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Abstract

Access to savings devices does not necessarily increase savings, but individual behavioral biases can affect savings behavior. Using randomized control trials, we evaluate different strategies to increase savings. In the first experiment, we compare three interventions: an automatic savings plan (ASP), monthly SMS reminders of savings goals, and a rule-of-thumb savings package. The rule-of-thumb package and ASP temporarily increase savings balances for 6 to 12 months, after which the effect disappears. Reminders have a negative effect on transactional account balances, no effect on savings account balances, and decrease retail debt. These effects on savings depend on the time horizon of the goal. Only individuals who participate in the default option with short-term horizons and only those with long-term horizons who participate in the rule-of-thumb intervention have an increase in savings. We find that default savings increase the likelihood of spending on the short-term baseline goal. In the second experiment, we randomly offer recipients of a conditional cash transfer program the opportunity to receive their subsidies as a direct deposit rather than as a check. We find an increase in the transactional account balance over the course of two years after the opportunity to change, but not afterwards. There is no effect on the total bank account balances and downstream outcomes. We conclude that rules-of-thumb and default rules can have positive short-term effects on saving, while SMS reminders can have unexpected negative effects on account balances and debt levels.

1. Introduction

Despite the enthusiasm in the policy community for promotion of formal savings among the poor—one of Indian Prime Minister Modi's flagship programs involved opening an account for every Indian household—the evidence is not entirely encouraging. From the large number of recent impact evaluations of savings interventions three facts stand out. First, low-income households sometimes save a large fraction of their earnings. Table A1 in the appendix reports average savings rates from a subset of experiments where the data is available. The total stock of savings is more than double the monthly income in several of the studies and more than 35% of monthly income in most of them. Second, despite these findings, treatment effects from savings promotion interventions tend to be small: Bachas et al. (2018) review the magnitude of the treatment effects for a large number of these interventions and conclude that none of them increase the stock of savings by more than 2% of annual income, on average. In fact, many of them have no discernable effect. Finally, one reason the impact is limited is that take up of the savings product on offer as a part of the intervention (which is usually subsidized) is often surprisingly low. A prominent recent study of the impact of providing access to savings services to the poor in developing countries reviews the evidence on the broad class of savings interventions and concludes:

> "However, one pattern does emerge: few products appeal to more than a small minority. Rather than simply expanding access to basic services, expanding access to a wide variety of products catering to many different needs may thus be needed to generate noticeable welfare impacts." (Dupas, et al., 2018)

Clearly, a key to designing effective interventions is to start from the correct theory of what constrains savings. The two main theories underlying most interventions are either a lack of access to formal savings opportunities or limited ability to commit to save. The typical interventions, therefore, either provide access to a bank account (e.g. Dupas & Robinson, 2013 in Kenya; Brune et al., 2017 in Malawi; Prina, 2015 in Nepal; Dupas et al., 2018 in Malawi, Uganda and Chile; and Somville & Vandewalle, 2018, among others) or offer some kind of commitment savings product (e.g. Ashraf et al., 2006 and Karlan & Zinman, 2018 in the Philippines; and Brune et al., 2017 in Malawi, Dupas & Robinson, 2013, in Kenya; Kast et al., 2018 and ; Kast & Pomeranz, 2014 for Chile).

Dupas & Robinson, 2013 in Kenya; Brune et al., 2017 in Malawi; Prina, 2015 in Nepal; Dupas et al., 2018 in Malawi, Uganda, and Chile; and Somville and Vandewalle 2018, among others) or offer some kind of commitment savings product (e.g., Ashraf et al., 2006 and Karlan & Zinman, 2018 in the Philippines; and Brune et al., 2015 in Malawi, Dupas & Robinson, 2013, in Kenya, Kast et al., 2018 and Kast & Pomeranz, 2014 and for Chile).

Given the relatively limited success of these interventions, recently an interest in other possible strategies for encouraging savings based on behavioral foundations other than commitment problems has arisen. Prominent among them is Karlan et al. (2016), who argue that limited attention to low probability but substantial expenses is a source of under-saving. Based on this assumption the authors design a set of SMS-based savings reminders that encourage savers to better plan for these eventualities and show that this strategy increases

savings in their pooled sample, covering Bolivia, the Philippines, and Peru. Another recent paper (Bachas et al., 2017) argues that lack of trust in the banking system constrains savings. They study the impact of making conditional cash transfer (CCT) payments directly into bank accounts with a corresponding debit card rather than cash payments and make the case that a savings account linked to a debit card makes it easier to monitor funds and, therefore, increases individuals' willingness to leave money in the savings account. Similar default payments have been shown to increase savings, for example, among factory workers in Afghanistan (Blumenstock et al., 2018), farmers in Malawi (Brune et al., 2016), and villagers in rural India (Somville & Vandewalle, 2018).[2]

In this paper, we introduce yet another reason why people may fail to save, inspired by the study of Drexler et al. (2014) on the impact of rules-of-thumb on small business owners' cash management. They find that the implementation of some decision rules—that might appear to be obvious—leads to an increase in business revenues. While the authors do not find a significant effect on savings, that was not their focus. We start from a closely related theory—given the vast number of different choices people need to make, they might find it useful to have some simple rules-of-thumb to guide their consumption and savings choices. Based on this theory, we design an intervention that provides households with a savings strategy (SS). The intervention includes rules-of-thumb to reduce spending on temptation goods and to encourage better budget planning. We show participants a video, give them a hard copy calendar with monthly printed reminders about their plan, and send them monthly SMS messages about their savings strategy over the course of the following year.

We carry out two side-by-side experiments to evaluate the SS intervention and compare it to the other behavioral interventions that have already been studied.

The first experiment was implemented between October 2015 and May 2016, included a control and three treatment groups, and involved 6,242 participants. The first treatment is the SS intervention described above. The second is inspired by and very similar to the savings reminder intervention in Karlan et al. (2016). In this treatment group, beneficiaries are sent personalized savings reminders by SMS every month for one year. As in Karlan et al., the messages are personalized according to each participant's savings objective as declared in the baseline survey.

The third treatment, known as the automatic savings plan (ASP), provides participants with access to a commitment savings account. The ASP is inspired by Ashraf et al. (2006) and the broader literature on commitment problems in savings (Blumenstock et al., 2018; Brune et al., 2017; Dupas & Robinson, 2013; Kast et al., 2018; Somville & Vandewalle, 2018). Everyone in this experimental population already has a basic *CuentaRUT* account, a transactional account. For those who do not already have a savings account, the intervention offers participants the opportunity to open a savings account that heavily penalizes frequent

[2] Other type of interventions focus on joint decision making (Seshan & Yang, 2014) and changes in interest rates (Schaner, 2018).

withdrawals and to transfer a pre-specified amount of funds from the *CuentaRUT* account into this savings account every month.

The fourth treatment is called *Chile Cuenta* (CC) was carried as a separate experiment between November 2012 and October 2013 and included 3,232 individuals. The CC treatment is very similar to the CCT treatment studied by Bachas et al. (2018). For CC, the CCT recipients in Chile are given the option to receive their subsidies by direct deposit into a their *CuentaRUT* accounts instead of by check. Since only 64% of this population had a *CuentaRUT* account at the outset, those who did not have a *CuentaRUT* account and wanted to receive their subsidy payments via direct deposit opened a *CuentaRUT* account.

To evaluate the first experiment, we use both administrative data from BancoEstado and survey data. We conducted a household survey from March to July 2017—approximately 12 months after enrollment began—among a sub-sample of the 2,049 households, collecting information on participants' financial status, entrepreneurship, asset accumulation, and subjective well-being. We complement this data with the administrative data that we use to measure the program's impact on savings balances, debt levels, and transactions for 13 months before and for 17 months after enrollment.

We find that the SS treatment has a significant and relatively large positive effect on formal savings of approximately $181.2 USD on a base of $544.2 USD in the control group. The effect on total savings, including informal savings, is significant and comparable in magnitude. The effect using administrative data is smaller (US$73.2) and significant at the 10% for the average savings in months 1 to 12. Using the information on the time horizon, we study the treatment effect by dividing individuals into two groups: long-term and short-term goals. For individuals with long-term goals, the effect of SS is positive and significant; for individuals with short-term goals, on the other hand, the effect is not significant. We also find no effect on realizing the baseline savings goal or on business outcomes, total debt, and expenditures. We also test if the SS treatment reduces spending on temptation goods, which was an integral feature of the treatment, and find that the SS treatment has an insignificant effect. Finally, the SS treatment has a positive effect on subjective financial security, consistent with the delivered strategies being useful for participants.

For the SMS treatment, the point estimate in the survey data is actually negative but not significant both for formal savings and total savings. The administrative data confirm a significant reduction in the transactional balance kept in the *CuentaRUT* account and that the negative effect is no longer significant when we add in the savings balance. Although this result contrasts with previous positive findings (Karlan et al., 2016; Abebe, Tekle, & Mano, 2018), there are some clues as to why this outcome might make sense. For example, there is a decrease in the probability of having retail debt using survey data. This result is consistent with the hypothesis that the treatment makes the goal more salient and, consequently, savers withdraw funds to pay for whatever they were aiming to purchase without increasing their debt level.

Turning to the ASP treatment, we find that it has a positive and significant effect of $134.3 USD on a base of $544.20 USD in the survey data. In the administrative data, we see that it has a positive and significant effect on the average savings balances of $92.3 USD from

months one to 12 after enrollment. This effect remains positive from month 13 onwards but then decreases its statistically significance and size over time. These results are consistent with the remainder of the literature that finds that default treatments have positive effects (Bachas et al., 2017). Concerning the time horizon of the savings goal, the ASP has a positive effect on savings for individuals with short-term goals but no significant effects for those with long-term goals. We also find that individuals in the ASP treatment are more likely to spend on the short-term baseline savings goal and tend to increase their spending on temptation goods. We also find that the ASP tends to marginally decrease trust in financial institutions, while the effect on perceived financial security is negative but very noisily estimated. Finally, the ASP has no effects on debt, other expenditures, or business outcomes.

To evaluate the effects of the CC intervention, which entailed changing the default mode of CCT payment, we use the data from a household survey administered to 924 individuals anywhere from two to three years after the treatment was offered as well as administrative data from BancoEstado covering from 12 months before and up to 33 months after the offer to change was made.

The CC intervention was popular, as evidenced by the high take-up rate of 53% (4% of the individuals in the control group also changed their default payment status). Despite the high take-up, we see that this intervention made no difference in total savings, debt, or well-being when using the survey data. Using administrative data, we find that balances increased in the transaction accounts into which the CCT deposits were made, but this is somewhat mechanical. However, when we analyze the overall effect on total balances in the bank, we encounter no significant effects. This result is not necessarily inconsistent with Bachas et al. (2017), who find a positive treatment effect from a similar intervention but argue that the effect is due to the fact that the savers learned to trust the banking system. It is possible that Chileans already have enough faith in the banking system.

Overall, the evidence is rather mixed. Both the SS and ASP interventions work if we take the savings reported in the administrative data as the appropriate measure during the first 12 months after the intervention, whereas only the ASP effect remains significant after month 12. When we focus on the survey data, it confirms a positive and significant effect one year after the offering for both SS and ASP. Furthermore, both treatments effects are indistinguishable from each other in both the survey and administrative data. By contrast, the SMS and CC treatments very clearly do not work, although there are plausible reasons why this is the case.

In terms of a broader message, the evidence strongly supports Dupas et al.'s (2016) aforementioned view that savings interventions need to cater to a particular context to be effective, and it is challenging to identify universally applicable interventions. The best-established behavioral intervention, ASP, does seem to work for a while within our context, but the effect dies out after one year. The other two relatively well-established interventions, SMS and CC, clearly do not increase savings levels. However, the SMS has an unexpected effect in decreasing retail debt. On the other hand, the good news is that the novel SS intervention seems to work as well as the ASP treatment. Although this evidence relies on the context of a specific experiment, it is compelling enough to consider SS deserving of further trial.

2. Experiment 1: SS, SMS, and ASP

2.1 Recruitment and Baseline Survey

This study was conducted in partnership with BancoEstado, a state-owned, autonomous financial institution. BancoEstado serves most of the financial needs of individuals in low-income groups in Chile, holds 92.8% of the savings accounts in the country, and maintains 88.7% of the savings in these instruments.[3] The intervention was implemented in 23 BancoEstado branches located in vulnerable urban municipalities in the Santiago Metropolitan Region of Chile.[4]

Study participants were recruited at different BancoEstado branches. They had to be older than 18 years of age, have an already-existing account with BancoEstado, and have or be willing to open a savings account at that particular branch.[5] Furthermore, individuals had to have a *CuentaRUT* account or be willing to open one. The *CuentaRUT* account is automatically connected to an individual's national identification number known as RUT (Rol Unico Tributario). Even though the *CuentaRUT* was needed to implement only one of the treatments, we required all study participants to have a *CuentaRUT* account to facilitate comparisons across treatments. For a detailed description of the offering process, see Annex 2.

There are several differences between a *CuentaRUT* account and a savings account that, overall, make a savings account more illiquid. For instance, the *CuentaRUT* card can be used as a debit card in several retail stores (*Caja Vecinas*), where BancoEstado clients can buy goods, make withdrawals, or pay utility bills. Funds from a savings account, on the other hand, cannot be used in *Cajas Vecinas*. There are currently more *Cajas Vecinas* than ATMs in the Metropolitan Region of Chile (6,378 vs. 3,503, respectively). Depending on the type, savings accounts have the advantage of offering between two and nine free withdrawals per year, while BancoEstado always charges a fee for withdrawals from *CuentaRUT* accounts. On the other hand, overdraft fees for savings accounts start at a minimum of $2.00 USD per withdrawal, while the overdraft fee for a *CuentaRUT* account ranges from $0.30 to $1.29 USD (see Annex 3 for a detailed description of the fee structure of each account).[6] *CuentaRUT* accounts are more liquid instruments than savings accounts. In our sample, the average number of withdrawals in the three months before the offering for those with

[3] Retrieved May 22, 2018 from http://www.sbif.cl/sbifweb/servlet/InfoFinanciera?indice=4.1&idCategoria=564&tipocont=905.

[4] Highly vulnerable municipalities were chosen in accordance with the Priority Social Index 2014 and in agreement with BancoEstado. The number of bank executives per branch and the presence of a maximum of two branches per municipality were taken into consideration. See Annex 1 for details. The Ministry of Social Development computes the Priority Social Index, which considers income, education, and health, to determine a municipality's level of social development.

[5] BancoEstado customers go to different branches where bank executives are specialized in savings or credit. We collaborated only with executives who work in this particular service area. By the end of the enrollment process, every participant had at least one savings account and one *CuentaRUT* account.

[6] Overall, BancoEstado savings accounts are similar to those used in the rest of the literature. See Dupas et al. (2018) for a summary of account characteristics from other studies and Annex 3 for a description of the savings account used in our study.

