REMITTANCE AND CONSERVATION TECHNOLOGY ADOPTION

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Selected Paper prepared for presentation at the Agricultural & Applied Economics Association's 2013 AAEA & CAES Joint Annual Meeting, Washington, DC, August 4-6, 2013.

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Abstract

We analyzed the impact of remittance receipt and other socioeconomic characteristics on the conservation technology adoption among farmers in Chitwan, Nepal. Out of 25 soil and water conservation practices generally seem prevalent among farmers in the Country, most farmers seemed to have adopted only five of those practices. We compared the factors affecting the number of adoption of these practices using Poisson quasi-likelihood and semiparametric Poisson models. Results favor the choice of semiparametric Poisson model to understand the choice of conservation practices by farmers.

Keywords: Conservation practices, Poisson quasi-likelihood, remittance, semiparametric Poisson

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Improving agricultural productivity does not just require a combination of factors comprising the right technology, effective extension, access to physical inputs, and adequate market support services, but it also requires effectively managing natural resources (Frost et al. 2007, Kolawole et al. 2012). If households use remittance income to adopt agricultural practices that degrade the environment, the developmental impact of migration and remittance may not be sustainable. It is important for researchers to make clear the uncertainties concerning some of the benefits and pitfalls of migration and remittance on the adoption of conservation technology, and this study hopes to enumerate them for the Nepalese rural economy.

Nepal is an ideal country to study all the facets of migration, remittance, and their impact on natural resource conservation. The Government of Nepal (GON) started encouraging migration in the aims to reduce poverty, and remittance already amounts to 23 percent of GDP, and it is expected to grow (Agrawal et al. 2005, Thieme at el. 2005, Yang 2011). The problem is that migration may lead to a growing dependence on remittance income, and could result in unfavorable outcomes in the long run, including the degradation of the environment (Maphosa 2007, Lez-Vega et al. 2004). Optimistically, Nepal has a longstanding history of conservation and agricultural programs; it is very possible that agricultural development could converge with natural resource conservation (Agrawal et al. 2005). Formidably, Nepal is a small land locked country with limited resources and is vulnerable to environmental hazards.

If carried out appropriately, remittance has the *potential* to fund agricultural development in rural economies by financing resource-conserving technologies (Firdaus et al. 2010). Conservation Agriculture (CA) is a sustainable and an environmentally friendly management system for cultivating crops, with the potential to increase productivity and conserve soil and water (FAO 2008). If households participating in migration adopt a cultivation practice such as minimum tillage or conservation tillage or invest in other natural resource conservation methods, then migration and remittance may have a positive impact on the sustainable use of natural resources simultaneously improving their resilience to food insecurity. However, it is unclear whether the disruption due to labor loss and the resulting proclivity to use agricultural technology that harms the environment, is compensated by the prospective benefits of remittance money.

In order to test our hypothesis that migration and remittance has an overall positive effect on natural resource conservation in Nepal, we explored the household production behavior using survey data from a stratified random sample of households collected from Chitwan, Nepal. The location was chosen based on the sample of the population participating in migration, agriculture dominance, and the awareness of natural resource conservation methods. We estimated the impact of migration and remittance on several dependent variables of interest using a logit model. The dependent variable used was number of conservation practices adopted by farmers. The total number of conservation technology adopted by farmers is shown in Figure 1. The analysis was performed by using a Poisson quasi likelihood (PQL) method. A PQL model is more consistent than any of the existing model used

to analyzed count data model. We also compared a parametric PQL model with a semiparametric model and found it to be better specification than the PQL model. The issue of endogeneity in estimating the impact of migration and remittance on various household decisions was frequently mentioned in the literature, so we used an instrumental variable approach to account for the selectivity bias.

Increase in household income naturally impacts the environment, and the determinants of adopting resource-conserving technologies can facilitate better policy design. Results from the study can be viewed in relation to findings from other parts of the world to gain a better understanding of the impact of migration and remittance on the sustainable use of natural resources, especially by the rural poor who are vulnerable to environmental hazards.

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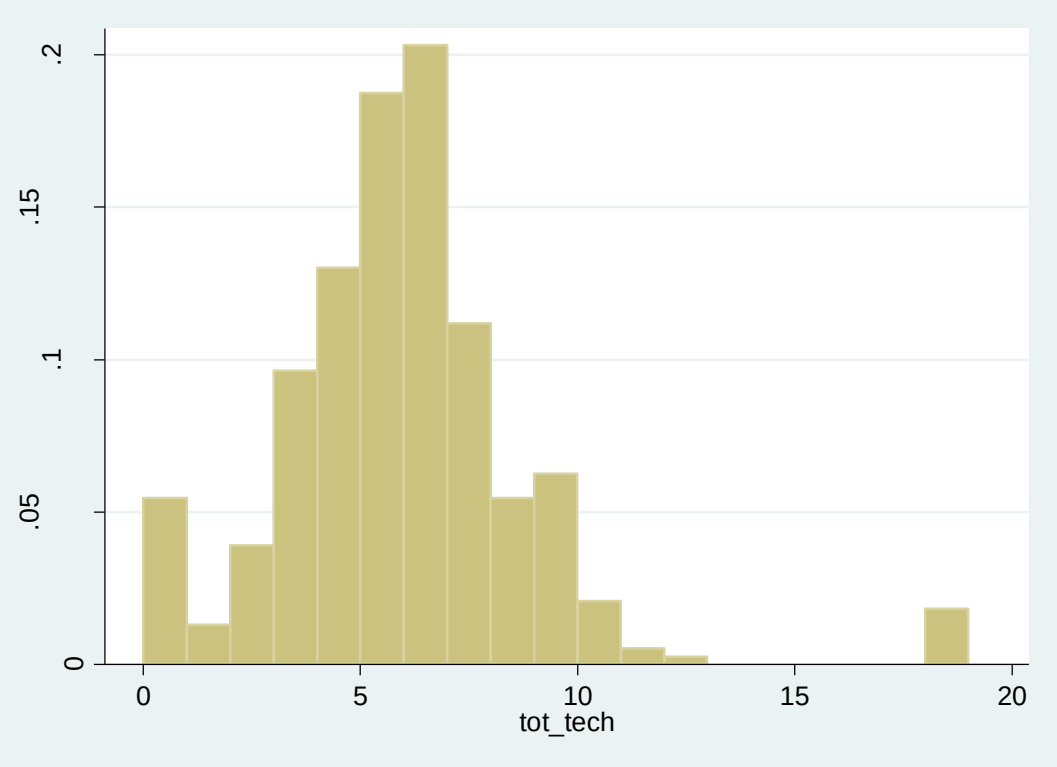

Figure 1. Total number of conservation technology adopted by farmers