The Long Term Effects of Temporary Incentives to Save: Results Field Experiment in Mexico

By PAUL GERTLER & AISLING SCOTT & ENRIQUE SEIRA

This study randomized bank branches across Mexico to receive a temporary incentive of prize-linked savings (PLS). A total of 110 branches were involved in the experiment, the study treated 40 branches with the PLS and 70 control branches. We demonstrate that PLS products serve as a nudge and result in a 46% increase in bank account openings. Additionally, those opening accounts due to the lottery are significantly lower savers than their counterparts in the control branches. Furthermore, they keep their accounts open at similar rates and 36 percent use their accounts almost 5 years after the temporary incentive. We do not observe current account holders changing their average savings during the lottery. Overall, we see effects on long-term savings for those who open accounts due to a short-term lottery incentives. Consequently, these lottery incentive (PLS) products could serve as an effective policy initiative to get individuals to open and learn to use savings accounts.

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I. Introduction

Savings is important, particularly for the poor. Savings builds assets and investments in capital and precautionary savings can smooth consumption. Despite high returns to savings for the poor (Dupas and Robinson 2013) only 22 percent of adults worldwide report having saved at a formal financial institution in the past year. For individuals living on less than $2 a day, 77 percent report not having an account at a formal financial institution (Demirguc-Kunt and Klapper 2012).

We investigate whether temporary incentives or "nudges" can introduce poor into the formal banking sector. Behavioral biases may hold individuals back from savings in particular we focus on procrastination and lack of experience with formal financial institutions. Procrastination refers to individuals that may want to save but put off saving till the future due to hyperbolic discounting (O'Donoghue and Rabin, 1999). While lack of experience focuses on savings as an experience good. Individuals may not want formal banking accounts but if given an account can learn savings by doing and developing a trusting relationship with a formal financial institution. This paper focuses on temporary incentives to address these barriers and encourage long-term savings. If individuals procrastinate, a temporary incentive may push them over the hump to open a savings account that they wanted to open but never got around to it. Temporary incentives may induce individuals that don't want accounts or trust financial institutions to open accounts and learn the benefits of savings over time. In both cases, we expect to see temporary incentives increase participation in the formal banking sector and that those accounts persist over time.

We focus on temporary incentives for savings in Mexico. Within Mexico 86% of households not receiving government benefits do not have a savings account and only 8.6% have a bank account (MXFLS, Household Survey 2009-

2012). We design an experiment that randomizes branches to expose individuals in the bank branch area to a prize-linked savings account (PLS). A prize-linked savings (PLS) is a financial product that offers a lottery ticket for a fixed cash prize. The principal savings is never decreased and the more savings in an account the more chances to win a lottery. These products are popular in South America, Africa, and Europe. PLS take advantage of the fun of gambling and can de-bias time inconsistent individuals to increase participation in savings.

A key contribution of this paper is that it offers a short-term financial incentive to all individuals in the treatment and measures how that incentive affects ATM accounts and savings over time. Our main outcomes will be on the extensive margin of account openings and the intensive margin of average savings of existing account balances. This paper contributes to a growing literature on financial incentives for behavior change. While some studies focus on education and health behavior there exists a small literature on savings behavior. For example, Schaner (2015) shows that financial incentives can have sustained behavioral change in the financial realm when individuals want to save and have access to lucrative investment opportunities. In contrast, our paper analyzes how the overall low-income population changes savings behavior in response to a temporary financial incentive.

Our results are consistent with the literature on transaction costs serving as a key determinant of savings. For instance, Prina (2015) finds that offering low transaction costs savings accounts encourages poor households to use savings accounts regularly. Low transaction costs whether in the form of no fees, no minimum balances, or proximity to the bank increase usage in savings accounts among the poor (Karlan, Ratan, and Zinman, 2014; Banerjee and Duflo, 2011; Dupas, Green, Keats, and Robinson, forthcoming). We find that increasing the benefit of a low transaction cost account by way of a temporary financial incentive induces savings.

Additionally, this paper contributes to the literature on financial innovations for the poor and the effects on savings. Financial innovations such as micro loans, commitment savings, and rotating savings and credit associations, constitute a growing literature. For instance Dupas and Robinson (2013a) find savings accounts with initial credit has effects on long-term health investments. Rigorous loan repayment schedules for micro loans have been proven to have large-long term effects on business investment (Field et al. 2013). There have been some randomized experiments that demonstrate commitment savings can help individuals exercise self-control (Ashraf, Karlan, and Yin 2006; Brune et al. 2014), but puzzling evidence remains around the lack of us of these commitment devices. This paper along with Prina (2015) and Dupas and Robinson (2013b) demonstrates that individuals can save even without commitment contracts. Our paper goes further to say that simply advertising a savings account with an incentive can boost account openings and savings.

The results of this paper contrast the results found the financial literacy literature. Those studies examine the effects of financial education on economic outcomes and find relatively little impact (Karlan et al. 2014; McKenzie and Woodruff 2014). Cole et. al (2011) find that financial subsidies are more effective than financial literacy training at increasing take-up and long-term savings. Scharer (2015) shows the effect of substantial financial incentives on long-term economic outcomes such as investment and savings. Kast et. al (2013) and Karlan and Zinman (2014) demonstrate that low interest subsidies have no economic impacts. We examine a different type of incentive, a chance to win a large sum, and demonstrate that smaller incentives targeted at low-income individuals can have long-term savings outcomes. Further research is needed to compare lottery incentives to interest subsidy incentives.

Finally, this paper relates to a burgeoning literature on prize-linked savings. Prize linked savings (PLS) accounts serve as common financial products in places

such as the United Kingdom, Sweden, South Africa, South America and the Middle East (Maynard et al. 2011). Survey evidence indicates these products have been successful in attracting savers particularly low-income and unbanked individuals (Guillen and Tschogel 2002). Filiz-Ozbay et. al (2013) indicate that 58% of interviewed customers at Wal-Mart expressed interest in opening a hypothetical PLS account. Additionally, the account attracted individuals that save little currently but enjoy gambling, but the study finds no correlations between education, income, or age and likelihood to be interested in PLS (Filiz-Ozbay et al. 2014). Non-experimental work from Guilian and Toschogel (2002) concludes that PLS accounts serve as a marketing device for banks more than a source of cheaper funds. Lab experiments by both Atalay et al. (2012) and Filiz-Ozbay et al. (2013) show that the introduction of a PLS account option increases savings rates. Our work builds off of these papers to examine PLS behavior in the field. A recent paper by Cole et. al (forthcoming) finds that in South Africa PLS accounts do not crowd out other savings. Paired with our paper, we believe that PLS are attracting a new type of saver to formal banking institutions. Our paper is the first paper to our knowledge to conduct a randomized field experiment on the effects of prize-linked savings.

