



# Payment for ecosystem services and motivational crowding: Experimental insights regarding the integration of plural values via non-monetary incentives

Stefany Maca-Millán<sup>a</sup>, Paola Arias-Arévalo<sup>a,b,\*</sup>, Lina Restrepo-Plaza<sup>b,c</sup>

<sup>a</sup> Grupo de Investigación en Economía Regional y Ambiental, Faculty of Social and Economic Sciences, Universidad del Valle, Colombia

<sup>b</sup> Department of Economics, Faculty of Social and Economic Sciences, Universidad del Valle, Colombia

<sup>c</sup> Grupo de Investigación E-SocialS: Experimental Social Sciences and Behavioural Change, Faculty of Social and Economic Sciences, Universidad del Valle, Colombia

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## ABSTRACT

Incentives based on extrinsic motivations such as Payments for ecosystem Services (PES) could negatively affect intrinsic motivations (i.e., motivational crowding-out). This effect may be evidenced when conservation levels, after PES intervention, decline relative to those existing before PES implementation. However, still few experimental studies have assessed PES effects on motivations once economic incentives are missing. Moreover, experimental research still lacks insights on PES designs that may reduce the risk of motivational crowding-out. This paper aims to assess the post-intervention effects of integrating plural values via non-monetary incentives (i.e. environmental awareness, social recognition) into PES design. We conducted a lab-in-the-field experiment followed by a questionnaire involving 120 participants in rural Cali, Colombia. We use non-parametric and Differences in Differences regression analysis to show that integrating plural values (intrinsic and relational) via non-monetary incentives may have a long-lasting effect on conservation (motivational crowding-in) in comparison with a PES alone. We did not find strong evidence of PES motivational crowding-out. We conclude that PES effectiveness and equity-related outcomes could be fostered by integrating the multiple ways of knowing, relating and caring for Nature.

## 1. Introduction

Payments for Ecosystem Services (PES) are monetary or in-kind incentive-based mechanisms aimed at promoting ecosystem conservation (Wunder, 2005; Engel et al., 2008; Muradian et al., 2010; Somerville et al., 2010). By definition, PES are grounded on extrinsic motivations (Rode et al., 2015), i.e., on the instrumental value of carrying out a particular activity (Ryan and Deci, 2000; Rode et al., 2015). However, there are multiple motivations beyond economic incentives that influence people's conservation behavior, as is the case of intrinsic motivations (Fisher, 2012; Rode et al., 2015; Ruiz-Mallén et al., 2015; Kerr et al., 2017; Akers and Yasué, 2019; Ezzine-de-Blas et al., 2019). Intrinsic motivation occurs in activities that lead to individual satisfaction because they are inherently interesting, fun, or meet a challenge or personal conviction (Ryan and Deci, 2000).

Extrinsic motivations such as PES do not necessarily complement

intrinsic motivations (Bowles, 2008). While intrinsic motivations might get reinforced (Dedeurwaerdere et al., 2016; Alix-Garcia et al., 2018; Andersson et al., 2018), the conservation literature has also pointed out that in some situations, they could get "crowded-out"; not only as an effect of pecuniary incentives, but also due to the interaction with the personal background (e.g., gender, age, education, culture) and interpersonal contexts (e.g., institutions such as social norms and markets) (Ezzine-de-Blas et al., 2019). Possible PES crowding-out effects are worrisome because of the finiteness of PES projects and associated incentives (Jack, 2009; Narloch et al., 2012; Muradian, 2013; Muradian et al., 2013; Rode et al., 2015; Ezzine-de-Blas et al., 2019; Kaczan et al., 2019).

Because intrinsic and extrinsic motivations may coexist during the implementation of PES, one indirect approach to assess the effect of the intervention on motivations is to evaluate the conservation behavior when PES cease (Chervier et al., 2019; Ezzine-de-Blas et al., 2019). If

\* Corresponding author at: Department of Economics, Faculty of Social and Economic Sciences, Universidad del Valle, Colombia.

E-mail addresses: [stefany.maca.psa@gmail.com](mailto:stefany.maca.psa@gmail.com) (S. Maca-Millán), [paola.arias@correounivalle.edu.co](mailto:paola.arias@correounivalle.edu.co) (P. Arias-Arévalo), [lina.restrepo@correounivalle.edu.co](mailto:lina.restrepo@correounivalle.edu.co) (L. Restrepo-Plaza).

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