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Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions
By Dean Karlan and Martin Valdivia

Abstract

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Impact of Business Training on Microfinance Clients and Institutions[*]

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Abstract

Most academic and development policy discussions about microentrepreneurs focus on credit constraints, and assume that subject to those constraints the entrepreneurs manage their business optimally. Yet the self-employed poor rarely have any formal training in business skills. A growing number of microfinance organizations are attempting to build the human capital of micro-entrepreneurs in order to improve the livelihood of their clients and help further their mission of poverty alleviation. Using a randomized control trial, we measure the marginal impact of adding business training to a Peruvian group lending program for female microentrepreneurs. Treatment groups received thirty to sixty minute entrepreneurship training sessions during their normal weekly or monthly banking meeting over a period of one to two years. Control groups remained as they were before, meeting at the same frequency but solely for making loan and savings payments. We find evidence that the treatment led to limited improvements in business knowledge, practices and revenues. For the microfinance institution, the program increased client retention rates. There is also suggestive evidence that effects were larger for those that expressed less interest in training before the program began. This could have important implications for implementing similar market-based interventions with a goal of recovering costs.

Keywords: entrepreneurship, microfinance, business training, business skills, adult education
JEL Codes: C93, D12, D13, D21, I21, J24, O12

"I firmly believe that all human beings have an innate skill. I call it the survival skill. The fact that the poor are alive is clear proof of their ability. They do not need us to teach them how to survive; they already know. So rather than waste our time teaching them new skills, we try to make maximum use of their existing skills. Giving the poor access to credit allows them to immediately put into practice the skills they already know…" Muhammad Yunus, *Banker to the Poor* (1999, page 140).

1) Introduction

Few doubt that financial constraints limit the ability of the poor to invest and thus increase their income. Many, however, claim that the poor optimize their profits given such financial constraints. This is the spirit of the above quote by Muhammad Yunus, and is the rationale behind focusing interventions for microentrepreneurs solely on credit or savings, with no attention to skills training.

In this study we implemented a randomized control trial to assess the marginal impact of incorporating entrepreneurial training into a microcredit program. Although a program evaluation at one level, this study provides an opportunity to test whether these microentrepreneurs are indeed maximizing their profits given the resources available to them, or whether instead simple lessons on business development can guide them towards higher profits. As an example, in one lesson the trainers have each microentrepreneur write out a budget for their enterprise, often focusing on particular products or services. Particularly after taking into account the microentrepreneurs opportunity cost of time, many activities prove to be generating an economic loss. Similar, more concrete, evidence comes from de Mel et al (2008b; 2008a) in which researchers conducted a field experiment to measure returns to capital for microentrepreneurs in Sri Lanka. They found considerable heterogeneity, with many microentrepreneurs (in particular females) earning negative returns to capital. Most interesting and relevant here is the heterogeneity: those with higher cognitive abilities (as measured by a

digit-span test) yielded the highest returns. This calls into the question the "poor but rational" view that micro-entrepreneurs maximize profits subject to their financial constraints (Yunus 1999; Duflo 2006).

The study was conducted with FINCA-Peru, a microfinance institution (MFI) that implements "village banks" for poor, female microentrepreneurs in Lima and Ayacucho. We have strong reasons to expect significant selection biases with respect to the type of individuals that seek out such training and that are allowed in to such programs, and thus a randomized control trial is helpful for measuring the efficacy of such interventions. We randomly assigned pre-existing lending groups to either treatment or control. Treatment groups then received the training as part of their mandatory weekly meetings. Control groups remained as they were before, a credit and savings only group. We conducted a baseline survey before the intervention and a follow-up survey between one and two years later.

The entrepreneurial training materials, and the training of the credit officers, were developed and adapted by Freedom from Hunger (FFH), a US-based non-profit organization, and Atinchik, a Peruvian firm. Similar entrepreneurship training has been used around the world by other organizations, such as the International Labor Organization, Promujer in Latin America and BRAC in Bangladesh. FFH is considered a leader in the "credit with education" integrated model of microfinance and is directly responsible for such work in 18 countries and over 50 financial institutions for over 700,000 clients. Its influence in credit-linked training programs is evident from the adoption of its approach by other organizations without direct intervention from FFH and its prominent role at industry events such as the Microcredit Summit

(Dunford 2002). However, little is known about the marginal impact of these non-financial services.[1]

The policy issue is not simply whether or not such education is beneficial or not. Much debate also exists in the policy community regarding the optimal method of introducing such interventions. The "business development services" (BDS) approach typically calls for market-based solutions, in which services are rendered for a fee equal to or higher than marginal costs. If, however, the services provided are of unclear value to the more inexperienced entrepreneurs, this approach may create an adverse selection effect: those for whom impact may be highest will be least likely to pay the fee and join the program.

