interview. A second pre-test validated and confirmed the suitable format of the survey instrument. The drafted questionnaire probed for the socio-demographic, household, and farm information. A face-to-face interview took an average of 15-20 minutes to complete. Answers were recorded using a dedicated website. A total of 193 questionnaires were completed and the number varied across villages.

Literature on factors affecting the adoption decision of this specific type of ecotourism is very limited. Hence, the explanatory variables for the empirical relationship were chosen following earlier studies of ecotourism and agritourism. Four groups of explanatory variables were socio-demographic, household, and farm/environment features. Considering the socio-demographic factors, Tie Wang et al. [2019] studied “nong jia le” tourism in two villages and showed varying results. In the village of Pinglou, education and gender had the biggest influence on participation or engagement in “nong jia le”, while education, consumption level, and land area were important drivers in the village of Baozi [Wang et al. 2019]. In both areas, education was an important factor. In our sample, the average educational attainment level was not very high, but some residents had more formal

education than others. Education of an individual has the potential to simultaneously boost confidence and the ability to productively engage in tourism activities [Simmons 1994]. Education allows the differentiation of offered services such as acting as a guide or preparing meals. An inadequate education level has been the main barrier to the effective provision of tourism services [Odege 2014, Yeboah et al. 2017].

The measure of household size has yielded mixed results. Wei Liu et al. [2012] conducted their research in the protected area of Wolong Nature Reserve and concluded that household size is not a significant factor. However, this may be due to the fact that their study considered household size and number of workers in each household as separate independent variables. Other studies have verified that household size does indeed play an essential role in the provision of tourism services because a larger household size indicates larger labor resources [Croppenstedt et al. 2003, Nguyen 2018].

A number of studies have also stated that villager demographics, including age, gender, and marital status, affect the decision to become involved in community tourism activities. Wanjohi Kibicho [2008] reported that various resident groups, categorised according to their demographic factors such as age, gender and origin, had unique perceptions and attitudes towards community participation in tourism. Older men with a high educational attainment level were more supportive of tourism development [Safari et al. 2015, Jaafar et al. 2015, Mehta, Kellert 1998].

With regard to ecotourism, several studies have been found close relationships between farmstead features and provision of tourism services in both developed and developing economies. Among those features was the size of farmland area [Dolisca et al. 2004, Yeboah et al. 2017]. The current study included three measures of farm features, forested area, agricultural land operated by a rural household, and the size of the farmstead. Household income used in the empirical modeling was the 2018 total income after subtracting any income generated from providing the ecotourism services. Such specification pre-empted the potential bias.

Table 1 shows the descriptive statistics of the selected explanatory variables. About 52% of respondents that were surveyed are currently participating in ecotourism. The average total income in 2018 was estimated to be over CNY 53,000. The average age of the surveyed villager was 55 years. The average family size was about 5 and 66% of households include a person older than 60 years old. About 30% of households had children below 5 years of age. Females accounted for 55% of respondents and 95% of participants were married. As many as 70% of respondent educational attainment level was less than high school. An average of two household members work outside their village. The average forested area, agricultural land area, and homestead area are 1.154 mu³ (769 m²), 2.417 mu (1,611 m²) and 0.704 mu (469 m²), respectively.

³ mu is a measure of land area equal 666.7 m².

Table 1. Descriptive statistics of the sample

Variable	Unit	Mean	Std. deviation	Min	Max
Dependent variables					
Total income 2018	Incomes level [CNY]*: 1 = < 20,000 2 = 20,000-50,000 3 = 50,001-80,000 4 = 80,001-100,000 5 = 100,001-150,000 6 = >150,000	2.453	1.432	1	6
Socio-demographic variables					
High school	1 = high school degree	0.297	0.458	0	1
Age	Years	55.33	12.76	22	85
Marital status	1 = married	0.953	0.212	0	1
Male	1 = male	0.453	0.499	0	1
Household size	Number of persons	4.372	2.040	1	13
Nofamout	Number of persons working outside village	1.563	1.464	0	8
Eld_d	1 = if person +60 years old in household	0.658	0.476	0	1
Kid_d	1 = if child > 5 years old in household	0.295	0.457	0	1
Farmstead features [mu]**					
Forest area	Forest area	1.154	4.869	0	50
Farm area	Farmland area	2.417	8.729	0	112
Farmstead	Farmstead area	0.704	1.031	0.06	9

