

**Tying Odysseus to the Mast:  
Evidence from a Commitment Savings Product in the Philippines<sup>1</sup>**

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Abstract

We designed a commitment savings product for a Philippine bank and implemented it using a randomized control methodology. The savings product was intended for individuals who want to commit now to save later, and who were sophisticated enough to engage in such a mechanism. Before offering the product to the treatment group, we conducted a baseline survey on all participants in the study. We included hypothetical time discounting questions with reference to money, rice and ice cream. Those who exhibited hyperbolic time preferences were more likely to open the commitment savings account; this effect holds primarily for women, but not for men. Of the 710 individuals offered the product, 202 (28.4 percent) opened the account. After six months, average savings balances at the cooperating bank increased by 20 percent for the treatment group relative to the control group. Those who opened the account increased savings by 86.3 percent. Thirty-four percent of individuals continued using the instrument beyond the initial deposit.

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## 1. Introduction

Although much has been written, little has been resolved concerning representation of preferences for consumption over time. Beginning with Ainslie (1992), hyperbolic discounting (and then later quasi-hyperbolic discounting) models have been put forth as a counter to the more traditional exponential discounting models. Evidence for quasi-hyperbolic preferences stem primarily from laboratory settings (for a review, see Frederick, Loewenstein and O'Donoghue (2001)). If individuals with hyperbolic preferences are sophisticated enough to know it (Laibson, 1997; O'Donoghue and Rabin, 1999; Strotz, 1955), then we should observe them engaging in various forms of commitment (much like Odysseus tying himself to the mast to avoid the tempting song of the sirens).

To test this, we partnered with the Green Bank of Caraga, a small rural bank in Mindanao in the Philippines and conducted a field experiment. First, we administered a household survey of 1,767 existing clients of the bank. We asked hypothetical time discounting questions in order to identify individuals as having hyperbolic preferences. We then randomly chose half of the clients and offered them a new account, known as a "SEED" account. This account was a pure commitment savings product that restricted access to deposits as per the client's instructions upon opening the account, but did not compensate the client for this restriction.<sup>2</sup> The other half of the surveyed individuals were assigned to one of two groups: a control group which received no further contact; and a marketing group which received a special marketing visit to encourage use of existing savings products only (i.e., these individuals were encouraged to save more, but were not offered the new product in order to do so).

This paper first reports the determinants of accepting the offer to open a commitment savings account, and then we report the impact from this product on savings held at the financial institution. We find that individuals who exhibit hyperbolic preferences were indeed more likely

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<sup>2</sup> Clients received the same interest rate in the SEED account as in a regular savings account (4% per annum). This is the nominal interest rate. The inflation rate as of Feb, 2004 is 3.4% per annum. Previous year's inflation was 3.1%.

to take up our offer to open a commitment savings product. We also find that, for less educated individuals, those who exhibited hyperbolic preferences were more likely to report being part of informal savings groups with restricted withdrawals. Lastly, regarding impact, we find after six months that average bank account savings increased by 20 percent in the treatment group relative to the control group (ITT), and that those who opened the account increased savings by 86.3 percent (TOT).<sup>3</sup>

These findings are significant for three reasons. To begin with, they are the first field evidence that links reversals on hypothetical time discount questions to a firm decision to commit to save more in the future. A debate exists surrounding whether to interpret preference reversals in survey questions on time discounting as evidence for temptation models (Gul and Pesendorfer, 2002a, b, 2001), hyperbolic discounting models (Laibson, 1997, 1996; O'Donoghue and Rabin, 1999), or as simply noise or superficial responses. This paper provides evidence for the demand for commitment devices that supports both temptation models and hyperbolic discounting models. Specifically, we show that time preference questions can be used to predict take-up of a commitment savings product.

Second, our findings bridge the gap between experimental economics and the real world. Traditionally, economics experiments are conducted in a laboratory where the environment is tightly controlled. Recent efforts have pushed many of the techniques of experimental economics to the field, through either conducting money games outside of university settings or including surveys of laboratory participants to correlate game behavior with personal characteristics, past experience, and demographics (Barr, 2003; Barr and Kinsey, 2002; Fershtman and Gneezy, 2001; Glaeser et al., 2000; Henrich et al., 2001). Yet few projects have extended this to behavior to real decisions (exceptions include Binswanger (1980), Karlan (2003) and Shapiro (2003)). In this

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<sup>3</sup>The average starting balance for clients within each of the three groups were: 477(C), 487(M), 468(T). These means are not significantly different from each other. Table 1 describes pre-intervention means across treatment assignment.

paper, we establish strong links between answers to hypothetical time preference questions and real financial decisions.

Third, these findings have implications regarding the development of best savings practices for policymakers and financial institutions, specifically suggesting that product design influences both savings levels as well as the selection of clients that take-up a product. A natural question arises concerning why such commitment products have yet to be developed by individuals and/or firms. It turns out that there is substantial evidence that such commitment mechanisms actually do exist in the informal sector, but the institutional evolution of such devices is slow.<sup>4</sup> We examine this question in more detail later when we examine determinants of participating in informal savings groups. From a policy perspective, however, the mere fact that hyperbolic individuals did in fact take-up the product and save more suggests that whatever was previously available was not meeting the needs of these individuals.

This paper proceeds as follows. Section 2 describes the SEED Commitment Savings Product. Section 3 presents the literature on hyperbolic discounting and self-control. Section 4 explains the experimental design employed as part of the larger project to assess the impact of this savings product. Section 5 describes the survey instrument used for the baseline survey. Section 6 presents the empirical strategy. Section 7 presents the empirical results for predicting take-up of the commitment product and Section 8 presents the empirical results for estimating the impact of the product on financial institutional savings. Section 9 concludes.

## **2. SEED Commitment Savings Product Design**

We designed and implemented a commitment savings product called a SEED<sup>5</sup> account with the Green Bank of Caraga, a small rural bank in Mindanao in the Philippines. The SEED account

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<sup>4</sup> In the U.S., Christmas Clubs were popular in the early 20<sup>th</sup> century because they committed individuals to a schedule of deposits and limited withdrawals. In more recent years, defined contribution plans, housing mortgages, and tax overwitholding now play this role for many people in developed economies (Laibson, 1997). In developing countries, many individuals use informal mechanisms such as rotating savings and credit organizations (rosocas) in order to commit themselves to savings (Gugerty, 2001).

<sup>5</sup> “SEED” stands for Save, Earn, Enjoy Deposits.

contains three critical design features, one regarding withdrawals and two regarding deposits. First, individuals were required to choose the type of restrictions placed on their rights to withdrawal. Clients could restrict withdrawals until a specified month when large expenditures – for their business, school, Christmas purchases, or a particular celebration – were expected. Alternatively, clients could set a goal amount and only have access to the funds once that goal was reached (e.g., if a known quantity of money is needed for a new roof). The clients had complete flexibility to choose which of these restrictions they would like on their account; but once the decision was made it could not be changed.<sup>6</sup> Of the 202 opened accounts, 140 opted for a date-based goal and 62 opted for an amount-based goal. Of the 140 date-based goals, 113 were under one year, with 24 of them being just before Christmas.

In addition, all clients, regardless of the type of restriction they chose, were encouraged to set a very specific savings goal as the purpose of their SEED savings account. This savings goal was written on the bank form for opening the account, as well as on a “Commitment Savings Certificate” that was given to them to keep. Table 9 reports a tabulation of the goals given. Forty-eight percent of clients reported wanting to save for a celebration, such as Christmas, birthdays, or fiestas.<sup>7</sup> Twenty-one percent of clients chose to save for tuition and education expenses, while a total of 20 percent of clients chose business and home investments as their specific goals.

On the deposit side, two optional design features were offered. First, a locked box (called a “ganansiya” box) was offered to each client in exchange for a small fee. This locked box is similar to a piggy bank: it has a small opening to deposit money and a lock to prevent the client

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<sup>6</sup> Exceptions are allowed for medical emergency, in which case a hospital bill is required, for death in the family, requiring a death certificate, or relocating outside the bank’s geographic area, requiring documentation from the area government official. The clients who signed up for the SEED product signed a contract with the bank agreeing to these strict requirements. After six months of the project, no instances occurred of someone exercising these options. For the amount-based goals, the money remains in the account until either the goal is reached or the funds withdrawn, or the funds are requested under an emergency.

<sup>7</sup> Fiestas are large local celebrations that happen at different dates during the year for each barangay in this region. Families are expected to host large parties, with substantial food, when it is their barangay’s fiesta date. Families often pay for this annual party through loans from local high-interest rate money-lenders.

from opening it. In our setup only the bank, and not the client, had a key to open the lock. Thus, in order to make a deposit, clients need to periodically bring the box to the bank. Out of the 202 clients who opened accounts, 167 opted for this box.

Second, we offered the option to automate transfers from a primary checking or savings account into the SEED account. This feature was not popular. Many clients reported not using their checking or savings account regularly enough for this option to be meaningful. Out of the 202 clients, only 2 opted for automated transfers.

Lastly, the goal orientation of the accounts might inspire higher savings due to mental accounting (Shefrin and Thaler, 1988; Thaler, 1990, 1985). If this is so, it implies that the impact observed in this study comes in part from the labeling of the account for a specific purpose; the rules on the account would thus serve not only to provide commitment but also to create more mental segregation for this account.

Other than providing a possible commitment savings device, no further benefit accrued to individuals with this account. The interest rate paid on the SEED account was identical to the interest paid on a normal savings account (about 4 percent per annum).

### **3. Literature Review**

Economic theories of intertemporal choice generally assume time-consistent preferences. Stricter assumptions of exponential discounting – ones that imply a constant marginal rate of substitution among future periods – gained widespread use in the science for its mathematical tractability. Exponential discounting implies that preferences are time-consistent because they satisfy the property of stationarity. Loewenstein and Prelec (1992) describe it succinctly with the following example: consider an individual is indifferent between adding  $x$  units of consumption at time  $t$ , and adding  $y$  ( $y > x$ ) units of consumption at a later time,  $t'$ , to a baseline level of consumption  $c$ . Therefore,  $u(c + x)d^t + u(c)d^{t'} = u(c)d^t + u(c + y)d^{t'}$ . After dividing through by  $d^t$ , the equation becomes  $u(c + x) - u(c) = (u(c + y) - u(c))d^{t-t'}$ . Exponential discounting implies that preferences between two consumption adjustments depend only on the constant discount factor  $d$

and the fixed interval ( $t-t'$ ) between time periods. However, a long literature suggests that many individuals suffer from a time inconsistency problem and do not discount the future exponentially (Laibson, 1997; Loewenstein and Thaler, 1989; O'Donoghue and Rabin, 1999; Thaler, 1990, 1992). Specifically, preferences between two delayed outcomes may reverse when both delays are increased by the same fixed amount. This implies that the inter-temporal discount rate not only depends on the fixed difference in time periods ( $t-t'$ ), but also on the independent values of  $t$  and  $t'$ . This is consistent with psychological experiments which suggest that preferences are roughly hyperbolic in shape, entailing a high discount rate in the immediate future, and a relatively lower rate between periods that are further away (Ainslie, 1992; Loewenstein and Prelec, 1992). This fact has led to theoretical assertions that commitment mechanisms can lead to welfare improvements (Laibson, 1996). Laibson argues that commitment mechanisms that bind an individual to future actions or restrict individual choice in the future can overcome time inconsistencies. Evidence from analysis of portfolio allocation suggests that illiquid assets are held as a form of a commitment device; however, typically confounding effects such as differential returns make it difficult to conclude that such portfolio allocations are strictly about commitment.

While the experimental literature provides many examples of hyperbolic-shaped preferences, there is little empirical evidence to suggest that individuals who are experimentally identified as hyperbolic discounters desire commitment savings devices. The existing literature has instead focused on the association between high implied discount rates and other non-savings related outcomes of interest, such as job searches and food stamp usage patterns (DellaVigna and Paserman, 2001; Shapiro, 2003)<sup>8</sup>. Angeletos *et al* (2001) provides empirical evidence for a hyperbolic discounting model using household level data on savings and assets from the US.

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<sup>8</sup> DellaVigna and Paserman (2001) models job search in the presence of hyperbolic discounting, specifically examining the comparative static of impatience on search effort and demanded wages. For individuals with hyperbolic preferences, higher levels of impatience are associated with increased search efforts. For individuals with non-hyperbolic preferences, higher levels of impatience are associated with higher wage demands. Data showing that impatience is associated with longer job search suggest that a substantial percentage of the jobless have hyperbolic

On a theoretical level, several studies argue that the standard laboratory preference questions (whether hypothetical or real) cannot identify hyperbolic preferences, and put forth competing hypothesis that explain these observed reversals.<sup>9</sup> For instance, Fernandez-Villaverde and Mukherji (2002) argues that relative to an immediate reward, uncertainty in future rewards will lead individuals to choose the immediate reward. Read (2001) argues that preference reversals may be the outcome of subadditive discounting, where the amount of discounting over an interval increases as the interval is more finely partitioned. Rubinstein (2003) argues that similarity relations can be exploited by the framing used in questions, and that these relations can deliver the observed preference reversals.