We find some benefits for the client as well as the MFI. The client shows improvement in our aggregate indices of business outcomes and processes. The microfinance institution also benefits from increased client retention, and weaker evidence of improved repayment. Also, we find suggestive evidence of adverse selection in the market for business training as the beneficial impacts were more intense on business practices and institutional outcomes (but not business outcomes) for the individuals who expressed the least interest in business training during the baseline survey. Section II presents the nature of the intervention and basic hypothesis. Section III explains the experimental design and Section IV details the data collected and empirical strategy. Section V presents the results, and Section VI concludes.

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[1] One notable exception is an analysis of the non-credit services offered by the microfinance institutions in Bangladesh. This study used a structural approach to estimate the impact of credit services and assumed the residual impact to be due to the non-credit aspect of the program (McKernan 2002). Prior evaluations of Freedom from Hunger have measured the impact of the entire package of credit with education versus no services, not the marginal value of the education to the credit program. A comparison has been done on Project HOPE's credit program with health education versus the credit program alone (Smith 2002).

2) The intervention and its expected effects

The goal of the business training intervention is two-fold: to improve business outcomes and overall welfare for clients and to improve institutional outcomes for the microfinance institution. Stronger businesses may demand more services, and clients may be less likely to default if they are satisfied (either due to higher cash flow or a stronger feeling of reciprocity). But the two goals do not necessarily reinforce each other: stronger businesses may "graduate" to larger formal sector banks, thus the business training could lead to lower client retention for the MFI.

The Intervention

FINCA-Peru ("FINCA") is a small, non-profit, but financially sustainable, microfinance institution that has been operating in Peru since 1993.[2] FINCA's mission is to improve the socio-economic situation of the poor and empower women through the promotion of the village-banking methodology. By providing them with working capital to increase inventory and invest in their businesses, FINCA expects to increase the earned income of its clients, primarily poor women with no collateral. In addition to providing credit, FINCA teaches its clients to save by requiring weekly or monthly savings deposits that correspond to the size of the loan the client has taken out and by encouraging additional voluntary savings for which they receive market interest rates. FINCA further aims to empower clients by giving them the opportunity to run their banks through their rotating participation on the village-bank board.

FINCA has operations in three particularly poor districts of Lima, and in two Andean provinces, Ayacucho and Huancavelica. As of June 2003, FINCA sponsored 273 village banks

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[2] Note that FINCA-Peru, prior to this study, had been associated with FINCA International, a large US-based, non-profit organization responsible for creating and replicating the village banking methodology around the world.

with a total of 6,429 clients, 96 percent of which were women. FINCA members, particularly those in Ayacucho, are relatively young and have little formal education. FINCA clients each hold, on average, $233 in savings whereas the average loan is $203, with a recovery rate of 99 percent. FINCA charges sufficient interest to be self-sustainable. Its sustainability indicator (total income / total expenses) was 113.8 percent in 2003; 107.6 percent in 2004; and 128.4 percent in 2005.

The business training materials were developed through a collaborative effort between FINCA, Atinchik,[3] and Freedom from Hunger (FFH), and had been used in the past in other projects.[4] The program included general business skills and strategy training, not client-specific problem-solving. Although the pedagogy did include discussion with the clients (not just lecture) and various short exercises, the program was not focused on providing specific, individualized advice. The content of the training was similar in both locations, but was organized and presented differently to cater to the differences in educational levels and learning processes.[5] In Lima, clients received handouts and did homework, whereas in Ayacucho, teaching relied more heavily on visual aids and was sometimes in Quechua (a local indigenous language). The training materials in Lima were organized in two modules. The first module

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[3] Atinchik, a nine-year old firm, specializes in the generation of training materials in business management for micro-entrepreneurs. Atinchik had used similar training previously in a project for the World Bank in Peru.

