

# Conditional Cash Transfers and Payments for Environmental Services—A Conceptual Framework for Explaining and Judging Differences in Outcomes

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**Summary.** — We develop a conceptual framework elucidating the main determinants of the impact of Conditional Cash Transfer (CCT) and Payments for Environmental Services (PES) programs. Using a simple multi-agent model and evaluations of existing programs, we show that (1) the share of the population who would meet the program's conditions in the absence of payments is a powerful predictor of program efficiency, and that (2) program efficiency is eroded by selection bias (people who already meet conditions self-select into the programs at higher rates than others). We then discuss possibilities for increasing efficiency and criteria for evaluating and choosing between CCTs/PES or other policy instruments.

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**Key words** — conditional cash transfer, payments for environmental services, additionality, targeting, program evaluation, developing countries

## 1. INTRODUCTION

The last two decades have seen the emergence of two innovative and related policy approaches that encourage investments in social and environmental capital in developing countries: Conditional Cash Transfers (CCTs) and Payments for Environmental Services (PES). What these two mechanisms have in common is that they offer positive incentives (cash or in-kind payments) conditional on a certain behavior that is linked to investments in social or environmental capital. CCTs support poor families, contingent on investments in the human capital of their children, mainly by mandating school attendance and/or use of healthcare services. PES compensate natural resource managers (usually land owners), conditional on the provision of environmental services or land-use practices that secure those services. Both these policy instruments, it has been argued, offer advantages over previous policy approaches (such as unconditional cash transfers, supply-side interventions, integrated conservation and development projects, and sustainable forestry management) which have shown meager results in reducing poverty and conserving ecosystems (Pattanayak, Wunder, & Ferraro, 2010; Rawlings & Rubio, 2005).

Recent reviews of CCTs (e.g., Fiszbein & Schady, 2009; Handa & Davis, 2006; Rawlings & Rubio, 2005) and PES (e.g., Bulte, Lipper, Stringer, & Zilberman, 2008; Landell-Mills & Porras, 2002; Pattanayak *et al.*, 2010; Wunder, Engel, & Pagiola, 2008) highlight the pace at which these policies have spread across the developing world. In 2008, 29 developing countries (mainly in Latin America) had at least one CCT program in place, with many more planned or already under-

way (Fiszbein & Schady, 2009). In many countries, nationwide CCT programs form the backbone of social security policy; for example, the *Bolsa Família* program in Brazil and *Oportunidades* in Mexico both serve a quarter of the countries' populations and have budgets of 0.5% of GDP (Fiszbein & Schady, 2009).

PES schemes are even more prolific. An early review by Landell-Mills and Porras (2002) found close to 200 incipient PES schemes in developing countries, and the numbers have only increased since then (Pattanayak *et al.*, 2010). Generally these programs are small in scale (sub-national). Three exceptions are Costa Rica's *Pagos por Servicios Ambientales* (PSA) program, which since its inception in 1997 has made payments for forest conservation (primarily) on nearly half a million hectares of land; China's *Sloping Lands Conservation Program* (SLCP), which so far has contracted 12 million hectares for reforestation in an attempt to stifle soil erosion; and Mexico's *Pago de Servicios Ambientales Hidrológicos* (PSAH) program, which compensates beneficiary communities for preserving 600,000 hectares of forest (Pattanayak *et al.*, 2010).

\* Financial support from the FORMAS project COMMONS, the MIS-TRA program *Biodiversity and Ecosystem Services in a Changing Climate* (BECC), NORD-STAR (Nordic Centre of Excellence for Strategic Adaptation Research), and SIDA via the Environment for Development Initiative ([www.efdinitiative.org](http://www.efdinitiative.org)) is gratefully acknowledged. We also wish to thank Debbie Axlid, Arne Bigsten, Allen Blackman, Paul Ferraro, Olle Häggström, Juan Robalino, Laura Villalobos, and three anonymous reviewers for valuable comments and insights. Final revision accepted: October 23, 2012.

Many CCT programs have incorporated and facilitated rigorous impact evaluations as part of their implementation, often using experimental designs to create credible counterfactuals that outcomes can be measured against (Fiszbein & Schady, 2009; Handa & Davis, 2006; Rawlings & Rubio, 2005). As a consequence, a large body of evidence shows that CCT schemes have successfully alleviated short-term poverty and increased the accumulation of long-term human capital through higher school enrollment rates and greater utilization of public health services (Fiszbein & Schady, 2009; Rawlings & Rubio, 2005).

Most PES programs, unfortunately, have not been subject to evaluations meeting the same scientific standards as CCTs (Ferraro & Pattanayak, 2006; Pattanayak *et al.*, 2010). The thorough evaluations that have been conducted, mainly in Costa Rica's and Mexico's nation-wide PES programs (Alix-Garcia, Shapiro, & Sims, 2012; Pfaff, Robalino, & Sánchez-Azofeifa, 2008; Robalino *et al.*, 2008), have found a low impact in terms of increasing forest conservation. Consequently, the recent PES review by Pattanayak *et al.* (2010, p. 268) concluded that “we do not yet fully understand either the conditions under which PES has positive environmental and socioeconomic impacts or its cost-effectiveness.”