CuentaRUT was 3.1, and the average number of deposits was 0.5. The corresponding figures for savings accounts were 0.3 and 0.1, respectively.

If a BancoEstado client met the eligibility criteria, then a bank executive explained the project and invited the individual to participate in the intervention. If the client accepted, they had to sign a consent form that permitted us to use the bank's administrative data in our evaluation. Once the client signed the consent form, the bank executive provided them with a tablet used exclusively for our study and played a one-minute video explaining the project. Afterward, the individual was prompted to take the baseline survey.[7] The baseline survey included questions about education, labor market participation, family structure, reasons for saving, and whether the participant received government subsidies. After completing the survey, the participant returned the tablet to the bank executive.

Individuals were then randomly assigned to a treatment based on their national identification numbers and stratified by some specific information from their survey responses. The bank executives who administered the surveys had to tap a hidden button on the tablet to see the treatment assignment.[8] These bank executives were trained on the procedures to follow for each treatment and what to say during the offer process.[9] Table 1 reports the number of recruited individuals for this evaluation each month, and Figure 1 shows the intervention calendar.

The evaluation team trained the bank executives and continuously monitored the enrollment process. A team member visited every branch at least twice a week to supervise the process and collect material (e.g., consent forms and executive logs). Additionally, the investigative team developed a monitoring system by updating the bank data and consent form information weekly.

2.2 Experimental Design

Individuals were randomly assigned to four treatments: ASP, SMS, SS, and pure control. In Table 2, we show the treatment assignment. About 30% of the participants were assigned to the control group (N = 1,887), 30% to the ASP (N = 1,845), 20% to the SMS (N = 1,273), and 20% to the SS group (N = 1,237, 20%). We oversampled the control and ASP groups to

[7] The baseline survey had 11 questions and took an average of 14 minutes to complete.

[8] Individuals had to provide their national identification number. We subsequently used the last two digits of the number to assign the participants to each treatment. Before enrollment, we randomized the numbers that corresponded to each treatment for each stratum. Then, when individuals provided their identification numbers and answered the baseline survey questions, they were assigned to a treatment.

[9] In December 2015, after three months of recruitment, we engaged monitors at the largest bank branches to help increase enrollment. The monitors wore identification badges and approached clients in the waiting area to motivate them to participate in the project. If a client agreed to participate, they signed the consent form and took the baseline survey on the tablet. After the participant completed the survey, the monitor then saw the treatment assignment in the tablet and gave the client a card with a number that indicated the treatment assignment. The client subsequently gave this card to the bank executive. Approximately 54.2% of the participants (N = 3,208) were recruited by bank executives and 45.8% (N = 2,715) were recruited with the monitors' assistance. See Annex 2 for details.

increase the power because we expected a lower take-up rate for the ASP group than the other two treatments.

We asked individuals to declare their savings goals in the baseline survey. Table 3 illustrates that the two most common goals were: 1) to save to purchase a house (47%) and 2) unforeseen expenses (12%). People typically keep their savings for a house in a BancoEstado account since this is required to apply for housing subsidies. We stratified the sample by the housing saving goal since it was the most common goal and because it involved a longer-term commitment and, therefore, could potentially be associated with larger balances. We also stratified individuals based on whether they received a subsidy since this would imply that they maintained a regular income flow.

We designed the savings strategy treatment for this study and adapted and sent out SMS reminders. Only the individuals assigned to the respective treatments were offered these services. When we implemented this study, the ASP was already part of the savings services BancoEstado makes available to its clients; therefore, we only randomized the offer of this service. However, anyone seeking this service could receive it at any BancoEstado branch.

2.3 Treatment Groups

Once a BancoEstado executive saw an individual's treatment assignment in the tablet, the executive had to perform specific tasks depending on the assignment. For every treatment, the bank executive gave participants a set of plain pencils (without a logo) as a thank you gift for their participation. Also, since individuals in the SS treatment were given some items, giving all individuals a gift equalized the treatments and prevented individuals in the SMS, ASP, or control group from asking for materials that were not part of their treatment.

Treatment 0: Control Group

Individuals assigned to the control group did not receive any treatment. The bank executive did not offer them any new services and only opened the account that the client had requested upon their arrival at the branch.

Treatment 1: Savings Strategies (SS)

We developed strategies to help people lower their consumption of temptation goods. These five strategies included: 1) identifying temptations, 2) calculating how much one could feasibly save within one year by decreasing unnecessary expenses, 3) determining a concrete savings goal, 4) developing a budget and remembering that it is not necessary to cease all spending on temptation goods, and 5) saving money in the bank. These strategies were conveyed to participants in three ways: 1) a three-minute animated video shown on a tablet provided by the bank executive;10 2) a gift bag with several items intended to increase the individuals' savings, including a wallet with the program's logo and a magnet that served as a reminder of the strategies presented in the video; 3) and a calendar that reminded the

[10] The video is available at https://sites.google.com/site/clpmartineza/projects. A transcript of the video is included in Annex 4. If a monitor recruited an individual, then the video was shown on the tablet at the bank branch after the individual was assigned to a treatment but before they met with the bank executive.

individuals of a different strategy every month. Later in the treatment, individuals received monthly SMS messages that reminded them of the strategies. These monthly messages are recorded in Annex 3 and correspond to the messages contained in the calendar. For example, the SMS messages sent in January and February 2016 were: "[Participant's Name], if you want to save and it is difficult to avoid the temptation to spend, then it helps to remember your savings goal. BancoEstado," and "[Name], if you want to save, remember that spending Ch$4,000.00 weekly on unnecessary expenses or temptation goods adds up to Ch$208,000 per year. BancoEstado," respectively.[11]

Treatment 2: Short Message Service Savings Reminders (SMS)

Individuals in this treatment received monthly SMS messages for one year. These messages were individualized and reminded the participants of their individual goals, which they indicated in the baseline survey. For example, if the individual declared at baseline that they wanted to save for unexpected expenses, the monthly SMS said: "[Participant's Name], remember to deposit money into your savings account this month. Get closer to meeting your goal of saving for unexpected expenses! Greetings, BancoEstado." These messages were similar to those described by Karlan et al. (2016). Because the bank executives did not have to offer any services or help clients open a bank account, this treatment seemed no different from what the control group received from the bank's point of view.

Treatment 3: Automatic Savings Plan (ASP)

In treatment 3, the bank executive explained how the ASP works and then offered the service.[12] The ASP was a program that automatically transferred money from the participant's *CuentaRUT* account into their savings account. The individual could specify both the amount of money and the date on which the transfer would take place.[13] If the individual did not have a savings account, then they had to open one. If the participant had more than one savings account, they could choose into which account the transfer should be made. The only restriction was that the savings account had to be in the individual's name. This treatment is similar to the treatment used by Ashraf et al. (2006).

Table 2 shows the take-up rates for each treatment. With regard to the ASP, the take-up was defined as agreeing to enroll in the ASP at the time it was offered, and the take-up rate was 33%. For the SMS and SS treatments, take-up was defined as receiving at least one text message. The take-up rates for SMS and SS were 92% and 93%, respectively. In Table A2, we report the main predictors of take-up for each treatment. For ASP and SMS, age predicts take-up, and, for ASP alone, having worked or studied last week also correlates with take-up. There is no observed characteristic correlated with take-up for the SS treatment.

[11] Corresponding to US$6 and US$315, respectively.
[12] When inviting individuals to participate, bank executives were trained to ask, "Would you like to participate in a savings program that will automatically transfer the amount you choose into your savings account every month?"
[13] The minimum transfer amount was 1,000 CLP (approximately $1.50 USD).

2.4 Data

BancoEstado granted us access to individual-level data on monthly savings and debt balances from September 2014 to September 2017 for all financial instruments and transactional data for bank accounts.[14] Since the offer process took place from October 2015 to May 2016, we have 13 months of pre-enrollment and 17 months of post-enrollment administrative data for every participant. We construct the pretreatment data as the average for the 13 months before individuals were enrolled.

To complement the administrative data, we conducted a household survey between March and July 2017 for a sub-sample of the participants.[15] The survey collected information on total savings, including formal and informal savings, debt, well-being, and employment, among other variables. The savings data collected in the survey include savings amounts at all financial institutions (not just BancoEstado) and, therefore, allows us to study the program's impact on savings beyond the partner bank and on informal savings.

Besides the information on savings accounts, the BancoEstado data include the balances and transactions recorded in the *CuentaRUT* accounts. Although this account is not designed for savings purposes, individuals might maintain balances in the *CuentaRUT* account for this purpose. We report the effect on this instrument by itself and combined with each individual's savings accounts balance. We name the sum of the balance in *CuentaRUT* and savings accounts total savings. The details of these reports are contained in the data appendix in Annex 5.

2.5 Summary Statistics

Table 4 provides the summary statistics for each treatment. Column 1 reports the number of observations. Columns 2 through 5 report the average level of each variable by treatment, and Column 6 shows the *p*-value for the test that all treatments and control means are the same. Panels A and B report the results for the bank data, and Panel C reports the results from the baseline survey variables. The variables related to balances and transactions were top-censored at the 99th percentile to eliminate outliers (similar to Bachas et al., 2017; De Mel, McIntosh, & Woodruff, 2013; Karlan et al., 2016).

Within the control group, the average amount of savings in the savings accounts is $224.40 USD.[16] Regarding the use of savings accounts, 51.2% of the control group has a positive balance. In Column 6, the *p*-value of the equability of means of savings balances is 0.669, which indicates that there is balance across treatments.

The average *CuentaRUT* account balance is $78.20 USD for the control group, which is balanced across treatments. In this same group, 71.4% of individuals have a positive balance in their *CuentaRUT* accounts. The average balance of *CuentaRUT* accounts is balanced

[14] We present the BancoEstado savings account characteristics in Annex 3.
[15] We sent the entire experimental sample to the survey firm, which administered the survey to 2,049 individuals.
[16] All amounts report real prices in USD for the same month in September 2014.

across groups (*p*-value = 0.104). However, the SMS group has a higher balance than the other treatment groups.

We added the balances in all of the saving accounts and *CuentaRUT* accounts to indicate the amount of resources individuals have in relatively liquid and formal instruments, which was equal to almost $314.5 USD for the control group and with no statistical differences from the other treatment groups.[17] The probability of having a positive balance when we include the *CuentaRUT* account and the savings account balances together is 85.4% for the control group. This percentage is not balanced across groups, as the ASP and SS groups have a lower percentage than the control group.

Regarding non-mortgage debt levels, the average amount of debt among the control group at baseline is US$169.4, with 6.6% of the control group with some debt at the baseline. Debt levels and their extensive margin are balanced across groups.

In Table 4, Panel C reports the means and balance test for the individual characteristics gathered from the baseline survey. The first two variables (i.e., saving for a house and subsidy recipient) are used to define the stratification cells. We observe that 46.8% of the participants report saving for a home, and 42.1% report receiving subsidies. Both variables are balanced across treatments. Among the participants, 29.4% are male, the average age is 34, and the most common educational achievement level is high school, which 52.2% of the control group completed. Most participants had worked the week prior to enrollment (63.00%), and the average per capita household income is $275.56 USD. All of the mean variables are balanced, except for gender and the probability of being studying, when comparing with the control group, and the high school dummy when comparing SMS with ASP.

Overall, taking into account the number of hypotheses tested, the random assignment seems to have provided comparable groups, which supports the internal validity of the results. Moreover, we perform a regression to study if covariates can predict any treatment. Table 4, Panel D shows the *p*-value of the F-test that all covariates are zero. For all comparisons, the null is not rejected. However, to provide conservative estimates, we control for any pretreatment differences in covariates across treatments.

2.6 Empirical Strategy

The identification strategy relies on the random assignment of each eligible individual to either a treatment or the control group. This approach ensures that individuals in each group are, on average, similar. We estimate the intention-to-treat (ITT) effects of the SS, SMS, and ASP treatments on outcomes Y_j for each individual. The main estimated equation is:

$$Y_i = b0 + b1*ASP_i + b2*SMS_i + b3*SS_i + a1* Y_{i,pre} + a2*X_i + u_i, \quad (1)$$

where Y_i is an outcome variable (e.g., the monthly balance); *ASP*, *SMS*, and *SS* are indicators of the treatment status; and $Y_{i,pre}$ is the pretreatment mean of the dependent variable. In

[17] After the sum was generated, all categories were "winsorized," and this is why the sum of the "Total Savings and *CuentaRUT* Account" balances together are not equivalent to the sum of these two separate balances.

addition, X_i is a set of dummy variables indicating the stratification cell (defined by the intention to save for a house and receipt of subsidies) and the variables that control for the characteristics of the offer process: a dummy that identifies whether the monitor or executive served as recruiter, dummies for the bank executive's name, and dummies for the month of enrollment and branch fixed effects. We also include gender and primary and secondary attainment dummies that are unbalanced at baseline.[18] We report all results with robust standard errors.

We use this equation (without $Y_{i,pre}$) to perform a monthly balance test throughout the 13 months before enrollment. In post-enrollment regressions,[19] we also include *CuentaRUT* accounts and the debt baseline amounts, which are unbalanced at the baseline, and monthly dummies to consider potential seasonality. In addition, we include per capita income and a studying dummy as a significant predictor of the rate of response to the survey.

2.7 Results

In order to facilitate our analysis, we report the parameters from Equation 1 in figures instead of tables for each month. As mentioned above, we also use Equation 1 to test the monthly balance on the variables before enrollment, which is why we report the results for the 13 months before and 17 months after enrollment completion. The specifications are different for these two periods because we control for variables that are unbalanced during the post-enrollment months. In each graph, we plot the ITT for each treatment and compare it to the control group, indicating its significance level. We also report effects on average balances for the first 12 months after offering and for months 13-17 separately. It is worth mentioning that savings balances in the control group increased from $282.30 USD before the month of enrollment to $521.98USD one year after the offering date. Therefore, all effects should be considered relative to this trend.

A. Survey Data

Survey sample

In this study, 2,049 individuals took the survey. Since those interviewed might not constitute a random sample of all participants, we studied to what degree the survey sample represents the study population. We addressed this in two ways. First, Table A3 shows the correlation between the probability of not being in the sample and the treatment assignment without controls, with controls (baseline characteristics), and with controls interacting with the treatments. We found no case in which the treatment assignment predicts having been surveyed; in other words, there is no evidence for differential attrition by treatment.[20]

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[18] We also included a dummy indicating the 55 cases in which the same executives offered a product to more than one person on the same date and time. A given executive could potentially enroll two individuals at the same time, which is what this variable indicates.

[19] The first month after enrollment corresponds to the month in which the offer was made because dependent variables are measured at the end of the month.

[20] Columns 2 and 3 show that males and those with a greater per capita income were more likely to participate in the survey.

