Chapter 5

RADIO AND VIDEO AS A MEANS FOR FINANCIAL EDUCATION IN RURAL HOUSEHOLDS IN PERU

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5.1 Introduction

This chapter analyzes the impact of a financial literacy training of a Peruvian microfinance institution, which is delivered by credit officers in monthly sessions with the support of video and radio materials. The program, conducted by Arariwa, a non-government organization, was implemented as a field experiment working with 49 credit officers across 665 communal banks in 13 provinces of the departments of Cusco and Puno, Peru. The objective of the study is to rigorously evaluate the effect of an ICT-based financial literacy education program that follows best practices on financial literacy and financial behaviors. We study the impact of a financial literacy education program using a randomized evaluation, which was designed to determine short-term effects and may be extended to determine long-term effects. Furthermore, we determine the effectiveness of using a radio and video supplemented credit with education financial educational program. The literature and experiences worldwide suggest that this methodology is likely to be the most cost-effective and we would like to quantify the benefit of this approach.

The field experiment included working with 49 credit officers across 666 communal banks in 13 provinces of the departments of Cusco and Puno during 2010. The program evaluated consists of (1) nine monthly 45 minute training sessions which involve the use of a 5- to 7-minute video, (2) nine 25-minute radio programs that reinforce the material in the training sessions and (3) nine homework assignments that encourage households to commit to behavioral changes. Credit officers were expected to deliver the training session with the video during the routine communal bank meetings and clients

were expected to listen to the radio and do the homework assignment between bank meetings.

The low-cost strategy for implementation of the video and radio components led to low compliance rates with the video and radio components. According to credit officer's estimates, the median treatment bank received only one video session and only 7 percent of its clients listened to the radio program. Given this, we divide our analysis into four parts that allow us to determine the impact of the program. First, we determine the impact of the program on those that the program intended to treat. Second, we determine the impact of the program on those that completed a relatively high number of training sessions but with average ICT compliance. Third, we determine the impact of the program on those that completed a relatively high number of training sessions where the video was used. Finally, we determine the impact of the program on those that were in banks in which relatively high percentages of the clients listened to the radio program. Impact was measured in terms of savings rates and client retention. We find that the program has no impact on those that we intended to treat. This can be partially attributed to low completion levels. We also find that the program has no impact on those that were treated with training sessions, video supplemented training sessions or radio. We cannot draw any conclusions about the impact of the credit with education model on financial literacy financial behavioral outcomes. However, we can conclude that in order to evaluate the effectiveness of video supplements and radio programs in the context of the credit with financial education model, higher investments in the delivery of these components would have to be made.

5.2 Review of the Literature

Financial literacy education programs have not been prevalent as long in the developing world as in the developed world. Nonetheless in recent years there have been a number of initiatives across the globe. These education programs range from public campaigns to months of training sessions. Many of these programs are promising in nature, but there are few impact evaluations and, as with the research in the developed world, no rigorous impact evaluations of financial literacy programs that are designed according to best practices.

A few examples of often mentioned financial literacy education programs in the developing world include (1) SEWA bank's Project Tomorrow in India, which is a financial counseling service for poor self-employed women, (2) World Education's financial literacy program for women in Nepal, which uses new financial literacy tools that World Education and Pact have developed, (3) the FAO's Food Security and Nutrition project in Zambia, which

includes a guide on money and (4) Freedom from Hunger's financial education modules that are used by microfinance institutions (MFIs) around the world to deliver education with credit (Sebstad and Cohen, 2003). There are two impact evaluations that add to the research conducted in the developed world. The first is a randomized impact evaluation of a business education module delivered by an MFI as credit with education. While this is not strictly a financial literacy training program, the subject matter is closely related and the method of delivery is very similar to the method that we are evaluating. The second is a randomized impact evaluation of a short financial literacy training session, which is directly relevant to the subject at hand.

