Inducing trust and savings in financial institutions through debit cards

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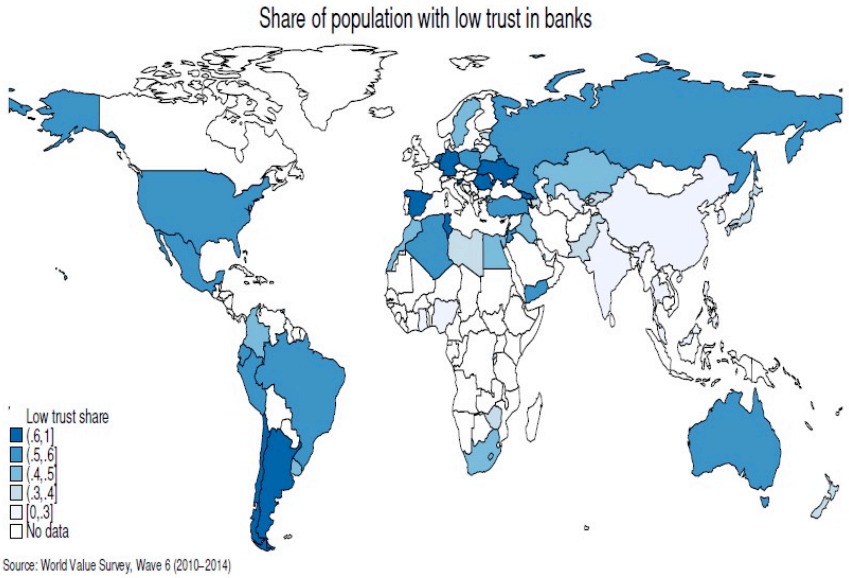
"Virtually every commercial transaction has within itself an element of trust […] it can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence."
— Kenneth Arrow (1972)

1. Introduction

Trust is an essential element of economic transactions. This is especially true for savings where the transaction takes the form of a promise to future returns. Unfortunately trust in financial institution seems low worldwide (see **Figure 1**). Gallup surveyed people in 60 countries and found that only 16 percent of respondents say they have great confidence in banks. Banks scored in the top half of *less* trusted institutions out of 17 institutions cited by Gallup. The issue of low trust is more serious in developing countries, especially for the poor. In Mexico 25 percent of those with primary school said they have ``no trust at all'' in banks, while a lower 18 percent of those with more than primary school did.

Figure 1: Trust in Banks



This is not gratuitous. There have been probably hundreds of frauds in Mexico in the last 15 years through which poor savers have lost the money they deposited in financial institutions. When contract enforcement is low, trust and trust-building become more important. This state of affairs might explain why current efforts at financial inclusion have hit a wall in developing countries. About half the world is unbanked (see Chaia et al (2009). Governments are switching from paying tens of millions of beneficiaries of conditional cash transfers (CCT) in cash to paying them through bank savings accounts, but most of the money is quickly withdrawn. The poor do not use these accounts and do not save in them. Along with transaction costs, the poor frequently list low trust as the main reason for not saving in the account.[1] Restrictions to access their money, high account monitoring costs, and disappearing savings in the form of hidden fees lead to low account use and low savings. Low trust and social capital figure importantly in the academic literature as barriers for the development of finance (Guiso et al (2004)).

ATM debt cards and mobile banking can alleviate this problem as these technologies lower the cost of monitoring movements in the account and simultaneously increases convenience and access to savings. We look at the effect of giving debit cards to Oportunidades beneficiaries who already received their transfer in a bank account at Bansefi (a government development bank) but had no debit/ATM card. We understood the potential importance of trust as a barrier to saving when Oportunidades officials told us that many beneficiaries depleted their savings by checking their balance several times a day to verify that it was still there. The debit card may help build trust over time as people monitor their account, and this higher trust may be reflected in increased savings.

The policy experiment is interesting for several reasons. First, while most papers on savings have focused on samples of a few hundred individuals, we study the nationwide (and, we argue, exogenous-to-saving) expansion of debit cards covering hundreds of thousands of households in more than 300 branches. It was implemented by the government in the context of an ongoing CCT, which helps to give it external validity. Second, it uses a standard technology—the debit card—and should be scalable to millions of CCT beneficiaries worldwide. Third, we use rich administrative data on account-level transactions to study savings for up to 24 months after the debit cards were awarded.

We find that savings in the account increase dramatically, almost tripling in a span of 2 years after receiving the ATM card. The increase is gradual and similar across different waves of the card expansion. Given the challenge of increasing savings and use of the account, this is in itself an important finding. We then distinguish between increased trust as an explanation for the increase in savings versus two other alternative theories. The first alternative is a pure transaction cost theory as in the standard Baumol-Tobin demand-for-money model. In this theory the debit/ATM card decreases the transaction cost of withdrawals, which leads to more frequent withdrawals of lesser amounts. In such a scenario the average daily savings would increase even if the total peso amount withdrawn per period remains constant. We find that this mechanical channel accounts only for 10% of the increase in savings. The second explanation we consider is a differential increase in transfer from Oportunidades to people with debit cards. We reject this theory as we find that the propensity to save out of the transfer increases gradually from about 20% to about 40%.

[1] In a follow-up survey to a randomized experiment, Dupas et al (2014) find that families cite unreliability and risk of embezzlement as two of the primary reasons for not opening a savings account after the opening fee is waived. See also Prina (2015).

Leaving more money in the account suggests that trust is at play, while the temporal gradation of the increase suggests some kind of learning is happening. We explore two kinds of learning that may be happening. What we call ``learning to trust'' which involves updating beliefs about the likelihood of losing the money in the account, versus ``learning to use'' or operational learning, which involves getting more and more acquainted with how the account and the debit card operate. Admittedly, distinguishing empirically among these different kinds of learning is a challenge, as they have similar observational implications on savings. In order to tease them apart, we study not only savings patterns but also data on monitoring patterns reflected in how often customers check their savings balance. We also bring to bear direct survey evidence on trust in the account and operational knowledge. We find that operational learning is fast, while trust in the account elicited directly from the survey has a positive but small time gradient. We also find that when they get the debit card, customers check their saving balance frequently, but the frequency decreases over time: beneficiaries with more than 6 months with the card check 57 percent less frequently per bimester. At some level the distinction between learning to trust and learning to use is not important, as time spent with the card can solve both problems, but each requires different policy interventions. While training on the workings of a savings account and its debit card affects knowledge, it may not be enough to increase savings if the poor believe that their money is not safe there. Knowledge does not imply trust.