[4] Since 1995, FFH has provided technical assistance to eighteen MFIs in Asia, Africa and Latin America, with its program *Credit with Education*, a combination of microcredit and educational services. Working with independent local partners, FFH provides training in microfinance products, MFI capacity building, and adult education in health and business development. Its business education curriculum was developed through market assessments using individual surveys, focus groups with key informants, pilot-testing, and the feedback of clients and staff. The materials used in Peru were slightly modified from materials used extensively by FFH's affiliate in Bolivia, CRECER.

[5] Among FINCA's Lima clients, the literacy rate is 98 percent, the majority has a secondary education and 40 percent have some post-secondary schooling as well. On the other hand, in the Ayacucho region, almost 70 percent of the FINCA clients did not finish secondary school and approximately 15 percent are illiterate.

introduced attendees to what a business is, how a business works, and the marketplace. Clients were taught to identify their customers, competitors, and the position of the business in the marketplace and then learned about product, promotional strategies and commercial planning. The second module explained how to separate business and home finances by establishing the differences between income, costs, and profit, teaching how to calculate production costs, and product pricing. See Appendix A for more details on the content of the business training.

Training began in October, 2002 in Lima and in March, 2003 in Ayacucho and was planned to last 22 weekly sessions in total. Each bank timed the beginning of the training with the beginning of new loan cycles, so not all banks began training at the same time. Ayacucho's meetings are weekly, whereas in Lima some groups meet weekly and others meet bi-weekly.

The Intended Effects

The goal of the program is to teach entrepreneurial skills. However, if the entrepreneurial "spirit" is more about personality than skills, teaching an individual to engage in activities similar to a successful entrepreneur may not actually lead to improved business outcomes. The training aims to improve basic business practices such as how to treat clients, how to use profits, where to sell, the use of special discounts, credit sales, and the goods and services produced. These improvements should lead to more sales, more workers, and could eventually provide incentives to join the formal sector.

We also examine the impact on two sets of household outcomes: household decision-making and child labor. The link to household decision-making is straightforward and one of the oft-cited motivations of such training: improved business success could empower female microentrepreneurs with respect to their husbands/partners in business and family decisions by giving them more control of their finances. The link to child labor is ambiguous, however.

Since many children work in family enterprises, this is an important outcome to observe. The training may lead to changes in the business which either increase or decrease the marginal product of labor, hence increase or decrease child labor through a substitution effect. If the training increases business income, then we expect increased wealth to lead to a decrease in child labor and an increase in schooling.[6] Furthermore, an indirect effect may occur in which the training inspires the mother to value education more and thus invest more in schooling of her children.

In addition to impact on the clients´ businesses and households, the training could impact important outcomes for the microfinance institution (MFI). If clients' businesses improve, they are more able to repay their loans. The training also may engender goodwill and sentiments of reciprocity, also leading to higher repayment rates[7]. Loan sizes and savings volumes are more ambiguous: if clients learn how to manage their cash flows better, they perhaps will need less debt. On the other hand, the business training may lead them to expand their business, and thus also demand more financial capital.

Although much of the academic literature focuses on repayment rates for microfinance, many institutions (who typically have near perfect repayment) are more concerned with client retention (Copestake 2002). The expected effects here are ambiguous. If clients like the training, they may be more likely to remain in the program in order to receive the training, whereas obviously if they do not like the training (perhaps due to the additional 30-60 minutes

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[6] The connection between increased income and the reduction of child labor and the increments in schooling can be reviewed in Basu and Van (1998), Baland and Robinson (2000), and Edmonds (2005; 2006), among others.

[7] Repayment rates are often near perfect in sustainable MFIs working with some form of group lending. Still, individual delays in payments and defaults are not that rare and represent a cost to the banks, as it puts pressure to the other members of the banks or groups to implement internal measures to guarantee repayment or ultimately pay the defaulted debt from their own pockets.

per week required for the village bank meetings), they may be more likely to leave. The net effect is critical for the microfinance institution, since maintaining a stable client base is important for the sustainability of the organization.