The paper proceeds as follows.... [TO BE COMPLETED].

II. Prize-Linked Savings Intervention

A. Background and Data

The experiment was conducted in September and October 2010 with The National Savings Bank and Financial Services (BANSEFI) in Mexico. BANSEFI was created in November 2001 to instill legal trust in the industry and help strengthen institutions. Of 494 official BANSEFI bank branches, 70 control

branches and 40 treatment branches were randomly selected. The branches are located in areas with limited access to commercial banking. Importantly, BANSEFI serves as a developing bank in Mexico to promote savings, develop central entities around financial services, and support the sector.

BANSEFI offers a number of financial products suitable for low-income individuals. We will focus on the debicuenta (called an ATM account henceforth) that is a savings account with an ATM card that the account holder can use at a variety of ATMs. No minimum balance is needed nor is there a fee associated with the ATM account. ATM accounts have an interest and no interest option. BANSEFI also offers a cuentahorro (henceforth savings (non-ATM) account), which are savings accounts that individuals can access at any point but do not have a ATM card option. Along with these low-cost accounts BANSEFI has focused on developing Knowledge and Capacity Building Products (KCP) to expand financial services to unbanked segments of the population and encourage the use of the account by temporary financial incentives to demand.

Prize-linked savings constitutes a product to temporarily increase the benefit to savings. Prize linked savings (PLS) accounts serve as common financial products in places such as the United Kingdom, Sweden, South Africa, South America and the Middle East (Maynard et al. 2011). The structure of PLS accounts combines a savings account with a lottery. Individuals with accounts at BANSEFI had some familiarity with these lotteries as BANSEFI had conducted lotteries to encourage savings from 2007 to 2009. During that time they had 10,000 winners. In 2010, the only PLS drawings were the ones in this study for September and October. Consequently, individuals who had accounts prior to 2010 may be eager to participate in the lotteries again.

2.1 Intervention

The intervention assigned branches to receive prize-linked savings (PLS) accounts for all ATM account holders and new ATM account openers. For every 50 peso increase in their ATM account, individuals are assigned a lottery ticket for a chance to win the prizes. The principal amount that individuals place in their account is never decreased by the lottery and they can take out their money anytime after the lottery with no consequences. The lottery offers individuals a chance to win 1,000 prizes of 400 pesos and one 10,000 peso prize for each of the two months of the lottery.

The PLS accounts were open to anyone in the designated 40 treatment branch areas. We focus on the general population in these areas with limited commercial banking options. Thus, the experimental design allows us to observe openings of individuals who may not have indicated the desire to save not had the opportunity to save in low-cost accounts due to the lack of commercial banks in their area. The branches advertised the lotteries with flyers that exhibited the message save in ATM account and multiply your money (Figure A.1). Participants who opened accounts were told that the lottery would be held for only two months and given the exact details about adding 50 pesos to their account each month to gain at least one ticket.

In order to participate in each lottery, an individual had to increase their balance excluding interest from the previous months ending balance. Thus, individuals could not open an account put money in one day and take it out the next day and gain a ticket for the lottery. Individuals could participate one month and not the other month of the lottery as well. For example, to participate in the October lottery an ATM account holder had to increase the balance at October 31, 2010 50 pesos excluding interest payments from the balance at September 30, 2010. One can participate in the October lottery without participating in the

September lottery or can participate in both. Individuals knew their probability of winning the lottery would depend on how many increments of 50 peso increases in their accounts as well as the number of others participating in the lottery.

As stated above, the lottery drawings were conducted after the end of September and October. We purposefully offered a limited time promotion of these accounts to observe the persistence effects of a short-term price change. The drawings of the winners were held publicly and according to rules surrounding raffles. Representatives from BANSEFI and Inspector of the Ministry of Interior participated in the drawing. For the winners of the drawings, a set of 10 balls were chosen out of a set of many revolving balls with numbers from zero to nine. The winning numbers were announced and winners were notified and credited the prizes in their ATM accounts. The timeline of the intervention proceeds as follows: fliers and advertisements were posted in August 2010, while the lottery drawings were held at the beginning of October for the September lottery, and beginning of November for the October drawing. After October no more lotteries occurred. Consequently, the end of the lotteries allows us to study the behavior after the incentives for savings disappear.

Timeline: [INSERT FIGURE]

2.1 Experimental Design

In order to identify the effects of the lottery we will analyze the lottery at different levels. First we estimate the effect of the lottery on the openings of ATM accounts. Then we examine the survival of these newly opened ATM accounts. Furthermore, we look at the average account balance of these individuals to examine whether the lotteries had a long term effect on savings. On the extensive margin we conduct two placebo tests. First we investigate whether the

advertisement of the lotteries had a positive effect on openings of savings accounts that is accounts not eligible for the lottery. Second, we examine the average balances of those who opened accounts before and after the lottery to see if there are substantial differences between treatment and control groups. Finally, our overall analysis focuses on the intensive margin. Here we look at the average balances of current account holders.

Based on our identification of the short-term versus long-term savings behavior effects, we can expect certain results. For instance, in order to identify a long-term effect, we would expect to see a positive effect of the lottery on ATM account openings as well as the survival of these accounts. Additionally, to observe long-term effects we expect to see the average savings balance of account openers increasing over time. Conversely, we would expect to see openers closing accounts and taking their money out if the lotteries only caused a short-term behavior change.

[Chart to be inserted]

2.3 Data and Balance

2.3.1 Data

This study uses two main datasets; branch level aggregate data on number of accounts and individual level data on savings. The branch level data identifies the number of ATM (debicuenta) and savings (cuentahorra) accounts opened each month per branch starting in March 2010. For the aggregate data, we have information on all 110 branches. Additionally, we collected information on the locations of these branches and municipality data. The supplementary municipality data consists of average income and share of population. The

individual level data indicates the type of account and each individuals' average savings. Average savings is the sum of the daily balances over the number of days in the month. The average savings metric allows us to see on average how much the individual keeps in their account and whether the individual keeps an active account. Additionally, we observe when the individual opened the account.