We close the paper by distinguishing between total savings versus savings shifting. Savings could be increasing in the Bansefi account at the expense of other types of saving. Using survey data on consumption, assets and income we show that the increase in savings in the account actually comes from a voluntary decrease in current consumption, not from savings shifting. To our surprise, not only does the data match qualitatively in the direction of increased total savings, but it also matches quantitatively in the amount of total savings of about $200 pesos per bimester.

This is the first paper we know that shows how the convenience and monitoring capacity that an ATM card affords has an effect on trust, savings, and the use of formal savings accounts. Previous papers have focused on small-scale interventions, looking mostly at the effect of changing fees/prices or commitment devices on account opening, or on the effect of account opening on savings. We believe that the context of CCT programs is very promising with regards to increasing financial inclusion, not only because of the sheer number of the poor that are served by CCTs, but also by the fact that we can leverage the trust built through the repeated interaction and gift-exchange phenomenon that arises from receiving a recurrent deposit. Simple existing technologies like the ATM card can increase savings and use of the accounts.

2. Context of the intervention and data sources

Half of the world's adults do not use formal financial services such as savings accounts. The poor disproportionately lack access with nearly 90 percent of the unbanked living in developing countries. This is not immediately concerning by itself given that individuals may optimally choose not to use them. However, several recent studies have shown that giving access to formal savings accounts has a robust positive effect on welfare proxies.[2] Although the poor do save via cash at home, livestock, etc., saving in these assets can be harder and riskier if it can be easily stolen, if there is an obligation to lend to family members, or simply because it is more tempting spend the savings when stored in this way. If this is so, adding formal accounts as another asset to their portfolio to tap savings could lead to increases in total savings and welfare.

But the solution is not just to open bank accounts for the poor. Governments have recently given savings accounts to millions of poor beneficiaries by depositing subsidies of CCT programs in bank accounts, only to find that most of these accounts are inactive. Academics have also reached this conclusion: when they have opened savings accounts for poor individuals they find that most accounts have less than 2 transactions per year. We examine the case of the highly studied CCT Progresa/Oportunidades in Mexico and find similar results: savings accounts are barely used. The average number of deposits in a year is virtually 1, the average number of withdrawals is also close to 1 per bimester, done mostly to cash their whole transfer, and average bimonthly savings are about $500 pesos, which arise almost mechanically by not withdrawing their transfer immediately.

There are suggestions that trust could be an important barrier to formal savings, as it features prominently in exist surveys (Dupas el al (2013)). If so, can ATMs increase trust in the account and reduce transaction costs in a way that increases savings in the account? We study this question using a debit card expansion done by Oportunidades. Oportunidades is possibly the most well known conditional cash transfer program worldwide. It started in 1997 and currently covers 6.5 million households, almost one fourth of Mexicans. The program provides cash transfers to poor families in Mexico every two months as a function of family size and compliance with children attendance to school and health check-ups. During our sample period the average transfer is about 1,200 pesos.

Starting in 2002, in a partnership with Bansefi—a government savings bank—Oportunidades began switching from paying the transfer in cash to paying it into Bansefi savings accounts, particularly for families living in urban areas close to Bansefi branches. The original motive for paying through bank accounts was to decrease corruption. Automatic payments through banks would lower both the ability of corrupt local officials to skim off benefits and of local politicians to associate themselves with the program through face-to-face contact with recipients when they received their transfers. Automatic payments would also decrease long wait times for recipients who previously had to show up to a "payment table" on a particular day, decrease assaults on program officers and recipients transporting cash on known days, and increase the financial inclusion of poor households.

[2] Getting a savings account increased business investment by 46% and daily private expenditures by 38% for micro-entrepreneurs in Kenya (Dupas, P and Jonathan Robinson 2013); increased agricultural output by 15% and household spending by 11% for Tobacco farmers in Malawi (Brune, S., et al 2015); total assets and expenditures in education by 12% and 20% in Nepal (Prina, S., 2015).

Figure 2. shows that by 2004 more than 1 million households received their transfer this way.