Karlan and Valdivia (2011) evaluate the impact of a business education training module delivered by FINCA to its microfinance clients in Peru. The authors use a randomized control trial to measure the marginal impact of business training education. They find that the treatment improved business knowledge, practices and revenues, and also improved repayment and client retention rates for the microfinance institution. The authors also showed that the stronger effects in terms of repayment and improvements in business outcomes are for those clients who expressed the least interest in the training education. This rigorous evaluation demonstrates that the delivery method that MFIs use to educate their clients is effective in this case. This suggests that it is likely to be effective for related topics, such as financial literacy. Cole, Sampson and Zia (2009) use a randomized control trial to determine the impact of a two hour financial literacy education session on trainees' financial literacy and their subsequent demand for financial services in Indonesia. They measure financial literacy through a survey using the questions that Lusardi (2003) propose. In this trial there are two orthogonal treatments, the financial literacy training session and a small subsidy, both of which are intended to encourage consumers to open a bank account. They find that the financial literacy education program has no effect on the likelihood that the average client will open a bank account, but that the program seems to be effective for those that are least financially literate. The authors also find that the subsidies are effective in motivating the average client to open a bank account. In fact, price subsidies are a 2.5 times more cost effective way of encouraging poor people to open a bank account than financial literacy education. Despite these results, Cole, Sampson and Zia (2009) do not provide strong evidence against financial literacy programs. While the evaluation is methodologically sound, unlike the studies in the developed world, the program being evaluated is not particularly strong. The first deficiency with the training program is that it is only two hours long. Clancy, Weiss and Schreiner (2001), mentioned above, suggest that two hours may not be enough to have a significant impact. Another deficiency is that the program is not as cost effective as it could be. The program hired

new trainers who earned above average salaries to work solely on this training. The "credit with education" model employed by FINCA and other MFIs is far more cost effective since the marginal cost of asking a credit officer to give educational session during regular bank meetings is minimal. A final shortcoming of this study is the fact that the sample size used was quite small, 736, and that the metrics for financial literacy, while widely used, are in fact quite simplistic and poorly contextualized. These factors may combine to obscure any true effects of the financial literacy education program being evaluated.

5.3 Operational Model of Microfinance Institution: The Case of Arariwa

Arariwa is a Peruvian NGO that is based in the city of Cusco, Peru and serves the entire department of Cusco, three Northern provinces of the department of Puno and a few districts of the departments of Madre de Dios, Arequipa and Apurimac. Arariwa was founded in 1985 and has three branches: (1) Arariwa Promoción, which focuses on livelihoods, health and institutional strengthening, (2) Cenfopar, a technical education center for young adults and (3) the microfinance unit, which offers microfinance products and services.

Arariwa's productivity standards require each credit officer to manage 25 communal banks. Each communal bank is a self-selecting group of 10–30 clients that participate in group savings, loan and learning mechanisms. Each communal bank elects a board of directors from its members, among them a president, secretary, treasurer and the training leader. Arariwa's objective is to empower the board of directors so that they can manage most of the bank's activities with the credit officer's supervision. However, with new banks the credit officer cannot count on this support. Each of Arariwa's clients has as many as five accounts that can be classified into two broad categories: (1) internal accounts, where funds are provided by the members of the communal bank and managed by the communal bank with the credit officers assistance, and (2) external accounts, where funds are provided by Arariwa and managed directly by the credit officer with the bank members assistance. The system used by Arariwa initially seems similar to self-help-group-bank-linkage models (SHGBL) prevalent in South Asia; however, it is quite different. The SHGBL model facilitates the formation of groups of lenders who start activities with internal accounts and are then linked to a bank that provides an external account when they are prepared to do so. In contrast, Arariwa's clients must first open an external account in order to initiate internal account activity.

