



Consequences of out-migration for land use in rural Ecuador



Clark L. Gray*, Richard E. Bilborrow

University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA¹

ARTICLE INFO

Article history:

Received 7 December 2012

Received in revised form 9 July 2013

Accepted 13 July 2013

Keywords:

Land use
Agriculture
Forest transition
Migration
Remittances

ABSTRACT

In rural Ecuador and elsewhere in Latin America, the departure of migrants and the receipt of migrant remittances have led to declining rural populations and increasing cash incomes. It is commonly assumed that these processes will lead to agricultural abandonment and the regrowth of native vegetation, thus undermining traditional livelihoods and providing a boon for biodiversity conservation. However, an increasing number of household-level studies have found mixed and complex effects of out-migration and remittances on agriculture. We advance this literature by using household survey data and satellite imagery from three study areas in rural Ecuador to investigate the effects of migration and remittances on agricultural land use. Multivariate methods are used to disaggregate the effects of migration and remittances, to account for other influences on land use and to correct for the potential endogeneity of migration and remittances. Contrary to common assumptions but consistent with previous studies, we find that migrant departure has a positive effect on agricultural activities that is offset by migrant remittances. These results suggest that rural out-migration alone is not likely to lead to a forest transition in the study areas.

© 2013 Elsevier Ltd. All rights reserved.

Introduction

Rural out-migration, or the departure of people from rural areas, is a key transformative process in agricultural regions of the developing world. In Latin America, out-migration and fertility decline have led to low or negative population growth rates in many rural areas, some of which have also received substantial remittances from international migrants (Carr et al., 2009; United Nations, 2010). Out-migration thus has important implications for both the incomes and labor resources of agricultural households and communities, but the net effect of these processes on livelihoods and land use change are unclear. Many authors have argued that out-migration and remittances undermine traditional agricultural activities and lead to land abandonment and the regrowth of native vegetation (Aide and Grau, 2004; Hecht, 2010). These changes could potentially contribute to “forest transitions” that protect biodiversity in these areas (Rudel et al., 2005).

However, there are good theoretical and empirical reasons to be skeptical of this argument. From a theoretical perspective, this view does not account for the fact that many rural households allocate their labor to other economic activities beyond agriculture (Ellis, 2000), and that remittances can be invested in labor-saving

agricultural inputs (Rozelle et al., 1999). From an empirical perspective, several recent studies using econometric and spatial approaches, as well as traditional ethnographic approaches, have found mixed or weak effects of migration and remittances on agriculture in origin areas. Complementing the in-depth but small-scale understanding of processes that come from ethnographic studies (e.g., Jokisch, 2002), econometric approaches offer the opportunity to clearly distinguish between the effects of migration and remittances while at the same time explicitly accounting for the selectivity of migration (Rozelle et al., 1999). Studies using spatial and remote-sensing methods provide the ability to view the landscape as a whole, and thus to derive conclusions about the overall environmental impacts of migration (Müller et al., 2009). Up to now very few studies have combined these approaches in a single study area (but see Rudel et al., 2002).

We investigate these issues in the context of rural Ecuador, a highly biodiverse country that is an important origin area of international migrants. We use a novel approach that combines a household-level econometric analysis of land use with a community-level remote-sensing analysis of vegetation change. These analyses draw on data from an original household and community survey conducted in three study areas in rural Ecuador, as well as from a linked spatial analysis of satellite imagery and other data sources. In the household-level analysis, we use data from 440 households to model the effects of migration and remittances on agricultural activities while accounting for other influences as well as the potential for endogeneity. In the community-level analysis we use data from 80 communities to model the effects of

* Corresponding author at: Department of Geography, CB 3220, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA. Tel.: +1 919 962 3876.

E-mail address: cgray@email.unc.edu (C.L. Gray).

¹ <http://geography.unc.edu/people/faculty-1/clark-gray>.

out-migration on changes in vegetation greenness while accounting for other social and biophysical characteristics of communities. Together the two analyses provide insights into both the economic and ecological effects of migration, with results that challenge common assumptions about these processes. This work considerably expands our previous study on this topic (Gray, 2009a), and complements recent work by ourselves and others on other aspects of the migration–environment nexus (Carr, 2008; Gray, 2009b; Massey et al., 2010; Fussell et al., 2010; Dillon et al., 2011; Gray and Mueller, 2012; López-Carr, 2012; Gray and Bilborrow, 2013).

Literature review

Theoretical perspectives

In the rural developing world, households commonly draw on a variety of assets to invest in a diverse portfolio of livelihood activities, including subsistence agriculture, cash cropping, wage labor and migration (Ellis, 2000). Migration is often part of a household strategy to diversify into a new income source in the form of migrant remittances (Stark and Bloom, 1985), though participation in migration is often constrained by lack of access to financial capital and migrant networks (Massey and Espinosa, 1997). The participation of individuals in migration and agricultural activities is also highly selective, and in the case of rural Latin America, men are often more likely to both participate in agricultural labor and to become international migrants (Katz, 2003). In this context, the departure of a household member reduces household labor supply, which will reduce labor inputs to agriculture and other activities unless there is a compensating increase in effort by the remaining household members. If the migrant sends remittances, these could be used directly for household consumption, substituting for agricultural production, and/or for hiring labor to compensate for the absent household member. Remittances could also be invested in the intensification of land use and the purchase of agricultural inputs such as fertilizer or pesticides. The outcome in particular cases will depend on the risks and opportunities represented by various livelihood strategies, among other factors.