2.3.2 Balance

To ensure that the branch level randomization worked, we conduct balance tests as well as show the geographic variety between the control and treatment. Table 1 exhibits how many control branches and treatment branches are in each state. Figure 1 shows a map of more than two thirds of the treatment and control branches across Mexico. The control branches (red) and the treatment (blue) branches are not very closely located with exception of Mexico City where there is a high concentration of both branches. However, the minimum distance is 3km(DOUBLE CHECK). Additionally, BANSEFI serves areas with limited access to other formal banking institutions thus we are not concerned with individuals migrating to a different branch based on lotteries offering.

Table 1 describes the summary statistics for the control and treatment branches in early 2010.

TABLE 1—BASELINE

	Control	Treatment	Diff.	SE
Num. of accts (start of 2010)	154.04	146.35	7.69	(17.12)
Num. of New Accts (per year)	16.83	16.60	0.23	(1.91)
Average Balance in Pesos (Jan 2010)	28530.30	30012.56	-1482.26	(4308.78)
Number of Observations	70	40	110	

In 2010 they had similar ATM account numbers, new ATM openings, and savings account openings. The total number of ATM accounts opened in 2010 before September 2010 when the bank announced the lotteries was 16.8 in the control and 16.6 in the treatment. These branches are small financial institutions

and many are in rural areas that have many unbanked citizens. The small difference in account openings indicates that these institutions attract new account holders at similar rates. Later, we will show balance for average savings when we turn to the intensive margin. Overall, the balance at baseline indicates that we can interpret any differences after the announcement as causal.

III. Main Results

A. Preliminary Results

In this section, we provide the first casual evidence of the effect of offering limited time PLS savings accounts. First, we examine the effects of the lottery on the extensive margin consisting of ATM account openings. By looking at the extensive margin we can observe the demand for these ATM accounts as well as the savings behavior of those that open these accounts. We will further analyze if there are spillover effects on the extensive margin as well as differences in account characteristics of those who had demand for ATM accounts. Finally we focus on the intensive margin where we observe the effects on average savings of current account holders.

3.1 Extensive Margin.

We start by analyzing how many individuals open ATM accounts due to the lottery offering. Figures 2 and Table 5 study how ATM account openings are impacted by the lotteries. From the balance statistics, we found that ATM account openings for the first 6 months of 2010 is low across all branches. The branches are small branches serving populations that have not been exposed to formal banking. Figure 2 provides visual evidence that the mean account openings increases during the lottery. We also observe that there exists an increase in account openings after the lotteries as well. Our outcome of interest y_{jt} is the

number of accounts opened in month *t* in branch *j*. To estimate the effects of the lotteries on our outcome variable we calculate the following regression:

(1) $$y_{tj} = \alpha + \sum \beta_t T_j * I_t + \sum \delta_t I_t + \gamma_j T_j + \varepsilon_{jt}$$

where I_t represents a dummy for each month and t_j represents a dummy for if the branch was treated. Our sample includes one observation per branch per month, thus we have 1320 observations over the year. Figure 2 plots the coefficients from the above regression. Each point plots the difference in the treatment and the control with 95 percent confidence levels. We observe a significant increase in account openings in October, the second month of the lottery. Again there exists a persistent but not significant effect of the lotteries on account openings after the lotteries end in October. This effect could be due to the excitement surrounding the lotteries. Additionally, branches may have failed to take down the advertisements. Since the effect is not significant, we do not observe persistence in account openings. As we expected, the lotteries increase ATM account openings, however, a significant increase occurs only in the second month of the lotteries. Since we randomized on the branch level and we have balance at baseline for our outcome of interest y_{tj} ATM accounts opened, we estimate the treatment effects with a regression for each month separately. Again, T equals one if the branch is a treatment branch and zero otherwise.

(2) $$y_{tj} = \alpha + B_t T_j + \varepsilon_{jt}$$

Table 5 presents our results from this month by month regression that gives a point estimate on the effect of the lottery treatment on account openings. We find that in October the lottery treatment leads to 1.46 more ATM account openings

than the control. The mean number of ATM account openings for the control branches is 3.21, consequently the lottery leads to 45% increase in ATM account openings.

3.1.1 Spill-overs:

Since some of the branches are located near each other, an alternative hypothesis the increase in account openings could be due to the fact that individuals chose to open accounts at treatment branches instead of control branches. Individuals could chose to substitute their local branch with a treatment branch due to the lottery. If this were the case, our significant increase in account openings would be due to decreased account openings in the control branches. Figure 2 demonstrates that the number of accounts opened in both treatment and control groups declines after October 2010 (the second month of the lottery).

One might imagine that the lottery promotion for ATM accounts affected other types of accounts at the bank branches. To address this concern we also look at savings account openings. Since the lottery was only available to those with ATM account contracts and not those with savings accounts, we can use the saving accounts as a placebo to test for spillover effects. As above we estimate the same regression and plot the coefficients with savings account openings as y_{it} our outcome of interest. We see from Table 5 and Figure 5 that savings account openings did not significantly increase during the months of the lottery. Therefore we do not see the advertisements for the lottery influencing other savings products offered at the bank branches. Consequently, we have a robust result for the limited promotion of the lottery inducing an increase in ATM account openings.

3.1.2 Survivorship:

As stated in our empirical framework, we wish to disentangle the short term effects from the long term effects of lottery. First, we examined the short

term effects on openings. We found a significant effect on ATM openings and now we seek to understand more about those that open ATM accounts due to the lottery incentive. We compare the survival rates of those that open accounts during the month of October the second month of the lottery in the treatment branches versus those that open accounts in the control branches during this same month. This allows us to observe whether the short-term effect of ATM account openings had a persistent long-term effect on individuals.

Table 2 indicates that the survival rates 12 months after the lottery are no different for individuals in the treatment than individuals in the control. For both groups, we observe survival rates of about 95%. We worry that even though accounts survive they are dormant and have little money in the accounts. Thus we use the 50 pesos cut-off to analyze how many have at least 50 pesos a year after the lotteries. Survival rates with greater than 50 pesos are 81% for the treatment group and 76% for the control group. Consequently, we believe that most of the individuals induced to open accounts due to the lotteries promotion did not simply take out the 50 pesos that they used to "buy" one lottery ticket after the lotteries ended. In fact, 81% kept at least 50 pesos in their account a year after the lotteries ended. This evidence suggests long-term effects.