Peruvian financial regulations forbid Arariwa, as an NGO, from collecting clients' savings. Therefore, all of the external accounts that Arariwa offers are credit accounts. There are three types: (1) the main external account, (2) the

complementary account and (3) the complementary extended account. Once a group of potential clients has agreed to apply to become a new communal bank, the credit officer evaluates each individual's credit worthiness. After this step, each approved individual is given a main external account. Each new client guarantees two other bank members' loans in the main external account. Although, if both guarantors are unable to pay, then all the members of the bank are responsible for the defaulters' loan. The amount that each client can borrow from the main external account increases in steps as clients go through loan cycles. Each step has a maximum amount that the credit officer is authorized to lend, but the amount lent to each individual is often less if the client does not want to borrow the full amount or if the credit officer's evaluation of credit worthiness established a lower limit. All of these accounts can be in Peruvian nuevos soles or in US dollars. In Peruvian nuevos soles the interest rate is 4 percent monthly declining balance; in US dollars the interest rate is 3 percent monthly declining balance.

Some clients that have proven to be reliable over several cycles engage in economic activities where the payback period on their loan is several months, which would make it impossible to start paying the loan back the month after the loan is disbursed. In order to retain these clients, Arariwa created the complementary and complementary extended accounts. The complementary account allows a small group of clients within a communal bank that have an established positive track record to borrow a larger amount for up to six months without paying monthly installments. The entire value of the loan is repaid at the end of the period agreed upon. The complementary extended account operates much like the complementary account except the loan term is extended to a maximum of 12 months. In these cases the members that are borrowing for extended periods form a solidarity group within the communal bank and guarantee each other's complementary or complementary extended loans.

There are two types of internal accounts that are dependent on each other: (1) the internal savings account and (2) the internal loan account. Although Arariwa is not allowed to hold client's savings, it obliges clients to save in the internal account. In order to borrow from the main external account, clients have to make an involuntary contribution of 5 percent of the capital of the loan in savings during the main loan cycle. Involuntary savings contributions become a part of the monthly installment (capital on external account, plus interest on external account, plus involuntary savings contribution). In addition to this involuntary contribution clients can contribute a voluntary amount towards their savings. While individual clients are free to contribute as much as they like and can vary this amount month to month, in practice, members of each communal bank tend to make commitments to

save a fixed amount voluntarily each month for an entire cycle. They tend to reevaluate this amount every time a new loan is disbursed from the external account. Voluntary savings are not considered part of the monthly installment and are tracked as a separate quantity even though they are ultimately pooled together with involuntary savings. Arariwa encourages communal banks to open a savings account with a commercial bank where the communal bank can store collective savings. However, there are communal banks that choose to store their savings in far less reliable ways.

Part of the savings that each bank accumulates is lent to group members at a rate that the bank agrees upon (usually 3–4 percent monthly declining balance). The interest charged on the internal loan account translates to interest accumulated in the internal savings account. Even when little of the group savings is lent to group members, the equivalent interest on savings is higher than rates at commercial banks and the saving mechanism is generally considered to be safer than other high-return options such as saving in the form of animals.

There is no official limit on how much of the group savings can be used to fund the internal loan account. However, in practice it is in Arariwa's interest to use the savings in the internal savings account to cover the risk of default on the external loan accounts. Therefore, each credit officer recommends that a certain proportion of the internal savings should be kept in a non-Arariwa liquid savings account. The credit officer uses his or her judgment to determine how high this percentage should be; however, it is typically no larger than 50 percent since it is in the clients' interest to increase the amount that is cycled through the internal loan account in order to improve the return on their internal savings account.

There are three periodic concepts that govern each communal bank's progress through time: (1) the monthly meeting, (2) the loan cycle and (3) the savings cycle. The monthly meeting is the basic unit of time that is used to track the progress of each bank. All financial transactions and training sessions occur in these 1.5–2 hour meetings, to which all clients are required to attend. There are two types of loan cycles that apply to the external loans: (1) the main loan cycle, associated with the main external account and (2) the complementary loan cycle, associated with the complementary and complementary extended accounts. The main loan cycle consists of four or six monthly meetings. Each main loan cycle consists of a disbursal and four or six monthly installments. If outstanding debt has been cancelled by the last installment and if bank members what to borrow another amount, then the next cycle's disbursement occurs in the same month as the current cycle's last installment. The savings cycle consists of several loan cycles. The members of each communal bank decide how many loan cycles they would like to save for—the

minimum is six loan cycles for a bank that operates on four-month loan cycles. Each of the complementary loan cycles lasts 6 months and the complementary extended loan cycle lasts 12 months. However, the amount is repaid in full at the end of that period and no monthly installments are required. The rhythm of the banks progression is set by the main loan cycle, as few clients have complementary accounts.