Second, we estimated Equation 1 by including a dummy defined as 1 if the participant was surveyed and 0 otherwise. Figure A4 reports the coefficient on the interactions of this dummy with each treatment assignment dummy when the dependent variables are: savings, *CuentaRUT,* and savings and *CuentaRUT* balances, respectively. The point estimates are small and statistically significant in only very few cases. Considering both results, we found no evidence of sample selection when comparing the survey and administrative samples.

Evidence on the "First Stage"

To check whether the treatments were delivered as planned, we asked participants if they had an ASP, if they received an SMS from the bank, and if they had received gifts when they visited the bank. In Table 5, Panel A, we found that individuals assigned to both the SS and SMS treatment groups report having received more SMS messages than the control group. In addition, we found that individuals in the SS group are more likely to receive individualized messages related to strategies and that individuals in the SMS group are more likely to receive messages containing general strategic reminders. Individuals in the SS group are more likely to report having received the treatment gifts, and more individuals in the ASP treatment report having signed up for the ASP than the control group. These results demonstrate that the intervention was implemented according to the protocol and that treatment assignment randomization was respected.

Effect on Savings

The survey asked participants to report all of their formal savings at financial institutions. This information allows us to test whether the participants moved money to BancoEstado accounts from accounts at other institutions. In fact, a comparison of survey and administrative data of formal savings indicates that the survey captures savings from more financial institutions, since the average savings balance for the control group is US$544.2 in the survey and US$522 in the administrative data (at month 12, which is the closest to when the survey was administered).[21] In addition, in the survey, participants reported informal savings, which are measured as savings at home, in their businesses, via a Rotating Savings and Credit Association (ROSCA), or kept by someone else. Access to information about informal savings allows us to study whether the participants decided to move their informal savings into formal savings accounts in response to the treatments.

Table 6 reports the treatments' ITT impacts on savings balances in survey (panel A) and administrative data (panel C). Panel A shows the impact for the participants' total formal savings and their total individual savings (including informal savings[22]). Column 1 shows that 82% of the control group's savings are formal. Column 2 reports the ITT coefficient for SS, which demonstrates a large positive and significant effect on savings accounts that

[21] There is no significant difference between savings balances in the administrative (month 12) and survey data for the control group (Available upon request).
[22] Informal savings include savings at home, in a business or ROSCA, and savings kept by another person.

indicates a 33% increase in savings balances. However, the coefficient size declines slightly but is still significant when informal savings are included.[23]

Table 6, Panel A, Column 3 shows that the SMS treatment has a negative effect on savings balances, but this effect is not significant. When informal savings are included, the coefficient size increases and is still not significant. Column 4 shows that the ASP results in a 24.6% increase in balances, which is significant at the 5% level, and, therefore, has a positive effect on savings account balances. However, once informal savings are included, the coefficient size declines substantially, its variance increases, and the effect is no longer significant (*p*-value = 0.20). In Table 6, Panel B, we report the *p*-values of the test of the significant difference between each treatment. We reject that the SMS has the same effect size as SS and ASP, but we cannot reject that the ASP has the same effect size as SS (*p*-values = 0.583 for formal savings and = 0.393 for total savings).

Overall, when considering all financial institutions, the results indicate that the ASP and SS can increase formal savings. However, when we include informal savings, the effect size decreases and is not significant for ASP, which suggests that some of the effect is a shift of savings from informal to formal instruments.

Effect on Other Outcomes

In Table 7, Panel A, we studied the treatment effect on several measures of entrepreneurship outcomes (sales, number of workers, and assets) and found that no treatment had any effect on these outcomes. Panel B reports the effects on a subjective financial security index. This index is the sum of the rated responses to three questions: 1) How would you describe your household's economic situation?; 2) How complicated is your household's economic situation?; and 3) How financially secure do you feel about your household's economic situation? We find that the SS treatment has a positive and significant effect at the 5% level on financial security, while the ASP has a negative effect that differs significantly from the SMS and SS's effects.

Finally, in Table 7, Panel C, we report the coefficients on subjective financial knowledge and financial trust. Financial knowledge is the sum of three rated questions about the degree to which participants agree with the following statements: 1) I understand what an interest rate is; 2) I know where to open an account in order to save in the formal financial system; and 3) I know how to open an account in order to save in the financial system. The Financial Trust Index is determined by calculating the sum of rated responses indicating the degree to which participants agree with the following statements: 1) Having a savings account is too expensive; 2) I am afraid that having a savings account might entail additional costs; and 3) Opening a savings account is necessary. The results presented in Panel C indicate that only the ASP decreases individuals' trust in financial institutions and that the ASP has no effect on financial knowledge.

[23] The coefficients found by means of the survey are larger than those found in the administrative data. This could be explained by the fact that individuals in the survey had larger (though not significant) balances in BancoEstado accounts (especially in the SS treatment group, see Figure A3) and because the survey collects information on the entire financial sector.

B. Administrative Data

Savings Balances in Partner Banks

The results obtained based on data from the partner bank might differ slightly from the results obtained from the survey data. One reason for the difference might be because the survey asked individuals about the balance of their savings accounts, which includes all banks and financial institutions, while in the administrative data we only have figures from the partner bank. In addition, we did not explicitly ask for the balance information of the *CuentaRUT* accounts, so individuals may or may not have included their *CuentaRUT* account balance in their savings balance. Finally, there is sample variation. As previously mentioned, we find that there are no statistical differences between savings accounts balances and total balances for individuals in the sample survey (see Figure A4). However, those who participated in the SS treatment and took the survey have higher balances than the rest of the individuals in the SS group. This result, therefore, might explain why we find that SS has larger effects using survey data compared to administrative data.

We report results on savings accounts, CuentaRUT balances, and their sum. Although the *CuentaRUT* account is not intended to function as a savings account, individuals can use it for that purpose. In fact, in the follow-up survey, 22% of individuals mention that *CuentaRUT* accounts could be used for savings purposes. Since we required all participant to have (or to open) a *CuentaRUT* account, we report the impact of the treatments on this transactional for two reasons: 1) to identify potential savings in this account and 2) to study the potential shift of balances from the *CuentaRUT* accounts to savings accounts.

We report results taking averages over several months (Table 6, Panel C) and month by month estimates (Figure 2). Table 6, Panel C shows the treatment effects on average balances for months 1–12 and 13–17 after the intervention. Column 2 reports the ITT coefficient for SS, showing a large positive and significant effect on savings accounts that indicates a 14% increase in savings balances in months 1–12 and no effect on *CuentaRUT* balances. When both accounts are considered, the effect size increases and is still significant (at the 10% level). However, the coefficient size declines and is not significant when considering months 13–17.

Table 6, Panel C, Column 3 shows that the SMS treatment has a negative effect on *CuentaRUT* balances that is significant in both time periods. The effect on total balances is negative but not significant. Column 4 shows that the ASP results in an 18.4% increase in balances in months 1–12 and 14.7% for the following six months. However, once *CuentaRUT* balances are included, the effect is only significant in the first time period (in the second, the effect is still positive, with a p-value = 0.107).

In Table 6, Panel D, we report the p-values of the test of the significant difference between each treatment. We reject that the SMS has the same effect size as SS and ASP, but we cannot reject that the ASP has the same effect size as SS (p-values = 0.816 for months 1-12 and = 0.849 for total months 13-17).

Going to the month by month estimates, Panel A, Figure 2 shows that the ASP treatment positively impacts savings account balances, which increase up to ten months after treatment began and then subsequently decrease. The effects of the ASP are significant from months

seven to 11, and the effects of the SS are significant during month six. The SMS coefficients, on the other hand, are mostly below 0 but are never significant. These are consistent with the average effects reported in Table 6.

The coefficients reported in Figure 2, Panel B show that SMS and ASP have a negative effect on the *CuentaRUT* balance every month, whereas the effect of SS is negative starting in month nine. This negative effect is significant for SMS for 16 of the 17 months.

In Figure 2, Panel C, we report the effect of all accounts (savings accounts and *CuentaRUT* accounts). The results show that the ASP still has a positive and significant impact on balances in the course of 6 months after the offering, and the SS treatment follows the pattern of the ASP and is marginally significant at three months. The SMS coefficients, on the other hand, are always negative and statistically significant only in month 15 after the enrollment.

Our finding of an increase in savings balances and a decrease in *CuentaRUT* account balances for SS and ASP is consistent with the transfer of funds from transactional accounts to savings accounts. For SS, this movement might reflect a change in behavior, even though the coefficients are mostly not significant. However, for the ASP, it is partly mechanical since transfers from *CuentaRUT* accounts to savings accounts occur automatically. Since the SS and ASP treatments exhibit a similar pattern in terms of effects, we test the hypothesis that all coefficients for SS and ASP are similar, and we do not reject similar effects for balances in savings accounts and total balances, with a *p*-value of almost 1 in both cases (see Table A4).[24, 25]

Because an individual's savings goal can affect their behavior, we study the effect of the time horizon on bank balance accumulation. Using the goal that an individual indicated in the baseline survey, we define an indicator variable of goal horizon and distinguish between short- and long-term goals.[26] We estimate Equation 1 by including a dummy for goal horizon and an interaction term of this dummy and the treatment variables. Figure 3 shows the effect for individuals with short-term goals, which is the sum of the treatment indicator and the interaction of the treatment indicator; and with long-term goals, which is the treatment indicator. For example, in the left and right panels of the graph, a positive coefficient implies that balances are greater if the baseline goal was either short-term (left) or long-term (right) for those assigned to the control group who had either a short-term or long-term goal.

[24] We also find that there are statistical significances between SMS and the other two treatments.

[25] Analyzing the extensive margin, we find that no treatment has an impact on the probability of having positive balances in the savings accounts. The point estimates for *CuentaRUT* accounts are positive and significant for SS over several months, which implies that individuals in these treatment arms maintained positive but smaller balances in their *CuentaRUT* accounts compared to the control group. The effect on account possession is irrelevant because all study participants were required to have them.

[26] The short-term savings goals include: unforeseen expenses, medical or dental expenses, holidays, gifts, expenditures on cars or bicycles, ceremonies and special events, household items, electronics, birth of a child, entrepreneurship, one's own education, children's education, and "other motives." The long-term savings goals include: retirement, home repairs, and purchasing a house. The goal to simply "have savings" was not included among the short- and long-term goals because it does not indicate identifiable expenses.

Compared to the control group, individuals in the SS group with long-term goals significantly increase the balances of their savings accounts (Figure 3, Panel A) and increase their total balances for the whole period (and are statistically significant for the first six months after the intervention). For those in SS with short-term goals, we find a positive and not significant effect on their total savings. These patterns indicate that SS positively impacted those with long-term goals. On the other hand, the ASP seems to be more effective at increasing savings for those with short-term goals. The left graph of Panel A shows that the ASP effects for individuals with short-term goals are between$115 and $160 USD from months five to 14, whereas the figures for those with long-term goals are between $15 and $57 USD. Total balances increase for those with short-term goals, as seen in Panel C. For SMS, there is a striking decrease in *CuentaRUT* account balances for all individuals. Therefore, there seems to be a differential effect for time horizons. Individuals in SS with long-term horizons seem to increase savings, and individuals in the ASP with short-term horizons increase savings.

Effects on Transactions at Partner Bank

The observed effects on account balances may arise from different patterns of deposits and withdrawals. To understand what causes balances to increase (e.g., more deposits or fewer withdrawals) and to determine whether the treatments affected these patterns, we first study whether the withdrawal pattern is associated with the days on which we sent text messages.[27] In practice, participants could withdraw or deposit money immediately after receiving an SMS message. In this way, their behavior could be understood as driven by the messages. The results are presented in Annex 6, Tables A6.2 and A6.3. SMS participants made fewer withdrawals and more deposits into their savings accounts after receiving the SMS messages, while SS participants made fewer withdrawals but did not change their deposit behavior.

We observe that all coefficients of the treatment assignment have the same sign for deposits in savings accounts, and it is only significant for ASP. This positive effect is consistent with ASP deposits being made during the first days of the month: for example, in March 2016, 50% of the ASP deposits in the control group took place on the first five days of the month. Regarding withdrawals from savings accounts, the coefficients are positive for SS and SMS and negative for ASP. These behaviors indicate that ASP increases the balance both by an increase in deposits and a decrease in withdrawals during the first days of the month. The coefficients for *CuentaRUT* are all negative and significant, consistent with a decrease in withdrawals for all treatments at the beginning of the month. This finding is not consistent with participants withdrawing money immediately after receiving an SMS message.

Secondly, to understand transaction behavior, we study the treatment effect on monthly deposits and withdrawals. For example, we study whether individuals in the SS group either withdraw their money less often or deposit money more frequently than the control group. In Figure 4, we present the treatment effects on the probability of depositing into or withdrawing from savings and *CuentaRUT* accounts. For SS, there is no clear pattern in deposits. For all treatments, we observe a small increase in withdrawals from savings accounts after month nine (see Figure 4, Panel B), which is consistent with the decrease in the savings balances.

[27] The SMS and SS texts were sent on the same day.

We also study whether individuals in the ASP withdraw their money more often than the control group, thereby reversing the treatment, or whether they seemingly forget that money is being transferred automatically from their *CuentaRUT* accounts to their savings accounts. We also examine how this behavior changes over time. Figure 4, Panel A shows that the probability of deposits for the ASP increases, but this is partially mechanical.[28] This pattern is consistent with the balance changes in all treatments and suggests that the decrease in savings that occurs after month ten is due to an increase in withdrawals and not a decrease in deposits. This positive effect on deposits is higher for individuals with short-term goals.[29]

Regarding the probability of making a deposit and withdrawal into/from *CuentaRUT* accounts (see Panel C and D), only the SMS has negative and significant effects on deposits. Therefore, the decrease in the balances of the *CuentaRUT* accounts observed in the SMS treatment seems to be caused by a decrease in deposits and not an increase in withdrawals.

2.8 Interpreting the Results of Experiment 1

According to the survey data, the SS has somewhat larger effects than the ASP, and both effects are significant. In administrative data, both the SS and ASP have positive and significant effects, with the ASP having a larger effect. These effects decrease over time. On the other hand, SMS reminders have—if anything—a negative effect on savings balances as well as a consistent and negative impact on *CuentaRUT* account balances. The ASP effects are similar to SS effects, and they are significant. The decrease in savings account balances observed in the ASP in later months seems to arise from an increase in withdrawals. However, these are ITT effects, since most people receive the SS and SMS, while only one-third of participants make up the ASP treatment group. While the estimated ITT impacts of SS and ASP are similar, this suggests that the ASP effect is due to a larger impact on a smaller number of people.

