UNDER-SAVERS ANONYMOUS: EVIDENCE ON SELF-HELP GROUPS AND PEER PRESSURE AS A SAVINGS COMMITMENT DEVICE*

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While commitment devices such as defaults and direct deposits from wages have been found to be highly effective to increase savings, they are unavailable to the millions of people worldwide who not have a formal wage bill. Self-help peer groups are an alternative commitment device that is widespread and highly accessible, but there is little empirical evidence evaluating their effectiveness. We conduct two randomized field experiments among low-income micro-entrepreneurs in Chile. The first experiment finds that self-help peer groups are very potent at increasing savings. In contrast, a more classical measure, a substantially increased interest rate, has no effect on the vast majority of participants. A second experiment is designed to unbundle the key elements of peer groups as a commitment device, through the use of regular text messages. It finds that surprisingly, actual meetings and peer pressure do not seem to be crucial in making self-help peer groups an effective tool to encourage savings.

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I. Introduction

Several behavioral mechanisms, such as defaults and direct deposits from wages into savings accounts, have been found to be highly effective at helping individuals increase their savings (e.g. Madrian and Shea, 2001; Thaler and Benartzi, 2004). However, most of these mechanisms are out of reach for large segments of the world's population, since they depend crucially on the existence of a formal wage bill. This is particularly problematic in developing countries, where many work as low-income micro-entrepreneurs or in the informal sector.[1]

This paper investigates the effectiveness of one institution that is potentially available to anyone, including those working in the informal sector: peers as a commitment device. In fact, the use of peers as a commitment device to reach a shared but individual goal is a widely observed phenomenon, both informally (e.g., running groups or study groups) and formally (e.g., Alcoholics Anonymous (AA) or weight-loss groups).[2] While self-help peer groups have been subject to theoretical analysis (e.g. Schelling, 1984; Battaglini et al., 2005), to our knowledge there exists no clean evidence investigating whether they actually help participants achieve their goals and if so, what aspects make them effective.[3]

We conducted two randomized field experiments among low-income micro-entrepreneurs in Chile to study the power of self-help peer groups as a commitment device and to investigate the importance of actual in-person meetings and of peer pressure for their effectiveness. Our first experiment, the "Peer Group Experiment," shows that self-

1. This is notably also the case for unemployment insurance, a form of forced precautionary savings, which is unavailable to most people in developing countries.

2. For example, AA has more than 2m members world-wide, 1.3 of them in the US (www.aa.org), and each week an average of 1.3m participants attend a Weight Watchers meeting (www.weightwatchersinternational.com).

3. Walsh et al. (1991) compare the effect of AA meetings to a hospital treatment. The effect of AA meetings *per se* is not tested, however. Jebb et al. (2011) show that a commercial Weight Watchers (WW) program is more effective than a standard program of care for obese individuals.

help peer groups have a strong impact on savings. We offered 2,700 micro-entrepreneurs who meet regularly as members of a microcredit association the opportunity to open a formal savings account. Participants were randomly assigned to one of three conditions: 1) a control condition where individuals received only a basic account; 2) a Self-Help Peer Group Treatment where participants' publicly announced savings goals were monitored in the weekly meetings; and 3) a High Interest Rate Treatment with a 5% real interest rate instead of the 0.3% in the basic account, which served as a benchmark to measure the effectiveness of the Peer Group Treatment.

Participants in the Peer Group Treatment deposit 3.5 times more often into the savings account, and their savings balance is almost twice as high as that of participants in the control condition. In contrast, the strongly increased interest rate has a surprisingly small effect, even though it was made exceptionally salient. While average savings increase somewhat, suggesting by linear extrapolation that the effect of self-help peer groups would correspond to an interest rate increase of at least 7.8 percentage points, quantile analysis reveals that the vast majority of participants does not respond to the interest rate at all, neither in terms of amount saved nor by reallocating savings from pre-existing accounts to the newly offered high interest rate account.

Our second "Text Message Experiment" was conducted one year after the opening of the accounts and was designed to unbundle the effect of peers as a commitment device. Surprisingly, it finds that neither in-person meetings nor peer pressure are indispensable features of the power of self-help peer groups. Weekly follow-up text messages achieve as much as 80% of the effect of physical meetings. And peer pressure, through fear of embarrassment or desire for positive signaling, does not seem to be the main aspect of what makes self-help peer groups effective either. A text message coupled with peer pressure by a real-life "Savings Buddy" has no larger effect than a text message that simply informs participants of their own achievement and the success rate of others.

This paper makes contributions in three areas: First, it speaks to the literature on commitment devices for saving. Many people regret not having saved more (for the US, authors' survey results for Chile Choi et al., 2002). Since even small amounts of savings can have large positive effects on people's lives (e.g., Burgess and Pande, 2005; Brune et al., 2011; Ashraf et al., 2010; Dupas and Robinson, 2011; Abraham et al., 2011), successful ways to encourage savings are important. We show the effectiveness of a mechanism that does not rely on a formal wage bill, and is therefore available to those working in the informal sector or to independent entrepreneurs, who comprise a large share of the population in developing countries.

Much of the literature on savings commitment devices in developing countries has focused on *withdrawal commitment devices* (see, e.g., Ashraf et al., 2006b; Dupas and Robinson, 2011; Brune et al., 2011, and Bryan et al., 2010 for a review article). With the notable exception of Ashraf et al. (2006a), who study the determinants of take-up for deposit collectors in the Philippines, our paper provides one of the first analyses of the effectiveness of a *deposit commitment device* for developing countries. In contrast to withdrawal commitment devices, deposit commitment devices limit the risk that the commitment device creates large welfare losses if an emergency arises, since the savings are always available in times of need.

Second, this paper provides evidence on the role of peers for savings decisions, and for behavior change more generally. To our knowledge, it presents the first randomized study evaluating the effectiveness of self-help peer groups in helping people achieve their goals. Beyond demonstrating the effectiveness of the peer groups as a commitment device, we take a step towards unbundling this composite treatment, in order to analyze the mechanism driving the result. Peer groups are often thought to affect behavior by creating pressure on individuals, (reneging on one's commitment can be punished directly or can

negatively affect a person's reputation or image (e.g. Schelling, 1984)[4]), or by facilitating the transfer of information between peers about the best ways to succeed at the task at hand, such as providing information about savings options, as in Duflo and Saez (2003). Alternatively, Battaglini et al. (2005) suggest that participants of peer groups may be motivated by observing the success of others, which leads them to update their belief about their own ability to follow through with the goal.

Our finding that weekly follow-up text messages, even without a Savings Buddy, can provide almost the same effect as actual peer group meetings, suggests that neither peer pressure nor the mutual mental support and information sharing seem to be the crucial elements of what makes self-help peer groups effective at increasing savings. Combined with evidence that information about the savings behavior of peers has only limited effects (Beshears et al., 2009)[5] and that regular reminders increase savings (Karlan et al., 2010)[6], our results suggest that peer groups might be an effective commitment device not so much because of social interactions but rather due to the regular follow-up and feedback mechanism they provide.

The third contribution of this paper is to provide one of the first experimental estimates of the effect of interest rates on savings.[7] Beyond serving as a benchmark for the Peer Group Treatment, the High Interest Rate Treatment provides insights that are interesting by themselves. Our finding that a large majority of participants do not increase

4. For a similar argument about norm adherence, see, **?**, e.g. and for image motivation, see Benabou and Tirole (2006); Ariely et al. (2009).

5. The evidence on peer information is in general very mixed. While positive effects have been found in some domains, like electricity usage when bundled with tips to save energy (Ayres et al., 2009; Allcott, 2011) or contributions to public goods (Frey and Meier, 2004), peer information has been shown to reduce work effort (Barankay, 2010) or lower take-up of tax credits (Manoli and Bhargava, 2011). For a discussion in psychology about the ambiguous effects of peer information, see Schultz et al. (2007).

6. Reminders have also been found to be effective in other areas, for example to decrease overdraft bank fees (Stango and Zinman, 2011), improve repayment of loans (Cadena and Schoar, 2011), improve goal achievement in the workplace (Cadena et al., 2011), or increase vaccination rates (Milkman et al., 2011).

7. One notable exception is an experiment by Schaner (2011) in Kenya, which randomly varies interest rates to study decision-making in couples with heterogeneous time preferences.

savings when interest rates are substantially higher, and do not adjust their savings portfolio towards the higher return account, has implications for the literature on the elasticity of intertemporal substitution, and for models and policies based on individuals' responsiveness to the interest rate. The weak response to the financial returns associated with the accounts is particularly relevant in light of findings that even in more developed and educated environments, individuals have a limited understanding of basic financial concepts, such as compounded interest rates (see, e.g., Lusardi and Mitchell, 2007, 2009, for evidence from the US) and many fail to respond to important parameters affecting the returns of financial products, such as the fee structure (see, e.g., Choi et al., 2010, for evidence from Harvard staff and Wharton MBAs).

The remainder of the paper is organized as follows: Section II. presents the set-up and the design of both field experiments. Section III. presents the result of Experiment 1 on the effect of self-help peer groups on savings. Section IV. presents evidence from Experiment 2 using text messages to test the importance of peer meetings and peer pressure on savings. Section V. concludes.

II. Background, Data, and Design of Experiments

II.A. Background and Data

Both randomized field experiments for this study were conducted in collaboration with the microfinance institution Fondo Esperanza (FE), and a large commercial bank, Banco Credichile. The context of FE is particularly suitable to analyze the role of self-help peer groups as a savings commitment device for those outside the formal labor market. The study participants were members of FE, and the savings accounts that were offered were held with Banco Creditchile. Members of FE are self-employed micro-entrepreneurs

(e.g., street vendors, cosmetic saleswomen), many of whom work in the informal sector. They meet regularly, on a weekly or biweekly basis, in groups of about 10-20 peers, together with a group monitor from FE. The purpose of the meetings is to enforce the regular repayment of the micro-loans that participants receive from FE in 3-month cycles for investment in their micro-enterprise. This feature allowed us to incorporate the peer group-based commitment structure.

Participants express substantial desire to increase their savings. Sixty-eight percent say they frequently regret not having saved more. In focus groups conducted before the intervention, many mentioned the goal of building savings as a buffer stock for emergencies or for non-business-related goals. The main reason why they were looking to build savings while at the same time borrowing from the microfinance organization is the difference in liquidity. The rigid schedule of the micro-loans renders them unsuitable to cover irregular or unexpected financial needs. This precautionary motive leads to the desire to build a buffer stock of savings at the same time. However, the optimal amounts of savings can be expected to be low, since for amounts beyond what is necessary for short-term precautionary reasons, it would be more beneficial to use this 'extra' savings money to reduce the amount of debt.