Internal loans also operate on the main loan cycle. However, there are two main differences in the way internal loans operate. The first difference is that internal loans can be disbursed on any month in the cycle, depending on availability of funds from the internal savings accounts. The second is that for the internal loans only the interest must be covered in monthly installments. The capital borrowed through one or many disbursements throughout a main loan cycle is returned in full on the last bank meeting of that cycle. Clients are free to return the full amount borrowed from the internal lending account prior to the last meeting. Access to savings is restricted until the last monthly meeting of the last main loan cycle of the savings cycle, which is referred to as the "graduation meeting." During the graduation meeting each member's savings plus any interest earned is returned and a new savings cycle begins during the next meeting.

Each communal bank meeting typically lasts between 1.5 and 2 hours. The standard meeting is divided into the following parts: (1) description of the Agenda and record of attendance and tardiness; (2) payment of each group member's monthly installment and any amount that each client would like to repay towards their internal loans and any amount that each client would like to contribute voluntarily to savings; (3) disbursement of internal loans to members that the bank determines to be worthy borrowers; (4) training session (45 minutes) given by credit officer.[1]

1 Arariwa' slogan is "Credit with Education." Prior to the implementation of the financial literacy module, Arariwa had three training modules: (1) Family wellbeing, (2) Health and (3) Business skills. The credit with education model allow Arariwa to optimize the efficiency of the delivery of educational services. There are four main mechanisms that make this educational delivery method more efficient than other potential methods: the institution has already incurred the cost of selecting a group of credit officers that are culturally and linguistically adept given the context, credit officers have already incurred the cost of travelling to the bank reunion place, credit officers have already incurred the cost of disciplining trainees into meeting at a particular location on a monthly basis and credit officers have already incurred the cost of getting to know each client, their personal strengths and weaknesses, which facilitates personal training. The trade-off is that credit officers have a lot of other responsibilities, which means that the financial literacy education is usually not their top priority. Also, teaching ability is only one of many criteria that the institution looks for when hiring a credit officer, which means that some credit officers may be strongest in areas other than those needed to effectively teach a group of clients.

5.4 Design

Arariwa adapted Freedom from Hunger's (FFH) modules on savings, budgeting and debt management, which are each seven–nine sessions long. The final product was one module that is nine sessions long and that covers the topics that were found to be most relevant for Arariwa's clients. Since the main loan cycle lasts four to six months, this financial literacy education module takes advantage of "teachable moments". Even in the most optimistic scenario, each bank will go through a minimum of one complete cycle during the nine-month training period. The end of each cycle is an opportunity for clients to decide how much they will borrow and save in the next cycle, which make the months preceding these decisions an ideal moment to teach about financial decisions. Each of the nine monthly sessions includes three components: a 45-minute training session during the monthly communal bank meeting, a 25-minute radio program that clients should listen to at least once between bank meetings and a homework assignment that clients should complete before each bank meeting. These components are described in more detail below:

1. *Training session during bank meeting:* The credit officer bases the 45-minute training sessions on a formal script that has been developed for each session. Most of the sessions also have a plastic poster that is used as a visual aid to go through decision making exercises. The training sessions were carefully designed based on the FFH training modules mentioned above, adapted to the local context and revised by Arariwa to focus more on commitments. There are four components to these training sessions: (1) introduction of the subject matter using interactive exercises intended to raise clients' awareness of their current financial decision making processes; (2) presentation of key theoretical concepts, reflecting upon the results of the interactive exercises; (3) use of a DVD to provide examples of Arariwa clients that have been successful because of following the advice given in the session; (4) A moment to commit to a behavioral change by thinking about key questions that are captured in a client training notebook.[2]
2. *Radio program:* Each 25-minute radio program is broadcast four times each month. The radio programs parallel the class training with stories, expert opinions and testimonies by Arariwa clients. The radio program is intended to reinforce the subject matter taught to clients in the training session and involve key decision makers in the client's household so that households are more likely to change their behavior.

