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# On the Efficiency Effects of Subsidies in Microfinance: An Empirical Inquiry

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**Summary.** — Using an original database of rating agencies, this paper gives empirical evidence on the impact of subsidy intensity on the efficiency of Microfinance Institutions (MFIs). We find that subsidies have had a positive impact on efficiency, in the sense that MFIs that received subsidies are more efficient than those that do not. However, we find also that subsidization beyond a certain threshold renders the marginal effect on efficiency negative. In our sample, 26% of MFIs receive levels of subsidization higher than that threshold, which implies that a marginal cut on subsidy intensity would increase their efficiency.

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## 1. INTRODUCTION

Over the last 20 years, the Microfinance sector has attracted a remarkable US\$ 1b. per year, in subsidies from private and public donors (CGAP, 2005). Yet, despite the notoriety of some success stories, less than 5% of MFIs are operationally sustainable, while the remaining 95% still require subsidies to cover their costs and finance their loans (UNCDF, 2005). Moreover, dozens of institutions that claim to make profits still rely on subsidies in order to cover their seemingly high transaction costs (Armendariz & Morduch, 2005).

Such extensive subsidization has created a debate on the implications for the efficiency of Microfinance Institutions (MFIs). This paper addresses this question from an empirical standpoint. It delivers evidence on the impact of subsidies on the efficiency of Microfinance Institutions (MFIs), based on data collected by two microfinance ratings agencies. Our work is particularly relevant for donors and policy makers, for it provides some guidelines on how far subsidies can take the microfinance industry to develop and achieve improved levels of efficiency.

The effect of subsidies on efficiency is a topic of intense debate in academic and policy circles. Many authors are concerned that excessive subsidization will inhibit the promise of sustainability in the provision of financial services to the poor.<sup>1</sup> The main concerns are that subsidies undercut both scale and efficiency within the MFI, and distort the market by favoring more inefficient institutions. On the other hand, Armendariz and Morduch (2005) have stressed the efficiency-enhancing role of “smart subsidies” that allow MFIs to build their infrastructure and develop the know-how.<sup>2</sup> In an effort to integrate both views, Lapenu (2000) questioned the level of subsidization of microfinance institutions that should be accepted, stressing the empirical nature of the problem. Surprisingly, evidence on the impact of subsidies on the performance of MFIs is scarce, with the exceptions of Cull, Demirgüç-Kunt, and Morduch (2006) and Hudon (2006).

Using a cross-section regression, we estimate the efficiency-tax as a function of subsidy intensity. The efficiency-tax measures the proportional decline in the efficiency of an MFI with a given level of subsidy intensity, relative to the benchmark of no subsidies. The efficiency tax can be positive or negative depending on whether subsidization reduces or enhances cost-effectiveness. The data we use include information on “donated equity” which covers equity received through cash donations, from sources that do not receive stock, and that carry no restrictions (CGAP, 2003). We take this as a measure of historical subsidies received by each institution, and compute subsidy intensity as the ratio of “donated” to total equity.

To address potential nonlinearities, we estimate a quadratic specification of the efficiency tax. This implies that the marginal efficiency-tax (i.e., the proportional decline in efficiency due to a marginal rise in subsidy intensity) depends on the level of subsidy intensity. Based on the notion of “smart subsidies”, which suggests that the efficiency-enhancing effects decline as the level of subsidization increases, our working hypothesis is that the marginal efficiency tax is increasing.

Our results show that, for virtually the entire sample, the efficiency tax is negative in the sense that MFIs that receive subsidies are more efficient than those that do not. Moreover, they confirm that the marginal efficiency tax is increasing, and the efficiency tax a non-linear function of subsidy intensity. In particular, the efficiency tax is negative and decreasing for lower levels of subsidy intensity, but becomes increasing beyond a critical value, and could potentially turn positive. In our estimates, only one MFI has a positive efficiency tax. However, a quarter of them have a level of subsidy intensity where the

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marginal efficiency tax is increasing. Note that, although these MFIs have a level of efficiency that is higher than those that obtain no subsidies, a marginal decline in their level of subsidization would enhance their efficiency.

In sum, our findings show that, in general, MFIs that received subsidies have seen productivity rise, although, in many cases, the level of subsidization has been excessive, at the margin. We interpret these results as a suggestion that small (“smart”) subsidies allow MFIs to increase the productivity of their staff, but beyond a certain threshold, they lower productivity, at the margin, in line with the moral hazard arguments raised in the literature.

An important concern is the well-known endogeneity of the MFI’s subsidy intensity. In particular, an MFI with higher unit costs and weaker sustainability may attract higher subsidies from its donors, who are eager to see the MFI survive. Under this hypothesis, the OLS estimate of the efficiency tax is biased upward. Unfortunately, we were unable to find proper instruments to correct this bias, given the limited data available in the ratings reports. However, it should be noted that, given the expected direction of the endogeneity bias, our key result that subsidies enhance efficiency, at least for small levels of subsidization, should not be qualitatively challenged by a correction for endogeneity.