This paper draws on three different sources of data. First, information on take-up and all transactions in the accounts was obtained directly from Banco Credichile. The second source of data came from FE's administrative files, which include participants' estimated household size, income, and years of education. Unfortunately, we do not have data on loan size or default rates. Finally, we complemented these two sources of administrative data with an extensive baseline and follow-up survey.

These surveys included questions about participants' savings and debt, their economic situation and recent economic difficulties, as well as a number of questions about

individuals' preferences and self-assessment, such as attitudes towards savings and banks, or confidence in one's own ability to follow through with one's goals. The surveys also included three financial literacy questions (similar questions have been used in, e.g., Banks and Oldfield, 2007; Gerardi et al., 2010) and a measure of whether individuals have time inconsistent preferences. As in, e.g., Ashraf et al. (2006b) and Meier and Sprenger (2010), we measure time inconsistency with choices between x Pesos in time t and y Pesos ($x < y$) in time t+1 months. Individuals make those choices for t = today and t = six months from today, which allows us to categorize individuals as being time inconsistent, i.e. present biased, if they are more impatient when t = today than when $t = 6$ months. Using this definition, about 30% of participants are classified as time inconsistent.

The timeline of the interventions was as follows (see Figure 1 for an illustration): the baseline survey was conducted in April-May 2008, during one of the group meetings. The savings accounts for the first experiment, the Peer Group Experiment, were introduced soon after, in June-July 2008. A year later, the follow-up survey was conducted through individual interviews at participants' home or workplace to be able to cover all participants, including those that had left FE in the meantime. During this follow-up survey, eligible participants were introduced to the second experiment, the Text Message Experiment.

[Figure I about here.]

II.B. Experiment 1: Self-Help Peer Groups and Interest Rate

Design

The Peer Group Experiment analyzes the effect of self-help peer groups on savings and was conducted among 196 groups with a total of 2,687 members of the microfinance

organization Fondo Esperanza (FE). The universe of study participants consists of all members of the 196 groups who were present in the meeting when the baseline survey was conducted.

In the weeks following the baseline survey, one of three types of savings accounts was introduced to the groups, with an offer to open such an account: 1) A basic savings account, 2) The basic account accompanied by a self-help peer group component, 3) A high-interest account (see details below). Groups were randomly assigned to treatments, and all members within a group were offered the same treatment, without knowing of the existence of the other types of accounts (see Figure 1 for a graphical representation of the experimental design). The randomization was stratified by group monitor, which automatically led to balance by region as well.

The accounts were attractive compared to other options in the market in that they had no maintenance fee and no minimum balance except for a 2-dollar minimum opening deposit. While all accounts were individual, participants also had the option to go to the bank together with other group members to open the account. The accounts were completely liquid for withdrawals at any time, and the financial conditions were guaranteed for at least two years.

Half of the groups were randomly selected for the Self-Help Peer Group Treatment. The other half did not receive any group support beyond the opening of the account. Among those not assigned to the Peer Group Treatment, half were offered the high-interest account. The accounts had the following features:

1. *The basic savings account* had all the features described above and a real annual interest rate of 0.3% (similar to the highest available alternative in the Chilean market).

2. *The self-help peer group account* was identical to the basic account, but was ac-

companied by an accountability structure, in which the weekly meetings acted as a self-help peer group in the following way: group members had the option of publicly announcing to the group what their weekly savings goal was for the coming credit cycle (approximately 3 months). Subsequently, members verified in each group meeting who complied with their savings goal. Those who complied and showed a deposit slip as proof received a sticker in a booklet, and those who collected enough stickers received a diploma as a non-monetary award. There were no financial incentives for complying with one's goal.

3. *The high-interest account* was identical to the basic account, but offered a 5% real interest rate. It was explicitly presented as "the Best Option in the Market"-Account, and when the account was introduced, its high return was illustrated graphically and with great care by their FE group leader during a one-hour workshop in the weekly meeting, which included the visualization of a growing piggy-bank and an illustration of compounded interest rates.

Summary Statistics

Table I presents summary statistics for the 2,687 participants in the sample of the Peer Group Experiment. As expected given the random assignment, average characteristics in the different treatment groups are very similar. There are no statistically significant differences with the exception of group size.

[Table I about here.]

Participants in the study have an average of 9.6 years of schooling and their mean age is 43 years. Monthly income per capita of their households is 84,212 pesos (about 160 USD), with an average household size of 4.3 people. Sixty-eight percent of participants do not have a savings account prior to the study. The reported mean of total savings for

those who do have a pre-existing account is 69,108 pesos (while income is expressed in per capita terms, these savings may combine savings of several household members, especially including participants' children). Participants' reported mean debt, including the micro-loan from FE, is 408,312 pesos. The larger amounts of debt compared to savings is not surprising given that participants are entrepreneurs and most of their debt is backed up by inventories and future sales.

The average number of participants present on the day of the baseline survey was 14.7 per group, with a slightly lower average in groups offered the basic savings account.[8] For the questions about attitudes toward savings and toward their peers in FE, as well as participants' time preferences, we conducted an F-test, which clearly rejects the null hypothesis that they are jointly significant in predicting whether a group had been assigned to a basic account or one of the other two accounts.

II.C. Experiment 2: Text Message Follow-Up

Design

The Text Message Experiment started one year after the Peer Group Experiment, during the follow-up survey. Its goal was to unbundle the mechanism behind the effectiveness of self-help peer groups, which always consist of a bundle of different, potentially important elements: being observed by others/peer pressure, observing the behavior of others, goal setting, rewards, information sharing, moral support, etc. The Text Message Experiment was designed to strip the treatment of most of these aspects and keep many things constant, in order to get a clearer sense of what drives the effect.

The Text Message Experiment was conducted among 873 participants who had

8. The baseline survey was conducted before anyone involved with the implementation knew which groups were assigned to which treatment, so we can exclude a selection effect based on the type of the account.

opened an account in the scope of the Peer Group Experiment (see Figure I). During the follow-up survey, eligible participants were randomly offered one of two text message services that simulate the regular follow-up of peer group meetings through a weekly text message. In addition to the regular follow-up, one treatment included the aspect of peer pressure - others observing the success rate of the participant (Schelling, 1984) - while the second treatment included the aspect of the participant observing the success rate of others (Battaglini et al., 2005).

1. *Peer Pressure Treatment:* Participants set a weekly savings goal for themselves. They then choose a person as their "Savings Buddy" to monitor their performance and encourage them to stick to their goal. Both the participant and the Savings Buddy subsequently receive a weekly text message, informing them whether the participant made their deposit this week. The message sent to participants also reminds them that the Savings Buddy received the same information. The text message to the Savings Buddies also thanks them for being the participant's Savings Buddy (see the Appendix for exact wording of the messages).

2. *Peer Information Treatment:* In the same way as in the Peer Pressure Treatment, participants set a weekly savings goal for themselves and receive a weekly text message, informing them whether they made their weekly deposit. However, no one else can observe the participant's performance and there is no Savings Buddy exerting pressure. Instead participants are told what share of other participants similar to them made their weekly deposit.[9]

9. Originally, we intended to analyze the impact of randomly varying quality of peers through the following design. We assigned participants to four 'comparison' groups in order to create random variation in peer quality. First, we divided participants into two groups of above and below median age. Among the similar age groups, we then randomly divided participants into two groups. In the weekly text messages of the Peer Information Treatment, participants receive information about the fraction of others in their comparison group who made their weekly deposit. In the final analysis, we ended up pooling all four comparison groups, since power limitations did not allow us to distinguish differential treatment effects.

3. *Control Group:* Participants are only asked to set a weekly savings goal for themselves but are not offered any text-message service.

Sample Selection and Set-Up of the Intervention

Prior to administering the follow-up survey, all participants who opened a savings account during the first experiment were randomly assigned to one of the three treatment groups for the second experiment. The randomization was stratified by savings balance in the account before the start of the Text Message Experiment and by the group to which participants belong. The latter automatically assures stratification by treatment in the first experiment. In order to maximize take-up, a set of screening questions were asked during the survey to determine who remained in this study. Only those 873 participants who had a cell phone (85.2% of the total) and who were interested in a weekly text message service designed to help people reach their savings goals (69.5% of participants with cell phones) were included in the Text Message Experiment.

All participants, including the control group, were asked what their weekly savings goal would be for the next three months if such a service were offered. This allowed us to rule out that the effect is driven by the goal setting itself (see, e.g., Locke and Latham, 2006). Those assigned to one of the treatments were then informed that they can indeed receive such a service for free, and the details of their particular service were explained (without mention of the existence of other treatments).

The research team matched weekly data from the bank with individuals in the study and sent corresponding text messages to participants. Since the interviews happened in a staggered manner, different participants started receiving the service at different points in time. However, the service ended for everyone at the same time at the end of October 2009.

Summary Statistics

Table II presents summary statistics of the Text Message Experiment for the 873 participants in the sample. As expected given the random assignment, average characteristics across treatment groups are very similar.

[Table II about here.]

Similar to the Peer Group Experiment, participants have an average of 9.6 years of schooling, their mean age is 44 years, and 70% did not have a savings account prior to the account they opened in the context of this study. Mean monthly per capita income of participants' household is 116,854 Chilean Pesos (about 230 USD), which is somewhat higher than for participants in the Peer Group Experiment. The average number of household members is 4.4. The average savings balance in the study accounts at the beginning of the Text Message Experiment is 14,853 pesos, or about 30 USD. The average number of monthly transactions in 2008 is 0.18 deposits and 0.06 monthly withdrawals.

In the following section, we show the results of both experiments. Section III. presents the results of the Peer Group Experiment in two steps: first, we discuss the impact of self-help peer groups compared to the basic account and second, we benchmark the effect by comparing it to the impact of the high-interest rate account. Section IV. shows the results of the Text Message Experiment, which sheds light on the question of whether actual in-person meetings and peer pressure are crucial elements of what makes self-help peer groups effective as a commitment device.

III. The Effect of Self-Help Peer Groups on Savings

III.A. Self-Help Peer Groups vs. Basic Account

In this section, we analyze the effect of the Peer Group Treatment compared to the control group. After showing the overall results, we present subgroup analysis investigating whether individuals with time-inconsistent preferences profit more from self-help peer groups. Finally, we discuss evidence suggesting that the savings in the bank accounts provided in this study are additional savings rather than substitution for other forms of savings.

Figure II shows the effect of self-help groups on the numbers of deposits and on the savings balance. It displays the Intent-To-Treat (ITT) effect for 12 months after the introduction of the accounts, comparing those assigned to the Peer Group Treatment to those assigned to the basic account. It is clearly apparent that the self-help peer groups increase savings outcomes in the accounts.

Panel A of Figure II shows that the average number of deposits is almost four times higher in the Peer Group Treatment. While the effect strongly decreases over time, even in the last quarter of the year, the number of deposits is still 3.5-times higher (0.059 vs. 0.016).