3) The experimental design and the monitoring of the intervention

We evaluate the effectiveness of integrating business training with microfinance services using a randomized control trial in which pre-existing lending groups of on average twenty women were assigned randomly to control and treatment groups. In Ayacucho, of the 140 village banks (3,265 clients), 55 were assigned to a mandatory treatment group (clients had to stay through the training at their weekly bank meeting[8]), 34 were assigned to a voluntary treatment group (clients were allowed to leave after their loan payment was made, before the training began), and 51 were assigned to a control group which received no additional services beyond the credit and savings program. In Lima, of 99 FINCA-sponsored banks (1,326 clients), 49 were assigned to mandatory treatment and 50 were assigned to control (there was no "voluntary" treatment group in Lima). The randomization was stratified by credit officer; hence each credit officer has the same proportion of treatment and control groups. No other policy changes, such as lending criteria, monitoring or enforcement, occurred along with the training.

We monitored the attendance at the weekly meetings and the training sessions. On average, training sessions in mandatory training banks had an 88% attendance rate while

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[8] In banks assigned to mandatory training, periodic meetings started with the training session. Fines were applied for absence or tardiness to the training sessions, and could result in expulsion from the bank (absence or tardiness to group meetings also can lead to expulsion from FINCA for the control group members).

attendance in voluntary banks was 76%.[9] The training did not occur at each meeting (nor does it typically under most implementations of "credit with education" in other MFI's). First, some treatment banks put the trainings on hold if they were having problems such as high default and dropout rates. In these cases, they would often enter a restructuring phase that involved reinforcement of the traditional FINCA training about good repayment practices and discipline. The training session was also skipped at the first and last meeting of each cycle, and when the meeting included a group activity such as the celebration of a birthday or regional and religious holidays. In these cases, the session would be postponed until the following meeting. There were other cases in which the clients and credit officers decided that they needed more time to grasp fully the information offered in one session. In some cases, it became a normal practice for banks to agree to spend an extra meeting reviewing the material of the previous training session.[10]

These practices not only delayed the completion of the training materials, but also caused heterogeneity in treatment intensity across groups. In Lima, for example, the average bank advanced 3.5 sessions per loan cycle over the 12-meeting cycles. However, it was common for banks to complete five training sessions in the first loan cycle, and gradually slow to an average of 2.6 training sessions per cycle over time. As a result, after at least 24 months since the launch of the training, only half the banks had reached the 17th session out of a total of 22 programmed sessions. At the individual level, married, older and more educated individuals are more likely to have higher attendance rates (results not in tables). The empirical analysis will compare the

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[9] Attendance in voluntary banks gradually slowed from an average of 80% at the beginning to 70% in the last two cycles observed.

[10] In the case of Lima, such revisions often implied using the sessions to work in groups, with the support from the credit officer, on the assigned homework.

village banks assigned to treatment to those assigned to control, irrespective of how well FINCA adhered to the training program, irrespective of how well clients attended the training, and irrespective of how long clients continued participating in the lending program. This is important not only to avoid a selection bias from heterogeneous intensity of treatment, but also because the delays experienced here are normal for credit with education interventions.[11] Thus, had the training been adhered to more strictly, we would be estimating the impact of a treatment that is different than is normally implemented.

4) Data and estimation methods

This evaluation uses three key data sources: FINCA financial-transaction data, a baseline survey before the randomization results were announced, and a follow-up survey up to two years later.

Financial-transaction data are from FINCA's database, which contains the reports of all the transactions made by each bank client at every scheduled meeting since 1999. It includes information on the loan cycles, broken down by loan payment, interest, mandatory and voluntary savings, fines for tardiness, and contributions to cover default of other members. The database also includes some socio-economic characteristics of the clients, such as age, education, and business main economic activity, registered when the client first joined a FINCA-sponsored village bank.

The baseline and follow-up surveys included a variety of questions on the socio-demographic characteristics and other general information about the client's household and

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[11] This stylized fact reported to us by Freedom from Hunger staff from their experience implementing credit with education in hundreds of financial institutions and non-governmental organizations around the world.

business. Expected outcomes are divided into four categories: (1) institutional outcomes, including loan repayment and client retention[12] (2) business results, (3) business processes, knowledge and savings practices (i.e., testing whether the specific practices taught in the training were adopted), (4) household outcomes, including empowerment in decision-making and child labor (the Lima follow-up survey included questions related to the time children between six and fifteen years old dedicate to domestic work and school activities). The full list of outcome variables and their definitions are included in Appendix Table 1.