TABLE 2—SURVIVAL RATES OF ACCOUNT OPENINGS DURING OCTOBER OF THE LOTTERY

	Control	Treatment	Diff.	P-Value
Number of Accounts Opened	215	180		
Survival Rates (1 year)	0.95	0.94	-0.01	0.67
Survival Rates (1 year > 50 pesos)	0.76	0.81	0.05	0.26
Number of Transactions (1 year)	1.74	1.72	0.03	0.93
Proportion with Transactions (1 year)	0.67	0.72	-0.06	0.22
Number of Transactions (~5 year)	0.37	0.61	-0.24*	0.06
Proportion with Transactions (~5 year)	0.31	0.36	-0.05	0.26

Another aspect of survival is usage of accounts. We examine whether individuals continue to make transactions and how many transactions well after the lottery. Table 2 shows that the number of transactions account holders made 1

year after the lottery was 1.74 in the control and 1.72 in the treatment group. Even a year after the lottery the treatment group continues to utilize its ATM account at the same rate as the control group. Surprisingly in July 2015 almost 5 years after the lottery, accounts in the control group conduct 0.37 transactions per month while the treatment group account holders conduct 0.61 transactions. This difference is statistically significant and indicates that those that opened accounts during the lottery continued to use them at higher rates than their control counterparts. The proportion that make at least one transaction in the month of July 2015 is 31 percent for the control group and 36 percent for the treatment group. Consequently, the short-term lottery incentive has lasting impacts on account survival and usage almost 5 years later.

3.1.3 Long-Term Savings:

To further measure the long-term impacts of the lotteries on savings we examine the average balances of those who opened accounts in October. We saw a significant increase in account openings in October and these accounts opened survive at similar rates as those in the control, thus we seek to understand more about these account openers. How much do these account openers save during and after the lottery?

Figure 4 plots the coefficients of differences in average savings in pesos of control and treatment October account openers. This figure represents a similar equation 1, only here we include a control for whether an individual won the lottery. Since winning the lottery will influence one's savings patterns we include a winner dummy which equals 1 if the individual won the lottery and the month is during or post the lottery. Figure 4 shows us that those opening accounts in the treatment group during the October lottery are significantly lower savers than those in the control branches. Furthermore, these individuals slightly increase their savings over time demonstrating a long-term effect of short-term incentives.

Next we examine the average savings of these accounts opened in October. Figure 5 illustrates that average savings of accounts decreases over time for both the treatment and control group. However, as exhibited in Figure 4 the treatment group decreases at a slower rate after the initial months. Although dissaving is the norm, the treatment seem to learn that there exists some value in having savings and they almost converge with the average savings balance of the control group.

In order to check the robustness of our long-term effect results, we do the same analysis on individuals opening accounts well before the lottery and after the lottery. We create a variable that indicates the number of months since the account was opened. Therefore the regression analysis compares individuals in the control and treatment based on their length of account. For instance we compare the average balance of the first month the account is open for someone who opened an account in January 2011 to the average balance of the first month of someone who opened their account in November 2009. Hence we can control for survival differences and test whether those opening accounts in the treatment branches not during the lottery are different from those in the control branches.

We see that the differences and 95% confidence intervals include zero for the entire sample. Thus we can assume that those accounts opened in the treatment group during the months of October 2009 to July 2010 and November 2010 to October 2011 are not significantly different savers than those in the control group who opened accounts during those months. Consequently, we find our results comparing those who opened accounts in October in the treatment robust.

Figure 4 presents interesting evidence that a short-term incentive can offer long-term benefits to savings and those who start saving are significantly lower savers in the beginning. Taken together with the results on survivorship, this

suggests that individuals opened ATM accounts due to a two-month lottery and continued to use and save in this account over a year after the lottery ended.

3.2 Intensive Margin

To observe the effects of the lottery on savings of all ATM account holders, we examine a subset of the population that has held accounts before the lotteries and held a positive balance. We eliminate accounts of those that receive conditional cash transfers from the government since their payments are bi-monthly and they pull most of the money out. The sample consists of 3,763 accounts; 2,366 in the control and 1,397 in the treatment branches. We observe these account balances from October 2009 to October 2011.[1] The unit of analysis is average savings in pesos which as described before is the sum of the balances each day of the month divided by the number of days. Table 6 presents the month by month treatment effect on Average Savings in pesos. For all the months after and during the lotteries we control for the winners of the lotteries since winning likely influences future savings. Thus we estimate the following regression for each period t,

$$y_{ij} = \alpha + \beta T_{ij} + \gamma_i W_i + \epsilon_i \quad (3)$$

where T_{ij} is a dummy for whether the individual is in a branch that received the treatment of lotteries and W_i is a dummy for whether an individual won the lottery and the month is during and post the lottery. Here we see no significant difference in average savings between the control and the treatment groups. Furthermore, we calculate the differences for average savings as we did for ATM

[1] Note we are missing data for February 2011 and thus we leave that month out of our analysis.

account openings in equation 1, only with y_{itj} as average savings for individual *i* in branch *j* at time *t* and controlling for during/post winners of the lotteries.

Then we estimate the marginal conditional treatment effect by using the following equation:

$$y_{ijt} = \alpha + \beta T_{ij} + \gamma_i W_i + \sum I(t) + \theta_j + \epsilon_i \quad (4)$$

In equation (4) $\sum I(t)$ represents month dummy variables and θ_j is a branch fixed effect. Figure 6 plots the resulting marginal conditional effect of equation (4). It shows the differences between treatment minus control. We see from Figure 6 that the treatment effect is small or close to zero and not statistically significant for any time period in our study. Consequently, we can not say that the lotteries had an effect on the intensive margin of average savings. On the intensive margin, one would expect rational and informed individuals to increase their balances during the lottery. This would indicate a short-term effect on current account holders. Surprisingly, we do not find evidence to support this nor do we find a long-term effect on savings of current account holders.