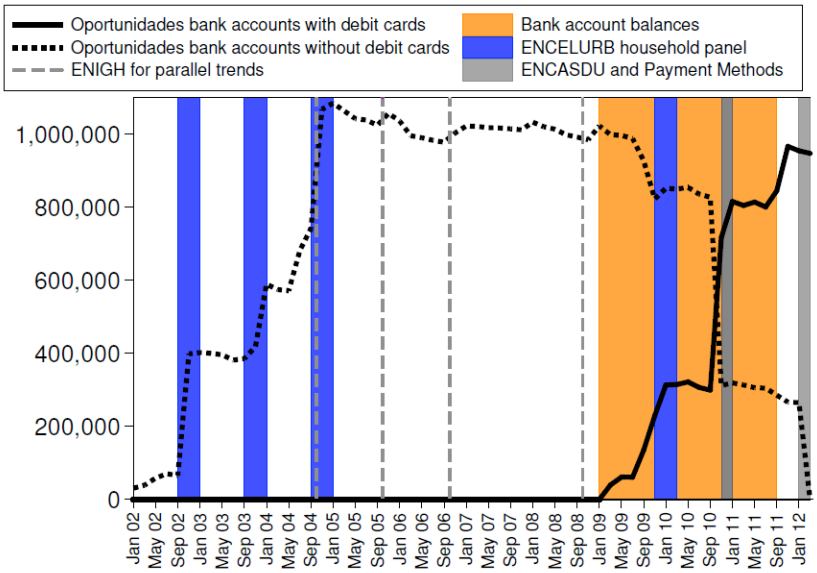


Figure 2: Roll out of accounts, debit cards, and Surveys

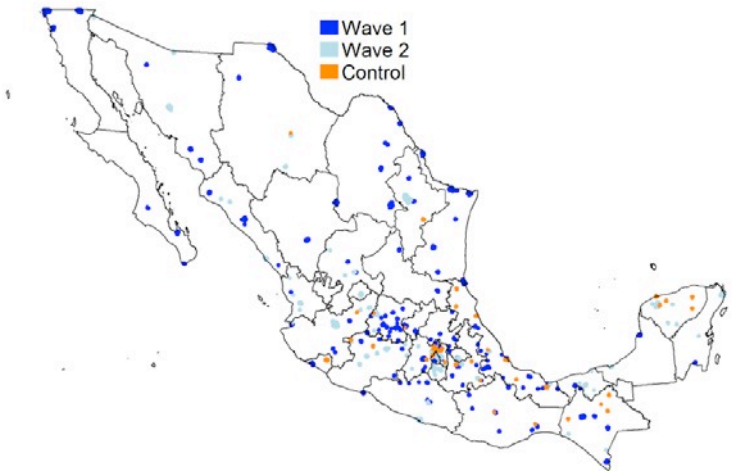
At first this account had limited attractiveness: although it did not require a minimum balance, it paid less than 1 percent nominal interest per year (inflation in Mexico has been close to 5 percent per year) and had no debit card that could be used in ATMs or to pay electronically at stores, which meant that transactions had to be done at the Bansefi branches. There were about 600 of them across the country, far too few to serve all beneficiaries. After the debit card was awarded it was possible to withdraw in any bank's ATM. The first ATM withdrawal and one balance check in the ATM every bimester was free. With time the account and the overall financial inclusion strategy has been offering more benefits to clients.

In 2009 the Mexican government announced that all recipients would receive their payments through a plastic card by 2012. In localities with more than 15,000 inhabitants VISA debit cards would be awarded. These cards would be tied to the Bansefi bank accounts through which recipients already received their transfers and would enable holders to withdraw money at any bank ATM and pay electronically at any store that accepts VISA cards. About 263 of Mexico's 550 urban localities were selected to change in 2009; we refer to this group as wave 1 (W1) of the roll-out. In this wave close to 100,000 Oportunidades recipients' bank accounts were tied to debit cards. Another wave of urban localities changed in late 2010, resulting in another batch of recipients receiving debit cards tied to their bank accounts; we refer to this group as wave 2 (W2). The remaining urban localities received debit cards at the end of 2011 and in 2012; we refer to this group as the control because our data period ends just before they receive debit cards.

Which localities switched first was determined as a function of the proportion of households in the locality that were eligible for the program but were not yet receiving benefits as the

introduction of debit cards to existing recipients was coupled with an effort to include more people as beneficiaries. The expansion was not staggered as a function of savings or the presence of banks, however.

Figure 3: Geographic rollout of debit card



The map in **Figure 3** shows that both waves had substantial geographical breath and that C, W1, and W2 localities were physically close. **Table 1** compares the means of C, W1, and W2 localities using the population census. Column 4 shows the p-value of an F test for equality of means. There is no statistically significant difference in population size, share of localities with a Bansefi branch, the percentage of households in poverty, or occupants per room. There is, however, a difference in the percentage of houses with dirt floor and adults of 15-29 years with less than primary schooling, but the differences are economically tiny, at 1pp and 2pp respectively. In Section 3 we will test and show that trends of saving, income, and consumption were parallel across waves.

Table 1: Balance tests

Variable (proportion)	Control	Wave 1	Wave 2	Diff. W1–C	Diff. W2–C	F-test p-value
Log population	10.57	11.18	11.48	0.60	0.91	0.000
	(0.11)	(0.10)	(0.16)	(0.14)	(0.19)	
Bansefi branches/100,000 population	1.27	1.23	1.58	–0.03	0.32	0.411
	(0.28)	(0.13)	(0.23)	(0.30)	(0.36)	
% HHs in poverty (Oportunidades estimates)	15.93	13.20	12.23	–2.73	–3.71	0.177
	(1.67)	(0.75)	(1.09)	(1.82)	(1.99)	
Occupants per room	1.18	1.11	1.12	–0.07	–0.06	0.260
	(0.04)	(0.01)	(0.02)	(0.04)	(0.04)	
Number of localities	44.00	143.00	88.00			

Before we turn to the identification strategy and the results, we want to convey the richness of our data sources. First, we have administrative data from Bansefi at the account level. This includes for information about bimonthly average savings balance.[3] The second data source is from two surveys conducted by Oportunidades and a countrywide survey from INEGI. We have 4 repeated cross sections of the ENCELURB survey for 2002, 2003, 2004, and 2010. This survey has comprehensive modules on consumption, income, and assets and includes more than 5000 beneficiary households drawn randomly from the Oportunidades beneficiary population. We also use an additional survey from Oportunidades Payment Method Survey (PMS) aimed at eliciting satisfaction, trust, and knowledge by type of transfer method. It was collected in the fourth quarter of 2010 and the first quarter of 2012. Sample sizes are close to 2500. Both rounds were drawn by stratified (by payment method) random sampling from all Oportunidades beneficiaries. A third data source is ENIGH, Mexico´s main household survey, which is implemented to more than 10,000 households every two years and is representative of the households in Mexico. **Figure 2** shows the timing of these data sources.

3. Identification strategy and tests plan

The paper goes through a battery of tests and results with three main objectives. The first is to test if getting an ATM leads to more savings *in the account*, to what extent and with what dynamics. The second is to distinguish among different channels leading to the increase in savings in the account. We are particularly interested in evidence for and against increased trust as a channel. And the third is to measure if the increase in formal savings constitutes new savings or if it is pure substitution from other sources of savings.

In order to identify causal impacts we use a Differences-in-Differences (DID) strategy, taking advantage of the staggered expansion of debit cards. The identification assumption is that the beneficiaries who got the card first would have had the same savings and use of the account as those who got it later if it wasn't for receiving the card. The identification assumption is inherently untestable, but we follow standard practice and do two kinds of tests to ascertain its plausibility. The first is the test in levels shown in **Table 1**, which compares means for treatment and control groups at the level of the locality and at the level of the individual account. As already discussed above most means are statistically identical, and while there is a difference it is economically small. The second test—more relevant for applying a DID identification strategy—involves showing that trends in savings were parallel before treatment for C, W1, and W2. We perform these tests in Section 4 and show that pre-treatment trends are indeed parallel. The similarity of savings in the treatment and control groups before treatment contrast sharply with the difference after the ATM card is awarded. The fact that results for two waves in different years are similar suggests this is not an artifact of a shock in a particular year.

[3] Here deposit and withdrawal information covers only the period after the card was awarded do to the way the data is organized at Bansefi.