Each of these theories provide an alternative explanation for observed preference reversals. However, they do not imply that time preference reversals should be correlated with take up of a commitment product. We will show findings to the contrary – that reversal of time preferences, specifically exhibiting higher discount rates for sooner time periods, does indeed predict take up of a commitment savings product.

Lastly, another body of literature addresses take-up of commitment savings mechanisms apart from the issue of discounting. Here, intra-household conflict might also predict use of commitment savings products. Anderson and Baland (2002) argues that Rotating Savings and Credit Associations (ROSCAs) provide a forced savings mechanism that a woman can impose on her household; if men have a greater preference than women for present consumption (or steal from their wives), women are better off saving in a ROSCA than at home. They motivate their study with the observation that ROSCAs are predominantly filled with women, and that, in their sample of 520 households from 385 ROSCAs in the Kibera district of Nairobi, married women are much more likely than single women to participate. In addition, working women are more

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preferences. Shapiro (2003) finds a positive association between high present biased discounting (short-run impatience) and the propensity to run out of food stamp. Shapiro argues that responses to hypothetical inter-temporal questions imply discount factors that are implausibly out of range for an exponential discounting model, and thus identify quasi-hyperbolic preferences. Hence, preference reversals are inferred but not observed directly.

<sup>9</sup> For a thorough literature review of these issues, see Frederick, Loewenstein and O'Donoghue (2001).



likely than non-working women to participate and working women living in a couple have the highest likelihood of participation. Interestingly, they find that women's bargaining power in the household, proxied by the fraction of household income that she brings in, predicts ROSCA participation through an inverted u-relationship.

In contrast, Gugerty (2001) uses a different sample, one from western Kenyan that contains 70 ROSCAs with 1066 ROSCA members, and finds that married women appear no more likely to participate in ROSCAs than unmarried women or women who are household heads. While women participate in ROSCAs at higher rates than men on average, those with a salaried income are no more likely to participate than women without a regular source of income. Among married women, those whose husbands live at home are no more likely to participate in ROSCAs, providing evidence against the intra-household conflict hypothesis.

The closest field study to the one in this paper is Benartzi and Thaler's Save More Tomorrow Plan (SMarT) (Benartzi and Thaler, 2002). This plan offered individuals in the United States an option to commit (albeit as a non-binding commitment) to allocate a portion of future wage increases towards their retirements savings plan. When the future wage increase occurs, these individuals typically leave their commitment intact and start saving more: savings increased from 3.5 percent of income to 13.6 percent over 40 months for those in the plan. Individuals who do not participate in SMarT do not save more (or as much more) when their wage increases occur. Our project complements the SMarT study in that we also use lessons from behavioral economics and psychology to design a savings product. We extend the SMarT study in three ways. First, we introduce the product as part of a randomized control experiment in order to account for unobserved determinants of participation in the savings program. Second, we conduct a baseline household survey in order to understand more about the characteristics of those who take-up such products. Third, we conduct this in a developing country where the existing range of savings product designs is both more limited and less studied than in the United States.

#### 4. Experimental Design

The SEED product was implemented under a randomized control experiment to evaluate its impact on the level of savings. Our sample consists of 4001 adult Green Bank clients who have savings accounts in one of two bank branches in the greater Butuan City area, and who have identifiable addresses. We then randomly these 4001 individuals into three groups: commitment-treatment (T), marketing-treatment (M), and control (C) groups. One-half the sample was randomly assigned to T, and a quarter of the sample each were randomly assigned to M and C groups<sup>10</sup>. We verified that the three groups were not statistically significantly different in terms of preexisting financial and demographic data.

We then performed a second randomization to select clients to interview for our baseline household survey. Among the 4001 clients randomized into groups, 3154 were chosen. Out of the 3154 attempted interviews, 1767 clients completed the full survey. While the selection of clients who completed the interview is not random, it is important that we test whether the observable covariates of *surveyed* clients are statistically identical across treatment groups. The top half of Table 1 shows the means and standard errors for the seven variables<sup>11</sup> that were explicitly verified to be equal after the randomization was conducted, but before the study began, for clients who completed the survey. The right column gives the p-value for the F-test for equality of means across assignment. The bottom half of Table 1 shows summary statistics for several of the demographic and key survey variables of interest from the *post*-randomization survey (i.e., not available at the time of the randomization, but verified *ex-post* to be similar across treatments and control groups). Of the individuals not found for the survey, the majority had moved (i.e., the surveyor went to the location of the home and found nobody by that name).

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<sup>10</sup> Using a computer program, each individual was assigned a random number drawn from a uniform distribution between zero and one. Individuals with a number between 0 and 0.25 were assigned to the control group; those between 0.25 and 0.50 were assigned to the marketing-treatment group; and those above 0.50 were assigned to the commitment-treatment group.

<sup>11</sup> These seven variables are client savings balance, active account, distance to branch, bank penetration in barangay of client, mean bank balance of barangay, standard deviation of bank balance in barangay, and barangay population.

This introduces a bias in the sample selection towards individuals who did not relocate recently. See Appendix Table 1 for an analysis of the observable differences between those who were and were not surveyed.

Next, we trained a team of marketers hired by the cooperating bank to go to the homes and/or businesses of the clients in the commitment-treatment group, to stress the importance of savings to them – a process which included eliciting the clients’ motivations for savings and emphasizing to the client that even small amounts of saving make a difference – and then to offer them the SEED product. We were concerned, however, that this special (and unusual) house visit might in and of itself inspire higher savings. To address this concern, we created a second treatment, the “marketing” treatment. We used the same exact script for both the commitment treatment group and the marketing-treatment groups, up to the point when the client was offered the SEED savings account. For instance, members of both groups were asked to set specific savings goals for themselves, write those savings goals into a specific “encouragement” savings certificate, and talk with the marketers about how to reach those goals. However, members of the marketing treatment group were not offered (nor allowed to take-up) the SEED account. If control or marketing-treatment group members asked to open a SEED account, bank staff were trained to address their concerns through a “lottery” explanation: clients were chosen at random, through the lottery, for a special trial period of the product, after which time it would be available for all bank clients. This happened on fewer than ten occurrences as reported to us by the Green Bank, and in one instance an individual in the control group did open a SEED account.<sup>12</sup>

## **5. Survey Data**

The survey data serve two purposes. First, they allow us to understand the determinants of take-up of the commitment savings product. Second, they serve as a baseline instrument for a later impact study. We want to know whether the observed impacts to financial savings at the bank (as found here) are in fact the result of a net increase in household savings, or whether they

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<sup>12</sup> This individual is dropped from the all analysis and summary statistics.

are just a result of the household substituting savings from other instruments to the SEED account. The later impact study will focus on household savings data collected in a follow-up survey to the baseline instrument in order to examine the impact of the commitment product on aggregate household and enterprise savings.

### *Determinants of Take-up*

The primary variable of interest for the current analysis is a measure of time-preference. As is common in the related literature, we measure time preferences by asking individuals to choose between receiving a smaller reward immediately and receiving a larger reward with some delay (Benzion et al., 1989; Shelley, 1993; Tversky and Kahneman, 1986). The same question is then asked at a further time frame (but with the same rewards) in an attempt to identify time-preference reversals. Sample questions are as follows:

- 1) Would you prefer to receive P200<sup>13</sup> guaranteed today, or P300 guaranteed in 1 month?
- 2) Would you prefer to receive P200 guaranteed in 6 months, or P300 guaranteed in 7 months?<sup>14</sup>

We call the first question the “near-term” frame; and call the second question the “distant” frame choice. We interpret the choice of the immediate reward in either of the frames as “impatient.” We interpret the choice of the immediate reward in the near-term frame combined with the choice of the delayed reward in the distance frame as “hyperbolic.” A reversal of this type is characterized as hyperbolic since the implied discount rate in the near-term frame is higher than that of the distant frame. We also identify inconsistencies the other direction, where individuals are patient *now* but in six months are *not* willing to wait. For lack of a simple term, we refer to these as individuals as “patient now and impatient later.” One explanation for such a reversal is that an individual is flush with cash now, but foresees being liquidity constrained in six months. Table 2 describes the cell densities for each of these categories.

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<sup>13</sup> The exchange rate is P50 to the US\$, and the median household annual income of those in our sample is US\$2,400.

<sup>14</sup> The two frames, now versus one month and six months versus seven months, were asked roughly 10-15 minutes apart in the survey in order to avoid individuals answering consistently merely for the sake of being consistent, and not proactively considering the question anew.

We also include similar questions for rice (a pure consumption good), and for ice cream (a superior good which is easily consumed – an ideal candidate for temptation). Although money is fungible, we wanted to test whether the context of these questions influences the prevalence of time-preference reversal, and of the predictive power of such reversals.

In addition to the time preference questions, we try to understand the respondent's attitudes towards savings. We ask about satisfaction with savings behavior, instances of having not been able to pay for a desired good, and instances of purchases that the respondent later regretted.

Lastly, we ask respondents to identify the individual who makes specific decisions within the household in order to ascertain whether spousal or family control issues might explain a higher propensity to take-up and save with a commitment device. These questions focus on identifying the principal decision-maker on a host of domestic and enterprise issues. Furthermore, by asking these questions in both the baseline and the follow-up, we can observe (in cases where the commitment product does help individuals save more) whether having more savings helps women develop financial independence.

#### *Baseline Demographic and Economic Questions*

The survey included extensive demographic and household economic questions. These questions allow us to examine further the determinants of take-up of the SEED product, as well as the determinants of engaging in other informal savings organizations, similar to Anderson and Baland (2002). Data were collected on aggregate savings levels (fixed household assets, financial assets, business assets and agricultural assets), levels and seasonality of income and expenditures, employment, ability to cope with negative shocks, remittances, participation in informal savings organizations, and access to credit.

## **6. Empirical Analysis**

The two main outcome variables of interest are take-up of the commitment savings product (D) and savings at the financial institution (S). Financial savings held at the Green Bank refers to

both savings in the SEED account and/or one of their other accounts. Hence, we can examine crowd-out to other savings vehicles at the bank. If the SEED account caused individuals to shift from one financial savings instrument to another, then there is no implication to aggregate savings.<sup>15</sup>

Our initial analysis focuses on the decision to take-up the commitment mechanism. First, we analyze take-up of the savings products for the individuals randomly assigned to the treatment group. Let  $D$  be an indicator variable for take-up of the commitment savings product. Let  $Z_{T1}$  be an indicator variable for assignment to treatment group T1 – the commitment product treatment group. Let  $Z_{T2}$  be an indicator variable for assignment to treatment group T2 – the marketing treatment group.

We compute the percentage of the commitment treatment group that takes-up the product as  $a_{T1}$  (for use later in computing the Treatment on the Treated effect). Then, in equation 1, we examine the predictors of take-up. We use a probit model to analyze the decision to take-up the SEED product:

$$(1) \quad D_i = \beta X_i + \mu_i,$$

where  $X$  is a vector of demographic and other survey responses, and  $\mu_i$  is an error term for individual  $i$ .

The primary characteristic of interest is reversal of the time preference questions. For each category of money, rice and ice cream, we code an individual as hyperbolic if they wanted immediate rewards in the short term, but were willing to wait for the higher amount in the long term. Another variable of interest is “impatience.” We classify an individual as impatient if the smaller rewards are consistently taken over larger delayed rewards.

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<sup>15</sup> After further data collection, we plan to examine potential crowd-out of other perhaps informal savings. Regardless, even if perfect crowd-out exists to informal savings, this would be a net welfare gain as long as the bank savings had a higher return and/or was more secure.

Our second main interest is the impact of the intervention on savings. The dependent variable is  $S$ , the change in total deposit account balances at financial institution. We estimate the following equation on the full sample of surveyed clients:

$$(2) \quad S_i = \beta_{T1}Z_{T1,i} + \beta_{T2}Z_{T2,i} + e_i$$

$\beta_{T1}$  provides an estimate for the ITT effect - an average of the causal effects of receiving encouragement to take up a regular savings product for those who take up the treatment and those who do not. Given that the control group will have the same access to banking services as the treatment groups,  $\beta_{T2}$  will capture the marketing effect of the experiment. Then, since the estimate of  $\beta_{T2}$  gives the base effect of being encouraged to use a standard savings product,  $\beta_{T1} - \beta_{T2}$  gives an estimate of the differential impact of a savings product with a commitment mechanism.