* CNY – Chinese yuan

** 1 mu = 666.7 m²

Source: own calculation

RESULTS

Results of estimating the decision to provide ecotourism services and the income of rural households in villages near forested and recreation areas in Beijing are reported in Table 2 and Table 3. The decision to provide services was estimated using the logit technique, while the income of rural households was estimated using the order logit technique. Coefficients of either equation were converted to the probability measures or marginal effects to provide practical information about the influence of explanatory variables on the decision of a household to engage in ecotourism service provision (Table 2) and the change in income (Table 4). Due to space limitations and the importance of the marginal effects, the subsequent sub-sections discuss only the latter.

Table 2. Logit estimation results of the decision to provide ecotourism services

Variable name	Coefficient	Std. error	Marginal effect (dy/dx)
Household income			
Mid_inc2	-0.9546**	0.4184	-0.2034
High_inc2	-0.6896	0.4808	-0.1470
Socio-demographics			
High school	0.0636	0.4196	-0.0885
Age	-0.0368**	0.0172	-0.0078
Marital status	-0.0576	0.8719	-0.0123
Male	-0.5667*	0.3547	-0.1208
Household_size	0.2642**	0.1231	0.0563
Nofamout	-0.2226	0.1536	-0.0474
Eld_d	-0.2640	0.4039	-0.0563
Kid_d	-0.7619*	0.4361	-0.1624
Farmstead features			
Forest area	-0.0524	0.0446	-0.0112
Farmland area	0.0013	0.0175	0.0003
Farmstead	-0.0161	0.1625	-0.0034
Constant	2.5093	1.1580	-

* $p = 0.10$, ** $p = 0.05$

Source: own calculation

Table 3. Ordered probit estimation results of the relationship between farm household income engagement in ecotourism, socio-demographic features and household

Variable name	Coefficient	Std. error
Participation	1.5383***	0.3304
Socio-demographic features		
High school	1.1334***	0.3646
Age	-0.0610***	0.0148
Marital status	2.4826***	0.7796
Male	-0.1051***	0.1752
Nofamout	0.0140	0.0939
Eld_d	-0.0269	0.1232
Kid_d	0.0787	0.3391
Farmstead features		
Forest area	0.2634	0.3826
Farmland area	0.0180**	0.0260
Farmstead	0.0312	0.0130

** $p < 0.05$, *** $p < 0.01$

Source: own calculation

FACTORS EFFECTING THE DECISION TO PROVIDE ECOTOURISM SERVICES

The decision to provide ecotourism services was more likely as the household income (less any income from ecotourism services) increased and suggests that households with less income from sources other than tourism are more likely to provide ecotourism services. As the respondent's age increases by a year above the sample mean, the probability of not providing ecotourism services increases by nearly 9%. Many older villagers lack knowledge and skills to engage in ecotourism service provision and can only assist younger household members in this effort. Also, being male lowers the probability of providing services by 12%. Male household members may work on the family land or outside the village and are unable to provide ecotourism services, especially if the demand for services coincides with important field tasks, e.g., planting. However, as the household number

Table 4. Effects of the explanatory variables on the probability of a villager household income level classification when engaged in ecotourism service provision