After showing the large increase in average savings, we take notice of its gradualism in time. This suggests some kind of learning is taking place. If beneficiaries were suddenly shifting all their cash under the mattress to the account we would expect a single jump in savings. Instead, we see rising savings for at least two years, as far as we can see in our data. We consider and reject two "supply side" explanations for the gradual increase. We show that the increasing pattern of savings is not the reflection of increased transfer income. Instead, the propensity to save *out of the transfer* increases. This also shows that the effect is not driven by differential increases in the size of the transfer for the treatment group.

Why is the demand for formal saving increasing? We consider two possibilities. The first is a pure transaction cost explanation, while the second involves an increased willingness to leave more money in the account. One simple way to model the relationship between withdrawal costs and savings is to use the classic Baumol-Tobin model of demand for money. In that model the consumer has a constant per-period requirement for cash to purchase goods. There is a benefit to leaving money in the account but also a transaction cost of going to the ATM machine or bank branch to withdraw the money. The consumer optimally trades off these two components. The result that interests us is that if the withdrawal cost decreases by having the ATM card—which is likely — then the consumer optimally chooses to leave more money in the savings account and withdraw smaller amounts more frequently. So savings increases mechanically not by withdrawing fewer pesos in the period, but by withdrawing more often. We call this the "mechanical effect." This model predicts that withdrawals will increase when consumers have an ATM card. This prediction is borne out, but we find that quantitatively this channel explains at most 10% of the increase in savings. The rest is due to decreases in the total per-period withdrawal peso amounts.

What are people learning such that they are gradually more willing to leave money in the account? We explore two kinds of learning that could generate this result. One of them we call operational learning. It involves the gradual understanding of how to use the ATM card, memorizing one's pin, and discovering new stores that accept paying with the card. The other involves learning that risk of getting the money "stolen" in the form of hidden fees or operational errors by the bank is lower than initially believed. These two explanations are observationally equivalent in the savings data, so any hope of distinguishing them has to bring additional data to bear. The first piece of data we use here is the frequency of balance checking. We show that individuals check their balance often when they get the card—consistent with using the better monitoring technology—but gradually check it less and less as the marginal value of the signal decreases with the length of the signal sequence, consistent with Bayesian learning. Operational learning would predict the opposite: all else constant, the easier it becomes to check the balance as you learn, the more one should check it. The second dataset (ENCADSU) we use consists of survey questions that directly ask beneficiaries if they think their money will disappear from the account. The data shows clearly that fewer people think they will lose their money as time with the ATM card passes. Importantly, we do not detect corresponding increases in proxies for knowledge, like knowing their card's pin, of reported ease to use the ATM. We believe this strongly suggests that trust increases as a result of the ATM card.

Showing that savings in the account are radically higher as a result of having an ATM card and that trust is a likely driver of the effect is an important contribution to our understanding of the determinants of formal savings and the literature on trust and its effects on economic transactions. But one question that remains is if this increase of savings in the account constitutes

an increase in total household savings or a shift from informal to formal savings. Total savings may rise because there is a new available asset in the portfolio, which may have a good risk-return profile not available before. We test whether total savings increases using data from consumption, income and assets for Oportunidades beneficiaries from the ENCELURB surveys using a DID estimation strategy. First we show that trends of consumption, income, and assets are parallel for treatment and control groups before receiving the ATM card. Then we show that there is an increase in saving after getting the ATM card. Strikingly, the increase in savings measured with the survey is very close to the increase in savings in the account, which suggests that total savings increased. Importantly, we document that the increased saving is not driven by higher income (which shouldn't be affected by the ATM) but by lower current consumption.

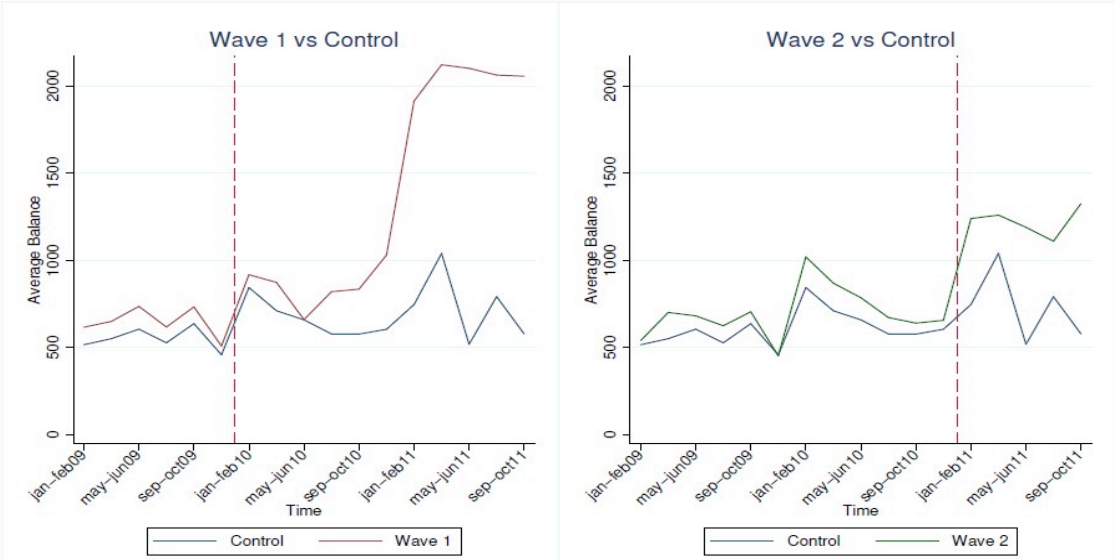
The following sections perform the tests described in this Section. Section 4 reports results for savings in the account. Section 5 separates between different channels for the increase in savings and Section 6 estimates the effect on total savings.

4. Results for savings in the account

A. Effect on Savings and Propensity to save out of the transfer

Figure 4 presents the data of the time series of savings; even the raw data is very telling. Panel A displays the control group and the first wave of debit card recipients and Panel B the control group and the second wave. Strikingly, average balances increase sharply for the first wave, although the effect is not immediate: it begins three to four bimesters after receiving the card and the large increase happens after a year of having the debit card. By October of 2011 wave 1 has average balances of around 2000 pesos, roughly three times that of the control group. A similar pattern is present in wave 2, although we have information for fewer bimesters after the switch.