In order to calculate the effect of treatment on the treated (TOT) effect in equation 2, we use assignment to commitment-treatment as an instrumental variable for take-up of the SEED product. This requires that several assumptions be satisfied, in particular that the effects on savings of treatment is unaffected by treatment assignment except through the product itself. The experimental process itself feasibly could encourage savings through its own mechanism, since offering any kind of savings product to a population could plausibly get them to start thinking about savings on their own. Hence, the experiment potentially could violate the exclusion restriction for using the random assignment as an instrument. We examine this issue using the marketing-treatment group. If  $\beta_{T2}=0$  from (2), then it is plausible that the encouragement to take up a savings product has no direct effect on savings (and also no indirect effect, as taking up the regular savings product did not effect savings); because the encouragement to take up a savings product with a commitment mechanism should not prompt savings directly any more than the encouragement to take up a regular savings product, we could conclude that encouragement to treat would be a valid instrument for treatment. As explained in the empirical results section, we do not find any significant effect of the marketing-treatment condition on savings balances; we

thus conclude that the encouragement to treat did not directly affect savings balances. With this conclusion, and with the additional fact that treatment group assignment is random and that control group members are prohibited from using the commitment products, we calculate the Treatment on the Treated effect TOT using  $\beta_{T1}/a_{T1}$ , or ITT divided by the proportion receiving the commitment-treatment.<sup>16</sup>

We further examine the correlates of savings changes.  $\gamma$  is a vector of coefficients that allows us to understand the relationship between various personal characteristics and changes in institutional balances:

$$(3) \quad S_i = \beta_{T1}Z_{T1,i} + \beta_{T2}Z_{T2,i} + \gamma X_i + \phi(X_i Z_{T1,i}) + e_i$$

$\phi$  in equation 3 estimates heterogeneous treatment effects. Covariates ( $X_i$ ) are interacted with commitment-treatment assignment to estimate whether being offered the commitment product has larger impact on savings for certain types of individuals.

The Treatment on the Treated effect provides us with an estimate of the average treatment effect on those who take up the product. Heterogeneous treatment effects suggest that this interpretation cannot and should not be broadened to include the effect on those who do not take up the product. Hence, the results should not be used to predict, for example, the consequence of a state-mandated pension program.<sup>17</sup> It can, however, be used to estimate the impact of a pension program where compliance is voluntary.

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<sup>16</sup> The insignificant estimate of the marketing-treatment coefficient merely suggests that SEED marketing affected savings through take-up of the SEED product alone. Based on this estimate, we cannot argue that the exclusion restriction holds for certain; we argue only that the effects of marketing are not statistically measurable in this intervention, and that any indirect affects of marketing are orders of magnitude smaller than the direct effect. Furthermore, the encouragement to save is not identical to the SEED marketing, and it may be that the coefficient on the encouragement treatment indicator does not provide a perfect measure of the independent effect of SEED marketing. It is not clear that an “ideal” marketing treatment group that receives SEED marketing – but are barred from taking-up SEED – would serve as a legitimate test of the exclusion restriction for reasons of spite, resentment, etc. The TOT estimates are therefore interpreted as approximations of the isolated impact of voluntary SEED take-up.

<sup>17</sup> The presence of heterogeneous treatment effects may imply that we cannot interpret the treatment effect we observe as entirely due to the treatment; it may be that the type of individuals who respond to the encouragement for a commitment savings product are different from those who respond to the encouragement for a regular savings product. Thus the difference we observe in their outcomes is due more to the difference in types of individuals that take-up the two products than to the difference in treatment. Regardless, this does not imply that the commitment product is not effective relative to a normal savings product; rather it suggests that financial institutions should offer both a commitment product and a normal savings product to clients in order to attract both types of clients. In the empirical



## 7. Empirical Results: Takeup

In this section, we analyze determinants of the adoption of commitment savings mechanisms through four subsections. First, we examine the predictors of responses to the time discounting questions. Second, we examine predictors of taking up the SEED commitment savings product, with particular focus on the ability of the time discounting questions (and specifically preference reversals) to predict this decision. Third, we use our data on informal savings behavior, such as ROSCAs, to revisit important questions about the motivations for participation in such institutions, particularly to the extent that such informal devices are construed as commitment mechanisms themselves. Fourth, we discuss alternative explanations for reversals of the time preference questions and present evidence on these explanations.

### *7.1 Determinants of Time Preferences*

We examine the determinants of different time preference responses by all individuals surveyed. Three characteristics are identified: impatience, present-biased time inconsistency (hyperbolicity), and future-biased time inconsistency (referred to herein as “Patient Now and Impatient Later”). We create three variables for each of these traits, with reference to money, rice and ice cream<sup>18</sup>. Table 2 shows the tabulations of the responses to these questions. In the next section, we will discuss alternative explanations (other than hyperbolicity) for response reversals. For now, we will refer to this reversal as “hyperbolic.”

Table 3 shows that strikingly few observable characteristics predict hyperbolicity. For the specification which includes both males and females, the only statistically significant result is that those who are less satisfied with their current savings habits are more likely to be hyperbolic (see Column 1). This result is driven by females as indicated by Columns 2 and 3. For females, the more educated also are more likely to be hyperbolic with respect to money. The point

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section, we test for heterogeneous treatment effects across different observable characteristics but do not find any significant differences in outcomes.

<sup>18</sup> Appendix Table 2 shows the correlations across these different time preference responses.

estimate is similar with respect to rice and ice cream, but is not statistically significant. For males, no independent variables predict hyperbolicity (regardless of whether the frame is money, rice or ice cream) with statistical significance.<sup>19</sup>

Table 4 shows the determinants of impatience. With respect to money, we find that women are more patient than men (more true for tradeoffs between 6 and 7 months), that married individuals are less patient than single individuals, that education is uncorrelated with impatience, and that members of households with higher incomes are less impatient. In general, we find similarly signed results for the three frames of money, rice and ice cream. One intuitive result is that those who report having skipped meals in the past month are radically more impatient with respect to rice (coefficient of 0.372, significant at 90 percent). The similar result for money and ice cream is positive, but not significant statistically.

Lastly, we examine the determinants of being patient now but impatient later (i.e., the opposite and less intuitive reversal of time preferences). We suggest three explanations for this reversal: noise in survey response, inability to understand the survey question; and the timing of a respondent's expected cash flows. If noise is the explanation, then no covariate should predict response of this type. We more or less find this to be the case. Twice as many individuals reversed in the "hyperbolic" direction than in this direction (see Table 2). This suggests that the hyperbolic measure also includes some noise. If this is the case, then attenuation bias will cause our estimates of the effect of hyperbolicity on take-up of the SEED product (see next section) to be biased downward. Inability to understand the question may be driving these responses; if education makes individuals more able to grasp hypothetical questions and answer them in a consistent fashion, then education should negatively predict this reversal. We find no such

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<sup>19</sup> The same regressions were also performed on the sub-sample of individuals who exhibited "impatience" with respect to money, rice, or ice cream. Coefficient estimates for these regressions are not shown; however, they are statistically identical to the estimates in Table 3. Furthermore, the every covariate remains statistically the same between the full sample and sub-sample regressions. The variable for impatience cannot be directly included in the regressions shown in Table 3 without downwardly biasing every coefficient in the regressions. This is because conditional on not being impatient for one of the three items, a respondent cannot be hyperbolic, and no covariate will predict hyperbolicity in that case.

statistically significant relationship. Lastly, we examine a simple cash flow story. In the survey, we ask the individuals what months are high and low income months. For females (but not males), individuals who report being in a high income month now but low income month in six months are in fact more likely to demonstrate the patient now, impatient later reversal.<sup>20</sup>

Since little else predicts this particular reversal (see Table 5), we believe that reversals in this direction represent mostly noise. Furthermore, as we will show later, these reversals do not predict real behavior, such as taking up the SEED product, like the hyperbolic reversals do. If this reversal was in fact about being flush with cash now, then one might be more likely to save now in order to be ready for the low income months later.

### *7.2 Predicting Take-up of a Commitment Savings Product*

Next we analyze the take-up of the savings products for the individuals randomly assigned to the commitment-treatment group. We find that those who are hyperbolic are in fact more likely to take-up the SEED product. Little else predicts take-up of the product. Table 6 and Table 7 show the determinants of take-up. Table 6 shows the results using simple OLS with just the time preference questions as independent variables (hence, effectively comparison of the probability of take-up, conditional on a particular time preference categorization. Table 7 shows results with a full set of independent variables. We find that hyperbolic females (with respect to money) are between 13 and 20 percentage points more likely to take up the SEED product<sup>21</sup>. This effect is non-existent, however, for men. Row 6 shows that if the sample is restricted to those who were impatient now, the predictive power of being patient in the future diminishes to 12.3% points overall and 10.8% points for females (and rises for men, to 9.9% points). In addition, reversals in the opposite direction (patient now and impatient later) do not predict take-up (row 5). Table 7

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<sup>20</sup> A similar prediction suggests that individuals in low income months now but high income in six months should appear to be hyperbolic. Table 3 shows that this conjecture does not in fact hold.

<sup>21</sup> With respect to rice, females are 8.7% points more likely to take-up, whereas with respect to ice cream females are only 4.7% points more likely to take-up.

shows that this result on hyperbolicity is robust to controlling for income, assets, education, household composition and other potentially influential characteristics.

Education and income also predict take-up of the commitment savings product. Individuals who have received some college education are more likely to take-up. The relationship between income and take-up is parabolic, with our lowest and highest observed income households less likely to take-up than those we observe in the middle.

Spousal control issues are likely to be another motivating factor in the take-up of a commitment product, and should be greater for women than for men. Therefore, we analyze the impact of household composition on the likelihood to take-up the commitment product over the normal savings product. Although women are more likely than men to take-up the commitment product (column 1: 14.4 percent points more likely), the interaction term of married and female is negative, though not statistically significant<sup>22</sup>. This suggests that *single* women are in fact more likely to take-up than married women, which is counter to the typical spousal control story. Most single women live in extended households before getting married, so this still could be a result of familial control issues for single women needing to find a mechanism to maintain savings outside the control of the household head.

In interpreting these results on female and married, it is important to recognize that our sample of women is a select sample of women who hold their own bank accounts. Particularly for married women, a woman with a bank account is likely different in many ways from the average married woman in the Philippines.

### *7.3 Determinants of ROSCA Participation*

Next, we analyze the correlates of participating in informal savings organizations, based on survey data we gathered before the intervention. Informal savings organizations are interesting in

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<sup>22</sup>We may be concerned that familial control issues, ie keeping money out of the hands of demanding relatives or parents, may be just as important as spousal control, and affect single income earners as well. Only 5 percent of the individuals live in a household with no other adult. Although this subsample is neither more nor less likely to take up the product, little inference should be drawn from this small sample of 34 individuals. This result is not shown in the tables. Also not shown, the share of income attributable to the female does not predict take-up of the SEED product.

this context because they are often cited as potential commitment devices for savings for individuals, particularly females. We start with a similar hypothesis, that participation in informal savings organizations is driven by a need for commitment mechanisms, either due to spousal or self-control issues. This analysis sheds insight into an academic debate about the role that informal savings organizations play for poor individuals (Anderson and Baland, 2002; Gugerty, 2001).

In our survey data, we asked several questions about the structure of the informal savings organization. We generate three dependent variables for different types of informal savings alternatives. First, we examine savings organizations with fewer than 30 members where no loans are made using the savings pool. Second, we examine small groups only, since large groups (over 30 individuals) are often organized through employers or some other large network, and by design do not appear to exert peer pressure on their members to save. Hence, they are more like a normal (albeit informal) savings vehicle rather than a commitment savings device. Similar reasoning applies when borrowing against savings is possible. Last, we examine propensity to keep cash in the home. We hypothesize that sophisticated individuals with self or spousal control issues will not try to save at home, and unsophisticated individuals might try but will not succeed in saving at home. Either way, we predict that those with self-control or spousal control issues are less likely to save at home.

We find evidence to support both self and spousal control stories of ROSCA participation. For self-control stories, we find that just as hyperbolicity predicts SEED take-up for women, it also predicts participation in a ROSCA for those with less education. Column 1 of Table 8 shows that hyperbolicity positively predicts ROSCA participation (significant at 95 percent level), but the interaction of hyperbolicity and being highly educated (some college), is negative and significant (at 90 percent level). We suggest that educated individuals are sophisticated enough to overcome their self control issues through some other mechanism, and hence do not resort to informal savings clubs to plan their savings. Whereas for the SEED product only hyperbolic

females are more likely to take-up the product, for ROSCAs both hyperbolic males and females are more likely to take-up (although only statistically significant when pooled, the coefficients remain similar when disaggregated by gender).

To further understand the role of spousal control, we conduct a similar analysis to Anderson and Baland (2002) and examine the percentage share of income the female controls in the household. As with Anderson and Baland, we find that women with some but not all of the income are most likely to participate in ROSCAs. Columns 1 and 2 of Table 8 show this result, that when female income share is between 50 and 75 percent of household income, the female is most likely to participate in a ROSCA. Anderson and Baland suggests that females with no income share have neither power nor money and therefore are unable to join any savings clubs. Furthermore, women with the full income of the household do not need to join ROSCAs because they hold significant power<sup>23</sup>. Hence, women with some but not all of the income in the household are most likely to participate in ROSCAs<sup>24</sup>. Contrary to Anderson and Baland, however, we do not find that married females are more likely to participate in ROSCAs. This could be because non-married females typically live in households with other adult men, so the absence of a husband suggests the presence of a father, brother, etc., who exerts similar pressure on household spending decisions. Methods of overcoming spousal power issues might be dictated largely by social norms, similar to Duflo and Udry (2003). In this context, informal savings clubs might be acceptable vehicles that spouses respect and hence provide the female with autonomy over those funds. However, the SEED account, perhaps because it is new and unknown, has no established social norms to dictate acceptable use within the household. This suggests that a long-term study would prove worthwhile in order to understand what norms evolve regarding the SEED product as it becomes more common.

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<sup>23</sup> If the man exerts power (perhaps violently) over the wife then the wife's share of income may not lead to more household power.