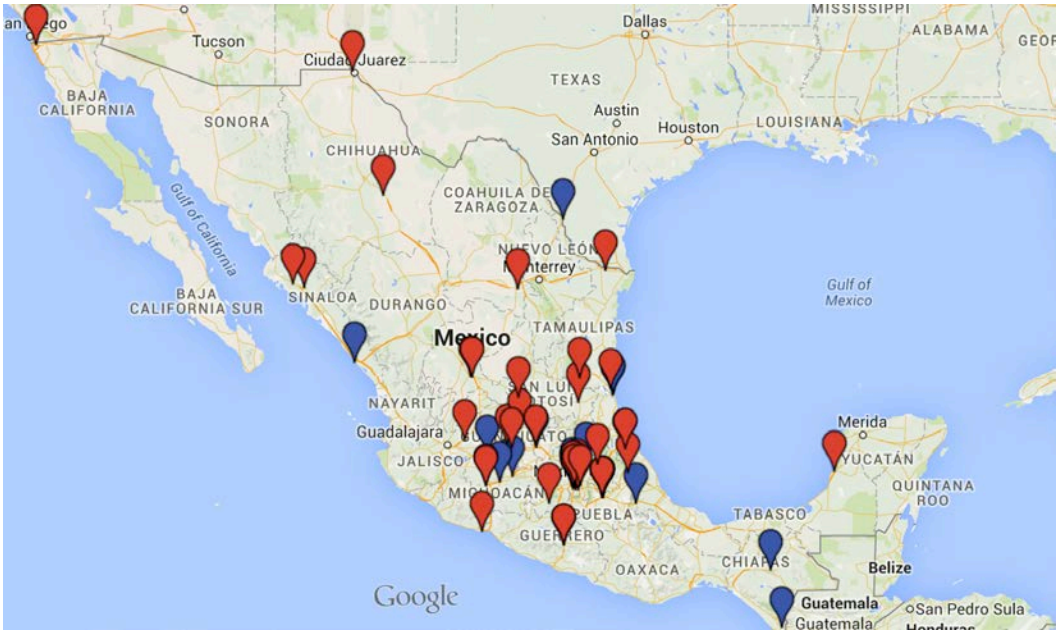
IV. Conclusion

We show that short-term incentive of offering a limited time lottery attached to an ATM account have some long-run impacts for those that choose to open accounts due to the lotteries. While the account openers due to the lottery are significantly lower savers on average, 36 percent of them continue to use their accounts more than 5 years later, which is 5 percent more than the control group. Additionally, the dissavings rate of the treatment account holders is less than that of the control accounts. Short-term incentives seem to be introducing a new type of saver to banking, one who doesn't save a lot at first but learns the value of savings over time.

Overall, development policy needs more research on behavioral mechanisms that influence savings. Further research would help shed light on impact of which short-term incentives work best.

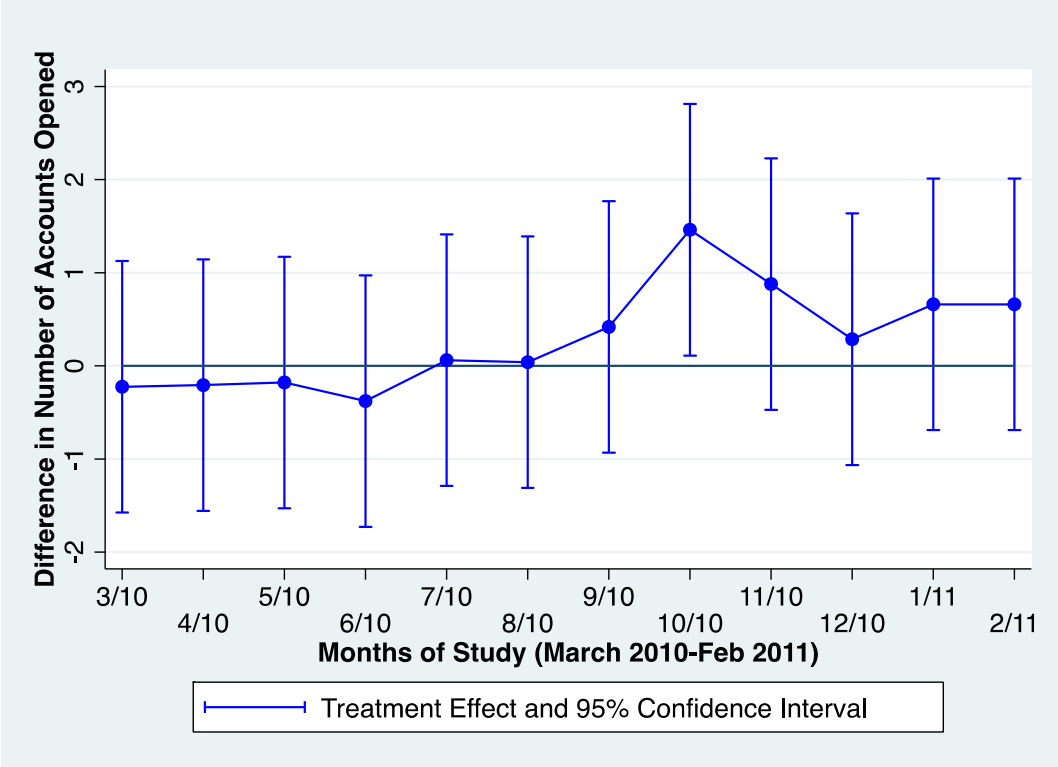
V. Figures

FIGURE 1. LOCATION OF TREATMENT AND CONTROL BANSEFI BRANCHES



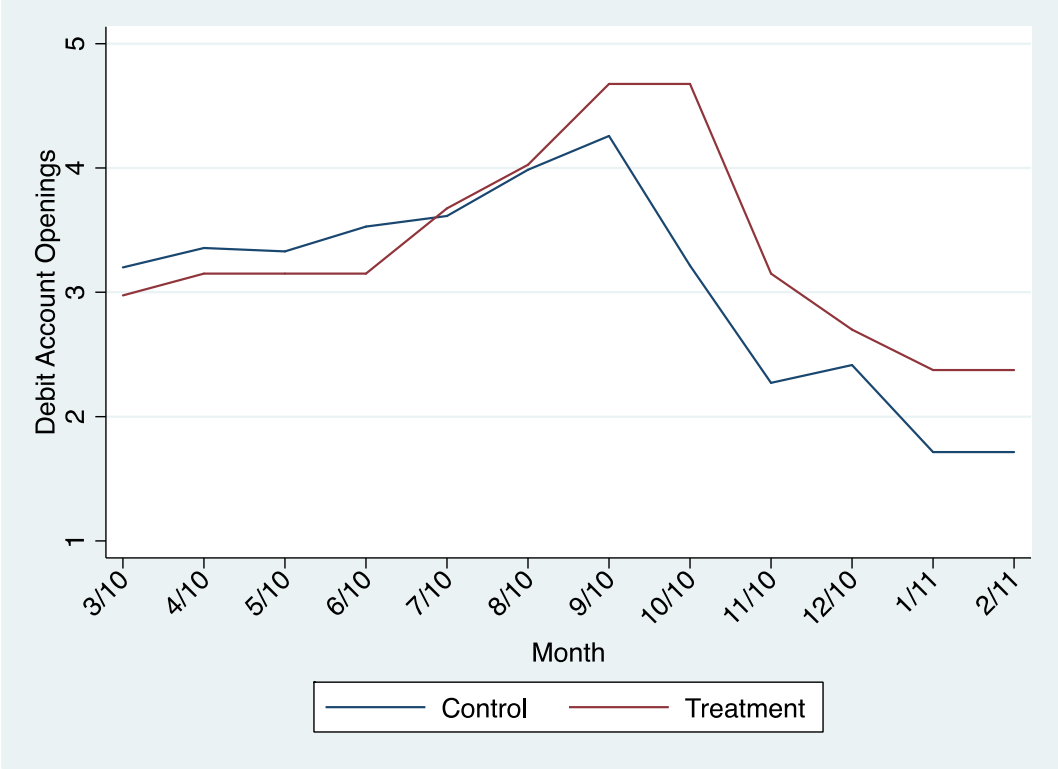
Notes: The treatment branches are denoted by the blue teardrops while the red teardrops mark the control branches.