Variable	Income level [CNY]**					
	< 20,000	20,000-50,000	50,001-80,000	80,001-100,000	100,001-150,000	> 150,000
Participation	-0.2550 (0.0480)*	-0.0060 (0.0166)	0.0805 (0.0197)*	0.0414 (0.0139)*	0.0978 (0.0261)*	0.0413 (0.0183)*
Socio-demographic features						
High school	-0.1879 (0.0591)*	-0.0044 (0.0121)	0.0593 (0.0214)*	0.0305 (0.0121)*	0.0720 (0.0247)*	0.0305 (0.0155)*
Age	0.0101 (0.0023)*	0.0002 (0.0007)	-0.0032 (0.0009)*	-0.0016 (0.0006)*	-0.0039 (0.0011)*	-0.0016 (0.007)
Marital status	-0.4116 (0.1238)*	-0.0096 (0.0268)	0.1299 (0.0438)*	0.0668 (0.0274)*	0.1578 (0.0554)*	0.0667 (0.0332)*
Male	-0.1701 (0.0499)*	-0.0040 (0.0111)	0.0537 (0.0181)*	0.0276 (0.0110)*	0.0652 (0.0225)*	0.0276 (0.0136)*
Nofamout	0.0045 (0.0204)	0.0001 (0.0006)	-0.0014 (0.0064)	-0.0007 (0.0033)	-0.0017 (0.0078)	-0.0007 (0.0033)
Eld_d	-0.0130 (0.0563)	-0.0003 (0.0016)	0.0041 (0.0179)	0.0021 (0.0092)	0.0050 (0.0215)	0.0021 (0.0091)
Kid_d	-0.0437 (0.0634)	-0.0010 (0.0030)	0.0138 (0.0199)	0.0071 (0.0104)	0.0167 (0.0244)	0.0071 (0.0106)
Farmstead features						
Forest area	-0.0030 (0.0043)	-0.0001 (0.0002)	0.0009 (0.0014)	0.0005 (0.0007)	0.0011 (0.0014)	0.0005 (0.0007)
Farmland area	-0.0052 (0.0021)*	-0.0001 (0.0003)	0.0016 (0.0007)*	0.0008 (0.0004)*	0.0020 (0.0009)*	0.0008 (0.0005)
Farmstead	0.0174 (0.0289)	0.0004 (0.0013)	-0.0055 (0.0092)	-0.0028 (0.0048)	-0.0067 (0.0112)	-0.0028 (0.0048)

* $p < 0.1$

** CNY – Chinese yuan

Source: own calculation

increases by one person, the probability of providing the services increases by about 26%. The result implies an additional adult because the presence of children in the household lowers the probability of engaging in ecotourism service provision by a whopping 76%. Female household members are responsible for caring for small children, while ecotourists may seek accommodation or meals that are also the domain of female household members. The priority of child care is a severe time constraint preventing ecotourism service provision in households with children.

FACTORS AFFECTING RURAL HOUSEHOLD INCOME

Results in Table 4 indicate that the rural household probability of falling in the lowest income if it provided ecotourism services was about a 26%. and the probability of a household in the four highest income categories was increased by the provision of ecotourism services. If annual income was above 50,000 CNY, the probability of the household being classified in the four highest income categories was approximately 8%, 4%, 10%, and 4%, respectively.

Among socio-demographic variables, having high school education showed a similar pattern of probability effects as a household had about a 19% lower probability of being in the lowest income category and, starting with an income of 50,000 CNY, the probability increased, by about 6%, 3%, 7%, and 3%, respectively. Formal education creates the opportunity to seek well- paid jobs and equips an individual with knowledge and skills useful in well-paid employment outside agriculture or forestry. The pattern of probability changes repeated itself for the effect of marital status and being a male respondent. In the case of marital status, the probability of being classified in the lowest income category was 41% lower, but was positive for the highest four categories and ranged from 7% to 17%. Job participation is high in China and a married couple both likely work for wages, even if one of them is only employed seasonally. Gender lowered the probability of falling into the lowest income category by 17% and increased by approximately 5%, 3%, 7%, and 3%, respectively, for income categories starting with an annual income of 50,000 CNY.

Age displayed a different pattern. For every year above the mean age (of the sample respondent), the probability of falling into the lowest annual income category increased by 1%. The probability of being classified in the income category of 50,000-80,000 CNY decreased by a negligible amount (0.3%) and was nearly zero, although negative and significant, for the household income range of 80,000-100,000 CNY. The probability of falling into the income range of 100,001-150,000 CNY was negative and small, -0.4% for every year above the mean age. Given the mean age of 55 years, it unlikely, as could be expected, that older villagers were interested in the provision of ecotourism services. Older villagers were also less likely to recognize the opportunities of providing ecoservices

although some may be uniquely qualified to serve as tour guides on forest hikes in the area where they were raised or make presentations about the local folklore to visiting urbanite ecotourists. It is also possible that older residents resent increased traffic associated with ecotourism and the resulting noise, pollution, and litter [Chang et al. 2018].