<sup>24</sup> We conduct a similar analysis on take-up of SEED and find similar point estimates but with larger standard errors and hence insignificant results statistically. These results are not shown.

Table 8 also shows the determinants of savings at home. Individuals with high discount rates (labeled “Impatient now w/r/t money”) are less likely to save at home. As noted above, this could be because such individuals never have free cash, or it could be because such individuals do not keep cash at home where they know it will get spent quickly. Supporting a spousal control conflict story, we find an interesting corollary to the ROSCA finding on spousal control: households where women control some but not all of the household income (50-75 percent) are less likely to save at home (where these same individuals are more likely to save in a ROSCA).

#### *7.4 Alternative Interpretations of the Time Preference Reversal*

Here we consider explanations other than hyperbolicity for the time preference reversals and present evidence for or against these alternatives. We present three alternative explanations: 1) pure noise, 2) inability to understand the questions, and 3) personal cash flows match timing of the questions.

Regarding noise, two pieces of evidence suggest that individuals who we code as hyperbolic do indeed reverse their time preferences. First, note from Table 2 that typically more than twice as many individuals reverse time preferences in the “hyperbolic” direction than in the other<sup>25</sup>. Second, if this were pure noise, then it should not predict real behavior, such as take-up of a commitment savings product, or usage of ROSCAs.

Regarding inability to understand the hypothetical questions, we examine whether education predicts reversals. We test whether less educated individuals are more likely to report preference reversals (in either direction). If this is the case, and less educated individuals are more likely to take-up the SEED product, then we would spuriously conclude that take-up of SEED was due to hyperbolicity, rather than just being uneducated. Examining Table 3 shows that attending college is in fact positively correlated, but statistically insignificant, with reporting “impatience now but patience later.” As shown in Table 5, reversals in the other direction, “patience now but

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<sup>25</sup> The means are statistically different at the 99% level.

impatience later,” are also uncorrelated with higher education (although in this case, the more educated are less likely to reverse).

Lastly, we examine a precise story about cash flows: individuals who report patience (impatience) now and impatience (patience) later are flush with cash now (later) but expect to be short cash later (now). In order to make sense, such a story also requires some element of credit constraints. Although we are unable to test this precisely, we did ask individuals what months are their high-income and low-income months. Females who report being in a high-income month at the time of the survey and a low-income month 6 months after the survey are in fact more likely to reverse time preferences, indicating patience now and impatience later (see column 2, Table 5). Hyperbolic reversals, however, are predicted neither by these cash flow measures nor by credit constraints.<sup>26</sup>

## **8. Empirical Results: Impact of the SEED Product on Financial Savings**

In the sub-sections that follow, we present results from the experimental control design on the impact of the savings product on financial savings held at the financial institution (both in the SEED account and in other accounts). We focus on the change in total balances held in the financial institution, which is the change in all deposit accounts (including deposits held in SEED accounts) six months after the intervention began, less the pre-intervention balance. Clients who took up the SEED account may have had different withdrawal dates for their accounts; however, we use the same timing for evaluating the impact on all subjects: all pre-intervention data is from June, 2003 and post-intervention data is taken at Jan, 2004.

The impact analysis takes on several steps. Section 8.1 presents descriptive results of the accounts opened under this program. Section 8.2 highlights the distribution of

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<sup>26</sup> Credit constraint regressions not shown, but include the number of self-reported alternatives for a loan.



changes in savings balances that occurred during the intervention across treatment, marketing and control. Section 8.3 through 8.5 show the impact both using Intent to Treat and Treatment on the Treated specifications, and using both change in savings balance as well as percent increase as the outcome measure. We find significant impacts, both economically and statistically. Section 8.6 examines outlier issues, specifically performing various robustness checks on a truncated sample. Section 8.7 examines impact conditional on different demographics and behavioral variables. Section 8.8 examines crowd-out to other savings held at the financial institution. Lastly, Section 8.9 examines whether certain features of the SEED product are correlated with higher or lower usage.

### *8.1 Seed Account Savings*

202 SEED accounts were opened. Figure 1 shows the distribution of SEED account balances. About a third of the clients have deposited money into their SEED account since the initial opening deposit. Sixty percent of all accounts are at P100, the minimum opening deposit. Formerly dormant clients own the majority of the accounts that were opened and no further deposits made. Twenty-five SEED clients who are considered inactive reached their date-based goals but, even when reminded through home visits by marketers to come into the bank because they could now withdraw their savings, did not and instead let the funds remain in the account. Sixteen other SEED clients reached their goal dates or goal amounts. Eleven of these clients withdrew their savings, but did not close their accounts, opting instead to roll over their account and set a new goal for which to continue saving. Three clients did not even withdraw their money when their goal was reached, but instead committed themselves to higher goal amounts or a further away date. Time deposits pay higher interest, so these clients are forgoing much higher interest rates that could accrue for their now-large balances (some up to 10,000 pesos) in order to retain their savings in the SEED account.

## 8.2 Distributional Differences over Changes in Savings Balances

Recall that the randomization procedure verified that means of pre-intervention bank savings were the same across treatments and control groups. In theory, we could analyze the product-impact using post-intervention savings levels as our outcome of interest. However, using change in total balance as our outcome measure allows for a more precise estimate of the impact of the program. Figure 2a shows the distribution of changes in savings balances for each of the three experimental groups. Because treatment was randomly assigned, we can infer from this graph that the distribution of changes in savings was significantly shifted towards the upper deciles. Figure 2b breaks out this treatment effect for those who were offered the product and took it up, and those were offered but did not take it up. The latter, non-SEED Treatment group, looks similar to the control and marketing groups in its distribution of changes in savings balances. In contrast, the SEED Treatment group looks very different, suggesting that the effect of treatment indeed came from the product itself, rather than from simply being offered the product. These effects are confirmed in the point estimates on marketing and treatment assignment in the subsequent sections, and further support using treatment assignment as an instrument for treatment in the treatment on the treated analysis.

## 8.3 Intent to Treat Effect

Estimates for  $\beta_{T1}$  in equation 2 can be interpreted as the average savings *increase* from being offered the commitment product. This is also the intent-to-treat (ITT) effect. Likewise, the  $\beta_{T2}$  coefficient estimate can be taken as the average savings increase of clients who were randomly chosen to receive marketing of standard savings products. The difference between the two coefficients ( $\beta_{T1} - \beta_{T2}$ ) can be interpreted as the differential effect of being offered a savings product with the commitment features.

The coefficient on assignment to the commitment treatment group,  $\beta_{T1}$ , is positive but only significant at the 90-percent level for full sample (column 1 of Table 10, Panel A). The

marketing effect is insignificant. The estimate for  $\beta_{T1} - \beta_{T2}$  is positive but it is also statistically indistinguishable from zero. This regression includes outliers with high wealth, which reduces the precision of our estimates. Therefore, we repeat the regression for previous sample of clients, but truncate the sample at the upper and lower half (or one) percentile of the balance change variable. This leaves a truncated sample of clients that lie within the middle 99 (or 98) percentiles of the distribution of change in total balances. In both sample specifications, the coefficient on treatment assignment is positive and significant at the 99<sup>th</sup> percent confidence level. We consider the results based on the middle 98 percentiles of the change in total savings balances to be our main “base” result. This truncates on both tails of the distribution, and it is the more conservative of the two truncated specifications. The ITT of P101.7 in column 3 is equivalent to 20.1 percent of pre-intervention institutional savings, or 0.68 percent of total household monthly income. Section 8.5.5 discusses the sensitivity of the ITT results to sample truncation in more detail.

The estimated ITT effect for formerly dormant clients is robust to sample truncation as well. For formerly dormant account holders, the ITT effects are about two-thirds the magnitude than those for the full sample of active and formerly dormant clients. Therefore, the impact of the intervention is much higher for active clients than for formerly dormant clients.

The negative intercept in almost every regression reveals the general level of dissavings for control clients over the course of the intervention. Given the timing of the analysis, this is perhaps due to expenditures for the Christmas season.

### *8.5.3 Treatment on the Treated Effect*

Two conditions must hold for the treatment assignment to be a valid instrument for take-up of the seed commitment product. First, the assignment must be correlated to take-up of the seed product. By design, this is so. No marketing or control individuals were permitted to open the SEED product. Among clients offered the commitment product, 27.6 percent opened an account. Second, the treatment assignment must satisfy the exclusion restriction. That is, offering the

commitment product cannot have an effect on savings except through take-up of the product. The ITT regressions support that the exclusion restriction holds.<sup>27</sup> In every regression in Table 10, Panel B, the estimate on  $\beta_{T2}$  is small relative to the  $\beta_{T1}$  estimate, and is statistically insignificant. This implies that the direct effect of marketing on savings is insignificant. The exclusion restriction also requires that there is no direct interaction effect between the treatment assignment and marketing on savings (i.e. marketing the commitment product is no different from marketing the standard savings product). If this is the case, then the treatment assignment is a valid instrument for take-up of the commitment product.

Estimates for the treatment on the treated effect (TOT) are reported in Table 10, Panel B. They are calculated by regressing balance changes on take-up of the commitment product, instrumented with treatment assignment. The samples are truncated in the same manner as in the ITT regressions. The TOT effect is equivalent to the ITT divided by the probability of take-up among those offered the product. In every specification, the TOT is roughly four times the magnitude of the average ITT effect.

#### *8.5.4 Probability of Savings Increases*

A second method to limit the influence of savings outliers in the sample is to treat savings changes above a certain threshold as a binary outcome variable. We construct indicator variables for whether a client achieved a positive savings increase, or a savings increase exceeding some cutoff percentage. These indicator variables are regressed on treatment assignment dummies as before to get the treatment effect on the probability of increasing savings in excess of some percentage. This enables a substantial increase in savings due to a wealthy individual to be muted in two ways: first, the absolute magnitude of the savings increase is normalized by her initial savings level; second, an outlier in the distribution of percentage savings increase would be no

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<sup>27</sup> Although as discussed earlier, we cannot rule out the possibility that the offering of the SEED product had a differential effect than the marketing treatment, despite the similarity in the scripts of the door-to-door marketing.

different than a client with a savings increase slightly higher than a given cutoff level would from the perspective of a binary dependent regression.

Table 11 reports the outcomes of probit regressions for cutoffs in savings changes of 0-50 percent, at every 10 percent. The treatment effect is significant and precisely estimated in every specification, and can be interpreted as the additional probability that a client randomly assigned into the treatment group will save more than the cutoff percentage, relative to the control clients. The largest treatment effect is reported in column 2. A client offered our commitment product will be 15 percent more likely to have increased savings by 10% or more after 7 months of the intervention. The treatment effect steadily declines as the threshold savings level increases. The estimates are precisely estimated, and tests for significance can be rejected at the 99 percent level in every regression. Furthermore, the estimated coefficients on assignment into the marketing group are insignificant in every specification. This is consistent with the statistically insignificant marketing effects estimated in section 8.5.2, and suggests that the impact of the commitment product came from the product itself, and not from the door-to-door marketing.

#### *8.5.5 Sensitivity of Estimates to Truncation*

One possibility is that even after omitting the uncharacteristically wealthy savers from the sample, the treatment effect could still be driven by large savings increases of a few treatment clients. If this is the case, then the ITT effect estimates are driven by unobservable covariates that were not equal across treatment and control groups. To examine this, we rerun the ITT regressions omitting the client with the highest balance increase from the commitment treatment group. We repeat this, omitting the clients with the two, three (and so on) highest balance increases from the commitment treatment group. We then can witness the decline in both the estimated average ITT effect and its significance. Sharp declines would imply that one or two clients are driving the estimates treatment effect, and we do not find such sharp declines. The results are reported in Appendix Table 3.

Column 1 of Appendix Table 3 duplicates the middle 98-percentiles sample ITT regression from Table 10, Panel A. We use this as the base regression. Each column thereafter omits the commitment treatment client with the highest remaining balance increase. As expected, the coefficients decline as clients are removed. The more relevant point is that the ITT estimates decline gradually, with no estimates declining by more than about 5 percent relative to the subsequent regression with one fewer treatment client. While informal, these regressions suggest that with the middle 98<sup>th</sup> percentile of balance changes, we have captured a sub-sample in which no client is single handedly driving the significance of our results. In fact, we must omit the 20 commitment treatment clients with the highest savings increases in order for the estimated ITT effects to lose significance at the 95-percent confidence level.

#### *8.5.6 Examination of Heterogeneous Treatment Effects*

We would like to understand the demographic characteristics that are correlated with increased savings resulting from the treatment assignment. Therefore, we repeat the regressions from Table 10, Panel A adding in demographic variables. In each of the regressions in Table 12, one demographic variable is included with its commitment treatment-interaction term. The demographic variables of most interest are the indicator variables for gender, for having attended some post secondary education, for showing present-biased preferences when asked hypothetical time preference questions, and for showing impatience for the same hypothetical questions, as these are demographic variables that have, to some extent, shown to be correlated with up-take of the commitment product.