In treatment banks, the baseline survey was given within a few weeks prior to the bank beginning the training. Figure 1 below shows the timeline of these components of the study for Ayacucho and Lima. Most baseline surveys were completed at the FINCA office at the time of their weekly meeting, although due to time constraints some of them had to be completed at their home or place of business. In Ayacucho we completed 3265 baseline surveys, and in Lima we completed 1326 baseline surveys.

Figure 1: Timeline of the intervention and data collection

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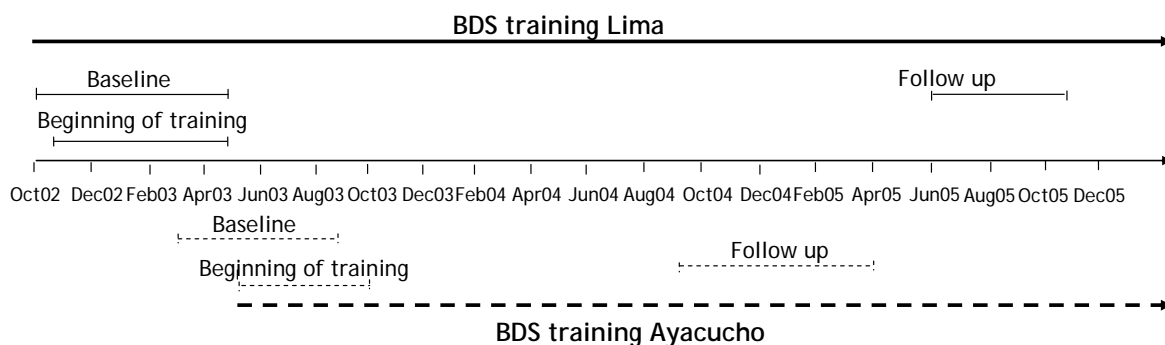
[12] Group loan repayment has been almost perfect within FINCA, even before business training. Thus, what we look here is at individual performance in terms of payment tardiness and default. Reductions in this indicator may not lead to increased payment collection by FINCA but reduce transaction costs by banks and FINCA itself in enforcing late payments either by the individual or by making the bank liable.

Seventy-six percent of the clients in the baseline survey were reached and surveyed for the follow-up survey. For the 62% of the clients interviewed in the baseline who were no longer members of a FINCA-sponsored village bank when the follow-up surveys began, we located them using addresses collected in the baseline survey or, in some cases, asking neighbors or FINCA members. However, some clients had moved far away, were impossible to locate, or refused to be interviewed. In total, we interviewed 83% of the clients who were still borrowing from FINCA, and 72% of those who had dropped from the program[13].

In order to show that the random assignment produced observably similar treatment and control groups, Column 4 of Tables 1, 2, 3 and 4 reports key demographic characteristics and financial-transaction history from before BDS training began. At the time of the randomization, data were available on prior repayment rates, the average loan size and the average savings size. The remaining variables were unobserved at the time of the randomization, but also are similar across treatment and control groups, as expected.

To estimate the impact of the business training program, we either compare treatment to control in the follow-up data, or use a difference-in-difference (DD) estimator if the measure is included in both the baseline and the follow-up survey. Due to the randomization, both estimators provide an unbiased estimate of the impact of the intention to treat with business training program on a particular outcome variable.

Econometrically, the double difference estimator comes from the following expression:

$$Y_{ijt} = \alpha + \beta_1 Post_t + \beta_2 D_j^T + \beta_3 Post_t\, D_j^T + \varepsilon_{ijt} \tag{1}$$

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[13] We discuss the implications of attrition on the interpretation of our results in section 5.3.

where Y_{ijt} denotes an outcome variable for client i in bank j at time t, $Post_t$ is a binary variable equal to one if the observation corresponds to the post-treatment time period, D_j^T is a dummy variable that takes the value one if the client belonged to a treatment bank, and ε_{ij} denotes the error term. Then, β_3 is the double difference estimator of the program's impact on outcome Y. That is, β_3 measures the difference between the treatment and control groups in the evolution of outcome Y, and is an unbiased estimate of the average impact of being assigned to a treatment group on the outcome variable Y. In cases where we only have the measure in the follow-up survey, we estimate the following:

$$Y_{ij} = \alpha + \beta D_j^T + \varepsilon_{ij} \tag{2}$$

where β is the parameter of interest as it estimates the differences between the treatment and control groups in outcome Y.

