



Estimating welfare impacts where property rights are contested: methodological and policy implications



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ABSTRACT

Where rights over natural resources are contested, the effectiveness of conservation may be undermined and it can be difficult to estimate the welfare impacts of conservation restrictions on local people. In particular, researchers face the dilemma of estimating respondents' Willingness To Pay (WTP) for rights to resources, or their Willingness To Accept (WTA) compensation for foregoing these rights. We conducted a discrete choice experiment with respondents living next to a new protected area in Madagascar, using a split-sample design to administer both WTP and WTA formats, followed by debriefing interviews. We first examined the differences in response patterns to the formats and their performance in our study context. We also used the two formats to elicit respondents' attitudes to conservation restrictions and property rights over forestlands. We found that the format affected the relative importance of different attributes: WTA respondents strongly favoured livelihood projects and secure tenure whereas neither attributes were significant for WTP respondents. The WTA format outperformed WTP format on three validity criteria: it was perceived to be more plausible and consequential; led to fewer protest responses; and was more appropriate given very low incomes. Seventy-three percent of respondents did not accept the legitimacy of state protection and strongly aspired to secure forest tenure. The use of a WTP format may thus be inappropriate even if respondents do not hold formal rights over resources. We conclude that estimating the opportunity costs of stopping de jure illegal activities is difficult and coercive conservation lacks procedural legitimacy and may not achieve full compensations. Our findings question the viability of the current conservation model and highlight the importance to conservation policy of locally legitimate property rights over forestlands.

1. Introduction

By forming and restoring soils, forests have underpinned agriculture worldwide (Sunderlin et al., 2005). The removal of forest cover provides access to fertile soils for millions of small farmers in the tropics, and has therefore supported their livelihoods for decades (Sunderlin et al., 2005). In most low-income tropical countries, the conversion of natural forests to small scale swidden agriculture has been described as the main proximate cause of deforestation (van Rijnsoever et al., 2015) and primary forests continue to be used for swidden cultivation (Kim et al., 2015a). Small farmers often view swidden agriculture as a low labour, low capital, and risk minimising farming strategy promising greater flexibility than more intensive agricultural systems that require

onerous investments and technical training (Nielsen et al., 2006; Scales, 2014). Clearing forests for swidden agriculture may provide higher returns to local communities than leaving them standing (Godoy et al., 2000). Local people may therefore incur net welfare losses from conservation actions restricting forest clearance.

Protected areas are seen as a major conservation tool for preserving biodiversity. The continuing habitat loss in the tropics has motivated their expansion and the setting of more stringent protection targets (Perrings et al., 2010). However, much of the protected area network in low-income countries is characterised by considerable confusion and dispute over property rights (White and Martin, 2002). While governments have de jure ownership of forestlands in many tropical countries (commonly inherited from colonial regimes), they have often been

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unable to enforce these claims owing to complex factors including funding shortfalls, recurrent political instability and exceptionally high levels of corruption (Bruner et al., 2004). In addition, state ownership is often contested by indigenous communities who claim customary rights over forestlands through settlement (White and Martin, 2002). Despite long-standing customary ownership rights, local communities may be completely excluded from forests, or devolved only the responsibility to manage forest resources (Dressler et al., 2010). Property rights to forestlands are clearly a key and contentious issue in forest conservation in many tropical countries.

Ambiguous property rights also pose challenges to the ex-ante valuation of the welfare impacts of forest use restrictions. Researchers must choose between estimating respondents' Willingness To Accept (WTA) compensations for forgoing access to a resource or their Willingness To Pay (WTP) to access the resource. While discrete choice experiments (DCE) have been successfully used to value local people's WTA compensations to reduce illegal hunting activities in Tanzania (Kaczan et al., 2013; Moro et al., 2013; Nielsen et al., 2014), asking WTA questions when respondents do not perceive any rights over the good being valued leads to biased results (Freeman, 2003). Indeed, property rights are theorised to be the most important criterion determining the choice between WTP and WTA formats. In this paper we use property rights to mean a bundle of rights over forestlands as defined by Schlager and Ostrom (1992, p250–251), referring to access, withdrawal, management, exclusion and alienation rights). In practice, households may customarily perceive less than these full sets of rights and the reality often involves a complex operationalisation of these bundles of rights (e.g. Muttentzer, 2006).