In every regression, the coefficient on the interaction term is insignificant. This suggests that, within the treatment group, the average effect of the treatment assignment is working fairly uniformly across the distribution of these variables. Controlling for gender lowers the direct treatment effect but the gender-treatment interaction term is not significant. This implies that among the demographic variables included in the impact regression, the variable for being female is perhaps the only one that systematically contributes to the total average impact of treatment

assignment of P101.7 – a fact that is not surprising considering the propensity for women to take-up the commitment product. It is possible that a third variable – correlated with both being female and saving more as a result of the treatment – may be contributing to females taking-up the commitment product and using it to increase savings.

We would also like to understand the effect of the treatment on encouraging formerly dormant account holders to become more active depositors. If dormancy is mainly due to a combination of time-inconsistent preferences and high transaction costs of making deposits (e.g. travel costs), then we may expect to find a treatment effect through use of the home-use lock-box. On the other hand, if dormancy is an outcome of a lack of interest in formal savings institutions, or forgetfulness of past deposits, then we may expect to find a marketing effect. Appendix Table 4 reports the commitment product and marketing treatment effects on likelihood to activate a dormant client. The dependent variable in column 1 is a binary variable for transacting on a non-SEED deposit account in the past two months. The binary variable is redefined for past-two through past-six months, and for past-year – the definition we use for dormancy. In every regression, neither the treatment nor marketing effect is remotely significant.

#### *8.5.7 Shifting Assets vs. Generating New Savings*

To test whether the SEED account balances represent new savings, or whether they represent shifting of assets between accounts held at the institution, we define a new outcome variable: change in balance in all non-SEED savings accounts. This is the change in savings in all deposit accounts except for the SEED account over the six months since the experiment began. We regress non-SEED change in balance on the indicators for the treatment groups. We then compare the coefficient estimates against the ITT coefficient estimates. Perfect crowd-out (shifting) of SEED savings occurs when increases in total savings can be accounted for by declines in non-SEED balances for the clients in the commitment treatment group. That is, when there is perfect crowd-out, the coefficient on the commitment treatment indicator in the non-SEED change in balance regression will be the negative of commitment ITT estimate. If all

SEED savings lead to new institutional savings, then the coefficient in this regression will be zero. In general, the sum of the commitment treatment coefficient estimate in the non-SEED change in balance equation and the commitment ITT estimate yields the net effect of the SEED account. We use “net” because the regressions cannot separately identify the crowd-out effect and the externality that the SEED account may have on non-SEED account savings.

Table 13 reports the results of this regression. Column 1 reports the regression of non-SEED change in balance on treatment indicators. The estimated coefficient on the both treatment indicators is positive but insignificant. Column 2 shows the ITT regression from section 8.5.2 as a comparison. The net crowd-out is essentially zero, implying that on average, SEED balances were created out of new savings. The crowd-out effect is insignificant for active and formerly dormant clients as well.

#### *8.5.8 Determinants of SEED Balance: Commitment Features*

We attempt to shed light on the mechanism by which the SEED account is, in practice, generating new savings. First, we test whether particular features of the commitment product are a determinant of SEED balance. Recall that features of a SEED account are determined by the clients themselves. Thus, we do not interpret these results as independent savings effects of a particular product features. Rather, features that predict SEED balance can be interpreted as a proxy for underlying heterogeneity that may be of interest to economists. For instance, we expected that the lock-box may help with increased deposits as it serves as an at-home physical commitment device. Yet, at the same time, it might be that only clients who are most aware of their lack of a commitment to save find the lock-box desirable.

The top half of Table 14 reports the regression results where SEED balance is the outcome variable, and characteristics of the commitment product are the regressors. Note that only two regressors pertaining to the commitment product have significant coefficient estimates: the constant, and the indicator of being an active client prior to the experiment.



There is no other commitment product characteristic that appears to be a significant predictor of SEED balance. Particularly, the use of the box is positive in every specification in which it is included, but in none is it significant statistically. The type of SEED account does not appear to matter as well. More surprisingly, the terms of maturity are also not predictive of SEED balance. It is unclear why, say, a higher amount-based savings goal is not correlated with higher SEED balance. It could be that the highest goals are also the most unrealistic.

We also test whether our indicators for hyperbolic preferences and impatience directly predict SEED balances. We specify a regression similar to those above, except now the set of regressors include indicators for being impatient now for money and patient later, impatient now and impatient later, box use, and interaction terms. The bottom half of Table 14 reports the results for these regressions. In the simple regressions where indicators for hyperbolic preferences and impatience appear individually, and separately (column 8 and column 10), the coefficient estimate is insignificant. Including box-use and interactions to these two base regressions changes the results: hyperbolic individuals without a box save more, significant at the 90 percent level.

## **9. Conclusion**

Savings requires a delay of immediate rewards for greater future rewards and is thus considered particularly difficult for individuals who have time inconsistent preferences and/or self-control problems. Using hypothetical survey questions, we identify individuals who exhibit impatience over near-term tradeoffs but patience over future tradeoffs. We find this reversal uncorrelated with most demographic and economic characteristics. However, we find that for women this reversal predicts take-up of a commitment savings product.

Using a randomized control methodology, we offer individuals a commitment savings account. Twenty-seven percent of those offered the commitment savings product open such an account. Comparing those offered the product to a randomly chosen control group not offered the product, we find a strong positive impact on savings. A second treatment group received a

marketing intervention, but no product, to measure the direct effect of the marketing on savings levels. After six months, average bank account savings increased by 20.4 percent in the commitment-treatment group relative to the control group (ITT); those who opened the account increased savings by 86.3 percent (TOT). This corresponds to an average increase of 100 pesos (= \$2USD) for the ITT and 500 pesos (\$10USD) for the TOT. Although the nominal amounts are small, as a percentage of prior formal bank savings the product impact is significant. Among those with prior positive balances, the treatment group participants have a 14.6 percent higher probability of increasing their savings by more than 10 percent and 8.7 percent higher probability to increase by more than 50 percent, relative to the control group participants. In terms of economic significance, a doctor's visit in this area of the Philippines costs about \$3USD, public school fees are \$3/year plus \$4/month for special projects, and a one month supply of rice for a family of five costs \$20.

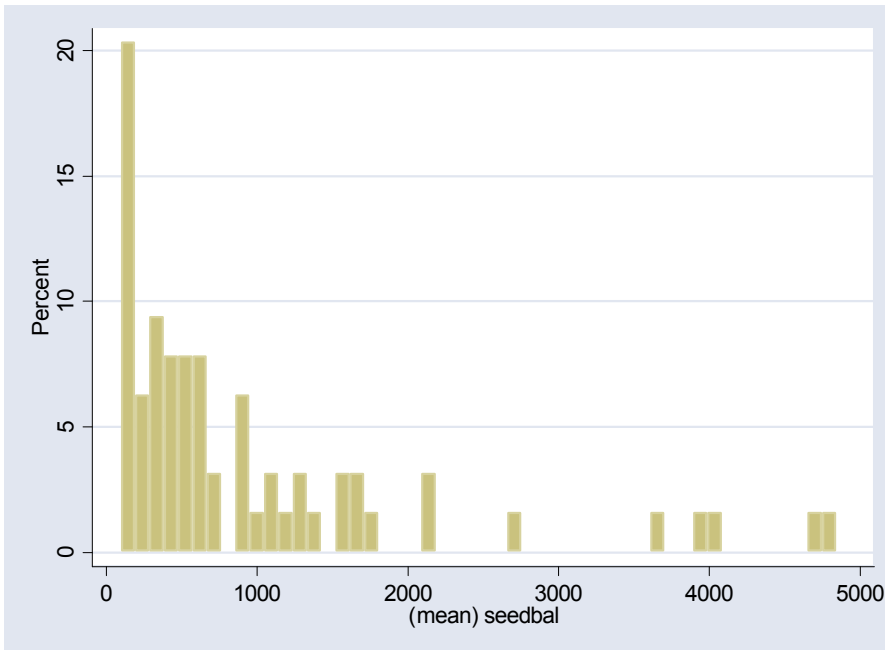
Whereas these results are economically and statistically significant, they suggest that further research is warranted to understand several issues. For instance, will the effect of the product diminish over time without constant reminders? Which product features exactly generate the outcomes we observed (i.e., is it the locked box or the withdrawal restrictions that matter most)? From an institutional perspective, what are the costs involved in implementing this product and do the benefits in terms of savings mobilization warrant such efforts? Lastly, does this represent substitution from other forms of savings in assets or in other institutions?

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Figure 1: Distribution of SEED Balances<sup>28</sup>



<sup>28</sup> Sample restricted to SEED greater than P100 (134 observations at or below P100) and observations within the middle 98% of the total balance change distribution. Including the outliers would make it difficult to observe on the graph the observed distribution for the majority of the participants. Furthermore, excluding the outliers mimics the primary impact specifications used in the tables.

Figure 2: Change in Institutional Savings Balances by Treatment Group

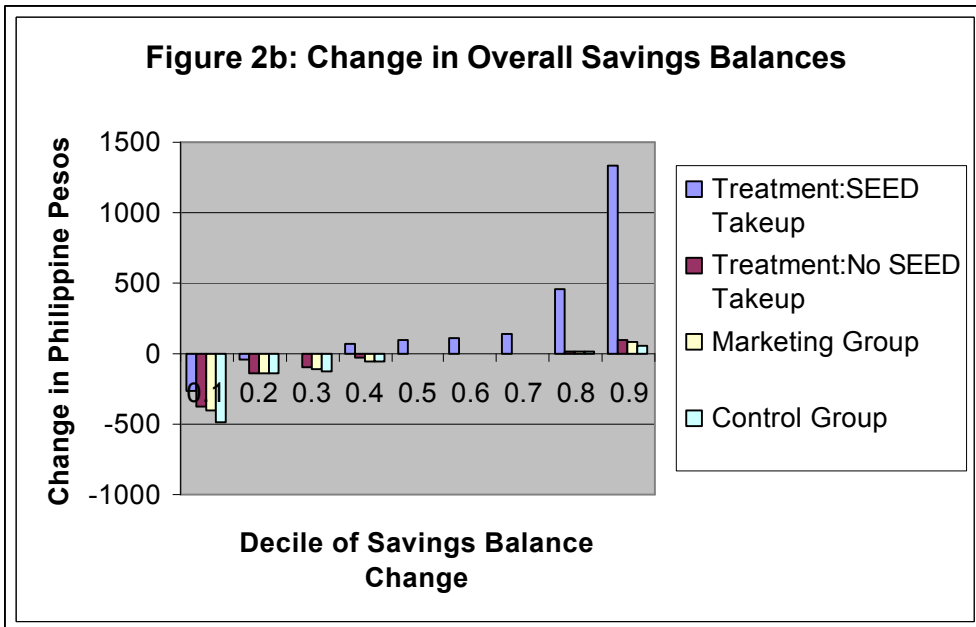
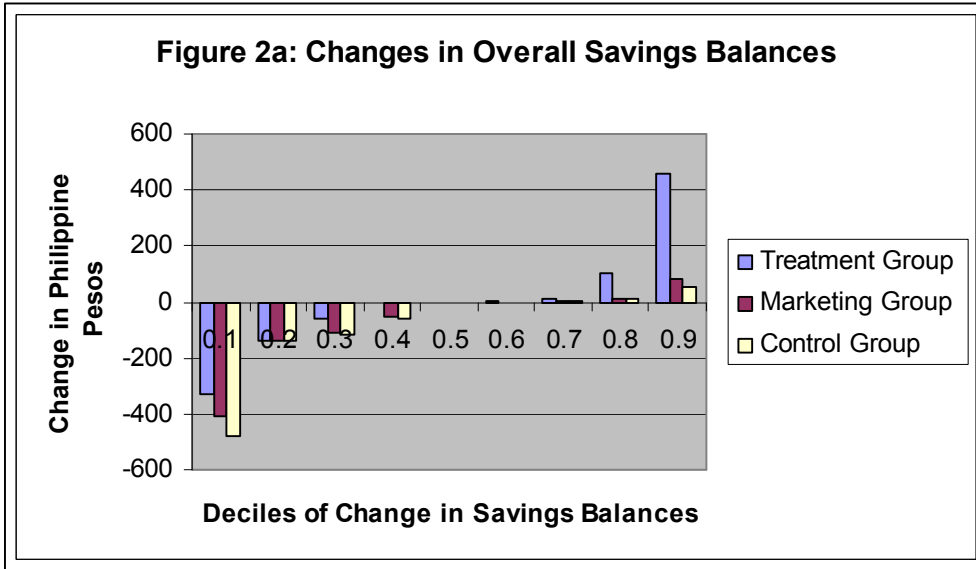


Table 1. Summary Statistics of Variables, by Treatment Assignment  
Means and Standard Errors

	Control	Marketing	Treatment	F-stat P- value
<b>A. VARIABLES AVAILABLE AT TIME OF RANDOMIZATION</b>				
Client Savings Balance (hundreds)	5.315 (0.233)	4.965 (0.234)	5.017 (0.174)	0.499
Active Account	0.359 (0.022)	0.361 (0.022)	0.350 (0.017)	0.903
Barangay's Distance to Branch	2.188 (0.088)	2.324 (0.088)	2.276 (0.066)	0.539
Bank's Penetration in Barangay	0.022 (0.002)	0.021 (0.002)	0.019 (0.001)	0.681
Mean Balances of Barangay (hundreds)	5.067 (0.046)	5.084 (0.047)	5.094 (0.035)	0.396
Standard Deviation of Balances (hundreds)	4.919 (0.036)	4.962 (0.039)	4.947 (0.026)	0.638
Population of Barangay (thousands)	5.855 (0.207)	5.714 (0.209)	5.737 (0.155)	0.870
<b>B. VARIABLES FROM SURVEY INSTRUMENT</b>				
Education	11.654 (0.160)	11.342 (0.171)	11.724 (0.119)	0.152
Female	0.615 (0.017)	0.548 (0.017)	0.600 (0.012)	0.012
Age	42.015 (0.620)	42.903 (0.624)	42.088 (0.463)	0.509
Enterprise Owner	1.748 (0.020)	1.708 (0.021)	1.738 (0.015)	0.342
Impatient (near)	0.806 (0.040)	0.892 (0.040)	0.871 (0.030)	0.274
Hyperbolic (250)	0.203 (0.019)	0.226 (0.019)	0.202 (0.014)	0.563
Hyperbolic (300)	0.128 (0.016)	0.150 (0.016)	0.141 (0.012)	0.621
Sample Size	468	462	837	1767

Standard errors are listed in parentheses below the means.