Many of the outcome variables included in this study are binary. In such cases, we estimate a linear probability model (LPM) and report the marginal effect of D_i^C for the impact of business training on outcome Y. In the tables of the results section, we also report estimates of β_3 and β that result from regressions that add to equations (1) and (2), respectively, a set of covariates such as the clients' age and education, the number of loans received from FINCA, business type and size, and branch location.[14] We cluster all standard errors in the OLS specifications within the village bank, which was the unit of randomization. In addition, we add

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[14] Since treatment was assigned randomly, the insertion of these covariates would not affect the consistency of the parameter of interest. Rather, its inclusion is used to improve estimation precision, to account for chance differences between groups in the distribution of pre-random assignment characteristics, and to account for non-random attrition in the follow-up survey (discussed in Section 5.3).

dummy variables to identify the credit officer, as randomization was stratified by that variable (see Duflo, Glennester and Kremer, 2007).

We evaluate the impact of this intervention upon a total of 36 institutional, business and household outcomes, 13 of them related to business knowledge and practices. However, testing multiple outcomes using (1) or (2) independently increases the probability of rejecting a true null hypothesis for at least one outcome above the significance level used for each test (Duflo, Glennester and Kremer, 2007). We need to adjust the estimated p-values if we want to test whether business training has an impact on the family of outcomes associated to business practices/knowledge, business results or institutional outcomes. A summary measure that captures such idea is the mean standardized treatment effect. Following Kling, Liebman and Katz (2007), we implement that by defining a summary measure Y^* as the unweighted average of all standardized outcomes of a family. That is, we get $Y^* = \sum_k Y_k^* \Big/ k$, where

$Y_k^* = (Y_k - \mu_k)/\sigma_k$. Y_k denotes the outcome variables within each family and were re-defined in some cases so that a larger value is always better for the business, household or MFI[15]. Standardization is done using mean and variance for the control group, at baseline when the DD

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[15] An example for the family of institutional outcomes is that we use client retention for the construction of the corresponding summary measure, instead of dropout. In the case of continuous variables such as fines and solidarity discounts, the adjustment implied multiplying those variables by -1. Also, notice that we develop this analysis only for the TCD specification in the case of institutional outcomes and the family of outcomes related to business practices/knowledge, since the DD specification required dropping many variables and would break the purpose of this kind of analysis. The family of business results does use the DD specification, so that we drop the variable on profit margin for main product as it was collected only in the follow-up.

specification is used. Thus, the mean and standard deviation of β in (1) for Y^* allows us to test

whether treatment had an overall positive effect on the corresponding family of outcomes[16].

We also use the summary measure Y^* to test whether the training generates heterogeneous

treatment effects for each family of outcomes along characteristics such as prior interest in

training, schooling, and business size as measured by total revenues. We use the following

model:

$$Y_{ij}^* = \alpha + \delta X_{i0} + \beta_1 D_j^T + \beta_2 D_j^T X_{i0} + \varepsilon_{ij}, \tag{3}$$

where X_0 is a binary variable that denotes the characteristic of interest prior to the intervention.

In this case, β_1 is the treatment-control difference (TCD) estimator for those individuals that

have characteristic $X = 0$ and $(\beta_1 + \beta_2)$ measures the impact for those individuals that have

characteristic $X = 1$.

5) Results

5.1) *Aggregate results by outcome category*

We divide the analysis into four categories: (1) business outcomes, (2) business processes

and knowledge, (3) household outcomes including empowerment in decision-making and child

labor, and (4) microfinance institutional outcomes.

Business results

Table 1 presents the results on business outcomes such as sales and employment. For

clients in the treatment group, sales in the month prior to the surveys were 15 percent higher

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[16] As mentioned above, we classify our expected outcomes into four categories: (i) institutional
outcomes, (ii) business results, (iii) business processes/knowledge, and (iv) household outcomes.

(se=8%)[17], one percent lower in "good months" (se = 5%), nine percentage points higher in a "normal" month (se=5%), and 26 percent higher in "bad months" (se = 10%).[18] We infer from this last result that the training has helped clients identify strategies to reduce the downward fluctuations in their sales, not just the level of sales. For instance, the training taught how to think about diversifying the goods and services they offer, as well as to think more proactively about alternative activities in slow months of their core business. The improved cash flow also may have reduced their seasonal demand for credit helping to explain the lack of impact of the training on loan size and cumulative savings (Table 4, discussed more below).