Despite these many options available to rural households, many authors in environmental studies and development studies have argued that out-migration and remittances will lead to agricultural decline and disintensification (e.g., a reduction in agricultural intensity). In environmental studies, this idea is part of “forest transition theory”, in which rural out-migration is viewed as a key mechanism leading to land abandonment and the subsequent regrowth of native vegetation (Rudel et al., 2005). In the development studies literature, out-migration and remittances are often seen to undermine traditional livelihood activities, such as subsistence agriculture, as part of a “migrant syndrome” (Reichert, 1981; Jones, 2009). These perspectives do not account for the diversified nature of rural livelihoods, the significant adaptability of rural households in the face of demographic and economic change (Bilborrow, 1987; Netting, 1993), and the numerous alternative pathways of adaptation of described above. Both the forest transition and migrant syndrome frameworks have been widely criticized as overly simplistic (Taylor et al., 1996; Perz, 2007; García-Barríos et al., 2009; Robson and Berkes, 2011), but the view that agricultural decline and environmental restoration follow out-migration remains common (Aide and Grau, 2004; Kauppi et al., 2006; Meyerson et al., 2007; Hecht, 2010).

Previous empirical studies

Previous studies of the consequences of migration for agriculture have employed qualitative, econometric and spatial methods,

and have variously found evidence of positive, negative and zero net effects.

Numerous qualitative and small-scale studies have approached this issue through ethnography and intensive observation of a small number of communities. Among these studies, several have found evidence of disintensification of agriculture (Zimmerer, 1993; Preston et al., 1997; Schmook and Radel, 2008; Jones, 2009; Qin, 2010; Robson and Berkes, 2011), while others have observed small or zero net effects (Black, 1993; Klooster, 2003) or intensification through the investment of remittances (McKay, 2005; Taylor et al., 2006; De Haas, 2006). Three studies have examined Ecuador specifically. Preston and Taveras (1980) investigated agricultural change following out-migration in six rural communities in the Ecuadorian highlands, and found that in most cases land belonging to internal migrants was rented out or sold for further use instead of abandoned. Jokisch (2002) later examined two communities in the central Ecuadorian highlands, and found that, despite rapid international out-migration and large remittance inflows, small-holder agriculture continued mostly unchanged. Finally, Rudel et al. (2002) similarly observed significant out-migration from a rural community in the Ecuadorian Amazon without significant land use change.

A number of econometric studies have also investigated this issue, typically using cross-sectional or longitudinal survey data in instrumental-variable regression models. Migration and remittances are potentially *endogenous* because they are not randomly assigned but instead reflect selection on both observed and unobserved characteristics. This issue complicates simple comparisons of migrant-sending and non-migrant-sending households because any differences between these households may be due to either the drivers or consequences of migration. The instrumental variable approach directly addresses this concern, but it requires the use of one or more variables, known as *instruments*, that affect migration and/or remittances but do not affect the final outcome of interest (Wooldridge, 2001). Rozelle et al. (1999) pioneered the use of this approach to study migration in a study of smallholder agriculture in China, drawing on migrant networks and remittance norms as instruments. This study revealed that out-migration and remittances had countervailing negative and positive effects, respectively, on maize yields.

Several other studies have since used similar approaches (e.g., Mendola, 2008; Miluka et al., 2010; Atamanov and Van den Berg, 2012), including four from Latin America. Pfeiffer and Taylor (2007) found that participation in cash cropping in Mexico declined with the departure of international migrants, particularly for male migrants, but that growing staple crops was unchanged. Damon (2010) similarly showed that area in cash crops in El Salvador declined following international migration, but the area in staple crops unexpectedly increased. In contrast, Van Wey et al. (2012) found in Amazonian Brazil that cash crops increased with remittances and that migrant departure had no effect, though this study did not account for endogeneity. Finally, in a study from Ecuador, Vasco (2011) showed that fertilizer use and cattle ownership unexpectedly increased with migrant departure while remittances had no effect. Thus, consistent with qualitative studies, econometric studies find mixed and diverse effects from migration and remittances on household agricultural activities.

Finally, a small number of studies have used spatial methods, including geographic information systems and remote sensing, to evaluate the consequences of migration for agriculture. In an early study that foreshadowed this approach, Rudel et al. (2000) linked data on reforestation from 650 field plots in Puerto Rico to census data on demographic change and other factors, revealing that reforestation increased as the local population declined due to out-migration. This approach has since been extended to include

Download English Version:

<https://daneshyari.com/en/article/6548933>

Download Persian Version:

<https://daneshyari.com/article/6548933>

[Daneshyari.com](https://daneshyari.com)