Table 2: Tabulations of Responses to Hypothetical Time Preference Questions

	Prefers 200P in 6 months	Prefers 250P in 7 months	Total		Prefers 200P in 6 months	Prefers 300P in 7 months	Total
<b>A. MONEY PREFERENCES</b>							
Prefers 200P today	592	368	960	Prefers 200P today	306	247	553
	33.56%	20.86%	54.42%		17.35%	14.00%	31.35%
Prefers 250P in 1 month	199	605	804	Prefers 300P in 1 month	132	1079	1211
	11.28%	34.30%	45.58%		7.48%	61.17%	68.65%
Total	791	973	1764	Total	438	1326	1764
	44.84%	55.16%	100.00%		24.83%	75.17%	100.00%
<b>B. RICE PREFERENCES</b>							
	Prefers 10 kilos in 6 months	Prefers 15 kilos in 7 months	Total		Prefers 10 kilos in 6 months	Prefers 20 kilos in 7 months	Total
Prefers 10 kilos today	584	395	979	Prefers 10 kilos today	306	267	573
	33.11%	22.39%	55.50%		17.35%	15.14%	32.48%
Prefers 15 kilos in 1 month	89	696	785	Prefers 20 kilos in 1 month	75	1116	1191
	5.05%	39.46%	44.50%		4.25%	63.27%	67.52%
Total	673	1091	1764	Total	381	1383	1764
	38.15%	61.85%	100.00%		21.60%	78.40%	100.00%
<b>C. ICE CREAM PREFERENCES</b>							
	Prefers 0.5 gallon in 6 months	Prefers 1.5 gallons in 7 months	Total		Prefers 0.5 gallon in 6 months	Prefers 2 gallons in 7 months	Total
Prefers 0.5 gallon today	490	360	850	Prefers 0.5 gallon today	276	212	488
	27.95%	20.54%	48.49%		15.66%	12.03%	27.70%
Prefers 1.5 gallons in 1 month	75	828	903	Prefers 2 gallons in 1 month	72	1202	1274
	4.28%	47.23%	51.51%		4.09%	68.22%	72.30%
Total	565	1188	1753	Total	348	1414	1762
	32.23%	67.77%	100.00%		19.75%	80.25%	100.00%



Table 3: Determinants of Exhibiting Hyperbolic Discounting in Hypothetical Questions  
Probit

	Money			Rice			Ice Cream		
	All (1)	Female (2)	Male (3)	All (4)	Female (5)	Male (6)	All (7)	Female (8)	Male (9)
Satisfied with savings, 1-5	-0.017* (0.010)	-0.027** (0.013)	-0.001 (0.015)	-0.016 (0.010)	-0.018 (0.013)	-0.013 (0.015)	-0.005 (0.010)	-0.008 (0.013)	0.001 (0.015)
Low income now, High in 6 months	-0.050 (0.040)	-0.048 (0.050)	-0.067 (0.068)	-0.028 (0.042)	-0.049 (0.051)	0.005 (0.078)	-0.042 (0.040)	-0.007 (0.050)	-0.105* (0.063)
Married	0.036 (0.025)	0.035 (0.031)	0.055 (0.045)	0.008 (0.026)	0.043 (0.032)	-0.053 (0.050)	-0.013 (0.025)	-0.027 (0.031)	0.023 (0.047)
Some college	0.034 (0.023)	0.056* (0.031)	-0.006 (0.035)	0.023 (0.023)	0.050 (0.032)	-0.031 (0.035)	0.039* (0.023)	0.042 (0.030)	0.035 (0.035)
Number of household members	-0.001 (0.005)	-0.004 (0.006)	0.004 (0.007)	-0.002 (0.005)	-0.003 (0.006)	0.001 (0.007)	-0.006 (0.004)	-0.012** (0.006)	0.002 (0.007)
Unemployed	0.003 (0.060)	-0.017 (0.072)	0.025 (0.107)	-0.054 (0.056)	-0.076 (0.068)	-0.031 (0.097)	-0.060 (0.054)	-0.079 (0.062)	-0.002 (0.102)
Age	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)
Total household income	-0.012 (0.013)	-0.012 (0.016)	-0.016 (0.023)	-0.022* (0.011)	-0.024* (0.014)	-0.022 (0.031)	-0.009 (0.010)	-0.006 (0.012)	0.016 (0.031)
Total household monthly income squared	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.002)	0.000 (0.000)	0.000 (0.001)	-0.001 (0.004)	0.000 (0.000)	0.001 (0.000)	-0.005 (0.004)
Observations	1764	1041	723	1763	1041	722	1763	1041	720

Marginal effects reported for coefficients. Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

In columns 1, 2 and 3, dependent variable equals one if respondent preferred 200 (200) pesos now more than 250 (300) pesos in one month, but then preferred 250 (300) pesos in seven months more than 200 (200) pesos in six months. If respondent reported preferring 200 pesos over 300 pesos with one month delay, then the respondent was asked what amount would be required to entice them to wait the additional month. Respondents were then coded as hyperbolic (i.e., the dependent variable equal to one) if the imputed discount rate was higher for the tradeoff between now and one month from now than for the imputed discount rate for the tradeoff between six and seven months.

Columns 4, 5 and 6 show the same responses, except with respect to rice (10 kilos versus 15 or 20 kilos). Column 7, 8 and 9 show the same responses, except with respect to ice cream (0.5 gallon versus 1.5 or 2.0 gallons). "Low income now, High in 6 months" is an indicator variable equal to one if the respondent reported being in a lower than average income month at the time of the survey, but expected to be in a higher than average income month six months after the survey. Each respondent was asked which months tend to be their high (low) (average) months of the year. Three individuals did not answer completely the time preference questions with respect to money, and four did not respond completely to the questions with respect to ice cream and rice.

Table 4: Determinants of Impatience  
Ordered Probit

	Money		Rice		Ice Cream	
	Now vs. 1 month (1)	6 months vs. 7 months (2)	Now vs. 1 month (3)	6 months vs. 7 months (4)	Now vs. 1 month (5)	6 months vs. 7 months (6)
Female	-0.053 (0.058)	-0.120** (0.059)	0.012 (0.058)	-0.111* (0.061)	-0.250*** (0.058)	-0.291*** (0.063)
Hungry	0.208 (0.181)	0.137 (0.192)	0.372* (0.190)	0.118 (0.191)	0.176 (0.194)	0.042 (0.196)
Married	0.125* (0.067)	0.103 (0.069)	0.062 (0.066)	0.049 (0.070)	-0.027 (0.068)	0.024 (0.074)
Some college	0.083 (0.061)	-0.028 (0.062)	-0.034 (0.062)	-0.070 (0.064)	0.119* (0.062)	0.076 (0.066)
Number of household members	0.002 (0.012)	-0.011 (0.012)	0.011 (0.012)	0.004 (0.012)	-0.023* (0.012)	-0.013 (0.013)
Unemployed	0.093 (0.165)	0.121 (0.158)	0.149 (0.168)	0.185 (0.155)	0.081 (0.149)	0.232 (0.158)
Age	0.002 (0.002)	-0.000 (0.002)	0.002 (0.002)	0.002 (0.002)	0.000 (0.002)	-0.001 (0.002)
Lending client from bank	0.052 (0.071)	0.090 (0.072)	0.045 (0.071)	0.005 (0.074)	0.076 (0.073)	-0.005 (0.079)
Lending client with default	0.036 (0.170)	0.084 (0.164)	0.162 (0.156)	0.012 (0.174)	-0.083 (0.161)	0.295* (0.169)
Total household income	-0.078*** (0.027)	-0.040 (0.026)	-0.090*** (0.028)	-0.033 (0.028)	-0.033 (0.027)	-0.022 (0.028)
Total household income squared	0.003* (0.001)	0.002** (0.001)	0.003** (0.001)	0.002 (0.001)	0.002** (0.001)	0.001 (0.001)
Household debt per capita	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Observations	1764	1754	1765	1763	1764	1752

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Marginal effects reported for coefficients.

The dependent variable equals zero, one or two. A zero value indicates the most patient and two indicates the most impatient. For each frame (money, rice, ice cream), the respondent first was asked to chose between 200 pesos now (0.5 gallons for ice cream; 10 kilos for rice) and 250 pesos in one month (1.5 gallons for ice cream; 15 kilos for rice). If the respondent preferred the payment now, the future benefit was then raised to 300 pesos (2.0 gallons for ice cream; 20 kilos for rice). If the respondent was patient in both settings, the dependent variable was coded as 0. If the respondent was impatient in the first question but then patient for the second, the dependent variable was coded as 1. If the respondent was impatient for both questions, the dependent variable was coded as 2. Between three and thirteen observations dropped when respondent answers did not map into the above 3 categories.

Table 5: Determinants of Exhibiting Patience Now and Impatience Later with Respect to Money  
Probit

	All (1)	Female (2)	Male (3)
High income now, Low income in 6 months	0.071 (0.058)	0.146** (0.074)	-0.098 (0.075)
Satisfied with savings, 1-5	0.001 (0.009)	0.002 (0.011)	0.000 (0.015)
Married	0.013 (0.022)	0.020 (0.027)	0.002 (0.044)
Some college	-0.006 (0.021)	-0.027 (0.028)	0.022 (0.032)
Number of household members	-0.003 (0.004)	-0.005 (0.005)	0.000 (0.007)
Unemployed	-0.007 (0.053)	0.019 (0.067)	-0.060 (0.083)
Age	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Total household income	-0.005 (0.009)	-0.003 (0.011)	-0.017 (0.026)
Total household income squared	0.001* (0.000)	0.000 (0.000)	0.002 (0.003)
Observations	1764	1041	723

Marginal effects reported for coefficients. Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The dependent variable equals one if respondent preferred 200 (200) pesos now less than 250 (300) pesos in one month (patient now), but then preferred 250 (300) pesos in seven months less than 200 (200) pesos in six months (impatient later). Hence, these individuals exhibit time inconsistency, but not in the direction associated with hyperbolicity.

Table 6: Determinants of SEED Takeup  
Linear Probability (OLS)

Independent Variable (All indicator variables)	Dependent Variable = 1 if Respondent Opened SEED Account					
	All		Female		Male	
	Constant	Coef.	Constant	Coef.	Constant	Coef.
Impatient now and patient later w/r/t money (hyperbolic)	0.261*** (0.020)	0.082** (0.038)	0.269*** (0.027)	0.152*** (0.049)	0.250*** (0.030)	-0.037 (0.058)
Impatient now and patient later w/r/t rice (hyperbolic)	0.276*** (0.020)	0.030 (0.037)	0.287*** (0.027)	0.087* (0.049)	0.260*** (0.030)	-0.073 (0.058)
Impatient now and patient later w/r/t ice cream (hyperbolic)	0.282*** (0.020)	0.009 (0.038)	0.302*** (0.026)	0.047 (0.052)	0.251*** (0.030)	-0.039 (0.057)
Impatient now w/r/t money	0.287*** (0.024)	-0.003 (0.020)	0.296*** (0.032)	0.021 (0.026)	0.274*** (0.037)	-0.037 (0.030)
Patient now and impatient in future w/r/t money	0.291*** (0.019)	-0.032 (0.042)	0.323*** (0.025)	-0.050 (0.058)	0.240*** (0.029)	0.003 (0.060)
Patient later w/r/t money (hyperbolic) (sample restricted to Impatient Now w/r/t money)	0.207*** (0.047)	0.123* (0.067)	0.267*** (0.070)	0.108 (0.094)	0.143** (0.060)	0.099 (0.094)

All specifications are simple OLS. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Sample restricted to those reached by the Green Bank marketing team. Results robust to including those surveyed by the research team but not reached by the Green Bank marketing team.

Independent variables coded identically to those in Tables 3, 4 and 5.

Sample size is 710 for "all", 427 for "female" and 283 for "male." For the final row, where the sample is restricted to those who are Impatient Now w/r/t Money, the sample size is 172, 101 & 71, respectively.