[Figure II about here]

Panel B of Figure II shows that self-help peer groups not only increased the number of deposits but also lead to higher savings balances. The average balance is twice as high for participants in the Peer Group Treatment than in the control group. The effect persists over time and does not decrease during the entire year. The fact that savings increase

initially and stay constant afterwards suggests that individuals may have reached a stable level of savings that they maintain – consistent with a precautionary savings model.

The decrease in the number of deposits over time might also be explained by at least two other reasons: First, individuals might not continuously participate in the self-help peer groups, for example if they leave the FE group. Secondly, the FE group leader might lose some of the initial motivation, and the quality and regularity of the self-help peer group follow-up in the meetings might consequently decline over time. Answers to corresponding questions from our follow-up survey suggest that all of the above are in fact happening to some degree. Individuals in the peer group treatment who are still with FE one year after the introduction of the accounts make more deposits until the end, in groups in which the leader implemented the treatment more judiciously, the treatment effect stays higher for longer, etc. However, these correlations have to be treated with caution, since they are very prone to selection effects.

Table III shows these results in an OLS framework.[10] We estimate regressions of the following specification:

$$S_i = \alpha + \beta_1 Self\ Help_i + \beta_2 Interest\ Rate_i + \epsilon_i \quad (1)$$

S_i is the savings outcome for individual i. We analyze three savings outcomes: (1) the average monthly number of deposits over 12 months, (2) the average monthly deposited amount, and (3) the average balance. In order to illustrate the effect of outliers, we also show the results for a sample that is winsorized at top 1% and top 5%. $Self\ Help$ is a dummy equal to 1 for individuals in the Peer Group Treatment and $Interest\ Rate$ is a dummy equal to 1 for individuals in the High-Interest Treatment (analyzed in the next section). ϵ is the error term.

10. Tobit specifications do not change the results qualitatively.

Panel A of Table III presents the ITT effect for all three outcomes, and supports the findings of Figure II: the number of deposits, the amount deposited, and the savings balance are significantly higher for those in the Peer Group Treatment. These effects are both statistically and economically significant, as savings balances almost double and the number of deposits more than triples. While the amounts are modest in absolute terms, previous studies have shown that even small amounts of savings can make a substantial difference in dealing with income shocks (e.g., Burgess and Pande, 2005; Brune et al., 2011; Ashraf et al., 2010; Dupas and Robinson, 2011; Abraham et al., 2011). The positive impact of self-help peer groups can also be seen in self-reported financial stress one year after the beginning of the experiment: individuals in the self-help peer groups are less likely to state that they are worried about their financial future than individuals assigned to the basic account treatment ($p < 0.05$; four-point scale).

Panel B shows Treatment-on-the-Treatment (TOT) effects. Take-up rates of the savings accounts are very similar between the treatments: 50% for the basic account, 51% for the high-interest account and 55% for the self-help peer group account (none of the differences are statistically significant). Correspondingly, Panel B shows that the TOT effects are about twice the size of the ITT effects.

In sum, the evidence indicates that self-help peer groups are effective in encouraging deposits by participants, which in turn leads to substantially increased savings balances. The increased number of deposits is not offset by a corresponding increase in withdrawals, even though the accounts are fully liquid and withdrawals are not observed by the peers.

In a second step of the analysis, we asked whether participants who exhibit dynamically inconsistent time preferences benefit more from self-help peer groups.[11] This may

11. In an earlier version of this paper, we additionally tested predictions from Battaglini et al. (2005) based on the analysis of data that contained only the first 6 months of treatment (rather than the 12 months available in this paper), and found that consistent with their model, those who feel superior to others in their group in terms of their capacity to follow through with their goals benefit more from the

be the case if the peer groups lead to front-loading of the cost of not saving. Overcoming self-control problems might be especially important for these individuals (for evidence showing that time-inconsistency correlates with financial behavior, see e.g., Ashraf et al., 2006b; Meier and Sprenger, 2010).

[Table IV]

In Table IV, we present results that test whether individuals who exhibit time-inconsistent preferences profit more from self-help peer groups. The results in Column (1) show that indeed the self-help peer groups increase the number of deposits more for such individuals. The results are robust to including a number of control variables and interacting them with the treatment dummies (as the coefficients of the treatment dummies are for the omitted group, they are less informative). Looking at the savings balance, the effects are measured with much less precision.

Having found that self-help peer groups have a substantial effect on savings in the study account, we next investigated whether this constitutes additional savings or just crowds out other forms of savings. Generally, it is very difficult to obtain evidence on this question since researchers usually only have information about one savings vehicle, and survey data on total savings tends to be very noisy. Much of the literature on savings, such as on 401(k)s, on the role of defaults, etc. does therefore not measure the crowd-out effect on other forms of savings. A recent exception is Gelber (2010), who looks at transitions into 401(k) eligibility and finds that eligibility "crowds in" reported IRA assets, although even this study does not have access to administrative data on other savings. To our knowledge, no paper so far can address the question of crowding-out fully. Ashraf et al. (2006b) find no crowding out of saving in other accounts in the *same* bank as the accounts offered in their experiment, but they also cannot observe other savings.

Peer Group Treatment. However, these results are no longer significant when looking at the 12 month time frame.

We provide three types of evidence suggesting that self-help peer groups increase total savings and do not just replace other forms of savings. First, and most basically, for the 70% of participants who do not have another savings account, savings in the study account represent all new *formal* savings.

Second, we measured the impact of the treatments on other forms of savings. In order to measure potential crowd-out, we asked individuals extensively about other forms of savings in the baseline and follow-up surveys. As expected, these amounts were reported very noisily. In order to measure how noisy such self-reported information on savings amount was, we also asked participants to report the amount saved in the study account, for which we had administrative data. Comparing the self-reported to the true amount, we find a correlation of merely 0.43.

Given the noisiness, looking at total reported amounts saved is not very informative to capture crowd-out. If anything, the data suggests a crowd-in of other forms of savings for participants in the Peer Group Treatment. However, anticipating the low reliability of self-reported amounts, we also elicited a binary measure indicating whether participants who have other accounts made any deposits or withdrawals in the previous six months. This measure is much less noisy, since it is easier for participants to remember and to report than amounts of the balance. Confirming the validity of this measure, we test whether participants in the Peer Group Treatment report a higher probability of having made a deposit into the study account, which we know from the administrative data to be true, and find that this is indeed the case ($p < 0.01$). We then analyze the binary measure for other accounts and find that those in the Peer Group Treatment are not less likely to use their other accounts than the control group, both in terms of deposits and withdrawals. Finally, looking at reported cash holdings, we again find no significant differences. In sum, we find no evidence for crowd-out of other forms of saving. Participants in the Peer Group Treatment and High-Interest Treatment do not report lower total savings, do not make

less use of pre-existing accounts, and do not report less cash holdings.

A third indicator that the savings account in the study has real impacts and does not only replace other savings stems from evidence in Abraham et al. (2011), which shows that having access to the savings accounts in this study has substantial real impacts and helps participants alleviate the burden of economic shocks, both objectively and subjectively. After one year, participants with access to one of the three accounts have less informal debt, fewer outstanding payments, and less often need to reduce consumption due to economic difficulties, compared to a group that was not offered any account. Subjectively, they report being significantly less worried about their financial future, and evaluate their recent economic situation as less severe. Taken together, this evidence suggests that savings in our field experiment represents additional savings rather than mere substitution.

III.B. Self-Help Peer Groups vs. High Interest Rate

To get a sense of the magnitude of the effect of self-help peer groups, we compare it to the impact of a more classical treatment to encourage saving, a substantially increased real interest rate of 5% annually. In addition to providing a benchmark for the effectiveness of the self-help peer groups, understanding the interest rate elasticity of savings is an important question by itself.

From a theoretical perspective, the overall effect of interest rates on savings is ambiguous, due to the income and substitution effects. When interest rates increase, the substitution effect makes savings more attractive, while the income effect captures the fact that the future value of the savings increases, which reduces the savings rate needed to obtain a given level of future consumption. This income effect is particularly important for long-term savings, and may be less important for shorter-term precautionary savings

such as the ones in this study. The substitution effect, however, makes a clear prediction: In the absence of significant transaction costs, individuals should be expected to reallocate their savings portfolio towards the higher-return account.

In our setting, we have the opportunity to analyze both of these aspects. First, we look at whether the higher-interest-rate treatment increases overall savings in the study account. Secondly, we separate out the substitution effect, by investigating whether those participants who have a pre-existing savings account before the study reallocate their savings to the higher-yield account. Given that the high-interest-rate accounts represent by far the highest alternative in the market, we know that the interest rates of their pre-existing accounts are lower. Finally, when we find that participants do not reoptimize their savings portfolio towards the high-yield account, we explore the obstacles that may lead to this ineffectiveness of interest rates through a series of detailed questions in the follow-up survey.

Looking at the overall effect of the interest rate on savings in the study account, Figure III shows the mean monthly savings balance as well as the 75th, 95th, and 99th percentiles.[12] The panels show several interesting patterns: First, it is not readily apparent whether the mean of the savings balance differs between the high-interest High-Interest Treatment and either the self-help peer group or the basic account. Second, Panels B-D show that looking at the whole distribution reveals a much starker result. A very large fraction of participants do not respond to the increased interest rate at all. At the 75th and even at the 95th percentile, the savings balance in the basic account and the High Interest Rate Treatment are virtually identical, while participants in the Peer Group Treatment display substantially higher savings. Only at the very top of the distribution (Panel D for the 99th percentile) does the interest rate lead to higher savings. In sum, Figure III indicates that self-help peer groups shift the entire distribution of savings, while

12. The median is zero, given that take-up is only about 50%.

the increased interest rate only affects the very top tail of the savings distribution.

The results of Table III support those findings in regressions for all three of our savings outcomes. The high interest rate does not significantly increase the number of deposits, and in most specifications does also not significantly increase the amount deposited or the savings balance. Looking at the winsorized specifications confirms that when we top code the largest percentiles, the interest rate does not seem to have an effect. It is noteworthy in itself that an increase in the interest rate of almost 5 percentage points has very little impact.

For all outcomes, the self-help peer groups are more successful in increasing savings than the increased interest rate, except for a small number of individuals at the top of the distribution. The difference is statistically significant for the number of deposits and for the winsorized savings amounts. If we take the results from Column (5) and linearly extrapolate the point estimation of the interest rate increase, the results indicate that the self-help peer groups have an effect equivalent to an increase in the interest rate to 7.8%.

Having found that for the vast majority of participants the high-interest-rate account does not increase savings, we focus our attention on the subset of participants, for which reallocation of pre-existing savings into the study account could be expected: participants who have a pre-existing savings account. However, for small amounts of savings, the transaction costs may be too large to warrant reallocation. We therefore split the group of those with pre-existing savings further into two groups and focus on those above the median of the pre-existing savings balance.