2 While a few TVs and portable DVD players were purchased, credit officers were asked to borrow equipment from their clients in order to make the intervention more cost effective.

3. *Homework assignment:* Each client has a 40-page notebook that contains summaries of each session, tables to track their savings and loans and questions regarding their commitment and the radio program. Each client is supposed to sit down with her or his family to commit to a behavioral change by filling out the commitment questions. Each client is also supposed to answer some questions about the radio program to prove that he or she listened to the program. In order to incentivize clients to take these homework assignments seriously, a small prize is given to one member of each bank that has completed the commitment and radio questions at the beginning of each session. If multiple clients have answered the questions correctly, then the winner is determined through a simple lottery.[3]

Whereas the radio program was broadcast publicly, we included an encouragement design in order to help us define treatment and control groups. The clients were encouraged to listen to the program during the training sessions. Furthermore, the homework assignments included questions about the training and the radio program, and they were tied to lottery prizes. While true that the control group was not excluded, our expectation was that the announcements and incentives would generate significant differences in actual exposure.

Given Arariwa's communal bank methodology, we decided to use a clustered design in which the unit of randomization is the communal bank and the units of measurement are the clients within each bank. The sample was determined using a multistep process, which included: (1) power calculations, (2) application of exclusion criteria to reduce the sample to the required size and (3) randomization and division of the sample into an administrative sample and a survey sample. Power calculations were performed in order to design a clustered sample frame that would guarantee enough power to measure changes in key metrics that are considered relevant by the microfinance industry. Power calculations were not performed on every metric due to the lack of data. However, they were performed on four metrics for which data was available and which were considered to cover the spread in variation in the types of metrics in the data collection strategy. These metrics

3 The sessions focused on training related to balance of income, expenditures, investments and financial obligations, determination of personal, family and business goals and on how to plan financially to achieve these goals; determination of a saving plan to account for financial goals, necessary expenses and emergencies; determination of what to invest in, how much, how much will come from savings versus loan, how long to borrow for and whether or not borrowing will be profitable; how to calculate how much debt a client can afford based on income, expenditures and current debt, and characteristics of responsible borrowers.

Table 5.1 Stratification of Banks in Survey Sample

Banks in sample	Treatment	Control	Treatment-control
Average level of education	3.33	3.27	0.06
Average number months as clients	15.8	16	−0.02
Average loan outstanding (S/.)	1852	1816	36
Average number of clients in bank	15.8	15.4	0.4

Notes

1. Banks in treatment group: 172, banks in control group: 168.
2. Statistical significance in parenthesis.

were reliability in repaying external loans from Arariwa, tendency to save voluntarily in the internal account, amount borrowed from the external account in the current cycle and client's number of children.

The sample was selected and randomized through a multistep process. At each step the sample was balanced according to stratification criteria that were chosen partially because they were considered to be important factors to balance and partially because the data were readily available. For the bank selection process the following criteria were used: average level education of clients, average number of months that clients have been members of the bank, average amount of loan outstanding, and number of clients in the bank. For client selection processes within banks the following criteria were used: level of education, number of months as member of bank, amount of loan outstanding, and percentage of bank clientele that is female. Our random samples are displayed in Tables 5.1 and 5.2. Since the administrative sample had already been divided into treatment and control, the banks in the survey sample were already divided into treatment and control. Table 5.1 displays the treatment and control banks in the survey sample.[4]

5.5 Findings

This study was partially inspired by the rapid spread of the credit with education microfinance model, in which credit officers use preestablished communal bank meetings to train clients on a number of topics. The model has

4 We generated a list of all the clients in the survey sample by randomly picking seven clients from each bank to be eligible in order to allow for the fact that in some banks it might not be possible to locate two clients. Table 5.2 provides characteristics of clients eligible to be in the survey sample. We considered this possible attrition when making power calculations.