Effects on Saving and Spending Patterns

To examine the effects on saving patterns, we examine whether the changes in savings balances result from participants making large withdrawals. To estimate this effect, we established an indicator variable that takes a value of 1 if the balance change was larger than 90% in absolute value. We report the results in Table A5 for the first nine months and months 10 to 17 separately. SS is less likely to lead to large withdrawals than the control group in the first nine months after enrollment began, consistent with the increase in balances for the same period. This result is consistent with SS increasing savings by decreasing the amounts withdrawn in the first months of the intervention, while previous results suggest that ASP increases savings by increasing deposits. For months 10 to 17, all treatments show a positive

[28] In order to study the mechanical effect, we would need to identify the transfers from the *CuentaRUT* accounts to the savings accounts. We are unable to do so, however, because this type of transaction is not recorded in the transactional data. Yet, since the number of monthly deposits increased by approximately 0.05, and since the difference in the take-up between the ASP group and the control group was approximately 0.18, the change in the number of monthly deposits of those participating in the ASP was, on average, 0.28. Since this number less than 1, we can rule out that this change is due to a full mechanical effect.

[29] These results are available upon request.

effect on large withdrawals, consistent with the decrease in balances observed for all treatments.

Continuing this extensive examination of how the interventions worked, we now turn to differences in how the interventions affected spending and borrowing patterns.

Effects on Spending and Borrowing Patterns

In the household survey, we asked every individual if they spent money in the last 12 months on the baseline goals toward which they were saving. Then we created a dummy variable that identified whether an individual spent money on the goal.[30]

To study consumption patterns, we asked individuals about their expenditures in the previous month on more frequent consumption items, such as food, health, education, alcohol, and gambling, and we collected information on spending throughout the prior 12 months to determine their less frequent expenditures (e.g., electronics). To determine debt, we collected information about the type of debt each individual had incurred and the total amount of debt owed. Next, we explore the effect that the treatments had on these variables.

The pattern of the total balances across time (an increase in balances followed by a decrease) is consistent with individuals having reached their savings target and then withdrawing the money from their accounts. In Table 8, Panel A, 33.6% of the individuals in the control group spent some money in the last 12 months on the goals that they declared at baseline, a figure that corresponds to 37.9% (7.8%) if it was a short(long)-term goal. Only individuals in the ASP treatment with short-term goals had a significantly different rate (13.6 percentage points higher than the control group). This significant difference is consistent with an increase in savings balances and a corresponding increase in savings goal achievement for the ASP. The temporary increase in savings and the characteristics of goal achievement are consistent because they signify that the ASP treatment participants successfully increased their savings only for short-term goals corresponds with the level of the monthly savings effect: approximately $60.00 to $85.00 USD. Based on the short-term goals reported at baseline, this amount of money would be sufficient to cover the cost of these short-term goals.

In Panel B, we tested the effect of the treatments on spending in the month before the survey on temptation goods (e.g., cigarettes, alcohol, and entertainment) was conducted. We also tested for the effects on spending on durable electronic goods bought during the 12 months before the survey was administered and on health, education, food, and additional consumption in the previous month. We found that, while the SS and SMS do not affect group temptation spending, the ASP increases spending on temptation goods by almost $7.00 USD. Since these goods are not part of the savings objective, this result suggests a portion of additional savings could have been spent on the items in this category (i.e., temptation goods). We also found that SS significantly lowers health spending and has a negative but insignificant effect on spending on electronic goods and food. The SMS, on the other hand, has a negative but insignificant effect on electronic spending. Likewise, the ASP tends to

[30] This module had a high non-response rate: of the 2,049 individuals in the sample, only 1,253 individuals provided this information.

lower spending on education, health, food, and overall consumption, but the effects are not significant.

In Table 9, we studied the treatments' effect on total debt and the probability of holding different types of debt.[31] Type of debt is a self-reported indicator of having bank credit, line(s) of credit, retail credit card(s), consumer credit, and mortgage credit. Total debt is also self-reported. We find that none of the interventions had a significant or sizable impact, except for the SMS intervention, which significantly decreased the likelihood of having borrowed from a line of credit and a retail credit card. We also study the effect of each treatment on debt amounts in the administrative data and observe no significant impact for any treatment (see Figure A2).[32] Finally, we perform a difference in difference analysis using administrative data, using as reference the period before the offering and analyzing if there was an effect on debt one to 13 months after the offering or 14 to 17 months after the offering. Table A6 shows the difference in difference coefficients, and we find that the SMS treatment decreases total debt level by $38.4 USD after month 13, but the result is not statistically significant. For SS and ASP, we find smaller and insignificant results. It is important to mention that the change in debt we find in the survey data for SMS is for debt that cannot be captured in the administrative data. Thus, these results are complements of each other.

The aforementioned results complicate our ability to interpret the impacts of the interventions. For example, in the ASP case, one might ask whether the intervention could be considered a way to curb short-termism—the very theory that inspired the intervention—by substituting short-term savings goals with more long-term objectives like education and health.

Understanding the SS Effect

In Table 7, Panel D, we test whether the SS increased budget planning, which was one of the SS treatment's rules-of-thumb, and we find a small insignificant negative effect. In Table 8, Panel A, we show that the SS treatment had a small and positive but not significant effect on spending on the original goal. As stated before, the SS treatment did not affect the consumption of conventional temptation goods, but it did result in a considerable but not significant reduction in the purchase of electronics, which is another potential category of temptation goods. The SS did not affect debt.

In sum, the treatment increases savings shortly after the offering and appears to work by making individuals mindful of spending and, consequently, giving them a greater sense of

[31] The high variance in the amounts of debt resulted in imprecise estimates.

[32] We calculate net savings, adding savings and the balance in *CuentaRUT*, the balance in other checking accounts, and then subtracting debt. Figure A3 shows the results for the net savings variable. We find a similar pattern compared to the effect of total savings. The treatments ASP and SS have a positive effect, with a peak around month ten after the offering, decreasing afterwards. Treatment SMS has mostly a negative effect. However, due to variability on the variable, almost none of the coefficients are significant.

financial security. However, we do not find evidence that individuals are more likely to achieve the original savings goal or modify the behaviors included in the actual strategies.

Understanding the Negative SMS Effect

Several hypotheses are consistent with the SMS treatment's negative effect on *CuentaRUT* accounts. For instance, individuals could have become annoyed by the SMS messages and withdrawn their balances from BancoEstado. The SS treatment also delivered monthly (albeit different) SMS messages to participants, and these messages had no negative effect on *CuentaRUT* account balances. Therefore, the SMS content—not the SMS itself—likely had a negative effect. Recall that the SMS focused on the participants' savings goals reported at baseline, which in Peru, Bolivia, and the Philippines positively affected savings (Karlan et al., 2016).

An alternative hypothesis for the negative effect of the SMS is that the SMS made the end goal of saving too salient; consequently, instead of inducing savings, it induced consumption. In order to test this hypothesis indirectly, it is necessary to study the effect of spending on the savings goal reported at baseline. We study this effect and report our results in Table 8, Panel A. We find that SMS messages had a positive and almost significant effect on spending on the original goal (*p*-value=0.52). The point estimates for spending on short-term goals more than double the point estimate of spending on long-term goals, with similar *p*-values of 0.22. These savings seem to result partly from reduced spending on electronics. There is also a substantial decrease in the probability of retail debt (Table 9).

Therefore, there is suggestive evidence that individuals receiving SMS messages read the message, understood the message, and used *Cuenta RUT* balances to increase consumption of their short-term savings goal instead of using debt to finance it.

3. Experiment 2: *Chile Cuenta*

In the second experiment, we collaborated with the Chilean government and BancoEstado to test the effects of receiving CCT subsidies as a direct deposit into a bank account rather than by check. The CCT program in Chile is called *Programa Puente*. Before this experiment began, the beneficiaries of the program received their subsidy by check, which were delivered to them by Cajas de Compensación, a private, non-banking institution that is part of the social security system in Chile.

As part of this experiment, *Programa Puente* beneficiaries were offered the opportunity to receive their subsidy payments by direct deposit directly into their *CuentaRUT* accounts rather than by check. However, they could still opt to receive their subsidy payments in the form of a check. If the beneficiaries chose to participate and did not have a *CuentaRUT* account, they had to open one. At the time of the intervention, 62% of the beneficiaries did not have a *CuentaRUT* account. Consequently, when they were offered the opportunity to

switch how they received their payments, some of these participants had to open a bank account.[33]

Enrollment in this experiment was conducted from November 2012 to October 2013. We randomly selected 3,200 individuals from five municipalities in greater Santiago, Chile, to participate in the intervention called *Chile Cuenta*. Individuals assigned to the control group were not offered the option to receive their *Programa Puente* subsidy payments via direct deposit, but they could ask to receive their subsidies in a *CuentaRUT* bank account instead of as a check that could later be cashed at a bank branch. Annex 7 contains the specifics of the intervention and experimental design.

We evaluated the program using administrative data from BancoEstado and a household survey. The administrative data from BancoEstado are similar to those available from Experiment 1 and were collected from November 2011 to February 2016. This range enabled us to obtain information from one year before the intervention began until three years after it was implemented. The household survey was conducted two to three years after *Chile Cuenta* was offered, meaning between December 2015 and February 2016. The response rate of the survey was 57%, and it is not correlated to treatment assignment. We performed an attrition analysis to study whether the response rate depended on some observable characteristics. We also interacted the baseline characteristics with attrition and found that baseline characteristics and their interactions had no statistically significant effect on selection (see Table A8.4 in Annex 8).

The treatment and control groups are well-balanced in savings and *CuentaRUT* account balances and most household characteristics. The F-test of differences on a set of variables indicates no statistical differences between these two groups. On average, 85% of the sample is female, about 36 years of age, and lives in a household with three members. The average balance that participants had in their *CuentaRUT* accounts before they were given the option to change how they received their default payment was $15.00 USD, while the average balance they had in their savings accounts was $124.00 USD (see Table A8.5 in Annex 8).

3.1 Empirical Strategy

Our empirical strategy relies on the random allocation of each eligible individual to a treatment group. We base our basic regression on the following equation:

$$Y_i = b_0 + b_1 T_i + b_2 Y_{i,pre} + S_{i,j} + \varepsilon_i, \quad (2)$$

where Y_i is the outcome of interest (e.g., savings, debt, well-being); T_i is a dummy for treatment; $Y_{i,pre}$ is the average of the dependent variable before the treatment began (when available); and $S_{i,j}$ are strata fixed effects, offering date and calendar month fixed effects, and unbalanced variables (i.e., the number of children from 0 to 5 years old, the number of

[33] We studied whether the treatment effect was different based on whether the participants had *CuentaRUT* accounts when the study began, and found no evidence of heterogeneity by that variable. The results are available upon request.

adults from 30 to 45 years old, and the debt balance value at baseline). We report robust standard errors. Since 53% of the treatment group agreed to change their default method of payment and 4.2% of the control group also switched to automatic bank deposit, the treatment parameter can be interpreted as an ITT effect.

We use the same equation in Experiment 1 to perform a monthly balance test for the administrative data for the 12 months before the offering. Since the treatment was primarily offered at the end of 2012, we have 29 months of administrative data for the whole sample and 33 months of administrative data for 93% of the sample.

3.2 Results

First, we present the effects of offering payment by direct deposit using the household survey, which allows us to study the effect of savings on the entire financial system and informal savings. The results presented in Table 10 show that individuals in the treatment group had lower formal and informal savings than the control group after the intervention, but the differences are not significant. We also test for potential effects on entrepreneurship outcomes, subjective well-being, and debt; in each case, we find no statistical differences between the treatment and control groups (Annex 8, Tables A8.6 and A8.7). There is also no significant impact on debt levels.

Next, we estimate the effect of *Chile Cuenta* using data from Banco Estado. Using the same variables used in the analysis of Experiment 1, in Figure 5, we present the effects of *Chile Cuenta* on savings account balances (Panel A), *CuentaRUT* account balances (Panel B), the sum of the balances of both types of accounts (Panel C), and debt amounts, not including mortgage debt (Panel D). We observe that these variables are mostly balanced only a few months before the intervention and show statistically significant differences between them.

In terms of effects, similar to the survey data in Panel A, the effects on saving balances were close to 0 for the first nine months following the offer, after which they became negative; they were never statistically significant. We observe a positive effect on the balances in *CuentaRUT* accounts (Figure 5, Panel B), which is partially mechanical because participants in the treatment group who accepted the offer received their subsidies by automatic direct deposit. This positive effect was statistically significant throughout the 27 months after the program was offered and ranged from $10.00 to $20.00 USD, which is similar to the *CuentaRUT* account balances at baseline.[34] After adding up the balances of all the accounts (Panel C), we observe a positive effect for the first 12 months and from months 21 to 30 after the offering began. In this instance, however, the coefficients are small and never significant. These results imply that the direct deposit default did not translate into higher savings overall; and that the effect on the account receiving the deposit disappears in the long term.[35] Finally,

[34] We do not have access to the individual subsidy amounts, but individuals in the first decile that corresponds roughly to our participants received on average $81.00 USD per month. If they kept this amount for one day, then the average balance increased by $2.70 USD, suggesting that individuals did not withdraw the entire subsidy immediately after they received it.

[35] Annex 8, Figure A8.1 shows no increase in the probability of having a positive savings account balance. This probability increases sharply, however, for *CuentaRUT* accounts.

in Panel D, we observe a positive and significant effect for a few months after the offering; however, that effect decreases over time, becomes negative, and is not statistically significant.

These rather disappointing results are consistent with those of Dupas et al. (2018) and De Mel, McIntosh, Sheth, and Woodruff (2018), who find that facilitating access to bank accounts or mobile services does not generate an increase in savings. However, our findings differ from the results of Bachas et al. (2017), who report that paying subsidies by credit card leads to increased savings equal to 2% of annual income two years after the intervention began.[36] Bachas et al. argue that building trust in the banking system is the main mechanism behind these positive results. Since most participants had BancoEstado accounts before the intervention, perhaps they already trusted the bank, rendering this mechanism irrelevant in Chile.

4. Conclusion

Financial inclusion and savings encouragement are key aspects of social protection and promotion because they increase lower-income families' ability to guard themselves against adverse economic shocks. In this paper, we evaluated several treatments designed to contribute to formal savings. We tested financial services previously used in the literature, such as default options and reminders, and we also included a new type of intervention that provides individuals with rules-of-thumb to increase their savings by decreasing spending on temptation goods. Overall, we found short-term and small effects for the rule-of-thumb and default options and some negative effects for the reminders on savings levels.

Although the results of this study are not very encouraging, they are consistent with the rest of the literature when we compare the savings effects to annual household income, at least for the ASP and SS. Using survey data, we calculate that the effect on formal savings is equal to 1.6% of the annual household income for SS, while this figure is -0.2% for the SMS and 1.2% for the ASP. These effects are statistically significant for the SS and ASP. When we include informal savings, those figures are 1.5%, -0.48%, and 0.82%, respectively, only significant for SS. Using administrative data, we find that the effect on the average total balance in the first 12 months after the offer began was 0.70% of annual impact for SS, -0.11 for SMS, and 0.80% for ASP, but only significant for ASP. In the second experiment, which involved changing how individuals are paid monetary subsidies from check to direct deposit into a bank account, we also find non-significant effects. None of these findings are inconsistent with Bachas et al.'s (2017) results, which include many insignificant effects and, among those that are positive, report a savings of 2% of annual income at most.