Figure 4: Savings time trends for treatment and control groups



The raw data also clearly suggest that pre-treatment trends of savings were parallel across control and treatment groups before getting the card. We test this statistically by estimating a regression that allows for different time coefficients for treatment and control groups. Concretely we estimate specification (1)

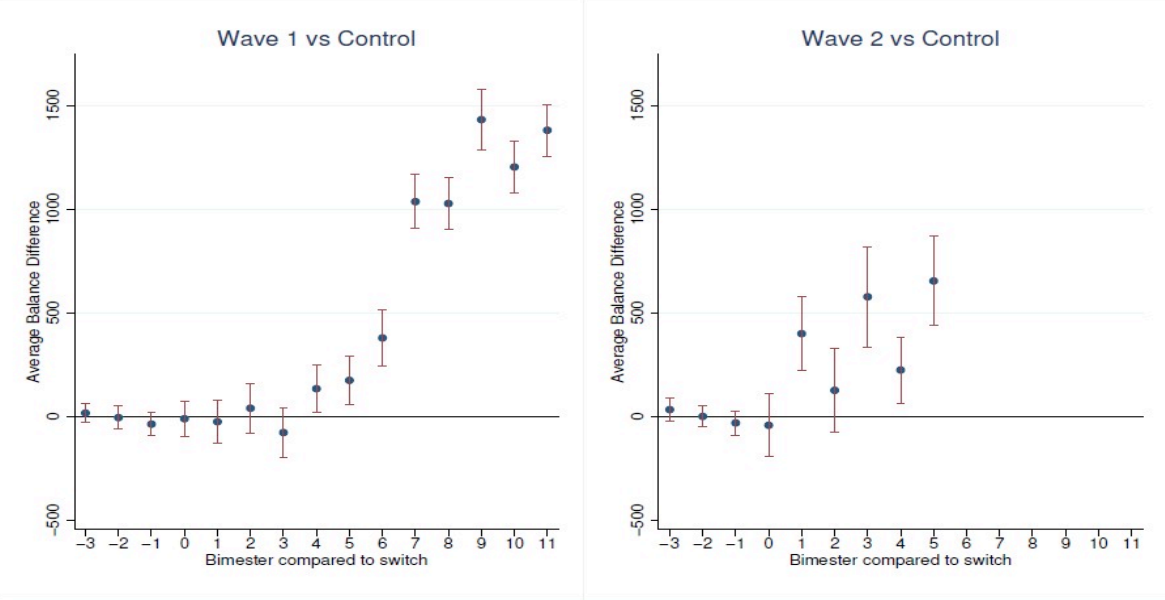
$$(1)\ Savings_{it} = \alpha_i + \gamma_t + \sum_{k=-3}^{kmax} \beta_k d_{it} + \varepsilon_{it}$$

where alpha_i is an account-level fixed effect that controls for account composition effects, gamma_t are calendar bimester dummies that control for general macro trends, and d_it are indicators for number of bimesters before and after the switch.

The coefficients of interests are the \beta_k's which measure the average difference in balances between the control and treatment group k bimesters before and after treatment. The test of beta_{-3}=beta_{-2}=beta_{-1}=0 is the test of parallel pre-treatment trends. We cannot reject that pre-trends where equal.

Figure 5 panel A plots these coefficients and shows that pretreatment coefficients are also not individually different from zero. It also shows that the increase in savings is gradual and large, stabilizing at 1,500 pesos of extra saving in the account after 2 years. Panel B shows the equivalent coefficient plot for W2. The magnitudes are similar (we observe a slightly quicker response to saving in the second wave), although we just have information one year after giving the card for W2.

Figure 5: Dynamic effects



Note: Figure 6 display the coefficients γ_k and their 95% confidence intervals of the event study of average balances, where k is the number of bimesters after the recipients obtain a debit card.

That savings increase gradually over a two-year period suggests to us that learning might be at play. Otherwise, if beneficiaries simply deposit their current cash under the mattress in the account, we should expect a one-time jump in account savings. It is to be noted however that: beneficiaries may not have 1,500 pesos of cash. If they may have small flows of income then even if they deposit them entirely in the account, the stock of savings may increase in exactly the manner documented. Alternatively, it may be the case for some reason that the amount of the Oportunidades transfer increases gradually for beneficiaries that get the card.

We have already mentioned above that there are virtually no deposits for either the control or treatment groups, so that the increase in savings arises from a change in withdrawals or the Oportunidades transfer.

Figure 6: Oportunidades transfers across time

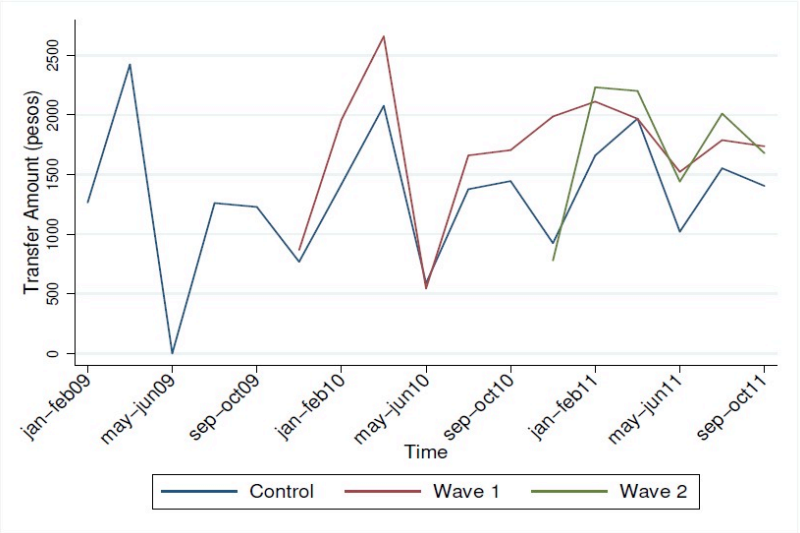


Figure 6 shows the pattern of Oportunidades transfer by group. Variation in time is a function of the presence of elections in certain localities,[4] compliance with conditionality, or across the board changes in the payment schedule. The C, W1, and W2 have similar transfer profiles. But most importantly, savings *as a proportion of the transfer* is increasing in time. We estimate the following specification:

$$(2)\quad Savings_{it} = \alpha_i + \gamma_t + Transfer_{it} + \sum_{k=0}^{12} \delta_k d_{ikt} + \sum_{k=0}^{12} \pi_k d_{ikt} Transfer + \vartheta_{it}$$

Where savings in bimester t is a function of account and month dummies, the peso amount of the transfer at time t, and a series of dummy variables that capture elapsed time since beneficiary i got the card and the interaction of these dummies with the amount of the transfer. The $\pi_k' S$ measure to what extent the transferred amount gets reflected in savings differentially for the treatment group vs the control group, i.e. they measure the extra propensity to save out of the transfer k bimesters after getting the debit card. We estimate the equation separately for wave 1 and wave 2.