The structure of the paper is as follows. In Section 2, we present the dataset obtained from the microfinance rating agencies, focusing on the measure of subsidy intensity. In Section 3, we discuss the theoretical linkages between subsidy intensity and the efficiency of MFIs. Sections 4 and 5 present the econometric specification and results, and Section 6 concludes.

## 2. THE MICROFINANCE RATINGS DATA

Our data were obtained from the financial statements gathered by two leading microfinance rating agencies: PlaNet Rating and Microfinanza. The ratings were produced during 2002–05, and provide balance-sheet and income statement information for 100 institutions, including data on subsidies obtained historically. For most MFIs, the dataset includes observations for three different years. The rating reports include the balance-sheet and income statement data, in addition to the number of borrowers and staff and indicators of operational and financial sustainability. Due to the variety of subsidies and the problems of transparency of many MFIs, it is difficult to obtain data on the amount of subsidies. The financial statements included in the ratings are one of the most trustworthy solutions, since they have all been audited during the rating process (contrary to voluntary databases, such as the Mix Market).

The MFIs in our sample include some of the largest and better managed around the world. Given the well-established concentration of microfinance clients in the largest institutions (Honohan, 2004), our sample is quite representative of the universe of microfinance activity.<sup>3</sup> In particular, our sample is comparable to the largest database in microfinance, with more than 700 MFIs, included in the 15th MicroBanking Bulletin [MBB] (MicroBanking Bulletin, 2007): the average operational sustainability in our database is 118%, compared to 115% for the MBB; the average number of borrowers is 14,081 compared to 10,102 for the MBB; the average nominal yield of 32.6% and 30.2% in the MBB; and, finally, the average staff productivity is 121 borrowers per staff and 112 in the MBB.

The difficulties to obtain reliable data on subsidies have been a key obstacle to studying the link between subsidies and per-

formance. Subsidies may be direct through cash or donations, indirect with in-kind asset or training facilities or through soft loans when the interest rate obtained through the market would be much higher. Other forms of subsidies are tax holidays, loan guarantees, soft equity, or public goods that the MFI might otherwise not provide such as data collection or impact surveys (Armendariz & Morduch, 2005). These adjustments can make a big difference. For instance, Morduch (1999b) calculated that the sum of the direct and indirect subsidies to the Grameen during 1985–96 reached \$144 million while the Grameen reported \$ 1.5million.

The rating reports make an impressive effort of capturing the subsidies obtained from each of the MFI, for a rather long period of time. The balance-sheet includes an entry for “donated equity”, which includes equity received through cash donations from sources that do not receive stock. It represents accumulated donations that carry no restrictions (CGAP, 2003). On the other hand, all donations for operating and non-operating expenses are included in retained earnings, net of the operational deficit of the MFI, and thus are not included in “donated equity”. In this sense, “donated equity” underestimates the magnitude of subsidies received by the institutions.

We obtain the subsidy intensity of each MFI, as the ratio of “donated equity” by total equity. For each MFI, we then average over the 3 years for which we have data. Out of the 100 MFIs in the sample, 16 have zero donated equity, that is, are subsidy free. The mean subsidy intensity is 0.73 and the median is 0.65.

## 3. SUBSIDY INTENSITY AND THE EFFICIENCY OF MFIS

In this section, we discuss the literature and derive testable propositions for the empirical effect of subsidies on the efficiency of MFIs. Donors have supported most microfinance programs since the emergence of the sector during the 70s. Their common goal is to encourage the development of a more inclusive financial sector. From this perspective, subsidies would be helpful to meet the social bottom line of microfinance or reach very remote populations that are not likely to be served without external support, particularly during start up.

In reality, even if microfinance has constantly argued to be a new, self-sustained development policy, one must recognize that very few MFIs have reached independence from donors’ funds. The norm remains subsidization, leading Morduch (1999a) to argue that much of the success of microfinance has been dependent on the role of continuing subsidies. The trade-off between financial performance and outreach is the main argument of MFIs looking for subsidies beyond the start-up phase (Diop, Hillenkamp, & Servet, 2007).

Recently, the role of public donors has been challenged by the emergence of new actors. First, interested by the prosperous financial results of some leading MFIs and by the positive image surrounding the sector, some socially-oriented or commercial investors are willing to develop microfinance portfolios and finance major institutions. Public subsidies should complement what these actors are not likely to finance, rather than compete with them. Second, private donors, including charitable foundations, such as the Gates and Omidyar Foundations, have decided to commit a large part of their funding to microfinance. While they are increasingly related to the traditional public donors, they appear to attach fewer conditions to their subsidies (Diop *et al.*, 2007).

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