Surprisingly, even these 'high pre-treatment savers' do not reallocate their savings into the high-interest account. Their savings in the study account are orders of magnitude lower than their savings in their pre-existing account. The average balance in these pre-existing accounts is about 315,000 Pesos (or about 650 USD), while the savings in the

study accounts are about 15,000 Pesos. When asked in the follow-up survey, less than 1% indicate having made any transfers from a pre-existing account into their study account.

There are many potential explanations for these findings: tangible or mental costs associated with this transaction, limited liquidity of the alternative account, a lack of understanding of the interest rate, mental accounting, or reasons other than the interest rate that leads participants to prefer the alternative bank account. We explore these possible reasons through a series of detailed questions in the follow-up survey.

Two aspects stand out in the survey responses: A lack of understanding of the interest rate, and mental accounting. Concerning the former, only 2% of participants indicate knowing the interest rate in the alternative savings account. Despite that, 63% of those in the High Interest Rate Treatment claim that their alternative savings account has a higher interest rate which, as discussed above, is highly unlikely. Given these stark results, we investigate to what degree financial literacy or lack of schooling is at the source of these findings. There is some indication that financial sophistication might interact with the treatments. For those with above-median financial literacy or above median education, the High Interest Rate Treatment leads to statistically significantly higher overall savings than the basic account, while for the overall population it does not. However, the difference between the subgroups is not significant.

After assessing the relative differences of the two savings accounts in terms of interest rate, distance, and other qualities, we asked those who did not transfer money into the high-interest account directly about their main reasons for not doing so. They were shown a list of possible reasons and asked to rank each in terms of importance. Mental accounting stands out as being named as very important the most frequently.[13]

13. The following are all answers in order of frequency: Mental accounting 70% ("Because the alternative account is destined towards a specific goal that I do not want to mix with the other savings account"), distance 19% ("The other bank is closer"), uncertainty 18% ("Because I am not sure whether the favorable conditions of the account in the study will continue"), trust 18% ("The other bank is more

In sum, we find that while savings in the high-interest account seem to be slightly higher than in the basic account, this difference is not statistically significant, and quantile analysis shows that for the vast majority of participants, interest rates do not increase savings in the study account at all. Looking at the subsample of participants who have significant pre-existing savings, we find that they do not reallocate savings into the higher yield account. These findings are especially interesting given that in the context of this experiment, the higher interest rate is made exceptionally salient. A training session at the introduction of the high-interest account stresses the fact that these represent the highest alternative in the market, and explains the effect of interest rates and compounded interest rates over time in a very intuitive manner.

These findings illustrate another advantage of self-help peer groups: they require little financial literacy. Our findings also suggest that models or policies based on the assumption that low-income individuals will respond to changes in interest rates should be treated with caution.

IV. How Crucial are Meetings and Peer Pressure?

The previous section established that self-help peer group meetings are effective at increasing savings. Such peer group programs consist of a whole bundle of interventions: goal setting, regular follow-up in meetings, peer pressure by others, observing the performance of others, symbolic prizes such as stickers for those who perform well, and advice on how to reach one's goal. This section attempts to unbundle this multifaceted intervention by investigating the importance of two of its key elements: physical meetings and

trustworthy"), interest rate 17% ("The other account has a higher interest rate"), cost of withdrawing and redepositing 10%, and having an outstanding loan at the other bank 9%.

peer pressure.

We first analyze the importance of in-person meetings by testing the effectiveness of regular follow-up in "synthetic" peer group meetings through peer-related text messages. We then investigate the role of peer pressure by comparing two different types of text message treatments.

IV.A. The Effect of Peer Text Messages on Savings

Figure IV shows the impact of being offered the weekly text message follow-up service. The horizontal axis represents calendar months in the year 2009, and the area between the horizontal lines marks the period during which the text message intervention is implemented (called "intervention period" going forward). Panel A shows the average number of deposits per month, and Panel B shows the average amount deposited.

[Figure IV about here]

Figure IV reveals three important results: First, there is no significant difference between treatment and control groups in both panels before the experiment begins in August 2009 (month "8" in the figure). Deposits in June and July trend slightly downward in the cold winter months in Chile, but this trend is no different between treatment and control. Second, in the intervention period, savings outcomes are substantially higher in the treatment compared to the control group, almost tripling the number of weekly deposits. The amounts deposited are much more noisy to measure, but even there we see a substantial increase. Third, after the text messages stop, the savings behavior looks very similar again across groups, and we observe no long-run impact on savings habits.

In order to estimate the significance of these effects, we estimate regressions of the following general form:

$$S_i = \alpha + \beta_1 Treatment_i + Prior\ Savings_i + \epsilon_i \quad (2)$$

where S_i is the savings outcome for individual i, and $Treatment$ is a dummy variable equal to 1 for individuals in the treatment groups. In addition, we control for the amount saved prior to the intervention period, which allows us to reduce much of the noise by capturing individual-specific variability, similar to what would be the case in a difference-in-difference specification.[14] We use the following measures of S_i: (1) average number of monthly deposits made, (2) average monthly amount deposited, and (3) new savings (deposits-withdrawals) in the intervention period. Amounts are also shown winsorized at the top 1% and top 5%.

Table V presents the results for all three outcomes during the intervention period. Panel A shows the Intent-to-Treat (ITT) effect while Panel B shows the Treatment-on-the-Treated (TOT) effect. The peer-related text messages have a substantial effect on savings. In the ITT specification, the average number of deposits is more than two-times higher than in the control group. Not only do people deposit more often, they also deposit higher amounts. The average monthly deposited amount is about 2,000 Pesos higher in the treatment group. As a result, participants in the treatment group increase their savings balance in the intervention period by about 7,800 Pesos.[15] Take-up rates of the two treatments are very similar. Of participants who initially express interest in the service, 42.8% end up actually signing up when offered to participate in the Savings

14. Results without controlling for prior balance (shown in Table A1 in the appendix) are qualitatively similar but measured more imprecisely.

15. The coefficient on prior savings is negative, since mechanically, people who have prior savings can withdraw more in the intervention period leading to possible negative new savings. Analysis not shown here shows no significant difference in the effect of the Text Message Experiment depending on the treatment in Experiment 1.

Buddy service and 41.6% when offered the Peer Information service. Correspondingly, the TOT effects are more than double in size. Treated individuals save, on average, around 19,000 Pesos or 38 USD more during the three treatment months, which corresponds to about 23% of average monthly household per capita income.[16]

[Table V about here.]

To get a sense of how much of the effect of self-help peer groups can be achieved without physical meetings, we compare the magnitude of the treatment effect of the Peer Group Experiment and the Text Message Experiment. Since the two experiments differ both in who participates and in the duration of the intervention, the comparison has to be interpreted with caution. In particular, we need to take into account that participants in the Text Message Experiment are a special subsample of the Peer Group Experiment (i.e. individuals who opened an account). In order to maximize comparability, we calculate the effect of self-help peer groups in the Peer Group Experiment for the three first months among the 873 participants in the Text Message Experiment (see Table A2 in the Appendix). This provides a conservative estimate for the claim that physical meetings are less important than expected, since we focus on the three months when the Peer Group Treatment had the strongest effect. This also has the advantage of controlling for seasonal effects since it compares savings in the same calendar months, one year apart. Finally, TOT and ITT for the Peer Group Experiment are by construction identical in this sample, since all participants in the Text Message Experiment opened a savings account in the scope of the Peer Group Experiment. For a conservative comparison, we look at the ITT effect of the Text Message Experiment. We find that peer-related text messages achieve about 80% of the effect of self-help peer groups in terms of new savings balance (about

16. The new savings of zero in the control group indicates that participants in this group, on average, withdrew the same amount as they deposited, with negative new savings for some participants during this period.

8,000 pesos compared to 10,000 in the Peer Group Treatment).

In sum, the overall result of the Text Message Experiment shows that peer-related text messages, i.e. "synthetic peer groups," have a substantial effect on savings. Comparison to real self-help peer groups suggests that text messages can achieve 80% or more of their effect, indicating that physical meetings are not as central to the effect of self-help peer groups as previously thought. In contrast to the self-help peer groups, the effect of the text messages does not decay over the first three months. This might be due to the fact that the default with respect to continuing participation is different for the two treatments: in order to discontinue participation in the text message service, individuals would have to actively opt-out, while for the peer group support, participants have to actively opt-in each week by showing up at the meeting. The effect of text messages might therefore be more sustainable over time than the effect of self-help peer groups. Future research is required to test the effectiveness of the messages over the long run.

IV.B. Is Peer Pressure Required for the Effectiveness?

After having established in the previous section that effects with a similar order of magnitude can be achieved through peer-related follow-up messages without in-person meetings, this section investigates whether the effect is driven by peer pressure. To answer this question, we compare two types of text message treatments, the Peer Pressure Treatment and the Peer Information Treatment (see Section II. for a description of the interventions).

Figure V shows the ITT effect of the Peer Pressure Treatment compared to both the control group and the Peer Information Treatment. The savings behavior in the two treatments follows a very similar pattern both in terms of number of deposits per months

(Panel A) and in terms of amount deposited (Panel B).[17]

[Figure V about here.]

Table VII confirms the impression from Figure V. Both treatments independently increase savings compared to the control group (this is statistically significantly for all three savings outcomes except for new savings in the Peer Pressure Treatment). Importantly, when comparing the effects of the two treatments with a F-test, having a Savings Buddy has no substantially different effect on any of the three outcome variables.

[Table VII about here.]

The fact that the Savings Buddy Treatment does not lead to stronger effects is even more striking in light of a) who participants chose as their Savings Buddy and b) the information contained in the Peer Information text messages.

a) When signing up for the text message service, participants in the Peer Pressure Treatment indicate their relationship to the Savings Buddy and the main reason they chose that person. Participants are allowed to select their own Savings Buddy so that they can choose their "optimal" peer. The reasons given for choosing that particular person indeed indicate that participants are using the text message services as a peer pressure commitment device and select Savings Buddies who really holds them to account. As seen in Table VI, the most frequently stated reason (30%) is that the person chosen is very strict and will motivate the participant to comply with his or her savings goal. This is followed by 28% indicating that the person was chosen because the participant generally shares financial information with them; 19% because the person is a role model when it

17. The figures seem to suggest that there is a different time trend between the two treatments. However, the monthly graphs are not ideal to observe time trends, since participants joined the treatment in different weeks. When looking at a graph representing actual weeks since the start of treatment (shown in Figure A1 in the Appendix), the two treatments look very similar over time.

comes to saving, by being very organized and good at complying with his or her own savings goals; 12% because the participant shares a bank account with that person. Very few participants (5%) indicate that they chose their Savings Buddy for being a relaxed person who will be understanding if the participant cannot reach their savings goal.