Table 7: Determinants of SEED Takeup  
Probit

	All (1)	All (2)	Female (3)	Male (4)	All (5)	Female (6)	Male (7)	All (8)	Female (9)	Male (10)
Impatient now and patient later	0.068*	0.085**	0.134***	-0.041	0.108**	0.180***	0.005	-0.030	0.199**	-0.040
	(0.038)	(0.040)	(0.049)	(0.056)	(0.046)	(0.059)	(0.069)	(0.076)	(0.097)	(0.081)
Some college	0.076**	0.080**	0.076	0.069	0.076**	0.066	0.076	0.085**	0.098*	0.069
	(0.038)	(0.039)	(0.048)	(0.055)	(0.038)	(0.049)	(0.055)	(0.043)	(0.055)	(0.063)
Impatient now and patient later * Some college								-0.037	-0.077	-0.001
								(0.077)	(0.092)	(0.117)
Female	0.144*	0.169**			0.142*			0.004		
	(0.077)	(0.078)			(0.077)			(0.041)		
Married	0.062	0.058	-0.071	0.065	0.064	-0.065	0.071	-0.026	-0.071	0.065
	(0.074)	(0.076)	(0.049)	(0.067)	(0.074)	(0.049)	(0.065)	(0.041)	(0.049)	(0.067)
Married * Female	-0.116	-0.110			-0.113					
	(0.088)	(0.091)			(0.088)					
Number of household members	-0.002	0.002	0.001	-0.007	-0.001	0.003	-0.006	-0.002	0.002	-0.007
	(0.008)	(0.008)	(0.010)	(0.012)	(0.008)	(0.009)	(0.012)	(0.008)	(0.010)	(0.012)
Unemployed	0.007	-0.032	0.022	-0.024	0.014	0.029	-0.003	0.019	0.027	-0.023
	(0.096)	(0.092)	(0.105)	(0.208)	(0.098)	(0.106)	(0.217)	(0.097)	(0.106)	(0.208)
Age	-0.002	-0.003*	-0.001	-0.003	-0.002	-0.001	-0.004*	-0.001	-0.001	-0.003
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Lending client from bank	0.002	0.000	-0.043	0.048	0.001	-0.048	0.063	0.005	-0.042	0.048
	(0.036)	(0.039)	(0.045)	(0.053)	(0.036)	(0.045)	(0.053)	(0.036)	(0.045)	(0.053)
Lending client with default	-0.027	-0.009	-0.020	-0.043	-0.028	-0.018	-0.051	-0.034	-0.023	-0.043
	(0.073)	(0.080)	(0.087)	(0.112)	(0.073)	(0.086)	(0.111)	(0.072)	(0.086)	(0.112)
Total household income	0.048	0.047*	0.133***	-0.025	0.047	0.143***	-0.029	0.046	0.131***	-0.025
	(0.029)	(0.029)	(0.044)	(0.042)	(0.030)	(0.043)	(0.043)	(0.029)	(0.044)	(0.042)
Total household income squared	-0.007*	-0.007*	-0.023***	0.002	-0.007*	-0.024***	0.003	-0.007*	-0.023***	0.002
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)	(0.005)	(0.004)	(0.008)	(0.004)
Impatient now w/r/t money					-0.037	-0.040	-0.048			
					(0.023)	(0.029)	(0.036)			
High income now, Low income in 6 months					0.027	-0.201***	0.287*			
					(0.104)	(0.064)	(0.154)			
Low income now, High income in 6 months					-0.055	-0.038	-0.142			
					(0.063)	(0.074)	(0.092)			
Barangay Fixed Effects	No	Yes	No	No	No	No	No	No	No	No
Observations	710	710	427	283	709	426	283	710	427	283

Marginal effects reported for coefficients. Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Sample restricted to those reached by the Green Bank marketing team. Results robust to including those surveyed by the research team but not reached by the Green Bank marketing team. Independent variables coded identically to those in Tables 3, 4 and 5. "Some College" is a binary variable equal to one if the respondent reported having attended at least one year of college.

Table 8: Informal Savings Activities  
Probit

	Fewer Than 30 Members			No Loan Option			Saves at Home		
	All (1)	Female (2)	Male (3)	All (4)	Female (5)	Male (6)	All (7)	Female (8)	Male (9)
Impatient now and patient later	0.042** (0.021)	0.039 (0.030)	0.040 (0.026)	0.040 (0.025)	0.051 (0.035)	0.023 (0.029)	0.036 (0.038)	0.055 (0.053)	0.017 (0.052)
Some college	0.010 (0.011)	0.007 (0.016)	0.012 (0.013)	0.006 (0.014)	0.006 (0.019)	0.003 (0.019)	0.002 (0.024)	0.008 (0.032)	-0.009 (0.034)
Impatient now and patient later * Some college	-0.022* (0.012)	-0.023 (0.021)	-0.015 (0.011)	-0.027 (0.018)	-0.027 (0.026)	-0.021 (0.022)	-0.029 (0.041)	-0.047 (0.052)	-0.015 (0.063)
Impatient now w/r/t money	-0.009 (0.006)	-0.014 (0.009)	-0.002 (0.007)	-0.009 (0.008)	-0.022** (0.011)	0.006 (0.010)	-0.055*** (0.013)	-0.053*** (0.018)	-0.058*** (0.019)
Female	0.000 (0.026)			-0.020 (0.034)			0.055 (0.048)		
Married	-0.003 (0.021)		-0.005 (0.013)	-0.004 (0.025)		-0.011 (0.023)	-0.026 (0.043)		-0.036 (0.044)
Married * Female	0.005 (0.024)	0.003 (0.014)		0.009 (0.030)	0.005 (0.016)		-0.015 (0.048)	-0.039 (0.028)	
Number of household members	0.001 (0.002)	0.001 (0.003)	0.001 (0.002)	0.000 (0.002)	0.000 (0.003)	0.001 (0.003)	-0.008** (0.004)	-0.013*** (0.005)	-0.002 (0.006)
Unemployed	0.004 (0.027)	-0.012 (0.032)	0.030 (0.048)	-0.018 (0.028)	-0.030 (0.032)	0.010 (0.053)	-0.067 (0.042)	-0.043 (0.060)	-0.106** (0.051)
Age	-0.000 (0.000)	-0.001 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001 (0.001)	0.000 (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)
Lending client from bank	-0.006 (0.010)	-0.018 (0.015)	0.007 (0.012)	-0.006 (0.013)	-0.026 (0.017)	0.015 (0.018)	-0.028 (0.023)	-0.050 (0.032)	-0.009 (0.032)
Lending client with default	0.045 (0.042)	0.069 (0.065)	0.032 (0.056)	0.049 (0.048)	0.104 (0.077)	-0.000 (0.049)	0.004 (0.065)	0.020 (0.087)	0.003 (0.103)
Total household income	0.005 (0.004)	0.006 (0.005)	0.007 (0.008)	0.006 (0.005)	0.005 (0.006)	0.020 (0.014)	0.034*** (0.011)	0.030** (0.013)	0.078*** (0.026)
Total household income squared	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.001)	-0.000 (0.000)	-0.000 (0.000)	-0.003 (0.002)	-0.002** (0.001)	-0.001 (0.001)	-0.008** (0.004)
Female * HH income share >0 & <=25%	-0.006 (0.022)	-0.007 (0.028)		-0.023 (0.026)	-0.023 (0.029)		-0.023 (0.044)	-0.010 (0.048)	
Female * HH income share >25 & <=50%	0.011 (0.023)	0.014 (0.026)		0.030 (0.033)	0.036 (0.034)		-0.040 (0.036)	-0.026 (0.040)	
Female * HH income share >50 & <=75%	0.068* (0.039)	0.081** (0.041)		0.081* (0.044)	0.091** (0.045)		-0.086*** (0.032)	-0.078** (0.038)	
Female * HH income share >75 & <=100%	0.033 (0.028)	0.040 (0.030)		0.037 (0.033)	0.045 (0.033)		-0.058* (0.034)	-0.051 (0.039)	
Observations	1765	1041	724	1765	1041	724	1765	1041	724

Marginal effects reported for coefficients. Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Columns 1-3: The dependent variable is an indicator variable equal to one if the respondent is a member of an informal savings organization with 30 or fewer members.

Columns 4-6: The dependent variable is an indicator variable equal to one if the respondent is a member of an informal savings organization with no option for borrowing from the pooled savings.

Columns 7-9: The dependent variable is an indicator variable equal to one if the respondent reported keeping cash at home as savings.

Table 9: Clients' Specific Savings Goals

	Frequency	Percent
Agricultural Financing/Investing/Maintenance	4	2.0%
Capital for Business	20	10.1%
Christmas/Birthday/Celebration/Graduation	97	48.0%
Education	42	20.8%
House/Lot construction and purchase	21	10.4%
Medical	1	0.5%
Personal Needs/Future Expenses	3	1.5%
Purchase or Maintenance of Machine/Automobile/Appliance	8	4.0%
Vacation/Travel	4	2.0%
Did not report reason for saving	2	1.0%
<b>Total</b>	<b>202</b>	<b>1</b>
Date-based goals	140	69%
Amount-based goals	62	31%
<b>Total</b>	<b>202</b>	<b>100%</b>
Bought Ganansiya Box	167	83%
Did not buy Ganansiya Box	35	17%
<b>Total</b>	<b>202</b>	<b>100%</b>

Table 10: Impact on Financial Savings  
OLS

Dependent Variable: Change in Balance								
	All	Middle 99	Middle 98	Middle 98	Former	Former	Former	Former
	(1)	Percentile	Percentile	Percentile	Dormants	Middle 99	Middle 98	Middle 98
		(2)	(3)	(4)	(5)	Percentile	Percentile	Percentile
						(6)	(7)	(8)
<b>A. INTENT TO TREAT EFFECT</b>								
Commitment-Treatment	238.624*	151.373***	101.706***	155.618***	159.334	103.917***	67.230***	97.106***
	(132.669)	(45.350)	(31.939)	(36.754)	(117.356)	(36.907)	(24.786)	(29.070)
Marketing-Treatment	182.821	42.472	18.242	14.883	-10.701	29.378	5.974	5.594
	(150.746)	(51.546)	(36.271)	(36.223)	(133.808)	(42.050)	(28.221)	(28.202)
Constant	39.475	-15.960	-26.562	89.188	-44.893	-79.898***	-76.218***	18.734
	(106.249)	(36.369)	(25.577)	(69.493)	(94.218)	(29.709)	(19.938)	(53.000)
Covariates Added	No	No	No	Yes	No	No	No	Yes
Observations	1767	1745	1726	1726	1139	1132	1126	1126
R-squared	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.03
<b>B. TREATMENT ON THE TREATED EFFECT</b>								
SEED takeup	988.754*	627.439***	421.795***	686.704***	637.335	417.977***	270.424***	494.997***
	(548.621)	(187.447)	(130.307)	(161.460)	(467.446)	(149.631)	(98.093)	(149.187)
Marketing-Treatment	182.821	42.472	18.242	14.206	-10.701	29.378	5.974	4.850
	(150.444)	(51.401)	(35.682)	(36.037)	(133.244)	(42.386)	(27.766)	(28.284)
Constant	39.475	-15.960	-26.562	94.920	-44.893	-79.898***	-76.218***	38.662
	(106.037)	(36.266)	(25.162)	(66.509)	(93.821)	(29.946)	(19.617)	(51.719)
Covariates Added	No	No	No	Yes	No	No	No	Yes
Observations	1767	1745	1726	1726	1139	1132	1126	1126
R-squared	0.01	0.01	0.04	0.03	0.01	0.04	0.04	0.01

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The dependent variable is the change in total savings held at the Green Bank. The top half of the table reports the results of the OLS regression of change in bank savings on indicators for commitment-treatment and marketing-treatment assignment. The omitted group is the control group. Column (1) includes all savings clients who were interviewed for the pre-intervention survey. The sample used in the regressions in Columns (2) (or (3)) truncate the clients in the highest and lowest half (or one) percentiles of the distribution of the change in balance variable. The middle 99 (98) percentile sample drops 8, 6, and 8 (11, 10, and 20) individuals from the control, marketing-treatment and commitment-treatment groups. The remaining columns repeat the regressions on the dormant clients, those who had no activity in their savings account for six months prior to the intervention. The bottom half of the table reports the instrumental variables regression of change in balance on take-up of the SEED product, where assignment into the commitment-treatment group is used as an instrument for take-up.

We call the coefficient estimate on the commitment-treatment indicator the TOT effect. While we cannot in principle prove that the independent effect of marketing the SEED product can be captured by the marketing effect, the negligible coefficient estimate on the marketing group indicator suggests that the direct effect of marketing on savings is small relative to the impact of the product design of the SEED account. A full set of demographic covariates are estimated in columns (4) and (8). This set includes marriage status, high educational attainment, household size, unemployed status household income, squared household income, loan status and an indicator for having defaulted on a Green Bank loan. Exchange rate is 50 pesos for US \$1.00.