Taken together, these results reinforce doubts about the value of savings promotion strategies, even though both the SS and ASP treatments are cost-effective. The cost to

[36] In Chile, a debit card enables individuals to make purchases in stores. Transactional fees are incurred after several withdrawals.

implement SS ranges from $13.00 to $16.00 USD.[37] Considering that the SS intervention's maximum impact on savings balances was $80.77 USD, the benefit-to-cost-ratio is 6.2. The cost to implement the ASP is negligible,[38] and, therefore, the intervention's maximum balance increase of $84.01 USD can be considered a net of cost-benefit. Finally, although *Chile Cuenta* had no impact on savings or other downstream outcomes, it did not have a negative impact either: the cost-benefit is positive because the transactional cost of depositing subsidies into a *CuentaRUT* account instead of distributing checks is $0.67 USD less per transaction.

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[37] The higher amount of $16.00 represents all costs, including the production of the video. Once made, however, the video can be shown to many individuals without increasing the intervention cost. For this reason, we include the lower intervention cost of $13.00.

[38] The only cost for the ASP is the fee to transfer the agreed amount from a *CuentaRUT* account to a savings account every month.

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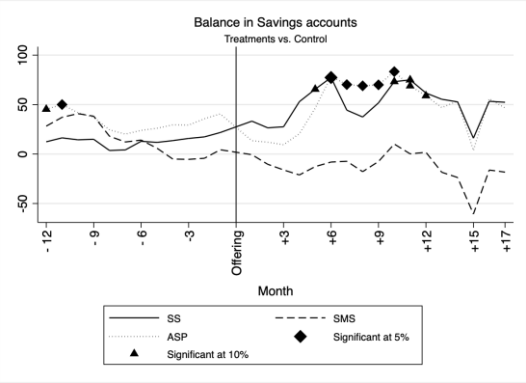
Figure 1: Timeline

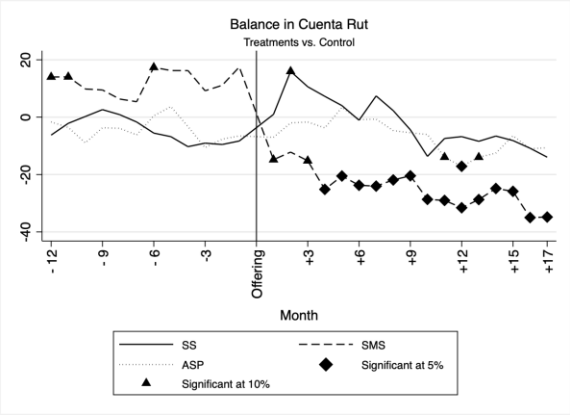
Year	Month	Months since Offering	Event PAP	Event Chile Cuenta
2011	November			First month from administrative data of Chile Cuenta
2012	October			Treatment assignment Chile Cuenta
	November			Starts offering of Chile Cuenta
2013	October	1		Ends offering of Chile Cuenta
2014	July	10	Design and pilot preparation	
	August			
	September		Administrative data first month	
	October			
	November			
	December		Pilot implementation	
2015	January		Pilot Evaluation	
	February			
	October		Offering process and baseline survey	
	November		Treatment implementation (SMS)	
	December	27		Follow-up survey Chile Cuenta
2016	February	29		Chile Cuenta's follow-up survey ends/Administrative data from Chile Cuenta ends
	May	1	End of offering process	
2017	January	7		
	March	10	Follow-up survey	
	April	13	Treatment implementation (SMS) ends	
	July	15	Follow-up survey ends	
	September	17	Administrative Data Ends	

Figure 2: ITT Effects Using Administrative Data

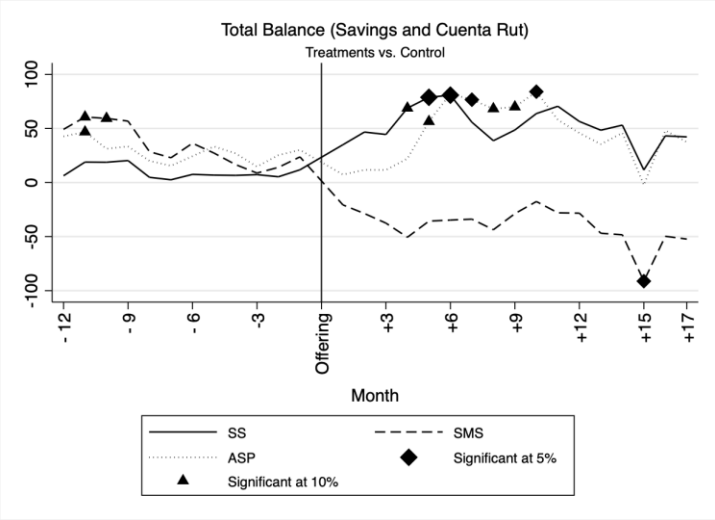
Panel A: Balance in Savings Accounts



Panel B: Balance in CuentaRUT Accounts



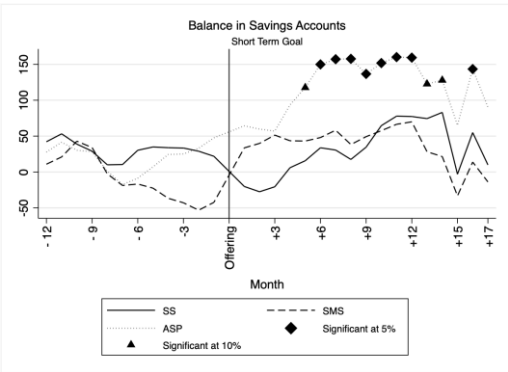
Panel C: Total Balances (Savings and *CuentaRUT* Accounts)

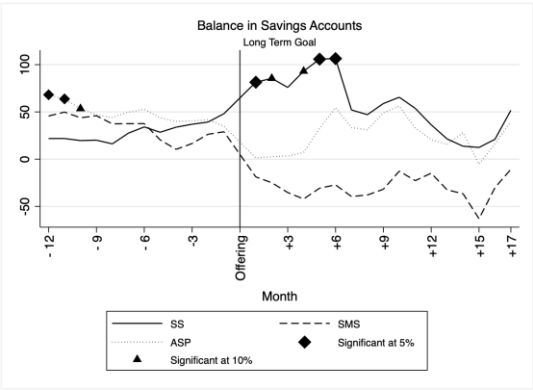


Note: The figure reports coefficients from the regression of savings and *CuentaRUT* account amounts on the treatments. Panel A reports coefficients on balance in savings accounts; Panel B reports coefficients on balance in *CuentaRUT* accounts, and Panel C reports coefficients on total balance (savings and *CuentaRUT* accounts). All variables are measured in real US dollars based on the exchange rate of September 2014. Variables are top-coded at the 99th percentile. All regressions include dummies for strata (defined by the reception of subsidy and savings goal), fixed effects by the enrolment date, bank executive fixed effects, branch fixed effects, and a dummy indicating whether an enumerator or a bank executive recruited the individual. We also include a dummy variable to control for "rare" cases where a bank executive makes multiple enrolments within the same hour as well as for the unbalanced variables: gender and a study dummy. We also include per capita income because it predicts survey attrition. In the case of post-enrolment regressions, we also include the mean values of *CuentaRUT* accounts balance; a dummy variable indicating a positive balance in savings and *CuentaRUT*; and the respective dependent variable prior to the application of the program. We use robust standard errors.

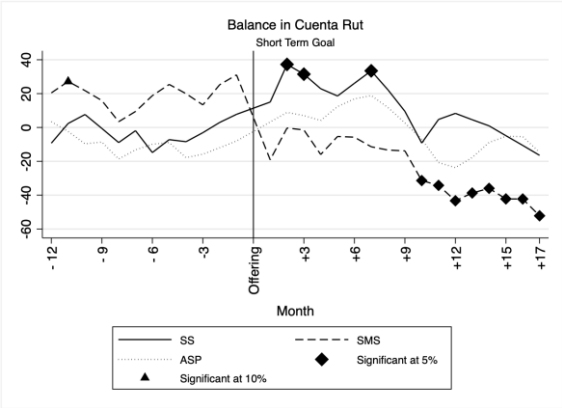
Figure 3: ITT Effects for Short-Term Goals and Long-Term Goals

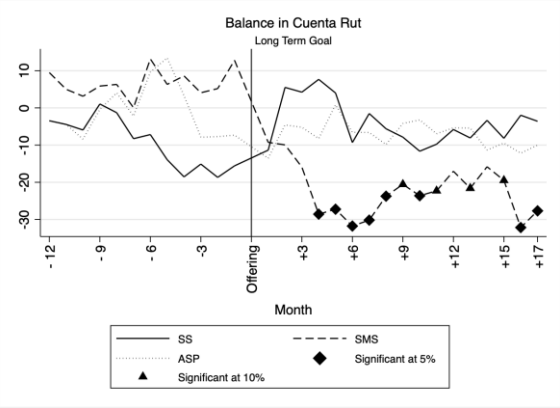
Panel A: Balance in Savings Accounts



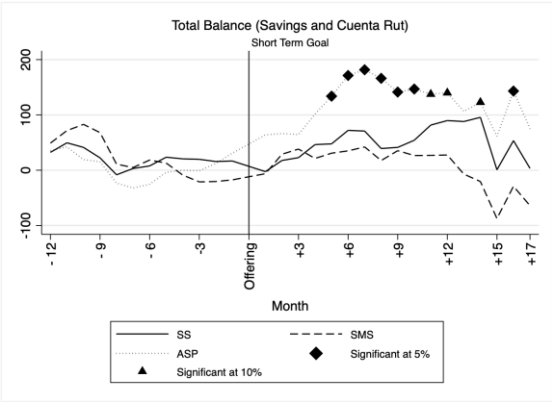


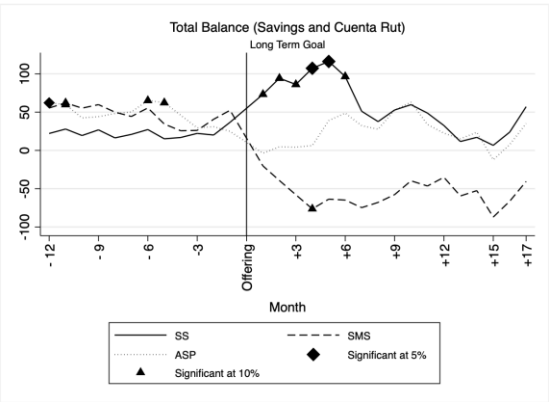
Panel B: Balance in *CuentaRUT* Accounts





Panel C: Total Balances (Savings and *CuentaRUT* Accounts)

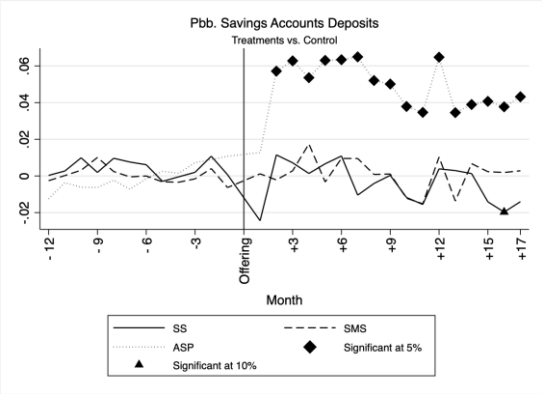




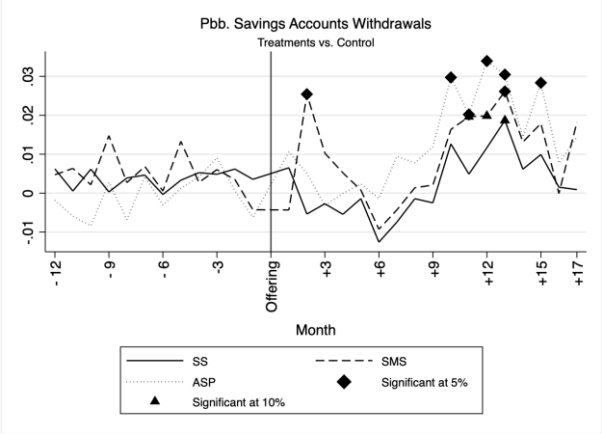
Note: The figure reports coefficients from the regression of savings and *CuentaRUT* account balances on the interaction between treatments and short-term saving goals. Short-term saving goal includes: unforeseen expenses, dental or medical treatment, holidays, birth of a child, gifts, car, motorcycle or bicycle, wedding or other ceremonies, entrepreneurship, own education, children's education, household items, personal electronic items, and "other motives". The long-term savings goal includes: old age, home repair or expansion, and purchase home. General notes from Figure 2 apply.

Figure 4: ITT Effects on the Probability of Making Deposits and Withdrawals Using Administrative Transactions Data

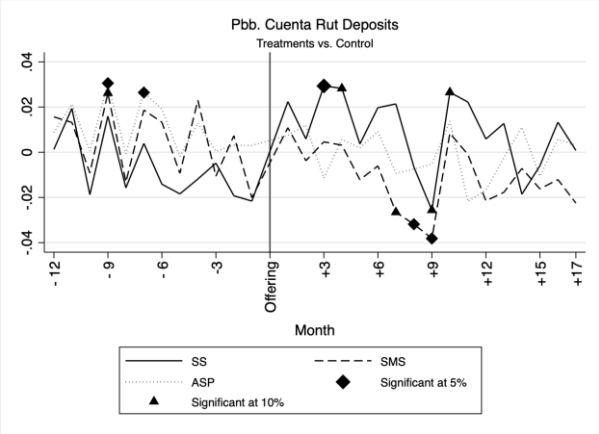
Panel A: Prob. of Depositing into Savings Account



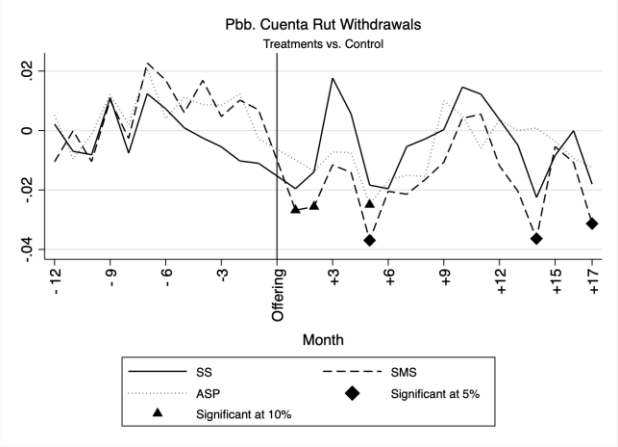
Panel B: Prob. of Withdrawing from Savings Account



Panel C: Prob. of Depositing into *CuentaRUT* Account



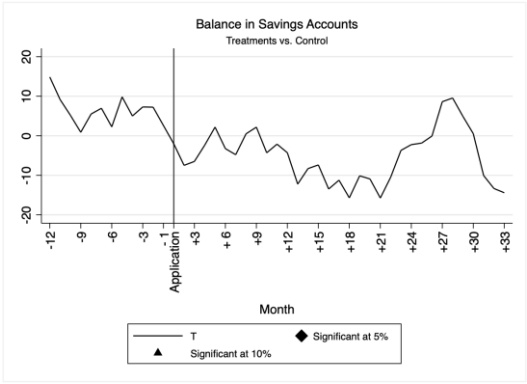
Panel D: Prob. of Withdrawing from a *CuentaRUT* Account



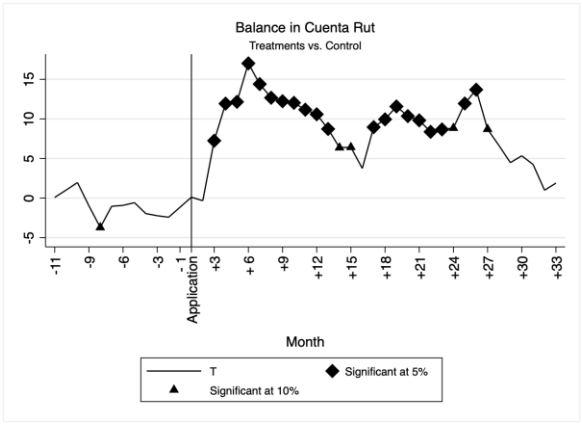
Note: The figure reports coefficients from the regression of the probability of making either deposits into or withdrawals from savings and *CuentaRUT* account. General notes from Figure 2 apply.