[Table VI about here.]

In terms of their relationship to their Savings Buddy, participants tend to choose someone who is close to them, either a close relative or a close friend. The most common choice is a son or daughter (32%), followed by partner (25%), close friend (17%), other relative (14%), parent (6%), neighbor (2%), and someone else (3%).

According to Mas and Moretti (2009), peer pressure can be expected to be particularly strong if the peers know each other, if they have had past interactions and expect future interaction. Similarly, research by Karlan (2007) shows that in peer lending groups, close social connections are very powerful in reducing default. That would suggest that the selected close peer should be particularly effective. However, we cannot rule out that in our context, the optimal social distance is different. This would be the case, for example, if close peers are more understanding when a commitment is not reached and are therefore less likely to exert pressure.

b) One possible explanation as to why the Peer Pressure Treatment does not have a stronger effect than the Peer Information Treatment could be that the peer pressure effect is strong, but the effect of the information about the performance of others is equally strong. While we cannot rule out that this is the case, the nature of the information that is conveyed makes us think that this is not likely. The message (see text in Appendix A) in the Peer Information Treatment informs participants about the percentage of others similar to them that made a deposit in a given week. It turns out that in most weeks, that number is very low or even zero. This fact, combined with evidence from Beshears et al.

(2009) showing that such information may have very limited effects on savings, suggests that the peer information component is not very likely to have had a strong effect.[18] The finding that the text message follow-up still has a substantial effect suggests that the regular follow-up and taking stock may be more important for their effectiveness than peers and peer pressure.

V. Discussion and Conclusion

Peer groups are often used as a commitment device to achieve personal goals, but there has been little empirical evidence evaluating their effectiveness and analyzing what aspects lead to their success. Our findings that self-help peer groups increase the number of deposits 3.5-fold, and almost double the average savings balance after a year, show that these groups can be a powerful tool to help participants reach an individual but mutually shared goal.

Compared to a substantially increased interest rate, self-help peer groups have a stronger impact, affecting a much larger share of participants. Achieving a commensurate average effect would require increasing the interest rate by at least 7.8 percentage points, and most participants do not respond to the increased interest rate at all. Even participants who have significant savings in pre-existing accounts do not re-optimize their savings portfolio towards the higher-return account. This weak effect of the interest rate is an important and novel result in itself. As demonstrated by the strong response to the Peer Group Treatment, it is not driven by a general inability or unwillingness of this

18. We also analyzed whether the treatment effect of those in the Peer Information Treatment is different for those who have randomly been assigned to different peers. In the design of the Peer Information Treatment, we randomly assigned participants into different comparison groups (see footnote 5). We analyzed whether conditional on age group, those participants who received a savings comparison message in their first week of treatment with a higher average of deposits of their peers displayed a different deposit pattern thereafter, but we did not find any significant effects.

population to save.

Our second experiment starts to unbundle the mechanism of self-help peer groups through different text message follow-up services. The first striking result of the Text Message Experiment is that most of the effect of self-help peer groups can be achieved without actual meetings, through simple follow-up text messages. So the rituals performed during the meetings, such as distribution of "reward" stickers and diplomas, the mutual support and the information sharing during the meetings do not seem to be the driving forces of the effectiveness. The other surprising finding of the Text Message Experiment is that peer pressure does not seem to be the crucial element of the effect either. The follow-up service that simply informs individuals about the percentage of others who fulfilled their commitment has an equally large effect as the service that adds peer pressure through a Savings Buddy. Therefore, even without a real life Savings Buddy, simple weekly text messages achieve almost the same effect as full-fledged in-person meetings.

When combined with evidence that information about savings behavior of peers has only limited effects (Beshears et al., 2009)[19] and that regular reminders increase savings (Karlan et al., 2010), our results suggest that the regular follow-up may more important to the success of self-help peer groups than the actual peers. Rather than exerting pressure, participants provide a mutual service, to hold each other to account in regular meetings, which proves to be highly effective.

These results have a number of implications for policy and for future research. First and most basically, they suggest that policies supporting self-help peer groups are a promising way to promote savings. This is particularly the case for many low-income individuals in developing countries, who do not have access to savings commitment de-

19. The peer information effect is likely to be particularly low in our setting as very few individuals are making a deposit each week. On average, our participants are informed that only 6% of their peers follow through with their goals.

vices such as defaults and direct deposits, which have been found to be highly effective in the developed world, but are tied to a formal wage bill. Adding a savings club component might be particularly convenient in contexts where people meet regularly anyway, such as microfinance groups, schools, sports clubs, or churches.

The findings of the Text Message Experiment suggest that even outside of contexts where people meet regularly in groups, savings can be strongly increased through simple follow-up messages. While self-help peer group meetings can be cumbersome to set up and to maintain, text message services require little coordination, do not rely on physical proximity, and as such are much more broadly applicable. Given the astonishing growth rate of cell phone use in developing countries, this is a channel that can potentially reach millions of people and may be attractive to a wider and different population than the one that is willing to come together for regular meetings.

An additional advantage of text message follow-ups over in-person meetings is that by design, they are set up such that the default is for participants to stay in the treatment, unless they actively unsubscribe. In contrast, individuals have to actively opt in every week to attend the peer group meetings. This difference in the default might explain why the effect of self-help peer groups strongly decays in the first three months, while the effect of the text messages does not.

Combined with other findings in the literature, our results raise a series of additional research questions: Is the regular feedback about participants' own performance and the performance of their peers important for the effectiveness of the follow-up messages, or would a simple reminder (Karlan et al., 2010) have the same effect? What role does the social distance to the Savings Buddy play? Research on the 'ideal' social connection in group liability lending (e.g., Ferrara, 2003; Karlan, 2007) shows that stronger social ties lead to more monitoring and higher repayment rates. How would the effect of a Savings

Buddy change if we varied the social distance? When given the choice, do participants choose their Savings Buddies optimally? Finally, to what degree is the finding that most participants do respond to the Peer Group Treatment but not to the High-Interest Treatment driven by limited financial sophistication? Would these findings be different in more educated environments? And how does this affect our thinking about the design of public policy, if policies vary by the degree of cognitive ability and sophistication required for their effectiveness?

Beyond the issue of savings, follow-up through text messages has many potential applications in other areas where people make resolutions but find it difficult to follow through, such as preventive health measures (e.g., for diabetes, exercising, or vaccinations), environmentally-friendly behavior (e.g., saving energy), education (e.g., completing homework, solving math exercises), etc. As these methods find wider application, the question arises to what degree multiple follow-up messages crowd out attention, and further research is required to investigate interactions between multiple messages, as well as the effect of follow-up messages over a longer time period.

Finally, our findings speak to a larger point about what types of interventions tend to be effective in particular situations. While traditional economic incentives may be effective in contexts where individuals lack motivation, they may have limited impact if the constraint that impedes the behavior change lies elsewhere.[20] Implementing behavior changes can be challenging even for motivated individuals - either psychologically, due for example to self-control problems, or practically, due for example to complicated processes. In these situations, policies that facilitate compliance may be more effective than policies that further increase incentives.

20. We thank Brigitte Madrian for helpful discussions, which allowed us to see our findings in this light. This idea is consistent with Gneezy et al. (2011) who find limited effects of monetary incentives in behavioral change programs, and with Bertrand et al. (2010) who compare the effect of interest rates and psychological cues for the uptake of credit products and find - similarly to our results - a much smaller effect for the interest rates.