[4] When there is an election Oportunidades has to give the transfer in advance, so that there is no payment close to the election month. This means that beneficiaries receive twice the transfer in one exhibition.

Figure 7: Propensity to save out of the transfer

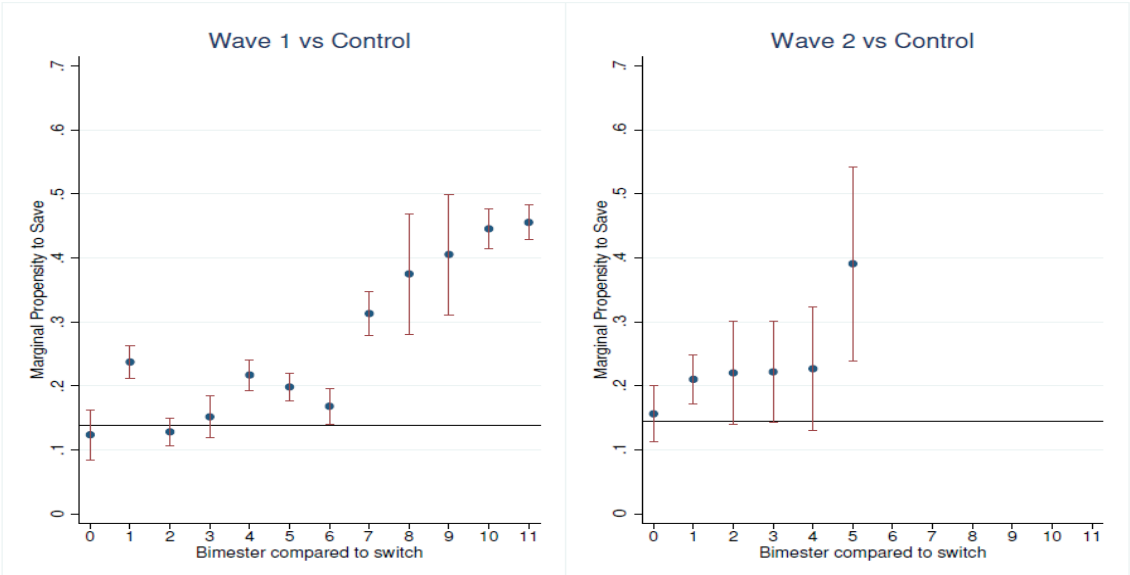
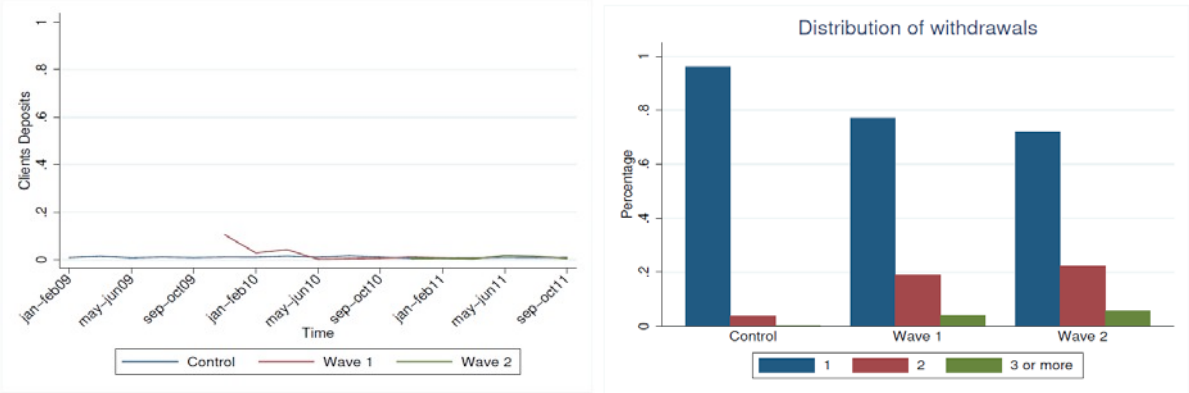


Figure 7 plots the delta_k estimates along with their confidence intervals. The average propensity to save out of the transfer for the control group is 14 percent. It is readily apparent from the Figure that the propensity to save out of the transfer increases in time, from less than 20 percent in the first year to 45 percent by the end of the second year. The results are robust to (a) controlling for lagged savings and (b) estimating 12 separate savings equations, one for each month after receiving the card. This later specification allows the coefficient on θ to depend on t.

B. The behavior of deposits and withdrawals and the ``mechanical effect''.

Changes in savings correspond roughly to changes of deposits minus withdrawals. Unfortunately, because of the way the datasets are structured we could only get access to data on deposits and withdrawals after the award of the debit card. **Figure 8** plots the number of deposits (**left**) and withdrawals across time (**right**).

Figure 8: Deposits and withdrawals



The average number of deposits per bimester is roughly zero, while the number of withdrawals is a little above one for the control group and above two for the treated groups in W1 and W2. Clearly the patterns for the control and treatment groups are different, with the treatment group withdrawing more.

That there is no increase in deposits suggests that beneficiaries are indeed cash-constrained, i.e. that cash under the mattress is likely low. The increase in withdrawals is consistent with a Baumol Tobin demand-for-money model, in which consumers have a fixed level of bimonthly expenditures that have to be done in cash. They can hold cash or deposits in an interest bearing account. Consumers then trade off interest earnings vs. the withdrawal transaction cost. In such a model, a decrease in transaction costs increases the frequency of transactions, as in our data. But more subtly, the size of withdrawals decreases, which implies an increase in savings in the account even if the total amount in the bimester is constant. This is a “mechanical effect” from changing not the desired level of savings but the frequency transactions and the fact that savings in the bimester are calculated as the average daily savings in the account in the respective bimester.