FIGURE 2. IMPACT OF TREATMENT ON THE NUMBER OF ATM ACCOUNTS OPENED (EXTENSIVE MARGIN)



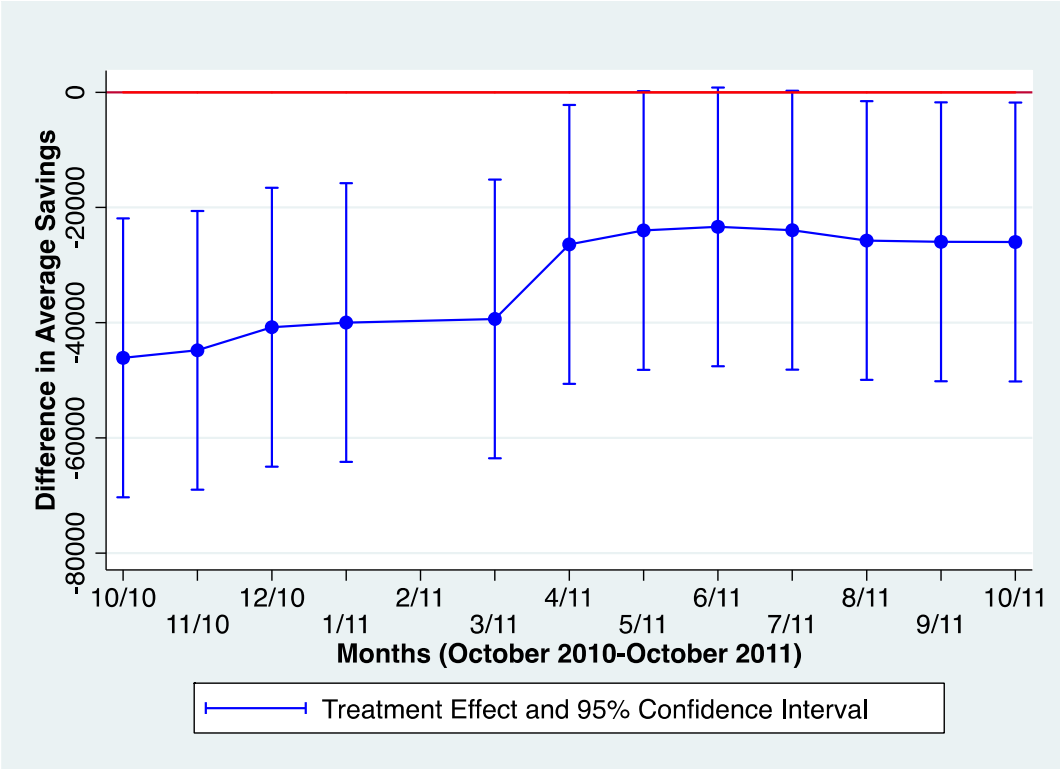
Notes: This table represents the conditional marginal effect of being a branch exposed to the lottery treatment. These estimates come from equation 1. The dependent variable is total ATM accounts opened per bank branch. The lottery occurred in September and October 2010 and ATM accounts opened in the month of the lotteries were eligible for the prize

FIGURE 3. AVERAGE NUMBER OF ATM ACCOUNTS OPENED PER MONTH (EXTENSIVE MARGIN)



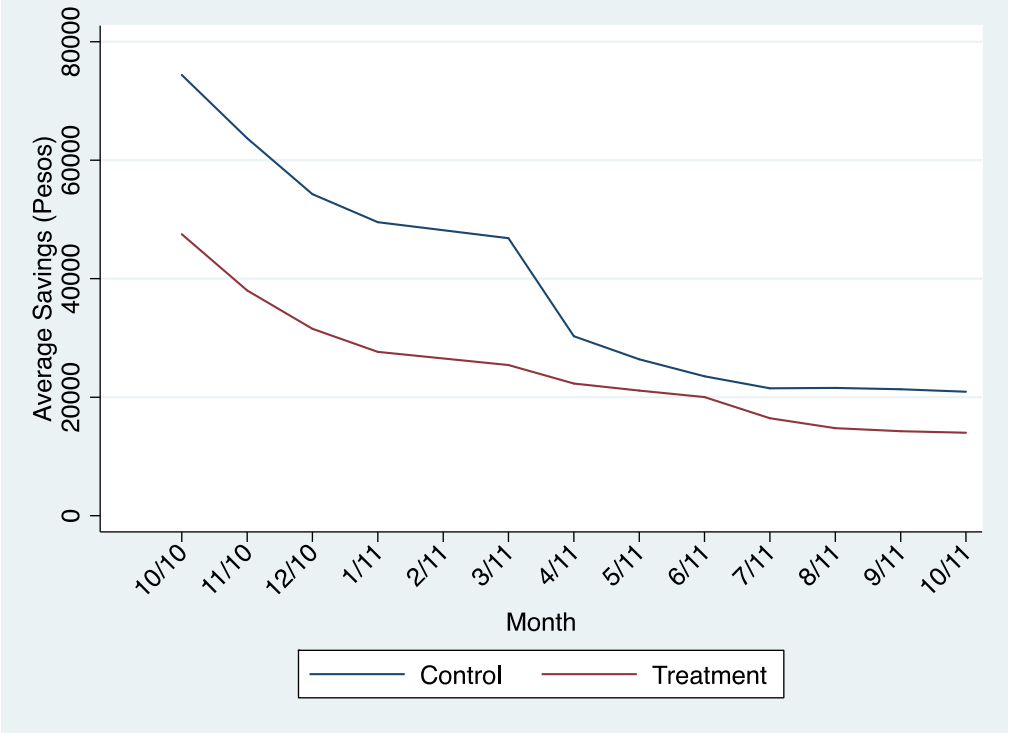
Notes: This figure exhibits the average number of ATM accounts opened per month