We find no effect on the number of workers, family or hired, employed at the family business. Finally, for retail business, no change in profit margin was observed on the most common product sold. Due to time and reliability constraints, we only asked about profit margin for the main product.[19] However, unless the profit margin shrunk on other products despite not decreasing on the main product, the increased overall revenue implies an increase in profits. For service businesses, since no change in labor was observed, the increased revenue should translate roughly to increased profits.

Business skills and practices

In the follow-up survey we asked clients questions about key elements of the training, such as business knowledge, marketing strategies, use of profits, and record-keeping (see Appendix Table 1 for the full list of survey questions and variable definitions). Table 2 shows

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[17] Both treatment and control groups experienced positive growth in sales in the month prior to the survey. Growth in the control group was 52% while growth in the treatment group was 68%.

[18] Again, both groups experienced growth in this indicator. Growth in the control group was 38% while growth in the treatment group reached 64%.

[19] Still, many clients were not able or willing to answer the questions related to the construction of this variable: that is weekly revenue and cost for the main business product.

the results on fourteen of these outcome measures. Most of them move in the intended direction but in the difference estimates (column 7) only five of them are significant at 90% level, with four of those five significant at the 95% level. The outcomes which are significant at 95% are: keeping records of their withdrawals from their business, an index of business knowledge questions, the proportion that report using profits for business growth, and implementation of innovations in the business. We find no statistically significant (at 90%) changes in tax formality, paid fixed salary to self, number of sales locations, level of diversification, allowing sales on credit, keeping records of payments to workers, started new business, proportion of clients who faced problems with business and proportion of clients who planned innovations in their businesses.

It is important to note that these are self-reported process changes. Since the program taught individuals to engage in such activities, and the surveys were associated with FINCA Peru in the minds of the borrowers, it is possible that the self-reports are biased in favor of the treatment groups.

Household outcomes

Table 3 reports the results on household outcomes. We divide the household outcomes into two categories, empowerment in household decision-making and child labor. We detect no impact on household decision-making such as how to use the FINCA loan and savings, whether to take money or products from the business, or family size decisions.[20] Participants are also no more likely to keep track of household bills or separate their money from that of their husband or partner. One explanation for the lack of empowerment effects may be that we are working

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[20] The reported outcome takes the value of one if the female FINCA client is one of the decision-makers and zero otherwise.

with women that already run a business, keep savings and manage loans so that they are already empowered enough for the business training to have an effect on the indicators analyzed here (it does suggest that modules focusing on these issues may not be optimal to include). Also, as indicated in Section 2, FINCA clients routinely receive empowering messages during their group meetings.

We also examine several outcomes on child labor, with competing hypotheses: business training may increase the value mothers place on education more generally, thus leading to higher schooling. Thus, in terms of the business, the training may increase or decrease the returns to labor. We find in net a reduction in daily hours dedicated to child labor and increase in schooling, but neither result is statistically significant (p-value is 0.411 and 0.317, respectively).

Institutional results

We found effects of training on institutional outcomes such as repayment and client retention, but not on loan size or accumulated savings. Perfect repayment among treatment groups is three percentage points higher than among control groups, but not statistically significant (p-value of 0.336).[21] In the OLS specifications, the results have a p-value of 0.144 without covariates and 0.114 with covariates.[22]

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[21] A client is said to have had a perfect repayment record if their payments over the cycle plus their savings were always enough to cover the amount borrowed plus interest.

[22] This statistic does not necessarily affect FINCA's finances as clients can still recover in the next week/month and also FINCA can collect solidarity discounts associated to the joint-liability mechanism within each bank. FINCA does incur noticeable transaction costs, however, in monitoring and enforcing, as any arrears, in any given week, leads to considerable discussion and mid-week follow-up as part of their normal procedures. The ultimate repayment rate to FINCA is around 98-99%, and is not different between treatment and control groups.