Table 5.2 Balance of Characteristics of Clients Eligible to Be in the Survey Sample

Clients eligible sample	Treatment	Control	Treatment-control
Number of clients	1204	1176	28
Level of education	3.3	3.3	0
Number months as client	15.8	16	−0.2
Loan outstanding (S/.)	1842	1791	51
% female	0.78	0.82	0.04

Notes

1. Treatment: 7 per bank; control: 7 per bank.
2. Statistical significance in parenthesis.

spread rapidly due to the low marginal cost with which it reaches rural clients. The main concern in the literature is whether the quality of such a low cost approach is likely to be so low as to render it ineffective from the perspective of a cost benefit analysis. In fact, our monitoring data progress through the financial literacy module was quite slow. Our initial assumption was that each communal bank that runs on a 4 month loan cycle should be able to complete nine sessions in 11 months, which would allow for two sessions to close and open cycles. However, in practice, in a series of 11 monthly meetings, only 1 percent of the communal banks in the treatment group were able to complete the nine sessions in the financial literacy module. The median bank was able to complete only three out of nine sessions and could be expected to take roughly three years to complete the module.

Our qualitative work suggests that there were three reasons for why many credit officers do not train on a regular basis. The first is due to attendance problems of bank members. In many banks several members come late and want to leave early. In others a large proportion of members don't come to the meeting at all and send their money with other members. In these circumstances credit officers often choose not to train in the hope that next session there will be more clients to train. This behavior by clients shows the limitation of imposing mandatory training sessions, which some clients do not value. In fact some of the banks in our treatment group explicitly asked the credit officer not to waste their time by training them.

The second reason is due to delinquency. If half way into a meeting a client has still not arrived and has not sent her money with another person, then the credit officer must track her down before his next bank meeting. Recovering the money becomes a much higher priority than giving a training session, especially if there are many clients that are delinquent or many clients that have become progressively later and later over the past few meetings. This is

the sort of natural trade-off that clients must face when the institution is providing two services through one person who has conflicting priorities.

The third reason is that credit officers are often unwilling or unprepared to give the training sessions. Credit officers are not recruited for their ability as educators but rather for their ability to open new banks, their ability to recover loaned money and their familiarity with their work zone. While some of the credit officers are excellent teachers, this is not generally the case. Those that are not naturally inclined towards teaching are usually eager to avoid this part of their role whenever there is a plausible excuse to do so. Furthermore, given the limited amount of training that credit officers receive, lack of confidence in the training materials encourages credit officers to avoid their training tasks.

In fact on average only a third of the intended treatment package has been delivered. This fact lays the ground for our analytical approach, in which we seek to determine (1) the impact of the program on those that were intended to be treated in a reasonable timeframe and (2) the impact of the program on those that were actually treated in this timeframe. The first question is most relevant to the formulation of policy regarding financial literacy education, since it directly answers the question of whether this specific program is effective with the typical client in a communal bank. Since the treatment package has only been partially delivered at the time of this evaluation, the second question is also relevant to policy. The impact of the program on those that have made significant progress through the training model thus far is likely to be similar to the impact the program will have on those that will progress through the module in the next 15 to 20 months.

Prior to the implementation began, credit officers were asked if clients would be likely to own TVs and DVD players and whether they would be willing to lend their equipment for the sake of watching a video in the training session. The response was generally very positive. They were also optimistic about the possibility of sharing a few portable DVD players and stationary TV/DVD sets. In order to cover the geographical areas in the impact evaluation, 12 radio stations were contracted to broadcast the radio program. In order for this to be cost-effective nonpeak times were selected to broadcast the program.[5] Qualitative work suggests that there are three main reasons for the low video compliance levels. The first is that despite an attempt to eliminate banks from the sample that had no access to electricity, there were several banks that were inadequately classified as having access to electricity and others whose meeting place changed to a location with no electricity. Without

5 These strategies were not as effective as predicted. The median bank was trained with the DVD one time and only 7 percent of the clients in the median bank listened to the radio program.

electricity it is usually not possible for the bank to watch the DVD. The second reason is the fact that clients are not as willing to lend the credit officer their TVs and DVD players as credit officers had initially predicted. They are willing to lend their equipment once or twice, but after this it becomes an inconvenience. Sharing their equipment is an inconvenience because clients do not want to carry their equipment to the meeting place, they do not want to show their relative wealth to other bank members by showing their new equipment and they do not want to inconvenience other household members who would like to use the equipment. The third reason is that credit officers are not willing to put the effort into creating a schedule that will allow them to efficiently share the portable DVD players. The result is that only one credit officer uses them in some cases and in most cases nobody ends up using them.