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VI. Figures and Tables

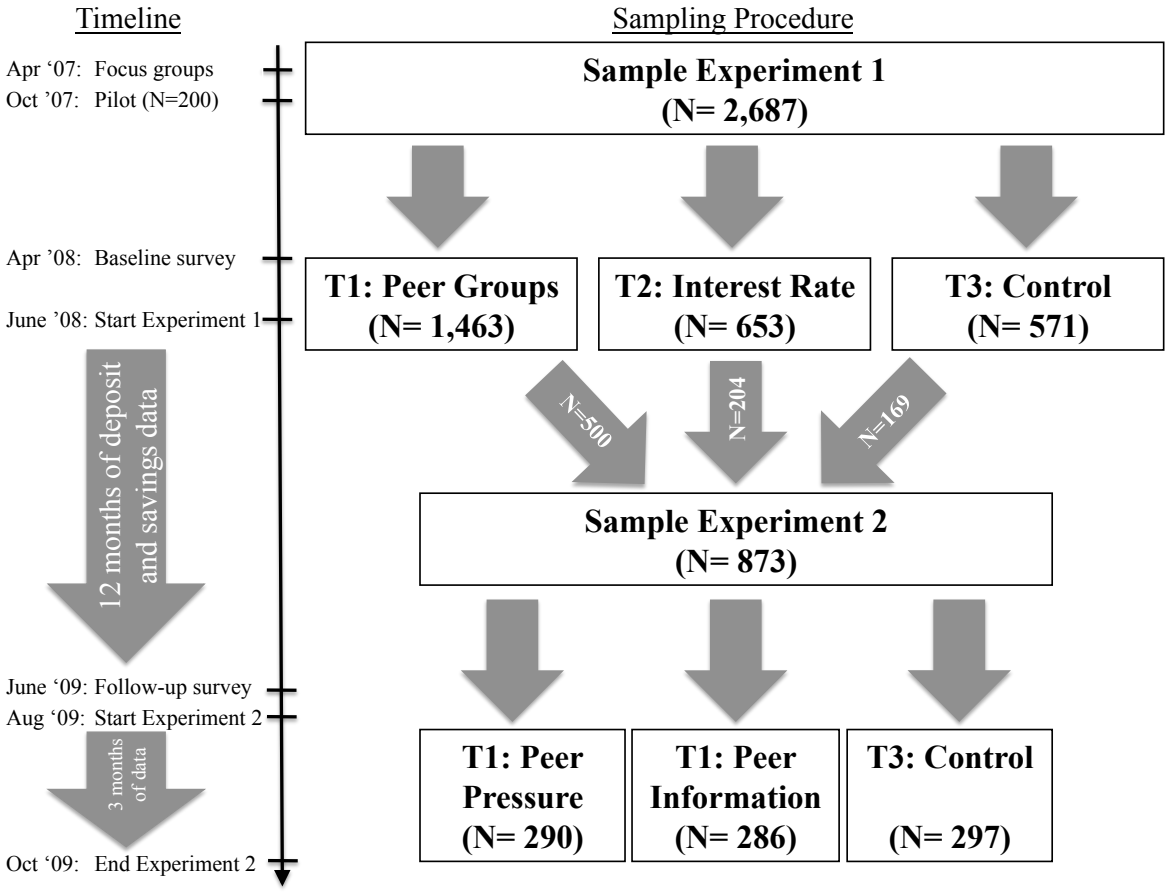

FIGURE I
Timeline and Sampling Procedure

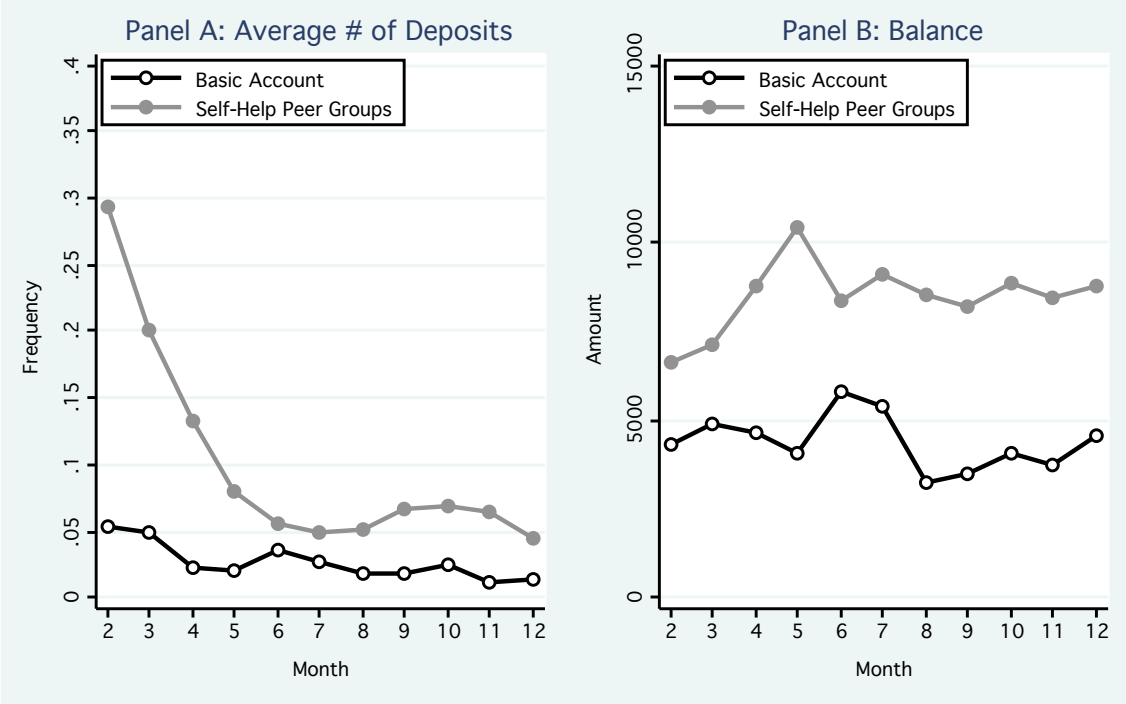

FIGURE II

EFFECT OF SELF-HELP PEER GROUPS ON SAVINGS (EXPERIMENT 1)

Notes: Panel A shows the number of deposits in a given month. Panel B shows average balance in the savings accounts (deposits - withdrawals). 'Month' indicates the months since the start of the experiment. All amounts are in Chilean Pesos. 500 Pesos = approximately 1 USD.

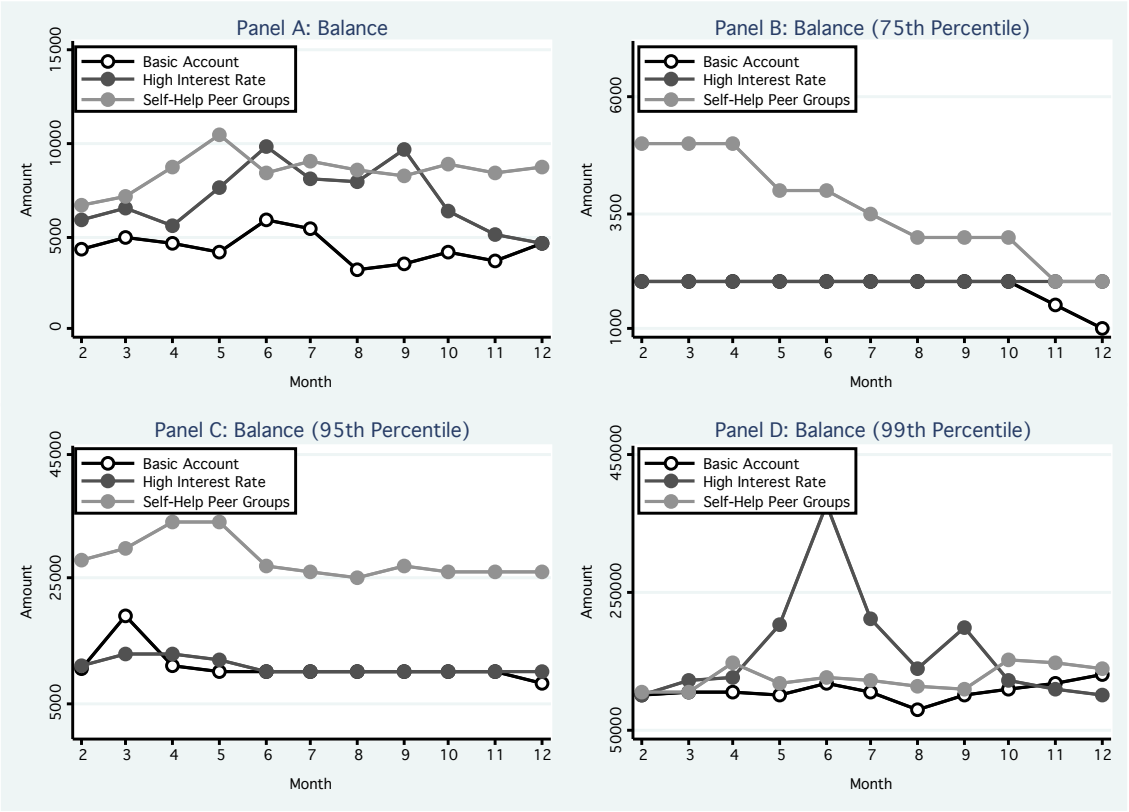

FIGURE III

EFFECT OF SELF-HELP PEER GROUPS AND HIGH INTEREST RATE (EXPERIMENT 1)

Notes: Panel A shows the average balance in the savings accounts (deposits - withdrawals). Panel B shows the 75th percentile of the average balance, Panel C and Panel D show the 95th and 99th percentile, respectively. 'Month' indicates the months since the start of the experiment. All amounts are in Chilean Pesos. 500 Pesos = approximately 1 USD.

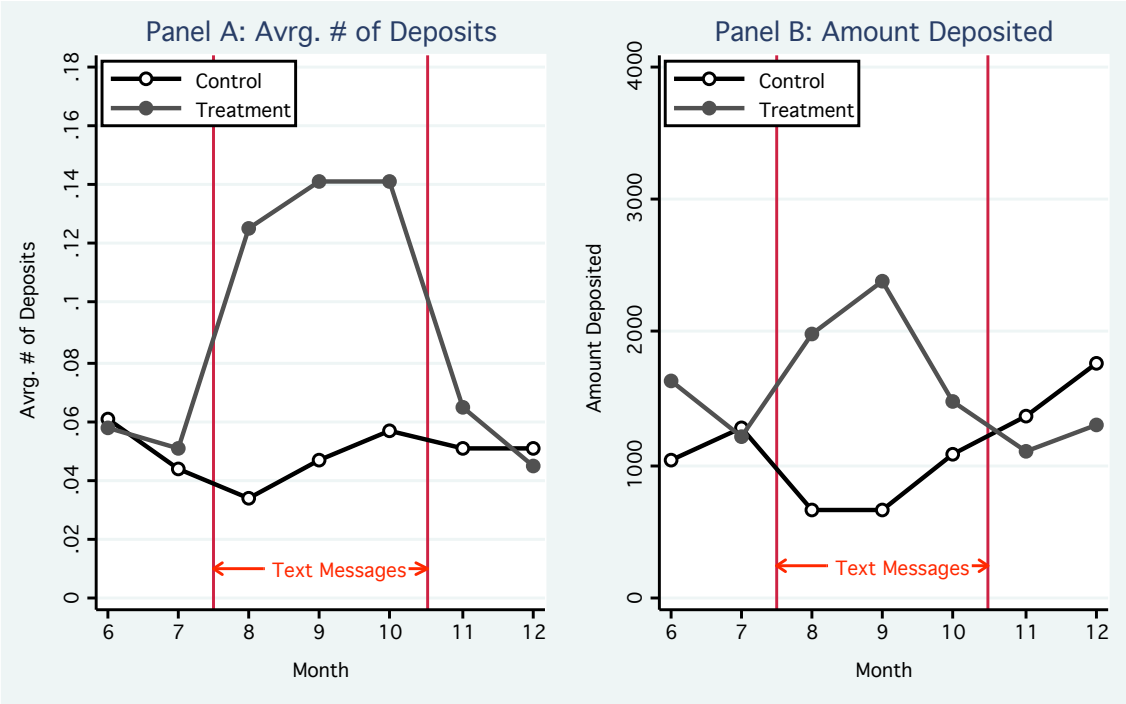

FIGURE IV

EFFECT OF PEER RELATED TEXT MESSAGES ON SAVINGS (EXPERIMENT 2)

Notes: Panel A shows the monthly number of deposits. Panel B shows the amount deposited per month, winsorized at the top 5%. The experiment started in August (month 8) and ended in October 2009 (month 10). All amounts are in Chilean Pesos. 500 Pesos = approximately 1 USD.

