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The Impact of Common Property Right Forestry: Evidence from Ethiopian Villages

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Summary. — We use inverse probability weighting to examine the effects of a unique two-pronged common-property forestry program in the Gimbo district of Ethiopia, which includes Joint Forestry Management and improved non-timber forest product marketing efforts. The program was found to have affected household access to agricultural land, and, thus, reduced livestock holdings, due to program strictures. Furthermore, despite those reductions, there is evidence that the program had economically significant effects on other activities. Households were able to increase their earnings from non-timber forest products, partly due to an increased labor allocation toward non-timber forest product collection.

Key words — community forestry, treatment effects, matching and Ethiopia

1. INTRODUCTION

The devolution of natural forest management to local communities has recently become more widespread, due to a growing recognition that local communities are likely to manage forest resources better than the state (Agrawal & Gibon, 1999; Gauld, 2002; Murty, 1994). Decentralization, often in the form of Joint Forest Management (JFM), is also seen as a means of developing and upholding democratization, allowing people to engage in their own affairs (Agrawal & Ostrom, 2001). However, improving the management of forests and upholding democracy is likely to hinge on the ability of forest management decentralization to improve the standard of living of those who are dependent on forests; Angelsen and Wunder (2003) and Sunderlin *et al.* (2005), among others, believe forest management decentralization can reduce poverty.

Essentially, decentralization is intended to halt deforestation by restricting excessive forest harvest, limiting agricultural land expansion, and spurring investment in the forest stock. However, whether or not such reforms can offer sufficient investment incentives is uncertain. Although the shift from state management to co-management is a step in the right direction, insecure, incomplete, and (often) incoherent property rights transfers from the state to local communities remains an important source of incentive incompatibility for communities (Behera & Engel, 2006). In some cases, the rents are shared with the state in the form of user fees (Behera & Engel, 2006; Jumbe & Angelsen, 2006; Kajembe, Nduwamungu, & Luog, 2005; Kumar, 2002; Lemenih & Bekele, 2008; Robinson & Lokina, 2012). The incentives could be even smaller, if we consider foregone income from deterred agricultural land expansion. Because of the restriction placed on forest clearing, due to JFM rules, a household foregoes income that could have been earned from new agricultural land. Household income would also be affected by agricultural or forest productivity, as well as any increase in the price of those outputs. [1] As part of the JFM program considered here, prices did increase, while forest or agricultural productivity could increase, due to decreased pressures placed on the forest. In a properly incentivized program, and, thus, one that is acceptable to participants, foregone forestry income is offset by forestry productivity gains and/or forestry product price rises. Similarly, the success of the program would depend on providing alternative incentives to farmers to eschew short-term gains in favor of medium- to long-term payoffs, while the benefits that accrue to community members must also serve as an incentive for monitoring and enforcement.

Since program success depends on the relative size of future returns compared to immediate losses, a program that more clearly offers future returns is more likely to be successful. One innovative design, and the one considered below, confers common property rights usufruct for non-timber forest products (NTFP) and augments it with improved marketing of these products. The present study evaluates one such JFM program in Ethiopia, described in detail in Section 2. For the analysis, we exploit a policy (natural) experiment, in which some forest using villages were able to access JFM, while other similar villages were not.

While a sizeable body of literature on the commons has focused on examining the structure and functioning of long-enduring institutions for common property resource management (Agrawal, 1994; Lawson-Remer, 2012; Ostrom, 2005), only a few have employed quantitative analysis to draw conclusions about impacts. The few empirical studies assessing JFM effects and distributional outcomes have produced mixed evidence, but most of the evidence points to worsened welfare outcomes for the poor. Specifically, Jumbe and Angelsen's

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(2006) evaluation of JFM welfare impacts—based on monthly forest revenue—in two Malawian villages reveals contrasting welfare impacts across the villages. Similarly, Cooper (2008) finds that JFM increased per-capita consumption growth, as well as inequality, in Nepalese villages, where the programs were implemented. However, Basundhara and Ojha (2000) and Cooper (2007) conclude that there are significant welfare losses.

For the most part, the preceding studies consider programs involving local forest protection in exchange for benefits that could arise from long-term sustainable management—access to fuel wood and non-timber forest products (NTFP)—for own consumption. However, evidence of the effects of a "conservation by commercialization" program, is scant. Although one criticism of the following analysis is its inability to separate the effect of own consumption access rights from that of market linkages, the program examined does include both components, and, therefore, in the light of limited evidence around such programs, this program's efficacy deserves attention. Unfortunately, separating the effect of the two program components is not possible in this study, as requisite data for a program without marketing incentives is not available. More importantly, given the importance of future rewards in achieving local buy-in, a program that supports future returns is a logical program to implement, and, therefore, evaluate. As noted above, providing incentives to farmers to eschew short-term benefits in favor of medium- to long-term payoffs is likely to be important in determining the success of such programs, and, therefore, should not be ignored, when considering the multifaceted goals of afforestation and rural development.