Further qualitative work suggests that there are three main reasons for the low radio compliance levels. The first is that despite an attempt to eliminate banks that have no access to radio signal from the sample, there are several banks that cannot tune into the selected radio stations. It is logistically too complex and expensive to pay every local radio station in order for all banks that have access to radio signal to be able to listen to the program. In many cases local radio stations crowd out all other radio signals, preventing clients from accessing the radio stations that they would need to listen to in order to tune into the financial literacy program. The second reason is that many clients are working when the radio program is broadcast. It would be too expensive to ask radio stations to replace their prime-time programs (usually news programs) with the financial literacy radio program. The third reason is that women in rural areas often do not know how to change the radio station to tune into our program. This is an unforeseen technology adoption problem that Arariwa has not overcome.

The monitoring and qualitative data collected demonstrate that the low cost delivery mechanisms chosen for this intervention were not appropriate for this context. Therefore, the analytical approach described at the end of the previous section is unlikely to capture the effects of the components. The overall low DVD and radio compliance levels in the treatment group suggest that our estimates of the impact of the treatment on those that we intended to treat only weakly reflect the effect that the ICT components might have. This is also true for our estimates of the effect of the impact of the treatment on those that received training sessions.[6] In order to estimate impact, we extend

6 The percentage of clients consistently receiving a DVD supplement in their training session is not much greater than 20 percent regardless of how many sessions have been received. Similarly, the percentage of clients listening to the radio is not much higher than 15 percent regardless of how many sessions have been received.

our analysis to look at the impact of the treatment on those that were treated with (1) training sessions where the DVD was used and (2) the radio program.

We use the following main groups of indicators to assess the impact of the program on Arariwa's institutional well-being and on client's financial behavior: savings rates and retention rates. Savings rates are indicators that allow us to measure changes in financial behavior that benefit the client. Retention rates allow us to measure changes in behavior that benefit Arariwa as an institution. We use indicators to measure differences in savings behavior. The first, *total savings accumulated*, is the total amount in Peruvian Nuevos Soles (PEN) that each client had accumulated in savings in their internal savings account by the end of their last complete cycle as of May 2010. The second, *voluntary savings commitment* is the monthly amount in PEN that each client voluntarily decided to save during the last complete cycle as of May 2010. The end of the last complete cycle could fall anywhere between February 2009 and May 2010 for banks with a four-month loan cycle and December 2009 and May 2010 for banks with a six-month loan cycle. The data on savings come from notebooks that credit officers use to keep track of each client's financial activity in the internal and external accounts. We use one indicator to measure differences in retention rates. *Retention* indicates whether a client originally in the sample was still a client of Arariwa on June 30, 2010. These data come from Arariwa's MIS, which has a record of which clients are active for any given time period. Retention is reported in the savings regression tables in order to save space.

5.6 Impact of the Program on Those That the Program Intended to Treat

In order to estimate the impact of the intention to treat of the program we use an OLS regression with our key variables of interest as dependent variables. We ran these regressions in three progressions, each time with a different set of independent variables. The first set of regressions includes the assigned treatment dummy as an independent variable, only. The second group of regressions includes the treatment dummy and a series of dummy variables that are used to control for the fixed effect of the credit officers.[7] The third group of regressions includes the treatment dummy, the credit officer fixed effects dummies and cluster the standard errors by communal bank.