Figure 5: ITT Effects Using Administrative Data from *Chile Cuenta*

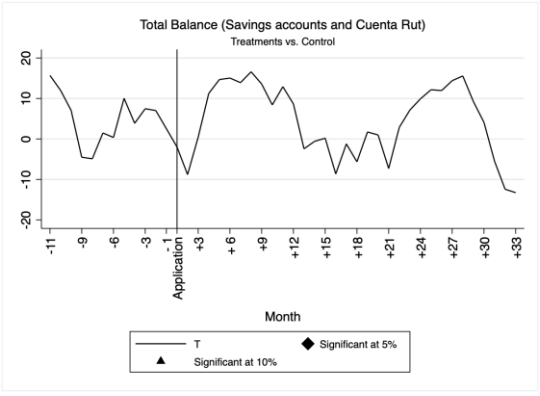
Panel A: Balances in Savings Accounts



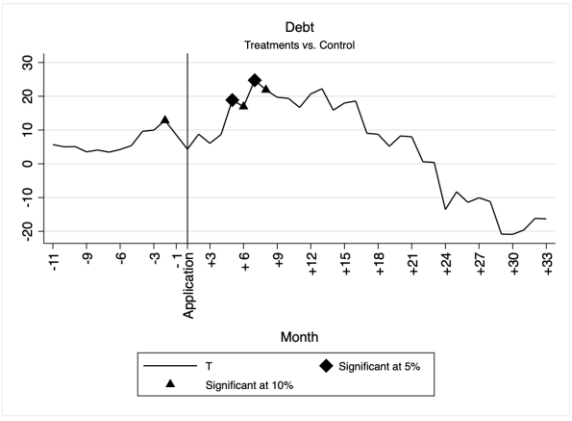
Panel B: Balances in *CuentaRUT* Accounts



Panel C: Total Balance (Savings and *CuentaRUT* Accounts)



Panel D: Debt



Note: The figure reports ITT coefficients using administrative bank data. Panel A reports the coefficients on balance in savings accounts; Panel B reports coefficients on balance in *CuentaRUT* accounts, and Panel C reports coefficients on total balance (savings and *CuentaRUT* accounts). All variables are measured in real US dollars using the exchange rate for January 2015. Variables are top-coded at 99th percentile. All regressions include dummies for strata (defined by a socioeconomic index computed by the government using the Social Security Card score, municipality of residence, age ranges, and cohort), and fixed effects by the enrolment date. In the case of post-enrolment regressions, we also control for SSC Score as a significant predictor for attrition in our sample, calendar month fixed effects, and a dummy to account for the number of children between 0 and 5 years old, which is unbalanced, and the baseline value of the dependent variable. We use robust standard errors.

Table 1: Recruitment by month

Year	Month	Number of offers
2015	October	460
	November	608
	December	611
2016	January	1,031
	February	983
	March	1,510
	April	1,036
	May	3
Total		6,242

Note: Author's calculation

Table 2: Treatment Assignment

Treatment Arm	Participants	Take-up
Control Group	1,887	-
Automatic Savings Plan (ASP)	1,845	31.00%
SMS remainders (SMS)	1,273	91.91%
Savings strategies (SS)	1,237	92.89%
Total	6,242	

Note: Author's calculation. For SMS and SS, take-up was defined as receiving at least one of the text messages. Take-up of ASP is defined if individuals opted to open an ASP at the time of the offering.

Table 3: Savings Goals

Baseline savings motives	%
Unforseen expenses	12.48%
Medical or Dental treatment	0.57%
Holidays	2.35%
Child's birth	1.38%
Gifts	0.26%
Car or bicycle	2.48%
Wedding or ceremonies	0.23%
For old age	4.22%
Fix or expand house	3.85%
Entrepreneurship	2.08%
Own Education	3.02%
Children education	5.55%
Household stuff	0.21%
Buy a house	46.51%
Electronic personal items	0.10%
To have savings	10.97%
Other motives	3.75%
Total	100%

Note: Author's calculation.

Table 4:Variable means and difference-test between treatments groups

	[1]	[2]	[3]	[4]	[5]	[6]
		Level				
Product Category	N obs	Control	Savings Strategies (SS)	SMS Remainders	Automatic Savings Plan (ASP)	p-value ASP=SMS=SS=0
Panel A: Amounts						
Balance in Savings Accounts	6,242	224.4	234.3	242.9	254.6	0.669
Balance in CuentaRUT	6,242	78,2	71.6	91.3	72.4	0.104
Total Balance (Savings Acc. & CuentaRUT)	6,242	314.5	317.8	352.2	337.6	0.770
Total Debt	6,242	169.4	156.0	202.5	170.8	0.694
Panel B: Probability (>0)						
Balance in Savings Accounts	6,242	0.512	0.507	0.516	0.507	0.916
Balance in CuentaRUT	6,242	0.714	0.720	0.701	0.696	0.258
Total Balance (Savings Acc. & CuentaRUT)	6,242	0.854	0.838	0.828	0.833	0.0651
Total Debt	6,242	0.066	0.054	0.066	0.062	0.510

Panel C: Baseline Variables

Saving for a home	6,242	0.468	0.456	0.448	0.460	0.608
Subsidy recipient (1=receives)	6,242	0.421	0.438	0.424	0.415	0.789
Gender (1=male)	6,242	0.294	0.323	0.321	0.323*	0.173
Age	6,242	34.00	33.66	33.74	33.82	0.939
Highest educational level						
Primary	6,242	0.108	0.104	0.102	0.121	0.336
Secondary	6,242	0.522	0.530	0.544	0.506	0.165
Tertiary	6,242	0.341	0.348	0.329	0.356	0.401
Working	6,148	0.630	0.622	0.625	0.633	0.897
Studying	6,148	0.107	0.120	0.120	0.129**	0.118
Retired	6,148	0.023	0.026	0.022	0.021	0.874
Household per capita income	5,854	275.558	279.792	265.878	271.824	0.331

Panel D: F-Test

ASP vs. C	0.262
SMS vs. C	0.409
SS vs. C	0.618
ASP vs. SMS	0.147
ASP vs. SS	0.649
SMS vs. SS	0.111

Note: Column [1] shows the number of observations. Columns [2]-[5] show the mean value for the control group, savings strategies, SMS remainder, and automatic savings plan respectively. Columns [6] reports the p-value of all coefficients being equal to zero. Variables in Panel A are in US dollars, using the exchange rate of September 2014 (1US$=593.47). Regressions include dummies for strata (defined by the reception of subsidy and savings motive), fixed effects by the date of the offering, bank executive fixed effects, dummy for imputed bank executive effect, branch fixed effects, and a dummy indicating if the individual was recruited by an enumerator or a bank executive. We also include a dummy variable to control for "rare" cases where bank executives offer the program at the same hour. We use robust standard errors. Panels A and B data are from the partner's bank administrative data, and panel C is from the baseline survey. The sample size varies because of missing values. In comparing ASP and C, *** denotes difference significant at the 1% level, ** at the 5% level, and * at the 10% level.

Table 5: ITT effects on mechanisms using survey data

	[1] Control Mean	[2] Savings Strategies (SS)	[3] SMS Remainders	[4] Automatic Savings Plan (ASP)	[5] Sample Size
Panel A: Processes					
Receive SMS	0.227	0.540***	0.519***	0.014	1,957
	(0.419)	(0.028)	(0.029)	(0.025)	
SMS Remainder	0.0995	0.238***	0.520***	0.006	1,785
	(0.300)	(0.028)	(0.029)	(0.019)	
SMS Strategies	0.0585	0.339***	0.040**	-0.015	1,875
	(0.235)	(0.027)	(0.019)	(0.015)	
Hires ASP	0.0995	0.013	0.023	0.134***	2,028
	(0.300)	(0.020)	(0.021)	(0.021)	
Receive treatment gifts	0.195	0.459***	0.029	0.010	1,957
	(0.397)	(0.029)	(0.028)	(0.024)	

Panel B: P-values	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
Receive SMS	0.491	0.000	0.000
SMS Remainder	0.000	0.000	0.000
SMS Strategies	0.000	0.000	0.005
Receive treatment gifts	0.000	0.000	0.495
Hires ASP	0.648	0.000	0.000

Note: SMS Remainder and SMS Strategies are from a different question than Receive an SMS, therefore the coefficients do not necessary add up. The table reports the mean for the control group for the Follow-Up Survey, intent-to-treat (ITT) estimates, and standard errors (in parentheses) of program assignment. Regressions include dummies for strata (defined by the reception of subsidy and savings motive), fixed effects by the date of the offering, bank executive fixed effects, dummy for imputed bank executive effect, branch fixed effects, and a dummy indicating if the individual was recruited by an enumerator or a bank executive. We also include a dummy variable to control for "rare" cases where bank executives offer the program at the same hour. We also include per capita income because it predicts survey attrition, and variables that were not balanced: the mean values of *CuentaRUT* accounts balance; a dummy variable indicating a positive balance in savings and *CuentaRUT*. Panel B report the p-values of the comparison between the three treatment groups. We use robust standard errors. The sample size varies due to missing values. ***p<0.01, **p<0.05, * p<0.1

Table 6: ITT effects on savings stock using survey data and administrative data

Panel A: Main Outcomes	[1] Control Mean	[2] Savings Strategies (SS)	[3] SMS Remainders	[4] Automatic Savings plan (ASP)	[5] Sample Size
Total Formal Savings	544.2	181.235**	-20.690	134.277**	2,045
	(1,117)	(84.566)	(70.274)	(66.249)	
Total Savings (including informal savings)	658.8	172.833*	-55.516	93.007	2,046
	(1,220)	(91.901)	(76.980)	(72.276)	

Panel B: P-values	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
Saving Accousts and Saving for a home	0.0243	0.583	0.0405
Total Savings (inlcuding informal savings)	0.0196	0.393	0.0721

Panel C: Administrative data Outcomes	[1] Control Mean	[2] Savings Strategies (SS)	[3] SMS Remainders	[4] Automatic Savings plan (ASP)	[5] Sample Size
Between 1st-12th month					
Balance in Savings Accounts	504.7	73.231*	10.216	92.292**	6,242
	(1,117)	(43.061)	(41.640)	(37.803)	
Balance in CuentaRUT	113.8	1.266	-22.272***	-4.989	6,242
	(244.1)	(6.745)	(6.193)	(5.984)	
Total Balance (Savings Acc. & CuentaRUT)	627.8	80.099*	-13.057	91.012**	6,242
	(1,218)	(45.052)	(43.469)	(39.192)	
Between 13th-17th month					
Balance in Savings Accounts	538.2	64.731	-11.649	79.043*	6,242
	(1,230)	(48.085)	(44.787)	(41.778)	
Balance in CuentaRUT	114.4	-9.589	-29.857***	-10.933	6,242
	(262.1)	(7.775)	(7.272)	(6.902)	
Total Balance (Savings Acc. & CuentaRUT)	660	59.975	-40.489	69.927	6,242
	(1,327)	(50.057)	(46.944)	(43.320)	

Panel D: P-values	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
Between 1st-12th month			
Balance in Savings Accounts	0.190	0.671	0.059
Balance in CuentaRUT	0.001	0.369	0.008
Total Balance (Savings Acc. & CuentaRUT)	0.066	0.816	0.022

Between 13th-17th month			
Balance in Savings Accounts	0.150	0.776	0.054
Balance in CuentaRUT	0.009	0.855	0.0061
Total Balance (Savings Acc. & CuentaRUT)	0.070	0.849	0.025

Note: Panel A reports the mean for the control group for the Follow-Up Survey, intent-to-treat (ITT) estimates, and standard errors (in parentheses) of program assignment. Panel B report the p-values of the comparison between the three treatment groups. Panel C reports the mean for the control group for the administrative data, intent-to-treat (ITT) estimates, and standard errors (in parentheses) of program assignment. Panel D report the p-values of the comparison between the three treatment groups. We use robust standard errors. Regressions include same covariates as table 5. The sample size varies due to missing values. ***p<0.01, **p<0.05, * p<0.1

Table 7: ITT effects on other outcomes using survey data

	[1] Control Mean	[2] Savings Strategies (SS)	[3] SMS Remainders	[4] Automatic Savings Plan (ASP)	[5] Sample Size
Panel A: Entrepreneurship					
Entrepreneurship	0.143	0.024	0.038	0.014	2,049
	(0.351)	(0.024)	(0.024)	(0.020)	
Sales	106.9	6.322	51.380	-4.800	2,049
	(482.6)	(29.713)	(36.148)	(24.124)	
Number of workers	0.220	-0.025	0.017	-0.042	2,014
	(0.923)	(0.050)	(0.057)	(0.047)	
Household Assets and Business Assets	4172	364.310	269.892	46.187	2,049
	(6,296)	(412.509)	(439.261)	(357.098)	
Panel B: Subjective Well-being					
Financial Security Index	8.288	0.300**	0.105	-0.137	2,049
	(2.202)	(0.141)	(0.140)	(0.126)	
Panel C: Financial Perception					
Financial Knowledge Index (1-15)	10.11	0.132	0.066	0.065	2,042
	(2.542)	(0.155)	(0.153)	(0.144)	
Financial Trust Index (1-15)	9.798	-0.155	-0.068	-0.263*	2,037
	(2.469)	(0.152)	(0.157)	(0.143)	
Panel D: Budget					
Has an expenditure budget	0.494	-0.023	-0.044	0.006	2,049
	(0.500)	(0.032)	(0.032)	(0.029)	