Table 11: Treatment Effect on Probability of Positive Savings Increases  
Probit

	Dependent Variable: Indicator for Percentage Savings Increase					
	Increase > 0%	Increase > 10%	Increase > 20%	Increase > 30%	Increase > 40%	Increase > 50%
	(1)	(2)	(3)	(4)	(5)	(6)
Commitment-Treatment	0.084*** (0.029)	0.148*** (0.024)	0.129*** (0.024)	0.101*** (0.023)	0.095*** (0.023)	0.089*** (0.023)
Marketing-Treatment	-0.002 (0.032)	0.019 (0.028)	0.026 (0.027)	0.024 (0.026)	0.021 (0.026)	0.021 (0.026)
Constant	0.519*** (0.023)	0.162*** (0.019)	0.152*** (0.019)	0.147*** (0.018)	0.145*** (0.018)	0.143*** (0.018)
Observations	1767	1767	1767	1767	1767	1767
R-squared	0.01	0.03	0.02	0.01	0.01	0.01

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The dependent variable is the probability that total bank savings increased by x%. Coefficient estimates reported in this table are the estimated changes in this probability from discrete changes in the indicator variables for commitment-treatment and marketing-treatment assignment. The control group indicator variable is omitted. Each regression uses the full sample of clients who were interviewed for the pre-intervention survey.

Table 12: Intent to Treat Effect of Subgroups  
Linear Probability OLS

	Dependent Variable: Change in Balance, Middle 98%					
	(1)	(2)	(3)	(4)	(5)	(6)
Commitment-Treatment	101.706*** (31.939)	70.166 (45.654)	142.564*** (44.696)	135.362*** (41.682)	91.017** (35.857)	114.742*** (34.669)
Marketing-Treatment	18.242 (36.271)	17.094 (36.363)	17.741 (36.169)	16.179 (36.209)	18.705 (36.292)	19.398 (36.296)
Female		-17.325 (36.834)				
Female * Commtment-Treatment		52.072 (53.713)				
Some college			-54.735 (36.516)			
Some college * Commtment-Treatment			-65.711 (53.377)			
High household income				-50.411 (36.235)		
High household income * Commtment-Treatment				-63.114 (52.644)		
Impatient now and patient later					-28.458 (40.439)	
Impatient now and patient later * Commtment-Treatment					38.953 (58.661)	
Patient now & impatient in future						47.739 (45.539)
Patient now & impatient in future * Commtment-Treatment						-63.004 (66.238)
Constant	-26.562 (25.577)	-15.947 (34.115)	4.818 (32.996)	-1.301 (31.314)	-18.840 (27.841)	-36.590 (27.313)
Observations	1726	1726	1726	1726	1726	1726
R-squared	0.01	0.01	0.01	0.01	0.01	0.01

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The dependent variable in the OLS regressions is the change in total savings held at the institution. The sample used in the regressions truncate the full sample of interviewed by dropping clients in the highest and lowest one percentiles of the change in balance distribution. Similar regressions were run on the "middle 99 percentile" and full samples with little difference in the significance of coefficient estimates on demographic and interaction terms. These results are not reported in the present table. Exchange rate is 50 pesos for US \$1.00.

Table 13: Tests for New Savings  
OLS

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Non-SEED Change in Balance	Change in Total Balance (ITT)	Non-SEED Change in Balance	Change in Total Balance (ITT)	Non-SEED Change in Balance	Change in Total Balance (ITT)
Sample Restriction:	Middle 98%	Middle 98%	Middle 98%; Active Clients	Middle 98%; Active Clients	Middle 98%; Dormant Clients	Middle 98%; Dormant Clients
Commitment-treatment	10.762 (28.742)	101.706*** (31.939)	33.706 (71.803)	175.262** (77.391)	2.390 (20.560)	67.230*** (24.786)
Marketing-treatment	18.242 (32.640)	18.242 (36.271)	42.788 (81.128)	42.788 (87.443)	5.974 (23.409)	5.974 (28.221)
Constant	-26.562 (23.016)	-26.562 (25.577)	63.002 (57.009)	63.002 (61.446)	-76.218*** (16.539)	-76.218*** (19.938)
Observations	1726	1726	600	600	1126	1126
R-squared	0.00	0.01	0.00	0.01	0.00	0.01

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Columns (2), (4) and (6) are the ITT regressions from Table 10. The dependent variable in the regressions in columns (1), (2), and (3) is the change savings in all non-SEED savings accounts held at the institution. The sample used in the OLS regressions is the truncated sample that drops the clients in the highest and lowest one percentiles of the change in balance distribution. Negative coefficients on the commitment-treatment indicator in columns (1), (3), and (5) imply that the SEED savings came at the expense of deposits into regular savings accounts. Adding the commitment-treatment coefficient estimates in columns (1) and (2), in columns (3) and (4), and in columns (5) and (6) give the net effect of the treatment on total savings. Exchange rate is 50 pesos for US \$1.00.

Table 14: Dependent Variable: SEED balance  
All SEED Clients

	All SEED Clients		Goal-Based SEED Clients		Date-Based SEED Clients		All SEED Clients		All SEED Clients		All SEED Clients	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Box	-141.943 (207.838)			-260.759 (244.677)	-251.440 (247.357)				96.208 (251.261)			210.210 (297.133)
Active			404.380** (165.459)	128.269 (413.542)	132.346 (415.882)							
Active * Box				335.346 (451.481)	333.818 (453.778)							
Goal amount		-12.451 (170.749)			-9.838 (169.997)							
Goal length								-0.003 (0.026)				
Goal type: Amount						0.007 (0.019)						
How long open					-1.285 (2.632)							
Impatient now and patient later								104.266 (165.899)	737.585* (405.742)			
Impatient now and patient later * Box									-755.838* (444.330)			
Impatient now w/r/t money										-60.336 (90.652)		273.236 (220.539)
Impatient now w/r/t/ money * Box												-401.867* (241.773)
Constant	577.098*** (188.976)	463.571*** (94.597)	327.625*** (94.577)	540.450** (221.047)	664.821** (336.852)	393.131 (236.685)	465.014*** (85.697)	424.133*** (96.960)	345.286 (227.464)	511.721*** (110.842)		335.089 (271.387)
Observations	202	202	202	202	202	62	140	202	202	202		202
R-squared	0.00	0.00	0.03	0.03	0.04	0.00	0.00	0.00	0.02	0.00		0.02

Standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The dependent variable in the regressions is the balance held in SEED accounts. In every column (except columns (4) and (5)) the sample is comprised of all 202 SEED clients as of January, 2004. The sample is restricted to SEED clients who chose the date-based goals in column (4), and to SEED clients who chose amount-based goals in column (5). Box is an indicator variable for whether the client chose to open the SEED account with a lock-box. Active is an indicator variable for activity status prior to the intervention. A client who made a transaction in any savings account held at the institution in the six months prior to the intervention was considered active. Impatience measures are those described in Table 6. Exchange rate is 50 pesos for US \$1.00.

Appendix: Table 1. Summary Statistics of Variables, by Survey Response

	Not Found for Survey	Surveyed	T-stat P-value
<b>A. VARIABLES USED IN RANDOMIZATION</b>			
Distance to Branch	2.082 (0.051)	2.265 (0.045)	0.007
Savings Balance (ten thousands)	4.322 (0.133)	5.083 (0.117)	0.000
Active Account	0.288 (0.013)	0.355 (0.011)	0.000
Penetration	0.017 (0.001)	0.027 (0.001)	0.000
Mean Balances (ten thousands)	4.717 (0.022)	4.773 (0.019)	0.055
Standard Deviation of Balances (ten thousands)	4.841 (0.02)	4.908 (0.017)	0.011
Population (thousands)	6.967 (0.127)	5.762 (0.113)	0.000
<b>Sample Size</b>	<b>1387</b>	<b>1767</b>	

This table demonstrates the observable selection bias of those surveyed versus not surveyed. The sample frame was taken from existing clients in the Green Bank database.

Column 2 shows summary statistics of those chosen for survey but where the individual was not found or not willing to complete the survey.

Column 3 shows the summary statistics of those with completed survey.

Standard errors are listed in the parentheses below the estimates of the means.

Appendix: Table 2. Correlations of Different Time Preference Responses

	Hyperbolic with Respect to Money (1)	Hyperbolic with Respect to Rice (2)	Hyperbolic with Respect to Ice Cream (3)	Impatient Now with Respect to Money (4)	Impatient Now with Respect to Rice (5)	Impatient Now with Respect to Ice Cream (6)	Impatient Later with Respect to Money (7)	Impatient Later with Respect to Rice (8)	Impatient Later with Respect to Ice Cream (9)
Hyperbolic with Respect to Money	1								
Hyperbolic with Respect to Rice	0.397	1							
Hyperbolic with Respect to Ice Cream	0.208	0.279	1						
Impatient Now with Respect to Money	0.518	0.227	0.119	1					
Impatient Now with Respect to Rice	0.171	0.508	0.180	0.520	1				
Impatient Now with Respect to Ice Cream	0.053	0.118	0.543	0.321	0.431	1			
Impatient Later with Respect to Money	-0.274	-0.098	-0.022	0.468	0.412	0.334	1		
Impatient Later with Respect to Rice	-0.163	-0.240	-0.053	0.368	0.569	0.364	0.652	1	
Impatient Later with Respect to Ice Cream	-0.154	-0.135	-0.161	0.259	0.325	0.598	0.492	0.557	1

Appendix: Table 3. Intent to Treat Effect: More Sensitivity Checks  
Linear Probability OLS

	Dependent Variable: Change in Balance							
	Middle 98 Percentile (1)	Deleted Top 1 Treatment, Middle 98% (2)	Deleted Top 2 Treatment, Middle 98% (3)	Deleted Top 3 Treatment, Middle 98% (4)	Deleted Top 4 Treatment, Middle 98% (5)	Deleted Top 5 Treatment, Middle 98% (6)	Deleted Top 9 Treatment, Middle 98% (7)	Deleted Top 10 Treatment, Middle 98% (8)
Commitment-treatment	101.706*** (31.939)	95.857*** (31.240)	90.562*** (30.658)	85.400*** (30.096)	80.284*** (29.534)	75.301*** (28.992)	57.045** (27.102)	52.864** (26.692)
Marketing-treatment	18.242 (36.271)	18.242 (35.469)	18.242 (34.801)	18.242 (34.155)	18.242 (33.510)	18.242 (32.888)	18.242 (30.716)	18.242 (30.245)
Constant	-26.562 (25.577)	-26.562 (25.011)	-26.562 (24.540)	-26.562 (24.085)	-26.562 (23.630)	-26.562 (23.191)	-26.562 (21.660)	-26.562 (21.328)
Observations	1726	1725	1724	1723	1722	1721	1717	1716
R-squared	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The regressions reported here follow the specifications of the ITT regressions in Table 10. Column (1) is identical to the top half of column (3) in Table 10. It shows the regression of change in balance on indicators of treatment assignment, restricted to the sample of clients that fall within the middle 98 percentiles of the distribution of the balance change variable. Moving from column (2) to column (10), each regression progressively removes the client in the treatment group with the highest positive change in savings balance. This series of regressions informally test whether the ITT estimate obtained in Table 10 was influenced by outliers in the change in balance distribution that happened to be assigned to the commitment-treatment group. Exchange rate is 50 pesos for US \$1.00.

Appendix: Table 4. Getting Dormant Clients to Start Saving  
 Probit

	Dependent Variable: Activity Status					
	Transaction Last 2 Months, Middle 98%	Transaction Last 3 Months, Middle 98%	Transaction Last 4 Months, Middle 98%	Transaction Last 5 Months, Middle 98%	Transaction Last 6 Months, Middle 98%	Transaction Last 12 Months, Middle 98%
	(1)	(2)	(3)	(4)	(5)	(6)
Commitment-treatment	0.014 (0.031)	0.027 (0.031)	0.034 (0.030)	0.021 (0.030)	0.018 (0.030)	0.013 (0.030)
Marketing-treatment	0.039 (0.034)	0.049 (0.033)	0.052 (0.033)	0.042 (0.033)	0.039 (0.033)	0.046 (0.032)
Observations	1126	1126	1126	1126	1126	1126

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The dependent variable is 1 if a transaction has been made in any savings account in the past x number of months. It is 0 otherwise. The sample is restricted to clients who were recorded as dormant (not active) prior to the intervention. A client was considered active if she had transacted on any savings account within the previous six months. Exchange rate is 50 pesos for US \$1.00.



Appendix: Table 5. Top and Bottom Centiles of Change in Balance

Percentile	Change in Balance	Percentile	Change in Balance
0	-1516.3	90	112.59
0.5	-1085.1	90.5	122.55
1	-987.7	91	158.04
1.5	-940	91.5	201.19
2	-838.86	92	255.07
2.5	-675.29	92.5	316.87
3	-630	93	404.95
3.5	-628.57	93.5	463.06
4	-605.22	94	527.12
4.5	-534.2	94.5	649.34
5	-519.96	95	830.52
5.5	-500	95.5	1040.06
6	-489.04	96	1226.46
6.5	-476.4	96.5	1527.58
7	-441.4	97	1770.98
7.5	-401.95	97.5	2115.89
8	-389.96	98	2904.58
8.5	-339.22	98.5	3712.72
9	-270	99	5027.07
9.5	-215	99.5	11452.06
10	-175.35	100	149944.4

Exchange rate is 50 pesos for US \$1.00.