CONCLUSIONS

Offering services to urban residents interested in ecotourism has been promoted in China. These service provisions have the potential to generate additional income and could help alleviate poverty and reduce pressures to migrate to urban areas in search of jobs. The decision to provide such services has been tempered by rural resident's age, household size, and the presence of children in the household. It can be expected that older residents or those who need to care for children are unlikely to provide ecotourism services due to lack of time.

Rural households in villages engaged in ecotourism had a higher likelihood of being classified in higher income categories if the resident had high school education, was married, younger, and male. Also, an increased farm area increased the likelihood of a household classified in higher income categories. Education and marital status were particularly important factors affecting household income level and could be important influence on the decision to offer or expand the provision of ecotourism services. Since the identified levels of income are relatively low compared to urban households, encouraging ecotourism service provision through government support programs has the potential to generate additional income for villagers. Creating opportunities to improve educational attainment seems to be a path to stimulate engagement in service provision and, as a result, improve incomes. Finally, the participation in ecotourism can be affected differently than in mass tourism (for review of recent studies see Michał Roman et al. [2020]) and deserves a closer examination.

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DOSTARCZANIE USŁUG EKOTURYSTYCZNYCH I DOCHODY GOSPODARSTW NA TERENACH WIEJSKICH: PRZYPADEK PEKINU W CHINACH

Słowa kluczowe: ekoturystyka, modelowanie wyboru, zmniejszanie ubóstwa,
dochód gospodarstwa domowego, Chiny, Pekin

ABSTRAKT

Celem artykułu jest ocena czynników wpływających na podejmowanie decyzji o świadczeniu usług ekoturystycznych przez mieszkańców terenów wiejskich. Zbadano także wpływ tych usług na dochody gospodarstw domowych, jako możliwość niwelowania różnicy w dochodach pomiędzy wsią i miastem. Do analizy wykorzystano dane pochodzące z badań ankietowych przeprowadzonych wśród mieszkańców podpekińskiej wsi w Chinach. Model empiryczny decyzji oferowania usług ekoturystycznych opierał się na modelu użyteczności przypadkowej (random utility model, RUM). Do obliczenia równań decyzyjnych i modelujących dochody zastosowano odpowiednio: metodę logitową i uporządkowaną metodę logitiową. Na podstawie współczynników regresji obliczono efekty krańcowe, które były miarami zmian w prawdopodobieństwie wyboru dostarczenia usług lub ich wpływu na dochody gospodarstwa wiejskiego, w reakcji na zmianę wartości zmiennej objaśniającej. Niższe prawdopodobieństwo świadczenia usług ekoturystycznych występowało u starszych mieszkańców, w rodzinach z dziećmi oraz w gospodarstwach mieszkańców ze stosunkowo wysokim dochodem. W odrębnym równaniu zidentyfikowano czynniki wpływające na dochody. Zaobserwowano, że dochody zwiększały się u tych mieszkańców, którzy ukończyli szkołę średnią, pozostawali w związku małżeńskim lub byli mężczyznami. Natomiast dochody malały wraz z wiekiem respondenta. Największe zmiany wielkości dochodów wystąpiły w gospodarstwach o stosunkowo niskich dochodach (pomniejszonych o dochody ze sprzedaży usług ekoturystycznych), a wielkość tych zmian zależała od przedziału dochodów. Wzrost dochodów mieszkańców był możliwy w gospodarstwach, które świadczyły usługi ekoturystyczne i był on stymulowany przez podnoszenie poziomu wykształcenia mieszkańców. Małym prawdopodobieństwem zaangażowania się w dostarczanie usług ekoturystycznych charakteryzowali się mieszkańcy gospodarstw z niskimi dochodami, gdyż były to osoby starsze i mniej wykształcone.

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