Panel E: P-values	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
Entrepreneurship	0.612	0.668	0.327
Sales	0.211	0.673	0.101
Number of workers	0.393	0.642	0.166
Household and Business Assets	0.847	0.447	0.618
Financial Security	0.209	0.00211	0.0847
Financial Knowledge Index (1-15)	0.690	0.667	0.995
Financial Trust Index (1-15)	0.601	0.489	0.219
Has an expenditure budget	0.544	0.375	0.127

Note: Panel A reports the mean for the control group for the Follow-Up Survey, intent-to-treat (ITT) estimates, and standard errors (in parentheses) of program assignment. All the amounts are measured in real US dollars (using exchange rate as of September 2014). Variables are top coded at 99%. Regressions include same covariates as table 5. We use robust standard errors. The sample size varies due to missing values. ***p<0.01, **p<0.05, * p<0.1

Table 8: Probability of expenses

	[1] Control Mean	[2] Savings Strategies (SS)	[3] SMS Remainders	[4] Automatic Savings Plan (ASP)	[5] Sample Size
Panel A:					
Pr. Spending on baseline goal	0.336	0.001	0.023	0.027	1,253
	(0.473)	(0.035)	(0.036)	(0.032)	
Pr. Spending on short term baseline goal	0.379	0.057	0.080	0.136**	507
	(0.487)	(0.070)	(0.066)	(0.066)	
Pr. Spending on long term baseline goal	0.0778	0.009	0.058	0.041	544
	(0.269)	(0.031)	(0.042)	(0.031)	
Panel B: Expenditure					
Expense in temptations goods	43.90	-1.130	-0.536	7.163*	2,045
	(66.2)	(4.014)	(4.138)	(3.797)	
Electronic durable goods	417.4	9.901	-4.091	-3.237	2,010
	(304.0)	(19.980)	(19.223)	(16.825)	
Other electronic goods	613.8	-14.164	-30.923	8.652	2,031
	(594.2)	(37.998)	(36.983)	(33.749)	
Health	38.16	-10.409**	-6.219	-5.303	2,027
	(77.53)	(4.595)	(4.559)	(4.155)	
Education	60.93	-0.515	-3.399	-6.663	2,037
	(129.8)	(8.176)	(8.281)	(7.053)	
Food	217.2	-9.544	2.844	-4.342	2,010
	(141.0)	(8.677)	(9.065)	(7.877)	
Total	700.5	-19.608	-25.892	-34.909	2,046
	(424.7)	(28.303)	(27.291)	(23.987)	

Panel C: P-values	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
Pr. Spending on baseline goal	0.581	0.473	0.919
Pr. Spending on short term baseline goal	0.756	0.287	0.411
Pr. Spending on long term baseline goal	0.238	0.322	0.687
Expense in temptations goods	0.890	0.0382	0.0668
Expense in electronic durable goods	0.516	0.497	0.964
Expense in other electronic goods	0.686	0.550	0.295
Health	0.388	0.252	0.838
Education	0.742	0.417	0.669
Food	0.193	0.548	0.420
Total	0.837	0.589	0.740

Note: The table reports the mean for the control group for the follow-up survey, intent-to-treat (ITT) estimates and standard errors (in parentheses) of the program assignment. Panel A reports the probability of spending on the baseline saving goals. This first row is a dummy variable that takes the value of 1 if the respondent reports to have spent money on her baseline saving goal during the last 12 months and 0 otherwise. The following rows report the probability on spending in short-term and long-term saving goals, conditional on having a short term or a long-term goal in the baseline, respectively. Short/Long term savings goals are defined as in Figure 3. Panel B reports the effects on the amounts spent in temptation goods, which could be expenses for cigarettes and alcohol, bars or entertainment; The variable having spent on electronic goods during the last 12 months considers expenses on a washing machine, a refrigerator, an oven or a microwave. Other electronic goods considers money spent on a computer, a TV, a music equipment, a DVD player, or a video game console. All the amounts are measured in real US dollars (using the exchange rate as of September 2014). Variables are top coded at 99%. Regressions include same covariates as table 5. We use robust standard errors. The sample size varies due to missing values. ***p<0.01, **p<0.05, * p<0.1

Table 9: Stock of Debt and Probability of Positive Debt (Survey Data)

	[1] Control Mean	[2] Savings Strategies (SS)	[3] SMS Remainders	[4] Automatic Savings Plan (ASP)	[5] Sample Size
Panel A: ITT effects					
Total debt amount	1590	-33.494	39.337	-30.761	2,038
	(3572)	(240.534)	(247.224)	(221.121)	
Pr (Bank Credit)	0.111	0.016	0.033	0.014	1,795
	(0.315)	(0.023)	(0.023)	(0.020)	
Pr (Credit Line)	0.0688	-0.019	-0.031**	-0.009	1,754
	(0.253)	(0.016)	(0.015)	(0.016)	
Pr (Retail credit cards)	0.349	-0.013	-0.083***	-0.009	1,850
	(0.477)	(0.032)	(0.032)	(0.029)	
Pr (Consumption credit (bank, financial institution or retail))	0.108	-0.012	0.004	-0.012	1,782
	(0.310)	(0.021)	(0.022)	(0.019)	
Pr (Mortgage credit)	0.0550	-0.021	-0.011	-0.011	1,728
	(0.228)	(0.014)	(0.015)	(0.014)	

Panel B: P-values	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
Total debt amount	0.994	0.958	0.965
Bank Credit	0.646	0.814	0.465
Credit Line	0.386	0.551	0.121
Retail credit cards	0,045	0.982	0,030
Consumption credit (bank, financial institution or retail)	0.534	0.938	0.454
Mortgage credit	0.548	0.557	0.942

Note: The table reports the mean for the control group for the Follow-Up Survey, intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. Output variables consider the total debt amount reported by the respondent and dummies that take the value 1 if the participant reports to have a debt in the corresponding category. All the amounts are measured in real US dollars (using the exchange rate as of September, 2014). Variables are top coded at 99%. Regressions include same controls as table 5. Panel B reports the p-values of the comparison between the three treatment groups. We use robust standard errors. The sample size varies due to missing values. ***p<0.01, **p<0.05, * p<0.1.

Table 10: ITT effects of Chile Cuenta on savings balance (Survey data)

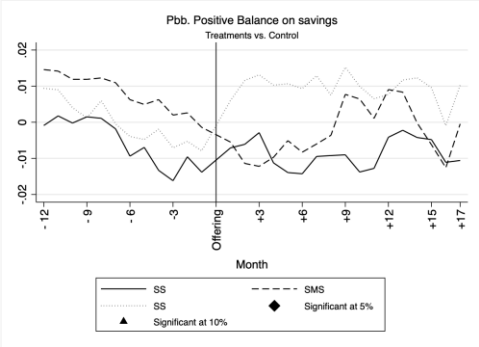
	[1] Control Mean	[2] Treatment	[3] P-value	[4] Sample Size
Savings Accounts	6.554	-0.417	0.868	922
	(37.03)	(2.503)		
Savings Account and Saving for a home	147.8	-12.581	0.624	922
	(339.6)	(25.636)		
Total Savings (including informal savings)	156.7	-10.387	0.689	922
	(345.1)	(25.918)		
Debt	733.3	98.296	0.570	890
	(1,968)	(173.021)		

Note: Column [1] reports the control mean group at Chile Cuenta's follow-up survey. Column [2] reports the intent-to-treat (ITT) estimate and standard error (in parentheses) of the program assignment at Chile Cuenta's follow-up survey. Column [3] reports the p-value of the null hypothesis that Treatment=Control. Regressions include dummies for strata (defined by a socioeconomic index computed by the government using the Social Security Card score, municipality of residence, age ranges and cohort) and fixed effects by offering date and municipality. We also control for SSC Score, as it is a significant predictor for attrition in our sample, and a dummy to account for the number of children between 0 and five years old, which is unbalanced. We use robust standard errors. The sample size varies due to missing values. *** p<0.01, ** p<0.05, * p<0.1.

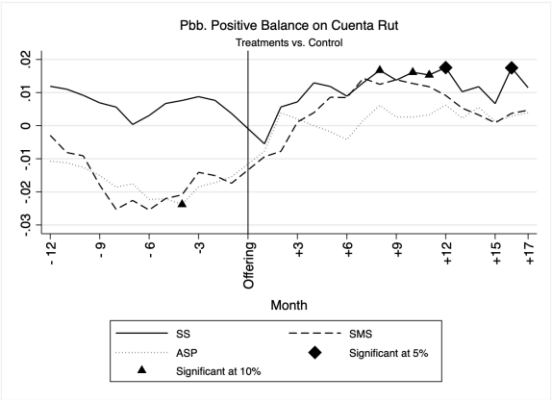
Appendix Figures

Figure A.1: Probability of Having a Positive Balance

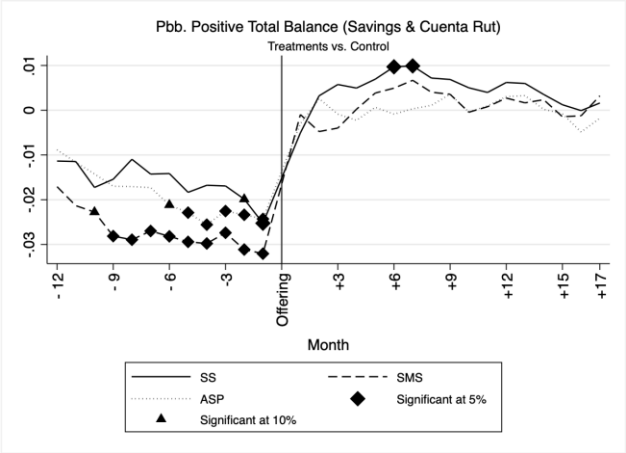
Panel A: Prob. of a positive balance in Saving Accounts



Panel B: Prob. of a positive balance in *CuentaRUT* Accounts

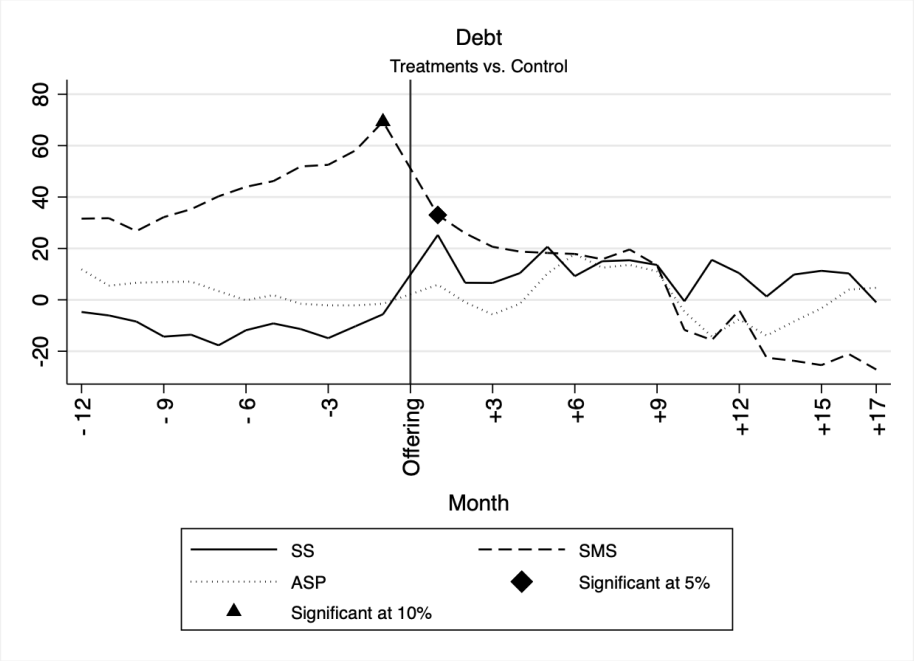


Panel C: Prob. of Positive Balance in Total Savings (Savings and *CuentaRUT* Accounts)



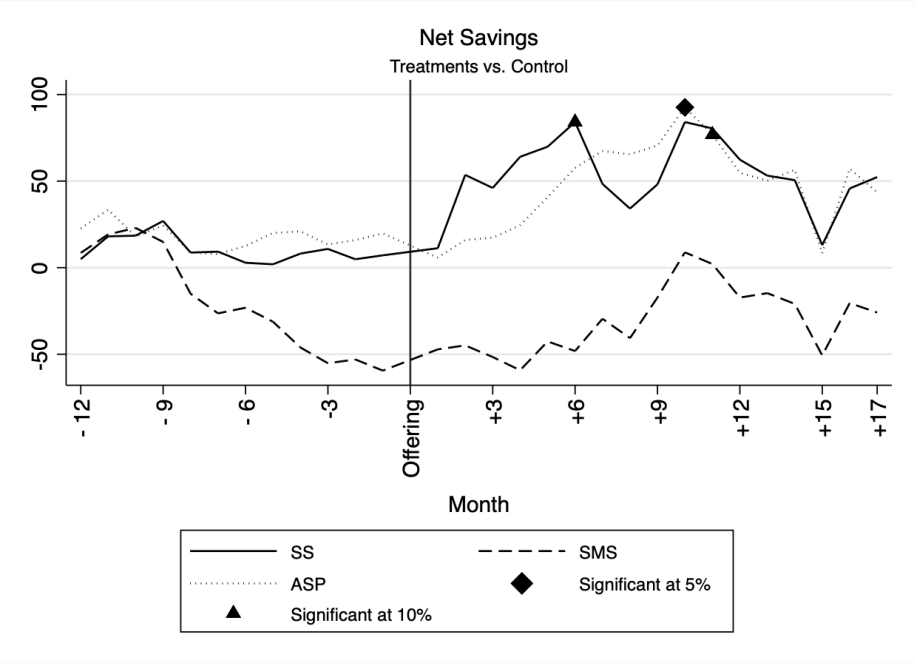
Note: The figure reports coefficients from the regression of balance in savings and *CuentaRUT* accounts on treatments. Panel A reports coefficients on balance in savings accounts; Panel B reports coefficients on balance in *CuentaRUT* accounts, and Panel C reports coefficients on total balance (savings and *CuentaRUT* accounts). General notes form Figure 2 apply.

Figure A.2: Total Debt



Note: The figure reports coefficients from the regression of balance in debts on treatments. Balance in debts is measured in real US dollars based on the exchange rate for September 2014 and top-coded at 99%. General notes from Figure 2 apply.