FIGURE 4. IMPACT OF TREATMENT ON ACCOUNT BALANCES OF ATM ACCOUNTS OPENED IN OCTOBER 2010



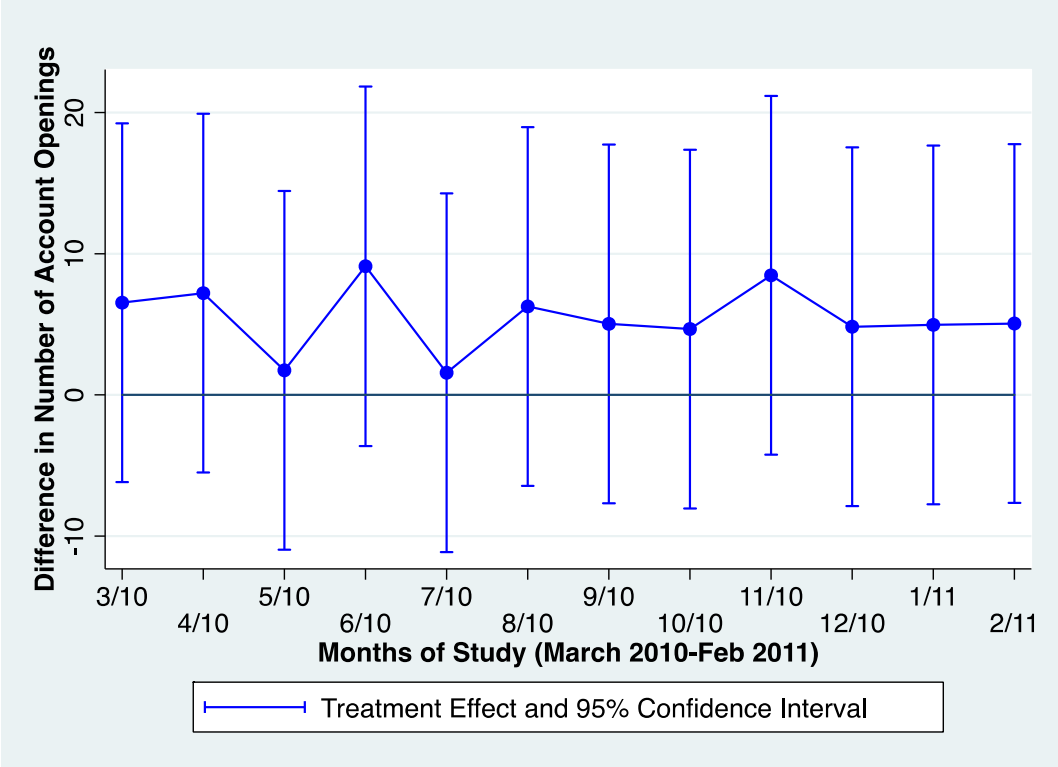
Notes: This figure represents the conditional marginal effect of being a branch exposed to the lottery treatment for those that opened accounts in October of 2010. October represented a significant increase in openings due to the lottery and thus we examine those that opened accounts in that month. The dependent variable is average savings balance (Pesos). The regression includes an individual winner dummy for those that won the lottery as well as month controls. The regression corresponds with that of equation ?.

FIGURE 5. AVERAGE SAVINGS OF ATM ACCOUNTS OPENED IN OCTOBER 2010



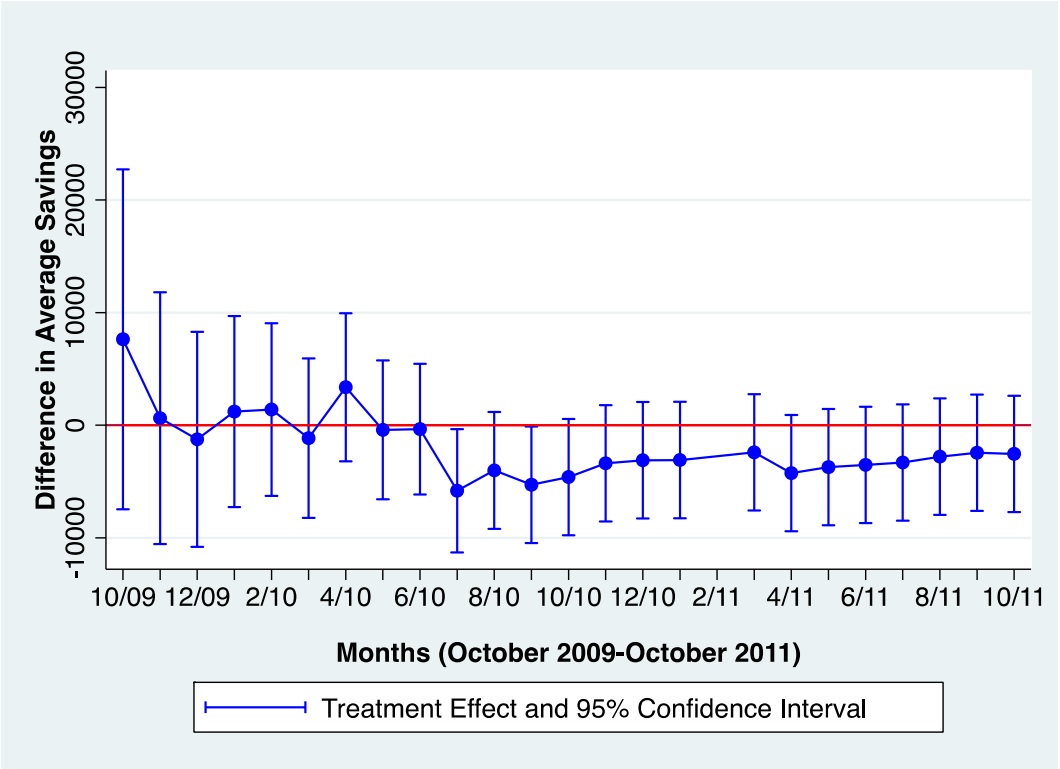
Notes: We are missing data for February 2011 (2/11) thus the average was imputed.