Therefore, this study aims to evaluate the impact of a JFM program augmented by the provision of market-based incentives, through NTFP marketing. For the analysis, inverse probability weighting is used to identify the effects of the program. We applied these methods to data collected from households living proximately to program and non-program forests in selected villages of the Gimbo district, in southwestern Ethiopia.

This study contributes by adding to the small, but growing, literature related to the evaluation of environmental policies in developing and emerging countries, while providing evidence of the effect of decentralized forestry management programs that are augmented by market-based incentives, through the marketing of NTFPs. Given the widespread devolution of natural forest management throughout developing and emerging economies (Agrawal & Ostrom, 2001; Bluffstone, 2008), which is invariably based on theoretical predictions, as well as anecdotal evidence from local case studies, rigorous empirical analysis of the impact is needed to inform such policies. Our results provide support for the hypothesis that decentralized forestry management, combined with a complementary market access policy, has the potential to raise the welfare of program participants.

The remainder of the paper is organized as follows. Section 2 outlines the evaluation problem, as well as the context of the study. Section 3 describes the data collection efforts, while Section 4 discusses the conceptual and econometric framework that informed the empirical strategies. Section 5 presents results and discusses those results. Finally, Section 6 concludes the analysis.

2. BACKGROUND, PROGRAM, AND EVALUATION PROBLEM

Since the 1970s, Ethiopian natural forests were primarily owned and managed by the state, which led to the establishment of various state-owned protected Forest Priority Areas (Kubsa, Mariame, Amante, Lipp, & Tadesse, 2003). These areas excluded local community input and, thus, were to be protected by hired forest guards; however, they were *de facto* open access forests, resulting in continued forest resource depletion (Lemenih & Bekele, 2008). This realization incited the government of Ethiopia and NGOs to seek alternative policy instruments (Kubsa *et al.*, 2003; Tesfaye, Roos, Campbell, & Bohlin, 2010). Against this backdrop, bilateral donors, such as GTZ and JICA, as well as NGOs, including Farm Africa/SOS-Sahel FARM-Africa, implemented Joint Forest Management (JFM) programs in different parts of the country. The overriding objectives of these interventions were two-pronged: halting deforestation and improving the livelihood (reducing poverty) of forest-dependent communities, the latter to be achieved through bolstering the economic benefits provided by the forests. In Bonga, which is the site of this analysis, Farm Africa/SOS-Sahel implemented more than six JFM programs, covering about 80,066 hectares of natural forest (Jirane, Tadesse, & Temesgen, 2008). [2]

In light of the aforementioned objectives, Farm Africa/SOS-Sahel set intervention preconditions, targeting forests with high rates of deforestation as well as communities that depended heavily on those forests. Once identified, forest units were demarcated in the field. Within the provisionally identified forest units, information related to available forest resources was required, as was information related to past and present management practices. Finally, this information was collated and bolstered through an analysis of prevailing forest management problems, forest uses, and forest user needs (Lemenih & Bekele, 2008).

A number of observations emerged from this multi-step process. Importantly, agricultural encroachment into forests, illegal logging, and the harvest of fuel wood (for either direct sale or charcoal production) stood out as major deforestation threats. Importantly, for this analysis, these activities were most often associated with unemployed urbanites and a heavy concentration of individuals from the Menja tribe. [3] These observations led Farm Africa/SOS-Sahel and the local government to target JFM interventions toward forests surrounded by significant Menja populations (Bekele & Bekele, 2005; Lemenih & Bekele, 2008). Although the Menja population was the overriding eligibility criterion, other criteria, including the degree of agricultural encroachment, population pressure, the forest's status, and the forest's potential to produce non-timber forest products, were considered to a varying degree.

Once intervention sites had been identified, the remaining key elements of JFM intervention—crafting common property right forest management institutions (rules) and establishing enforcement mechanisms—were put in place. The process of rule setting and establishing the attendant community organization involved a range of complex procedures. Farm Africa/SOS-Sahel began the process with negotiations and discussions with all stakeholders. However, since skepticism regarding JFM was rife within both the local government and the local communities, Farm Africa/SOS-Sahel provided JFM training for all stakeholders (Bekele & Bekele, 2005); that training was offered at the level of the village, rather than the individual, which has implications for the subsequent analysis. In addition to problems related to skepticism, negotiations with regard to JFM participation and JFM forest boundaries were fraught with difficulties.

Whereas JFM membership is meant to include those who actually use a particular area of the forest (regardless of their settlement configuration, clan, and/or ethnicity), membership negotiations involved both collective and individual decisions.