Since we observe in the data that the number of withdrawals doubled, it is fair to ask what percentage of the increase in savings can be accounted for by the “mechanical effect.” The answer is 10%.

5. Trust vs operational learning

The questions that we set to answer now are the following: Why do beneficiaries want to save more once they are given the debit card? Why does it take two years for beneficiaries to be willing to leave more of the transfer in the account? The answer is not that their cash needs decreased once they would pay with the card since, as we mentioned above, only rarely do they pay with the card and their total level of spending (cash withdrawals plus electronic payments) decreased. Furthermore, we showed that there is no correlation between POS growth and savings.

We conjecture that learning is at play. We explore two kinds of learning, operational learning and what we call learning to trust. The first involves knowledge of how to use the debit card, the ATM machine, memorizing the pin, etc. The second involves learning that risk of getting the money "stolen" in the form of hidden fees or operational errors by the bank is lower than initially believed. We reached the conjecture that trust was important after listening to anecdotes from Oportunidades managers and beneficiaries, and from looking at survey evidence that asked directly about trust in the bank account. Only 16% of Oportunidades beneficiaries with bank accounts reported feeling they were safe or trustworthy. One Oportunidades beneficiary described the ATMs as "a technology imposed on us that scares me and makes me feel frustrated and anxious." Oportunidades management found out about the problem of trust when many beneficiaries complained about disappearing money, only to find out that beneficiaries had incurred substantial fees from checking the balance many times in one day for many accounts.

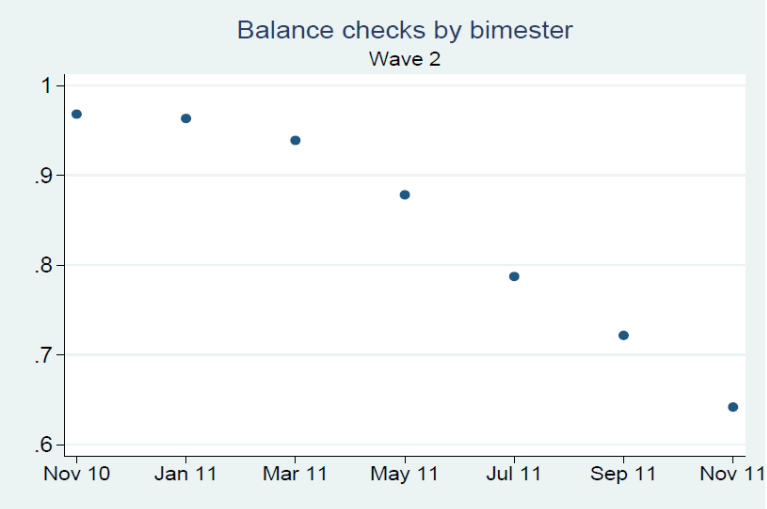
At one level, distinguishing between operational learning and learning to trust may not be important since many policies—like providing information on how the account works—may induce both types of learning. But on the other hand, information may not be sufficient to induce trust if the source providing the information itself is not trustworthy in the eyes of the beneficiary. Lack of trust is a harder problem to tackle than lack of knowledge, and its dynamics of learning may be slower as they likely require piecemeal experimentation, in contrast to just providing information on ATM card mechanics, which can be learned in a short time period. Many authors have recognized the importance of trust,[5] but this contrasts with the almost exclusive focus on financial literacy as a solution for increasing use of formal savings.

That operational learning and learning to trust are conceptually different does not imply that they are empirically distinguishable. Both may imply an increasing profile of savings. To tease them apart we use to additional data sources. The first piece of data is the frequency of balance checking. The two types of learning make different predictions regarding this variable. Operational learning means that it is easier—and less costly—for beneficiaries to check their balance as they memorized their pin and know who to use the ATM machine. Therefore, all else constant they should check their balances more. To the contrary, learning to trust predicts that although at the

[5] Banerjee and Duflo (2008) mention, for instance, that one challenge to fight dehydration from diarrhea in developing countries is to convince people to drink water with salt. This remedy is both cheap and effective, but many people just do not trust this advice and therefore don't do it. Dupas et al (2013) find that trust is one of the major determinants of not using an existing savings account.

start individuals check their balance often to monitor their savings, they learn that it is still there and update downwards their belief about the risk of losing money. With simple Bayesian learning balance checking has decreasing marginal benefit and therefore beneficiaries check their balance less. **Figure 9** plots the fraction of times people check their balance as a function of time with the card. We can observe a decrease both in the average and the in the confidence interval of the frequency of balance checking. This evidence supports the theory of trust rather that the theory of knowledge.

Figure 9: Balance checking after given the debit card



We were able to get more evidence of trust from two surveys, the ENCADSU and the PMS. These surveys directly ask beneficiaries if they think their money will disappear from the account. In the ENCASDU, the questions are “Do you leave part of the monetary support from Oportunidades in your bank account?” and, if the response is no, “Why don't you keep part of the monetary support from Oportunidades in your Bansefi bank account?” The second question includes pre-written responses and an open-ended response. An example of answers coded as trust include “Because if I don't take out all the money, I can lose what remains in the bank.” An example of answers coded as knowledge include: “They didn't explain the process for saving.” In the PMS there are more questions on these issues and each regression comes from a different survey question. The questions are these: Times checked balance: “In the last bimester, how many times did you consult your balance”; (2) Times checked balance without withdrawing: created by subtracting “In the last bimester, how many times did you withdraw money from the ATM?” from (1); (3) Hard to use ATM: responded “The ATM is difficult to use” to the question “What have been the main problems you have had with the ATM?”; (4) Gets help using ATM: “In general, does someone help you use the ATM?”; (5) Knows PIN: “Do you know your PIN by heart?”; (6) Knows she can save in account: “Did they tell you that with the card you have a Bansefi savings account?”

Both surveys are cross sections. In the case of the PMS there is a single cross-section in 2012. As shown above, the timing of implementation seems exogenous to locality and beneficiaries' characteristics. The hypothesis is that trust increases slowly over time while knowledge does not show this gradualism after 6 months. Since there are only 1,500 respondents we will not study each month after getting the card separately; instead we pull beneficiaries that have fewer than 6 with the card and we compare their knowledge and trust that have more than 6 months with ATM card to estimate regressions with the following specification: y _i = alpha + beta I(Card <= X months)_i + u_i. The dependent variables are the answers to the questions described above. If trust is gained over a time horizon higher than 6 months, then beta will be positive. **Table 2** shows the results for the ENCADSU and the PMS.