The choice of WTA or WTP matters since they have consistently been found to be empirically different (Horowitz and McConnell, 2002; Tunçel and Hammit, 2014). Standard Hicksian economic theory provides two explanations for the WTA-WTP disparity (Randall and Stoll, 1980). The first concerns the income effect: WTP is strictly limited by budget constraints while WTA is not. The second involves a closer examination of the theory of preferences and relates to the availability of substitutes for the good being valued (Hanemann, 1999). The WTA-WTP disparity may also reflect limitations in the standard theory; prospect theory provides the most prominent alternative (Kahneman and Tversky, 1979). Prospect theory posits that people define gains and losses based on a reference point, normally the status quo, and losses measured relative to this reference point have greater subjective significance than gains. While the effect of the format on welfare estimates has been well demonstrated, the choice of format might also affect the sign and statistical significance of the attributes valued in a DCE survey – the nature of such differences being less researched. A handful of DCE studies have designed the survey to allow respondents to trade both improvements and deterioration in the levels of attributes against the reference level, entitling them to both 'buy' or 'sell' the attributes (e.g. Hess, 2008; Bateman et al., 2009; Lanz et al., 2010; Masiero and Hensher, 2010; Glenk, 2011). While such designs explicitly allow a measure of WTA-WTP ratio, they have not explicitly framed the valuation questions in terms of WTA and WTP, nor have they elicited whether the target population actually perceives a property right to the good being valued. By explicitly asking respondents to think in terms of receiving or paying money, and following up with debriefing questions, researchers may identify alternative explanations to the WTA-WTP disparity that have been to date less researched. The first aim of this paper is therefore to examine the differences in the patterns of responses between the WTA and WTP formats.

A second aim of this paper is to assess the performance of the two formats for estimating the welfare losses from forest conservation policy in low-income countries on three criteria that indicate validity (Rakotonarivo et al., 2016). The first two criteria comprise measures of content validity, i.e. whether the survey descriptions and questions are "conductive and sufficient to induce respondents to reveal valid stated values" (Bateman et al., 2002: 305). The first criterion concerns the way

respondents perceive features of the survey. For example, whether respondents found the survey scenarios to be plausible or believed in the consequentiality of the survey (i.e. whether respondents care about the survey outcomes and view them as having real policy impact, see Carson and Groves 2011; Vossler et al., 2012). Therefore, all else equal, the best format results in the fewest respondents with problematic perceptions of the survey. The second criterion concerns the level of protest responses, that is, refusals to trade-off different attributes due to a lack of compatibility between respondents' beliefs and the given format. When property rights to forestlands (or other resources) are contested, respondents may have beliefs towards the policy that conflict with the selected format (Meyerhoff and Liebe, 2009). The third criterion pertains to budget constraints. Where restrictions on resource access have large welfare effects and where household incomes are close to survival levels, WTP may provide a biased estimate of the true welfare impacts because it is constrained by respondents' ability to pay.¹ We evaluated the two formats against these three criteria using the DCE results, responses to six standardised debriefing questions (with all respondents) and qualitative debriefing interviews with a subsample of respondents.

Our third aim is to use the DCE and subsequent debriefing interviews to investigate respondents' attitudes to conservation restrictions (irrespective of the valuation format) and perceptions of property rights, and discuss the policy implications for REDD+ (Reducing Emissions from forest Degradation and Deforestation) policy. REDD+ is often involuntary for local people who may be coerced into accepting it (Corbera, 2015). As such, REDD+ may lack legitimacy and undermine social justice (Corbera, 2012; Martin et al., 2013). Strict enforcement of restrictions in such a context may also impose local welfare losses that may not be mitigated by proposed compensation schemes (Martin et al., 2013; Poudyal et al., 2016). Justice principles enshrined in forest conservation policies in the tropics may not align with local perceptions of just and legitimate environmental management (Martin et al., 2014). In the next sections, we describe the study design and data analysis. Results are presented in Section 4, followed by the discussion and conclusion in Sections 5 and 6.

2. Material and methods

2.1. Study site

Our study site is Ampahitra *Fokontany*,² in the south-west corner of the Ankeniheny – Zahamena corridor REDD+ project in Madagascar, where most farmers rely on swidden agriculture, and on collecting wild products for subsistence use and trade (including building materials, fibres, foods). These people are, in the main, extremely poor and highly vulnerable to economic or environmental shocks. The Corridor Ankeniheny-Zahamena Protected Area aims to reduce deforestation in the eastern region of Madagascar and has been regarded as one of the island's top conservation priorities. It is the site of a pilot REDD+ project financed by the World Bank's BioCarbon Fund. It encompasses one of the largest remaining blocks of rainforest in Madagascar (which spans 382,000 ha) and was formally granted a category VI protected area status in April 2015 (Republic of Madagascar, 2015). It is co-managed by the Ministry of Environment in Madagascar, Conservation International, and local community associations. Major pressures include expansion of agricultural lands through forest clearance as well as illegal logging and artisanal mining (Ratsimbazafy et al., 2011). The average annual deforestation rate in the region was estimated to be 0.63 percent

¹ Local people heavily rely on subsistence farming. If their stated WTP estimates are severely constrained by their monetary income, these estimates may not reflect the actual value of the policy or good being valued. Yet, if they do not take income constraints into account, their stated values suffer from hypothetical bias, i.e. their stated preferences would differ from their actual behaviour under real economic circumstances.

² Lowest administrative unit in Madagascar.

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