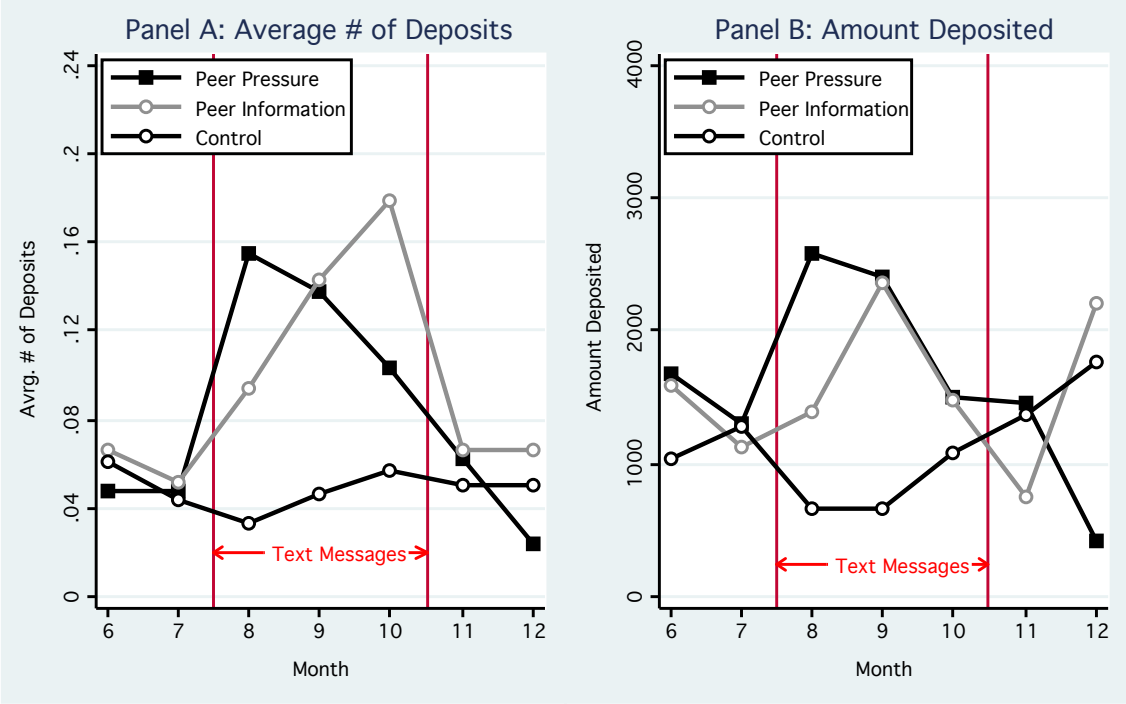

FIGURE V

IMPACT OF A SAVINGS BUDDY (EXPERIMENT 2)

Notes: Panel A shows the monthly number of deposits. Panel B shows the amount deposited per month, winsorized at the top 5%. The experiment started in August (month 8) and ended in October 2009 (month 10). All amounts are in Chilean Pesos. 500 Pesos = approximately 1 USD.

TABLE I

SUMMARY STATISTICS AND BALANCE OF RANDOMIZATION (EXPERIMENT 1)

	All	Control	Treatment 1	Treatment 2	Difference	
	All Accounts	Basic Account	Self-Help Peer Groups	High-Interest Account	Treatment 1 - Control	Treatment 2- Control
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Education	9.65	9.59	9.65	9.72	0.06	0.12
	(3.05)	(2.99)	(3.05)	(3.07)	(0.21)	(0.24)
Age	43.38	43.50	43.56	42.80	0.06	-0.62
	(11.55)	(11.70)	(11.49)	(11.60)	(0.71)	(0.84)
Income per capita	84,212	92,523	82,107	81,658	-10,416	-10,865
(monthly)	(133,780)	(236,123)	(88,266)	(86,238)	(14,172)	(14,493)
Household size	4.32	4.41	4.28	4.30	-0.13	-0.07
	(1.74)	(1.81)	(1.73)	(1.72)	(0.12)	(0.14)
Prior savings	0.32	0.33	0.31	0.32	-0.03	-0.01
account	(0.46)	(0.47)	(0.46)	(0.47)	(0.03)	(0.03)
Financial savings	69,108	80,227	66,631	64,933	-13,596	-15,293
	(290,570)	(431,114)	(260,897)	(189,481)	(18,058)	(18,165)
Mean financial debt	408,312	400,073	434,632	356,620	34,558	-43,453
	(833,319)	(804,914)	(944,669)	(538,193)	(50,446)	(50,275)
Group size	14.70	13.49	15.08	15.21	1.58**	1.71**
	(3.91)	(3.68)	(3.90)	(3.72)	(0.07)	(0.08)
Number of groups	196	46	104	46		
Number of observations	2,687	571	1,463	653		

Notes: In Columns (1)-(4) standard deviations are presented in parentheses below group means. Columns (5) and (6) show the difference between treatment and control groups by regressing the variable of interest on a treatment dummy. Robust standard errors clustered at the group level are shown in parentheses. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

TABLE II

SUMMARY STATISTICS AND BALANCE OF RANDOMIZATION (EXPERIMENT 2)

Variable	Control (1)	Difference "Peer Pressure"- Control (2)	Difference "Peer Information" - Control (3)
Education	9.65	0.07	0.15
	(3.04)	(0.25)	(0.25)
Age	44.05	-1.03	0.58
	(10.76)	(0.90)	(0.90)
Income per capita (monthly)	83,962	5,423	14,816
	(92,419)	(16,354)	(16,412)
Household size	4.394	0.113	-0.146
	(-1.580)	(-0.140)	(-0.140)
Prior savings account	0.300	0.059	0.022
	(-0.460)	(-0.039)	(-0.039)
Prior savings balance	14,853	-3,543	-2,887
	(152,427)	(8,646)	(8,616)
Number of deposits 2008	0.180	-0.003	-0.023
	(-0.470)	(-0.036)	(-0.036)
Number of withdrawals 2008	0.060	0.005	0.002
	(0.140)	(0.014)	(0.014)
Number of observations	297	290	286

Notes: In Column 1, standard deviations are presented in parentheses below group means. Columns (2) and (3) show the difference between treatment and control groups. Standard errors of a regression on treatment dummies are shown in parentheses. Monetary amounts in 2008 Chilean Pesos. 500 Chilean Pesos = approximately 1 USD. *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

TABLE III

THE EFFECTS OF SELF-HELP GROUPS AND HIGH INTEREST RATES ON SAVINGS

Dependent variable:	# of Deposits	Amount Deposited			Balance		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Intent-to-Treat							
Self-help peer groups	0.070***	11,812***	652***	274***	4,050**	2,227**	1,817***
	(0.014)	(447)	(236)	(64)	(1,888)	(860)	(392)
High-interest account	0.005	1,051*	471	31	2,446	527	232
	(0.009)	(580)	(303)	(66)	(1,810)	(984)	(368)
Constant	0.025***	864***	765***	247***	4,419***	3,951***	2,193***
	(0.006)	(213)	(164)	(44)	(930)	(672)	(269)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.022	0.001	0.002	0.012	0.001	0.004	0.017
F-test comparing treatments	p <0.001	p =0.85	p =0.56	p <0.001	p =0.48	p <0.06	p <0.001
Panel B: Treatment on the (Instrumented) Treated							
Self-help peer groups	0.128***	2,167***	1,196***	502***	7,426**	4,084***	3,332***
	(0.023)	(805)	(421)	(112)	(3,413)	(1,530)	(666)
High-interest account	0.010	2,080*	932	61	4,840	1,043	460
	(0.017)	(1,150)	(594)	(129)	(3,576)	(1,931)	(712)
Constant	0.025***	864***	765***	247***	4419***	3951***	2193***
	(0.006)	(212)	(163)	(44)	(928)	(671)	(268)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.097	0.015	0.030	0.081	0.015	0.045	0.145
χ^2-test comparing treatments	p <0.001	p =0.95	p =0.65	p <0.001	p =0.54	p <0.07	p <0.001
Number of observations	2,687	2,687	2,687	2,687	2,687	2,687	2,687

Notes: Dependent variables: Average number of deposits per months in Column (1); Average amount deposited per months in Chilean Pesos in Columns (2)-(4); Balance (amount deposited - amount withdrawn) in Chilean Pesos in Columns (5)-(7). Coefficients of OLS regressions in Panel A and coefficients of two-stage least square in Panel B. Standard errors clustered on the group level in parentheses. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

TABLE IV
TIME INCONSISTENCIES

Dependent variable:	# of Deposits		Balance			
	(1)	(2)	(3)	(4)	(5)	(6)
Hyperbolic × self-help peer groups	0.05**	0.05**	654	1,153	2,627	2,796*
	(0.024)	(0.025)	(3,028)	(2,793)	(1,595)	(1,582)
Hyperbolic × high-interest account	0.03*	0.03	3,942	4,291	2,836*	3,033*
	(0.016)	(0.016)	(3,374)	(3,459)	(1,707)	(1,760)
Hyperbolic	-0.00	-0.00	-2,100	-2,032	-1,454	-1,395
	(0.009)	(0.009)	(1,398)	(1,440)	(1,141)	(1,143)
Self-help peer groups	0.05***	-0.07	3,930	-14,203*	1,451	-11,184**
	(0.013)	(0.065)	(2,653)	(7,886)	(1,014)	(5,473)
High-interest account	-0.00	-0.03	1,225	-22,394	-356	-8293
	(0.008)	(0.051)	(2,193)	(20,158)	(1,125)	(8,701)
Constant	0.03***	0.07***	5,000	14,922***	4,353***	9,948***
	(0.006)	(0.028)	(1,189)	(4,932)	(810)	(2,977)
Control variables (and interactions)	No	Yes	No	Yes	No	Yes
Winsorized	None	None	None	None	Top 1%	Top 1%
R^2	0.03	0.04	0.00	0.01	0.00	0.02
Number of observations	2,687	2,687	2,687	2,687	2,687	2,687

Notes: Dependent variables: Average number of deposits per months in Column (1) and (2); Average balance (amount deposited - amount withdrawn) not winsorized and winsorized top 1% in Columns (3) - (6). Control variables (fully interacted with the treatment dummies) are: education, age, household size, initial household income (when joining FE) per capita, sum of financial debt, last recorded amount of credit with FE and bank savings. Standard errors clustered at the group level in parentheses. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

TABLE V
THE EFFECT OF PEER TEXT MESSAGES ON SAVINGS

Dependent variable:	# of Deposits	Amount Deposited			New Savings		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Intent-to-Treat							
Treatment group	0.090***	1,989**	1,745**	1,208**	7,786*	6,779**	6,509**
	(0.031)	(925)	(770)	(492)	(4,241)	(3,418)	(3,312)
Prior balance	0.000**	0.045***	0.039***	0.019***	-0.678***	-0.714***	-0.719***
	(0.000)	(0.004)	(0.004)	(0.002)	(0.019)	(0.016)	(0.015)
Constant	0.041	277	365	532	-213	-330	-1,142
	(0.025)	(754)	(627)	(401)	(3456)	(2785)	(2699)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.015	0.120	0.130	0.078	0.588	0.709	0.724
Panel B: Treatment on the (Instrumented) Treated							
Treated	0.216***	4,755**	4,170**	2,887**	18,610*	16,203**	15,557*
	(0.072)	(2,199)	(1,830)	(1,166)	(10,163)	(8,226)	(7,984)
Prior balance	0.000**	0.045***	0.039***	0.019***	-0.677***	-0.713***	-0.718***
	(0.000)	(0.004)	(0.003)	(0.002)	(0.019)	(0.016)	(0.015)
Constant	0.040	258	348	521	-288	-396	-1,205
	(0.025)	(757)	(630)	(401)	(3,499)	(2,832)	(2,749)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.053	0.128	0.136	0.090	0.584	0.704	0.719
Number of observations	873	873	873	873	873	873	873