Similarly, Filmer and Schady (2009, p. 2) contended that “despite the popularity of CCTs, little is known about what features of program design ... account for the observed outcomes”; and de Janvry and Sadoulet (2006, p. 2) argued that “almost no analysis has been conducted on the effectiveness of alternative program designs in achieving these results, despite the large sums spent to obtain them.”

The objective of the present paper is to explore the determinants of additionality of CCT and PES schemes, defined as the programs' capacity to deliver desired outcomes that would not have occurred in their absence. We look at how the context in which payment systems are implemented determines program impacts and analyze possible ways of increasing additionality through changes in program design. A better understanding of these issues will allow policy makers to make better ex-ante judgments of the potential impacts of a conceived CCT or PES program, providing valuable guidance in the choice between different policy options and in policy design.

The paper proceeds as follows. Section 2 discusses the concept of program additionality and introduces a conceptual framework identifying the main factors influencing it. Drawing on the conceptual framework, Section 3 introduces a stylized multi-agent model of a generic CCT/PES scheme and presents a simple empirical analysis of determinants of CCT and PES programs' impacts. Section 4 presents the results from these exercises and Section 5 offers a concluding discussion on tradeoffs between additionality and other policy goals and how the presented framework may help policymakers in the design of, and choice between, CCTs, PES, and other policy instruments.

## 2. CCT, PES, AND ADDITIONALITY—RATIONALE AND DETERMINANTS

CCT and PES programs vary widely in terms of, for example, scale (number of recipients), scope (conditions to be met or main program objective), benefit structure (cash or in-kind payments, payment level/differentiation, choice of payee), targeting methods, and monitoring and enforcement of conditions (see Fiszbein & Schady, 2009; Wunder *et al.*, 2008). Programs define the population eligible for payments (i.e., potential beneficiaries, such as poor households or only

landowners in priority areas) and then decide who will actually be program beneficiaries, either by negotiating with service providers (small-scale PES schemes) or by choosing among applicants<sup>1</sup> (national PES and nearly all CCT schemes). The latter is a central feature of CCT and PES schemes: households or land owners freely choose whether or not to apply for and accept payments.<sup>2</sup> Of course, once an agent has received payments, meeting the conditions is mandatory, although again the extent to which this is monitored (if at all) varies widely (Fiszbein & Schady, 2009; Wunder *et al.*, 2008).

Despite their differences, all CCT and PES programs share a basic rationale in that they offer positive incentives conditional on a behavior that increases investment in human or environmental capital, be it through higher school enrollment or more reforestation. Clearly, even before a program is implemented, some children attend school and some landowners are restocking forests. One measure of program success is therefore the extent to which the program is able to induce *additional* investments in human and environmental capital, over and above what would have occurred in the absence of the program incentives.<sup>3</sup>

There are two main reasons for focusing on the issue of how to increase additionality. The first is simply that low additionality implies that a CCT or PES program does little to contribute to its goal of reducing long-term poverty or increasing (or securing) environmental services. Since all CCT and PES programs operate on a limited budget, increasing additionality is an important way to augment policy impact and use public funds more efficiently.

Second, in the case of CCTs, the rationale for conditioning payments—rather than relying on unconditional, purely redistributive, policies—is that either market failures are causing some families to underinvest in the human capital of their children or attaching conditions may make redistributions more politically palatable (Baird, McIntosh, & Özler, 2011; Das, Do, & Özler, 2005; Fiszbein & Schady, 2009, pp. 46–65). Thus, if a large share of payments goes to households that are already making sufficient human capital investments, it weakens both the economic and political case for a CCT. The same argument holds for PES, whose main justification is to correct for market failures (externalities) that cause underinvestment in environmental capital.<sup>4</sup>

Still, it is important to recognize that CCT and PES programs often have multiple objectives (e.g., short-term poverty alleviation is an important aim of most CCTs and some PES schemes). In some cases, there are conflicts and tradeoffs between achieving these goals and maximizing additionality (see, e.g., Das *et al.*, 2005). Moreover, the marginal social utility of increased additionality may vary widely between different programs due to synergies in achieving the program goals; for example, for vaccination programs, where effectiveness requires a high degree of coverage, the importance of having high additionality is most likely higher than for education programs, where benefits accrue at the individual level to a larger degree.

We also recognize that some measures to increase the direct additionality of a CCT or PES program may be difficult to implement due to political economy considerations (see, e.g., de Koning *et al.*, 2011) and could even have unintended consequences (spillovers) that offset some or all the gains in efficiency. For example, increased targeting of payments based on previous behavior—as a proxy for future risk of noncompliance with program conditions—may be perceived as unfair (i.e., payments go to those who have acted against the common good) and may have negative effects on equity (FAO,

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