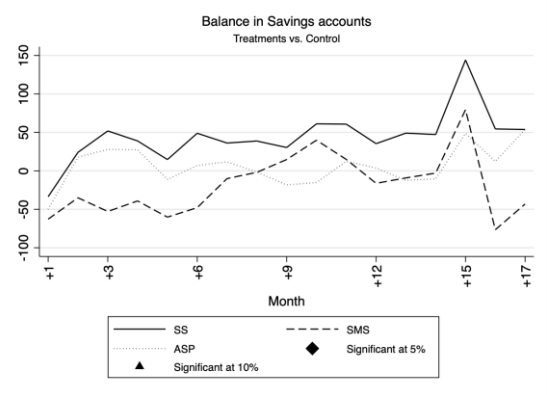
Figure A.3: Net Savings



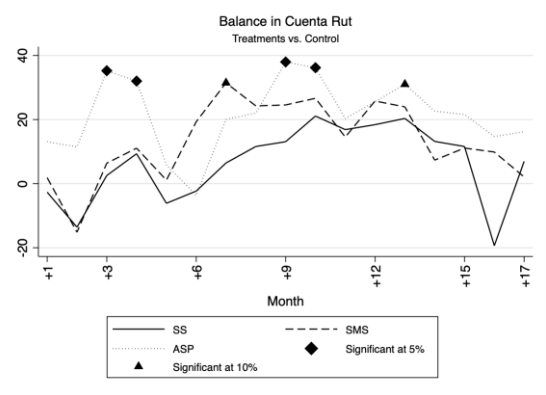
Note: The figure reports coefficients from the regression of balance in debts on treatments. Net savings is measured in real US dollars based on the exchange rate for September 2014, top-coded at 99% and also bellow-coded at a 1%. General notes from Figure 2 apply.

Figure A.4: Interactive Effect of Being in the Survey Sample

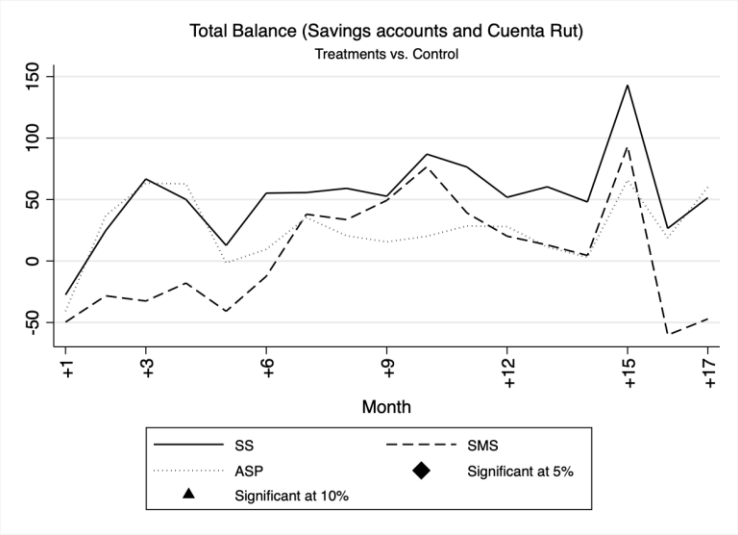
Panel A: Balance in Savings Accounts



Panel B: Balance in *CuentaRUT* Account



Panel C: Total Balance (Savings and *CuentaRUT* Accounts)



Note: General notes from Figure 2 apply.

Table A1: Comparison with Other Studies

Study	Intervention	Country	Population	Baseline Data (2015 US Dollars)		Savings as Proportion of Monthly income	Measurement of the Variables		
				Monthly Income	Savings		Monthly Income Level [1]	Level of Savings	Detail of Savings
Ahsraf et al (2006a) "Tyding Odysseus" [2]	Deposit collection	Philippines	Prior clients of a rural Bank	351.4	16.7	4.8%	Household	Individual. Stock	Savings in partner bank
Ahsraf et al (2006b) [3]	Deposit collection	Philippines		362.0	27.3	7.5%	Household	Individual. Stock	Savings in partner bank
				362.0	254.6	70.3%	Household	Household. Stock	Total monetary savings (multiple sources)
Bachas et al (2018)	Debit card	Mexico	Cash transfer beneficiaries	87.3	N/A	N/A	Per capita	N/A	"Net savings" reported, which is observed savings balance minus predicted withdrawals
Drexler, Fischer, and Schoar (2014).	Financial education	DR	Micro entrepreneurs	218.7	N/A	N/A	Individual	N/A	
Dupas and Robinson (2013a)	Account or lockbox	Kenya	Participants of ROSCAs	60.4	N/A	16.3%	Individual	Individual Monthtly contribution	Contribution to ROSCA
Dupas and Robinson (2013b)	Account or lockbox	Kenya	Female (market vendors)	138.7	138.6	99.9%	Individual	Individual. Stock.	Last year savings in ROSCA
			Male (vendors and bicycle-taxi drivers)	73.5	55.4	75.4%	Individual	Individual. Stock.	Last year savings in ROSCA
Dupas et al. (2018)	Account	Uganda	Unbanked	43.2	42.6	98.6%	Individual	Individual. Stock	Total monetary savings (multiple sources)
		Malawi		56,7	25.3	44.7%	Individual	Individual. Stock	Total monetary savings (multiple sources)
		Chile		61.2	23.9	39.0%	Per capita	Individual. Stock	Total monetary savings (multiple sources)

Karlan et al. (2016)	Reminders	Philippines	Clients who recently opened commitment savings account	198.4	N/A	N/A	Individual	Savings reported but it is unclear if it is at baseline	Savings by goal date in the account
		Peru		N/A	N/A	N/A	N/A	Savings reported but it is unclear if it is at baseline	Savings by goal date in the account
		Bolivia		N/A	N/A	N/A	N/A	Savings reported but it is unclear if it is at baseline	Savings by goal date in the account
Karlan et al. (2017)	Savings group	Ghana, Uganda, and Malawi	Female in target villages	16.6	N/A	N/A	Per capita	Unclear of reported savings are household or individual level.	Total monetary savings (multiple sources)
Karlan and Zinman (2018)	Interest rate, account ownership requirements	Philippines	People with a regular income interested in open a commitment savings account	Unclear of reported savings are household or individual level.	305.5	220.2%	Individual	Individual. Stock	Total monetary savings (multiple sources)
Kast and Pomeranz (2014)	Account	Chile	Self-employed micro-entrepreneurs	203.9	167.3	82.1%	Per capita	Individual. Stock	Savings in banks or cooperatives. Regardings savings, it sayss "while income is reported in per capita temrs, these figures may represent the savings of several household members combined.."
Kast, Meier and Pomeranz (2018)	Savings group	Chile	Microcredit clients	204.7	181.2	88.5%	Per capita	Individual. Stock	Savings in banks or cooperatives. Regardings savings, it sayss "while income is reported in per capita temrs, these figures may represent the savings of several household members combined.."

Prina (2015)	Account	Nepal	Female household heads	150.3	357.8	238.1%	Household	Household. Stock	Total monetary savings: bank accounts, ROSCA, MFIs and cash at home.
				150.3	137.3	91.4%	Household	Household. Stock	Deposits in bank accounts
Schaner (2016)	Interest rate	Kenya	Newly bank accounts by couples - Husbands	133.8	153.2	114.5%	Individual	Individual. Stock (unclear)	Total monetary savings (bank, cooperatives, home)
			Newly bank accounts by couples - Wives	65.5	39.0	59.5%	Individual	Individual. Stock (unclear)	Total monetary savings (bank, cooperatives, home)
Seshan and Yang (2014)	Financial education	India/Qatar	Indian migrants workers in Qatar	793.2	3691.7	465.4%	Individual	Individual. Stock	Total monetary savings (cashm bank and postal account, ROCA, life insurance and pension funds contributios, gold holdings, market value of stocks). Savings does not include hoint savings with wife.
Somville and Vandewalle (2018)	Payment default	India	People from villages without a bank branch	59.4	2.1	3.6%	Household	Individual. Stock	Bank account in partner bank
Banerjee, Martínez A, Puentes (2019)	SMS, ASP, financial education	Chile		275	185.0	67.3%	Per capita	Individual. Stock	Bank account in partner bank

Note: [1] Per capita income is calculated by dividing the household monthly income by the number of residents, while individual income is the reported individual monthly income of the targeted person. [2] Median household income from footnote 15, it is not clear if it is baseline income. [3]Median income. All the papers correspond to the literature review of Bachas et al. (2018). Excluded papers do not include a measure of total household income.

Table A2: Take-up Prediction using administrative data

Variables	[1] Savings Strategies (SS)	[2] SMS Remainders	[3] Automatic Savings Plan (ASP)
Gender (1=female)	-0.014	-0.012	0.004
	(0.017)	(0.017)	(0.025)
Highest educational level			
Primary	0.218	0.062	0.025
	(0.196)	(0.111)	(0.135)
Secondary	0.261	0.116	0.049
	(0.194)	(0.108)	(0.133)
Tertiary	0.300	0.136	0.016
	(0.194)	(0.108)	(0.133)
Worked last week	0.017	0.004	0.114***
	(0.019)	(0.019)	(0.027)
Studied last week	0.009	-0.032	0.101**
	(0.027)	(0.033)	(0.040)
Retired last week	-0.024	-0.021	-0.059
	(0.060)	(0.055)	(0.059)
Household per capita income	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Age	0.001	0.001**	-0.003***
	(0.001)	(0.001)	(0.001)
Observations	1,237	1,273	1,845

Note: The table reports the results of the regression between the probability of accepting the program offering and baseline characteristics. Column [1] reports the results from ASP take-up; column [2] reports the results from SMS take-up; and column [3] reports the results from Strategies take-up. Regressions include dummies for strata (defined by the reception of subsidy and savings motive). We use robust standard errors. Sample size varies due to missing values and treatment arms size. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Survey Attrition by Treatment

Dependent variable: Non completed survey	[1] Follow-up Survey	[2] Follow-up Survey	[3] Follow-up Survey
Panel A:Treatments			
Savings Strategies (SS)	-0.008	-0.011	0.013
	(0.017)	(0.017)	(0.141)
SMS Remainders (SMS)	0.018	0.017	-0.049
	(0.017)	(0.017)	(0.127)
Automatic Saving Plan (ASP)	0.008	0.006	0.185
	(0.015)	(0.015)	(0.116)
Panel B: Baseline Characteristics			
Saving Accounts amounts pre offering mean		0.000	0.000
		(0.000)	(0.000)
Cuenta Rut amounts pre offering mean		-0.000	-0.000*
		(0.000)	(0.000)
Gender (male==1)		0.064***	0.053**
		(0.013)	(0.024)
Primary		0.036	0.024
		(0.045)	(0.072)
Secondary		0.040	0.050
		(0.042)	(0.065)
Tertiary		0.053	0.037
		(0.042)	(0.067)
Worked last week		-0.010	0.020
		(0.015)	(0.028)
Studied last week		-0.022	0.032
		(0.023)	(0.043)
Retired last week		0.033	-0.075
		(0.044)	(0.085)
Household per capita income		0.000***	0.000**
		(0.000)	(0.000)
Age		-0.000	0.000
		(0.000)	(0.001)
Baseline Characteristics interacted with treatments			X
p-value from test that baseline characteristics interacted with treatments are jointly 0			0.362
Observations	6,242	6,242	6,242

Note: The dependent variable takes a value of 1 if the individual was not found. Column [1] presents results for the follow-up survey. The sample includes all individuals originally sought. Panel A presents the differential attrition rate. Panel B presents coefficients from interactions between treatments and covariates. In the regression, we also use as control all the variables with which treatments are interacted. We use robust standard errors. *** p<0.01, ** p<0.05, * p<0.1

Table A4: Interaction between treatments and months after the offer

	[1]	[2]
P-value F Test - Months 1 to 17 interacted with each treatment		
SS=ASP	1	0.994
SS=SMS	0.00420	0.00
ASP=SMS	0.000353	0.00

Note: The table reports p-values from the F-test of the interaction between all treatments and the 17 months after the offering. In column [1] of Panel B the dependent variables is savings accounts, while in column [2] is total balance (savings accounts and *CuentaRUT)*. General notes from Figure 2 apply. ***p<0.01, **p<0.05, * p<0.1

Table A5: Large withdrawals after offering

	[1]	[2]	[3]	[4]	[5]
	Control Mean	Savings Strategies (SS)	SMS Remainders	Automatic Savings Plan (ASP)	Sample Size
Panel A: Months after offering					
Savings Accounts					
1st-9th month	0.278	-0.028*	0.011	0.008	6,242
	0.448	(0.016)	(0.016)	(0.015)	
10th-17th month	0.174	0.027*	0.041***	0.033**	6,242
	0.379	(0.014)	(0.014)	(0.013)	
CuentaRUT					
1st-9th month	0.798	-0.008	-0.005	-0.005	6,242
	0.402	(0.014)	(0.014)	(0.013)	
10th-17th month	0.759	0.011	0.008	0.006	6,242
	0.428	(0.015)	(0.015)	(0.014)	
Savings Acc. & CuentaRUT					
1st-9th month	0.707	0.001	-0.002	-0.013	6,242
	0.455	(0.017)	(0.016)	(0.015)	
10th-17th month	0.632	0.026	0.022	0.006	6,242
	0.482	(0.017)	(0.017)	(0.016)	

Panel B: F-Test	[1] SS=SMS	[2] SS=ASP	[3] SMS=ASP
1st-9th month			
Savings Accounts	0.0256	0.0264	0.834
CuentaRUT	0.857	0.871	0.974
Savings Acc. & CuentaRUT	0.880	0.406	0.497
10th-17th month			
Savings Accounts	0.377	0.667	0.598
CuentaRUT	0.838	0.727	0.897
Savings Acc. & CuentaRUT	0.803	0.232	0.352

Note: The table reports coefficients from the regression of the probability of a withdrawal larger than 90% in the total savings or *CuentaRUT* account balance. Regressions include same controls as table 5.

Table A6: Difference and Difference Effect in Debt

	[1] Debt (1 to 13 months)	[2] Debt (14 to 17 months)
Time Dummy	56.498***	127.339***
	(9.516)	(16.640)
ASP	5.057	3.482
	(8.934)	(8.996)
SMS	51.280***	50.441***
	(10.548)	(10.576)
SS	-7.082	-8.029
	(9.586)	(9.588)
ASP * Time Dummy	-1.096	3.824
	(13.635)	(23.736)
SMS *Time Dummy	-2.140	-38.368
	(15.874)	(26.099)
SS * Time Dummy	4.926	0.428
	(14.820)	(26.331)
Constant	-78.514**	-88.817*
	(37.741)	(45.758)
Observations	162,292	106,114

Note: Time Dummy takes the value of 1 if months are between 1 and 14 (column [1]) months 14 or more (column [2]), and 0 if before baseline. General notes from Table 5 apply ***p<0.01, **p<0.05, * p<0.1