Notes: Dependent variables: Average number of deposits per months in Column (1); Average amount deposited per month in Columns (2)-(4); New Savings (amount deposited - amount withdrawn) in intervention period in Chilean Pesos in Columns (5)-(7). All outcomes are for the intervention period from August to October 2009. Coefficients of OLS regressions in Panel A and coefficients of two-stage least square in Panel B. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

TABLE VI
CHOICE OF SAVINGS BUDDY

	Frequency	Percent
Why did you choose your Savings Buddy?		
Because my Savings Buddy ...		
... and I save together in the same account.	18	12.24
... is very strict and will motivate me to comply with my savings goals.	45	30.61
... is very relaxed and will understand if I do not reach my savings goals.	7	4.76
... is very close to me and I share my financial information with them.	42	28.57
... is a role model when it comes to savings, very organized and always complies with their savings goal.	28	19.05
Other	4	2.72
No response	3	2.04
Number of observations	147	
What is your relationship to your Savings Buddy?		
Partner	37	25.17
Mother or father	8	5.44
Child	48	32.65
Other relative	20	13.61
Close friend	25	17.01
Neighbor	3	2.04
Other	4	2.72
No response	2	1.36
Number of observations	147	

TABLE VII

COMPARING THE EFFECTS OF PEER PRESSURE AND PEER INFORMATION

Dependent variable:	# of Deposits	Amount Deposited			New Savings		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Peer pressure	0.087**	2,018*	1,771**	1,415**	5,720	5,599	5,517
	(0.036)	(1,070)	(890)	(568)	(4,901)	(3,951)	(3,829)
Peer information	0.094***	1,961*	1,718*	998*	9,881**	7,976**	7,514*
	(0.036)	(1,074)	(893)	(570)	(4,919)	(3,965)	(3,843)
Prior balance	0.000**	0.045***	0.039***	0.019***	-0.678***	-0.714***	-0.719***
	(0.000)	(0.004)	(0.004)	(0.002)	(0.019)	(0.016)	(0.015)
Constant	0.041	277	365	532	-213	-331	-1,142
	(0.025)	(754)	(628)	(401)	(3,457)	(2,786)	(2,701)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.015	0.120	0.130	0.079	0.588	0.709	0.724
F-test 'Buddy' = 'Information'	$p = 0.85$	$p = 0.96$	$p = 0.95$	$p = 0.47$	$p = 0.40$	$p = 0.55$	$p = 0.61$
Number of Observations	873	873	873	873	873	873	873

Notes: Dependent variables: Average number of deposits per month in Column (1); Average amount deposited per month in Columns (2)-(4); New Savings (amount deposited - amount withdrawn) in Columns (5)-(7). All outcomes are for the intervention period from August to October 2009. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

A Text messages (English translation)

Peer Pressure Treatment

- Messages to participants
  - In case of deposit:
    "Congratulations! Last week you made your weekly deposit and we just informed your Savings Buddy of your achievement."
  - In case of failure to deposit:
    "Ooh! Last week you did not achieve your weekly deposit and we just informed your Savings Buddy."
- Messages to Savings Buddy
  - In case of deposit by the participant:
    "Good news, last week [NAME OF PARTICIPANT] made his/her weekly deposit. Thanks for being his/her Savings Buddy!"
  - In case of failure to deposit:
    "Unfortunately last week [NAME OF PARTICIPANT] did not make his/her weekly deposit. Thanks for being his/her Savings Buddy!"

Peer Information Treatment

- In case of deposit:
  "Congratulations! Last week you made your weekly deposit. [PERCENT OF OTHERS]% of other participants similar to you made a deposit."
- In case of failure to deposit:
  "Ooh! Last week you did not achieve your weekly deposit. [PERCENT OF OTHERS]% of other participants similar to you made a deposit."

B Additional Figures and Tables

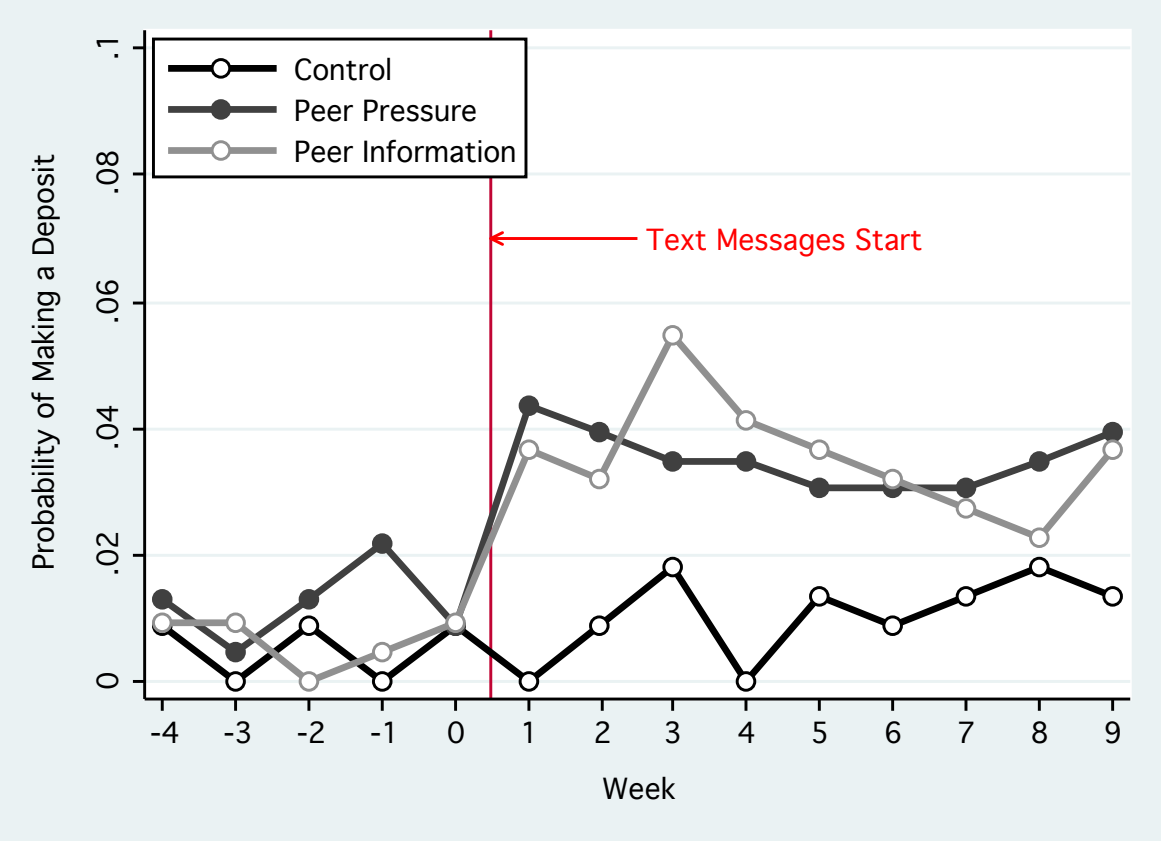

FIGURE A1
Peer Pressure vs. Peer Information Treatment in Making Weekly Deposit

Notes: The figure shows the probability of making a weekly deposit since the start of the experiment. While for all participants the text message service ended at the same time at the end of October 2009 (no attrition), different participants started receiving text messages at different times, depending on when they happened to be surveyed. Since the order of surveys was non-random, those starting the treatment later may be different. So if we only compared the treatment effect in (for example) August to October, we would capture both a difference of the duration of the effect and of the composition of those who were being treated in those two time periods. For the graphical representation, we therefore needed to choose a time period and include only individuals who were in the study early enough to receive messages for at least the number of weeks included in that period in order not to confuse composition effects with changes in the treatment effect over time. The figure includes individuals who were at least 10 weeks into the study and graphically displays the treatment effects of the 'Savings Buddy' vs. the 'Peer Information' over 10 weeks after the week of the first text message.

TABLE A1

THE EFFECT OF PEER TEXT MESSAGES ON SAVINGS (WITHOUT CONTROLLING FOR 'PRIOR BALANCE')

Dependent variable:	# of Deposits	Amount Deposited			New Savings		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Intent-to-Treat							
Treatment group	0.089***	1,844*	1,619**	1,148**	9,964	9,074	8,818
	(0.031)	(984)	(823)	(510)	(6,593)	(6,323)	(6,296)
Constant	0.046*	948	948	8,077*	-1.03e+04*	-1.09e+04**	-1.18e+04**
	(0.025)	(799)	(668)	(415)	(5,356)	(5,136)	(5,114)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.009	0.004	0.004	0.006	0.003	0.002	0.002
Panel B: Treatment on the (Instrumented) Treated							
Treated	0.214***	4,407*	3,868**	2,744**	23,808	21,680	21,070
	(0.072)	(2,340)	(1,958)	(1,211)	(15,777)	(15,146)	(15,089)
Constant	0.045*	933	935	798*	-1.04e+04*	-1.10e+04**	-1.19e+04**
	(0.025)	(802)	(671)	(415)	(5,406)	(5,190)	(5,171)
Winsorized	None	None	Top 1%	Top 5%	None	Top 1%	Top 5%
R^2	0.046	0.011	0.011	0.017	.	.	.
Number of observations	873	873	873	873	873	873	873

Notes: This table replicates the specification in Table V without controlling for 'Prior Balance' in their savings account. Dependent variables: Average number of deposits per months in Column (1); Average amount deposited per months in Columns (2)-(4); New Savings (amount deposited - amount withdrawn) in Columns (5)-(7). All outcomes are for the intervention period from August to October 2009. Coefficients of OLS regressions in Panel A and coefficients of two-stage least square in Panel B. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$

TABLE A2

EFFECTS OF SELF-HELP GROUPS FOR TEXT MESSAGE SAMPLE

Dependent variable:	# Deposits	Amount Deposited	New Savings
	(1)	(2)	(3)
Self-help peer groups	0.288***	2,707	10,058*
	(0.062)	(1,750)	(5,406)
High-interest account	0.006	2,290	5,797
	(0.035)	(1,430)	(4,309)
Constant	0.089***	1,565***	-2,683
	(0.026)	(595)	(3,758)
R^2	0.052	0.002	0.003
Number of observations	873	873	873

Notes: This table calculates the effect of self-help peer groups (i.e. the effect of Experiment 1) for the three first months (August to October 2008) among the sample of the 873 participants who also ended up participating in the text message experiment (i.e. Experiment 2). Dependent variables: Average number of deposits per month in Column (1); Average amount deposited per month; New Savings (amount deposited - amount withdrawn) in August to October 2008 in Column (3). Standard errors clustered on the group level in parentheses. Monetary figures are in 2008 Chilean pesos. 500 Chilean pesos = approximately 1 USD. *Level of significance*: $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$