Table 5.3 shows that the impact on savings for those that we intended to treat is statistically indistinguishable from zero. However, for all three progressions of regressions the coefficients for both savings indicators are

7 In total, there were 42 credit officers.

Table 5.3 Impact of the Intention to Treat: Client Retention and Savings

	Retention [a/]	**Savings** [a/]	
	Retention at end of study (% in decimal form)	**Total savings accumulated (PEN)**	**Voluntary savings commitment (PEN)**
I) With credit officer fixed effects and clustering of standard errors [b/]			
Treatment	−0.0225	29.52	1.857
	(0.0189)	(75.31)	(3.592)
Number of observations	9,843	609	741
R-squared	0.157	0.123	0.250
II) With credit officer fixed effects, clustering of standard errors [b/] and covariates [c/]			
Treatment	−0.0201	27.83	1.719
	(0.0188)	(74.85)	(3.703)
Number of observations	9,843	609	741
R-squared	0.170	0.161	0.257

Notes

1. Each coefficient reported in the table is from a separate OLS regression.
2. *Coefficient is statistically significant at the 10% level; ** coefficient is statistically significant at the 5% level; *** coefficient is statistically significant at the 1% level; no asterisk means the coefficient is not different from zero with statistical significance.
3. Standard errors in parenthesis.
4. a/ Dependent variables are defined as follows: Retention at end of study: Dummy variable indicating whether individual was still an Arariwa client in June 2010. Total savings accumulated: Amount of internal savings at the end of the last complete cycle as of May 2010. Voluntary savings commitment: monthly amount client committed to save voluntarily during the last complete cycle as of May 2010.
5. b/ Standard errors are clustered by communal bank c/ Covariates for regressions III) include months as Arariwa client, gender and education level.

positive, which suggests that there may have been a positive effect on savings. The sample of savings data that we were able to collect was much smaller than the data for retention and repayment due to the inaccessible nature of the notebooks that contained it.[8] It is possible that a positive effect is masked

8 Given the extreme difficulty in retrieving data from the notebooks we ended up missing a very substantial share of the sample as there was no alternative institutional variable

in the standard errors typical of a sample that is too small. The table also shows that the impact on client retention for those that we intended to treat is generally indistinguishable from zero. While in the first set of regressions the coefficient is significant at the 5 percent level, once covariates, fixed effects and clustering are added the significance disappears.[9] We can conclude that at the time of evaluation, the program did not have an impact on those we intended to treat. This is consistent with our expectations given that meaningful amounts of the treatment have only been delivered to a small percentage of the treatment group.

5.7 Summary and Conclusions

Our evaluation does not allow us to draw any statistically significant conclusions about the effectiveness of financial literacy programs or about the value that the information and communication technologies considered in this chapter may add to the delivery of financial literacy training. Given that at the time of this evaluation the median bank had only progressed through one third of the training sessions. Low compliance levels with the DVD and video components suggest that the low cost delivery methods chosen were not adequate for this context. Higher investments would need to be made in the delivery of the ICT components in order to raise compliance levels to the point that would allow a future reevaluation to draw useful conclusions. A rural microfinance institution would have to buy personal portable DVD players for each of its credit officers in order for the use of the DVD to become viable. The radio program would have to be aired at peak times in order for clients to listen to radio supplements.

While the study does not allow us to determine the impact of the program, the results spark questions about the effects of financial literacy training programs on retention rates and repayment rates. Throughout all of the regressions in the results section the coefficients associated with retention rates are negative, which suggests that the program may have adverse effects on client retention. Due to the way that monitoring visits were carried out it is likely that clients in treatment banks received more training than clients in control banks, regardless of the subject matter. One possible interpretation

that was employable. Interestingly, the loss of information in notebooks was random enough as to not bias our remaining data, which is confirmed by balance tests to the key variables that yielded no statistically significant differences between attrited and remaining samples.

9 The impact on client repayment behavior for those that we intended to treat is also generally indistinguishable from zero.

is that clients would rather not be trained and that when mandatory training in bank meetings is intensified they would rather move to a different financial institution, which brings to the fore the issue of compliance in this kind of interventions, a somewhat rarely studied issue. Our data do not allow us to draw any strong conclusions of this sort, but this possibility could be further explored with future research.

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