FIGURE 5. IMPACT OF TREATMENT ON TOTAL SAVINGS (NON-ATM) ACCOUNT OPENINGS



Notes: This figure represents the conditional marginal effect of being a branch exposed to the lottery treatment. These estimates come from equation 1. The dependent variable is total savings (non-ATM) accounts opened per bank branch. The lottery occurred in September and October 2010 and savings (non-ATM) accounts were not eligible for the lotteries.

FIGURE 6. IMPACT OF TREATMENT ON AVERAGE SAVINGS OF EXISTING ACCOUNT HOLDERS (INTENSIVE MARGIN)



Notes: This figure represents the conditional marginal effect of being a branch exposed to the lottery treatment and comes from equation 3?. The dependent variable is average savings balance of individuals in pesos. The regression includes an individual winner dummy for those that won the lottery, as well as branch and month dummies. The lottery treatment occurred in September and October 2010.

VI. Tables

TABLE 3—LOCATIONS OF TREATMENT AND CONTROL BRANCHES

State	Control	Treatment
California Norte	2	0
Campeche	2	0
Chiapas	1	2
Chihuahua	2	0
Coahuila	1	1
Distrito Federal	20	15
Guanajuato	3	0
Guerrero	3	10
Hidalgo	1	1
Jalisco	4	1
Mexico	10	5
Michoacan	3	4
Puebla	4	1
Queretaro	2	1
San Luis Potosi	2	2
Sinaloa	2	1
Tamaulipas	3	3
Veracruz	3	2
Zacatecas	2	0
TOTAL	70	40

TABLE 4—IMPACT OF TREATMENT ON TOTAL ATM ACCOUNT OPENINGS PER BRANCH (EXTENSIVE MARGIN)

Month	Control mean	Treatment Effect	SE	P-value
10-Mar	3.2	-0.23	(0.58)	0.7
10-Apr	3.36	-0.21	(0.54)	0.7
10-May	3.33	-0.18	(0.57)	0.75
10-Jun	3.53	-0.38	(0.77)	0.62
10-Jul	3.61	0.06	(0.74)	0.93
10-Aug	3.99	0.04	(0.97)	0.97
10-Sep	4.26	0.42	(0.98)	0.67
10-Oct	3.21	1.46**	(0.74)	0.05
10-Nov	2.27	0.88*	(0.53)	0.1
10-Dec	2.41	0.29	(0.66)	0.66
11-Jan	1.71	0.66	(0.45)	0.15
11-Feb	1.71	0.66	(0.48)	0.17

Notes: Number of observations is 110 branches. This table reports the estimated effect of lotteries treatment on the opening of ATM accounts. Each treatment effect comes from a separate linear regression corresponding to equation 2. The lotteries were held in Sep-10 and Oct-10 and ATM accounts were eligible for the lottery. Here we see evidence that the treatment effected opening accounts. *** p<0.1, ** p<0.05, * p<0.10

TABLE 5—IMPACT OF TREATMENT ON TOTAL SAVINGS ACCOUNT OPENINGS PER BRANCH

Month	Control mean	Treatment Effect	SE	P-value
10-Mar	55.54	6.53	(7.22)	0.37
10-Apr	51.64	7.21	(7.12)	0.31
10-May	55.59	1.74	(7.19)	0.81
10-Jun	59.27	9.03	(7.59)	0.24
10-Jul	66.53	9.03	(9.06)	0.24
10-Aug	48.59	6.26	(6.26)	0.32
10-Sep	47.44	5.03	(6.33)	0.43
10-Oct	48.06	4.67	(5.95)	0.43
10-Nov	41.46	8.47	(5.73)	0.14
10-Dec	36.87	4.83	(4.93)	0.33
11-Jan	35.11	4.96	(4.11)	0.23
11-Feb	35.87	5.05	(4.59)	0.27

Notes: Number of observations is 110 branches. This table reports the estimated effect of lotteries treatment on the opening of savings (non-ATM) accounts. Each treatment effect comes from a separate linear regression corresponding to equation 2. The lotteries were held in Sep-10 and Oct-10 and savings (non-ATM) accounts were not eligible for the lottery. Here we see no evidence that the treatment effected savings (non-ATM) accounts. *** p<0.1, ** p<0.05, * p<0.10

TABLE 6—IMPACT OF TREATMENT ON AVERAGE SAVINGS BALANCE OF EXISTING ACCOUNTS (INTENSIVE MARGIN)

	Control mean	Treatment Effect	P-value
Oct-09	34400.74	7963.44	0.14
Nov-09	36874.56	906.01	0.82
Dec-09	35463.66	-985.12	0.82
Jan-10	28530.30	1482.27	0.73
Feb-10	29894.89	1690.23	0.73
Mar-10	29160.28	-812.39	0.82
Apr-10	25007.55	3720.42	0.26
May-10	27973.36	-88.84	0.98
Jun-10	27880.79	-12.14	1.00
Jul-10	32339.25	-5478.85	0.21
Aug-10	31150.96	-3662.68	0.30
Sep-10	26460.32	-4941.37	0.10
Oct-10	22122.13	-4257.09	0.11
Nov-10	19813.05	-3034.85	0.24
Dec-10	17771.19	-2762.84	0.20
Jan-11	17605.71	-2741.30	0.23
Mar-11	17207.03	-2064.39	0.42
Apr-11	16144.91	-3908.70	0.10
May-11	14887.60	-3377.02	0.14
Jun-11	13884.36	-3176.77	0.15
Jul-11	13579.83	-2960.74	0.15
Aug-11	12232.62	-2441.36	0.18
Sep-11	11812.31	-2095.63	0.25
Oct-11	11563.35	-2196.82	0.22

Notes: This table reports the estimated effect of lotteries treatment on the average savings (pesos) of current account holders. The treatment effects come from equation 3. The lotteries were held in Sep-10 and Oct-10. Here we see no evidence that the treatment effected savings (non-ATM) accounts. All models include controls for months. * p<0.10, ** p<0.05, *** p<0.01

Appendix

FIGURE A.1. LOTTERY FLYER

Notes: This flyer was posted a month before (August 2010) the lotteries started.