Table 2: Learning to trust vs operational learning

	Mean	Has card $\leq$ 6 months	N
Panel A: ENCASDU Survey (2010): Doesn't save in Bansefi due to lack of...			
Trust	0.175***	0.095**	1,674
	(0.012)	(0.044)	
Knowledge	0.036***	0.012	1,674
	(0.004)	(0.020)	
Panel B: Payment Methods Survey (2012)			
Trust			
Times checked balance	1.146***	0.251**	1,493
	(0.039)	(0.105)	
Times checked balance without withdrawing	0.336***	0.190**	1,490
	(0.035)	(0.093)	
Knowledge			
Hard to use ATM	0.106***	0.002	1,617
	(0.013)	(0.025)	
Gets help using ATM	0.498***	0.050	1,612
	(0.023)	(0.048)	
Knows PIN	0.575***	−0.085**	1,609
	(0.017)	(0.034)	
Knows can save in account	0.353***	−0.034	1,617
	(0.023)	(0.046)	

The first thing to note in Panel A is that lack of low trust is cited 5 times more often than low knowledge as a reason for not saving in their account. Second, trust increases gradually with experience; it is 54 percent higher for beneficiaries with more than 6 months with the card than those with less time. In contrast there is no operational learning after 6 months with the card. Panel B also gives similar results using the PMS. Checking balances decreases by 36 percent after six months compared to the first 6 months, while operational knowledge is almost unchanged. We

believe this strongly suggests that trust in the account increases gradually after getting the ATM card.

6. New savings vs saving shifting

If one reads the literature on micro-savings, a robust finding is that providing a formal savings account increases investment in human capital or in physical assets. This already suggests that something more fundamental than switching savings from informal to formal channels is happening. It suggests that either the total level of savings is changing of that the account affects the composition of expenditures. We still know little about what is changing. Is the account—or the debit card in our case—affecting total savings? If so, is the new saving in the short run coming from increased income (say, as a result of working more now that the proceeds can be safely saved) or from a reduction in current consumption?

To answer this question, we use the ENCELURB panel survey, which spans the years 2002, 2003, 2004, and Nov 2009-Feb 2010. This survey is conducted by Oportunidades and has comprehensive modules on consumption, income, and assets.

If the effect we observed in savings in the account is a result of substitution, we would expect no differential change in consumption and a decrease in other assets. On the other hand, if overall savings do increase, we would expect little or no change in assets accompanied by a decrease in current consumption. To conduct this test we use a DID strategy. We compare the change in savings (measured as consumption-income) for beneficiaries living in localities that received the card versus those that only got it later. A formal test of parallel trends does not reject equality at 1 percent level of confidence. Table 3 presents the estimates of the following specification

$$y_{ijt} = \varphi_i + \delta_t + \gamma D_{it} + \vartheta_{ijt}$$

where Djt = 1 if locality j has switched to debit cards by time t and ϕi and δt are household and monthly fixed effects, respectively. The first thing to note is that total savings increase after getting the account by about 200 pesos. This is strikingly close to the increase in accounts savings we observe with the account level information. The effect is robust to winsorizing 5 percent of the sample and adding linear municipality specific or time trends or time trends interacted with household characteristics. The second finding is that the effect seems to be entirely due to a current decrease in consumption, and not to either an increase in income, a decrease in assets[6] or a

[6] The asset index is the first principal component of assets that are included in both the early (2002, 2003, 2004) and post-treatment (2009-2010) versions of the survey. These include: car, truck, motorcycle, television, video or DVD player, radio or stereo, washer, gas stove, and refrigerator.

decrease in the purchase of durable goods. This means that total savings increased, not just formal savings. This is achieved by a reduction in current consumption.

Table 3: Consumption and total savings

	(1)	(2)	(3)	(4)	(5)
Consumption					
	−181.18**	−142.35*	−128.88*	−240.74**	−146.22**
	(84.27)	(74.18)	(67.18)	(112.47)	(68.37)
	[0.037]	[0.061]	[0.061]	[0.038]	[0.038]
Income					
	73.43	78.98	52.20	40.34	50.47
	(154.24)	(137.97)	(122.83)	(132.90)	(120.47)
	[0.636]	[0.570]	[0.673]	[0.763]	[0.677]
P-value Consumption vs. Income					
	[0.052]*	[0.054]*	[0.101]	[0.010]**	[0.073]*
Savings = Income − Consumption					
	254.61*	215.94*	194.74*	283.82**	214.65**
	(127.82)	(113.33)	(102.17)	(119.32)	(102.27)
	[0.052]	[0.063]	[0.063]	[0.021]	[0.041]
Purchase of durables					
	5.61	6.93	8.31*	6.65	7.16
	(12.34)	(8.49)	(4.78)	(6.84)	(4.48)
	[0.652]	[0.419]	[0.089]	[0.336]	[0.117]
Asset index					
	0.06	0.06	0.09	−0.10	0.07
	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)
	[0.548]	[0.560]	[0.341]	[0.267]	[0.407]
Number of households	2951	2951	2951	2951	2938
Number of observations	11275	11275	11275	11275	11243
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Household fixed effects	Yes	Yes	Yes	Yes	Yes
Winsorized	No	1%	5%	5%	5%
Municipality × time fixed effects	No	No	No	Yes	No
Household characteristics × time	No	No	No	No	Yes

Notes: * indicates $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$. Standard errors are clustered at the locality level, using pre-treatment (2004) locality. Dependant variables are measured in pesos per month, with the exception of the asset index. Asset index is the first principal component of assets that are included in both the early (2002, 2003, 2004) and post-treatment (2009–2010) versions of the survey: car, truck, motorcycle, television, video or DVD player, radio or stereo, washer, gas stove, and refrigerator.

7. Conclusion

Conditional cash transfers are a very promising avenue to increase financial inclusion, both because they provide a constant income flow, but also because operating through the program itself may increase trust. However, their main problem is that most accounts remain inactive. We have shown that one way to increase savings is by providing a debit card that allows beneficiaries to check their balance and pay with the card without the need to withdraw cash.

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