We also found that treatment group clients were 4 percentage points less likely to either permanently or temporary dropout (p-value of 0.026), and 2.4 percentage points less likely to permanently dropout (p-value of 0.181). The proportion of dropout is high: 63% of the clients in the control group left their banks at some point between the beginning of training and the follow up survey, and 59% for clients in the treatment group. We infer from this that clients place high value on the training they receive, causing them to avoid, at a minimum, temporary exits, and perhaps permanent ones as well. If the business training is particularly successful in helping microentrepreneurs increase the size and formality of their business, it may lead to exit and entry into more formal sector banking services. Although that is not observed, it is possible that after more time this would have been observed.

Of those who do leave, treatment clients are more likely to cite the length of weekly meetings as a factor in dropping out of the program (Appendix Table 4). So while in net the business training is good for client retention, the program can expect to lose some clients due to lengthier meetings. Making the training voluntary would reduce in principle this tension, but we find the improvement in dropout rates is slightly higher for the mandatory treatment than the voluntary treatment groups.[23]

Another explanation for the increase in client retention for treatment groups is the improvement of clients' business outcomes, leading to higher repayment capability. The increase in client retention could be driven by the reduction in default rather than client satisfaction if the training causes some clients who might have defaulted to increase their ability to make loan payments. This would require an increase in business income to provide the funds to make extra payments, and as we saw above, such impacts were indeed detected. Although

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[23] This regression result is not in the tables but is available upon request.

not reported in the tables, we also examined whether the treatment led to more dropout with default compared to dropout without default. We found that the treatment effect is larger in reducing dropout without default, but when disaggregated neither is significant statistically.

The improved default and client retention rates have implications for the profitability of the institution, as discussed in more detail in the conclusion. However, we find no change in average loan size borrowed or cumulative savings at FINCA by the clients. Similarly, we do not find any changes in the collection of fines and in solidarity discounts which could have affected the client's feeling towards the training.[24]

Naturally the training is costly, as it requires labor costs for the organization to train their staff, likely leads to a lower quantity of clients an individual credit officer can handle on a continuing basis, and also requires some materials. Freedom from Hunger has found with previous partners that the total costs to an organization is between 6% and 9% of total operating costs (vor der Bruegge, Dickey and Dunford 1999). For FINCA Peru, which charges annualized interest rate of about 84%, this implies about a 10% increase in their costs. The marginal revenue will come from the increased client retention and repayment rates (no change in loan sizes was observed). The fixed cost of managing a village bank is high, but the variable operating cost of each individual client is quite low. The financial cost of capital is also low, roughly one fifth of the interest revenue. Thus, the improved client retention rate (four percentage point improvement in client retention) generates significantly more increased net revenue (revenue net of cost of capital) than the marginal cost of providing the training. The benefit from the improved client repayment is more difficult to estimate, since the true benefit to FINCA comes through lower enforcement costs (the eventual default is virtually nonexistent).

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[24] Fines and solidarity discounts were only systematically registered in FINCA's database since june 2004 so that we do not have records for clients that left FINCA before that.

Thus in all, a lower bound exercise (i.e., ignoring repayment rate benefits) still suggests this is a profitable undertaking for FINCA. Indeed, after the study ended, FINCA decided to implement the "mandatory" version of business training in all village banks.

5.2) Results for Outcome family indexes by sub-groups

Following the discussion in section 4 and Kling, Liebman and Katz (2007), Table 5, Panel A reports the mean standardized treatment effect for four families of outcomes, although empowerment outcomes are separated in household and business decisions. We find statistically significant (at 90%) and positive average effects on two of the four families of outcomes, business results and business practices. The results for institutional outcomes are positive but not significant, and are negative but not significant for empowerment with respect to decision-making power in the household.

Table 5, Panel B also explores the hypothesis of heterogeneous effects among sub-groups defined by the client's attitude towards training, education and business size. We find that for improvements in the families of institutional outcomes, business practices and institutional outcomes are strongest (significant at 90% and 99%, respectively) for clients who expressed the *least* interest in business training in the baseline survey. Similar heterogeneity is similarly signed but not significant statistically for business results, and oppositely signed and significant statistically (99%) for empowerment. If more weight is put on the business and institutional outcomes, this result has implications for the appropriate method for introducing business training to a program or market, since the impact is highest on those who indicate the lowest demand for the service. Under those circumstances, charging a fee for the business training initially may yield the exact wrong set of clients in order to maximize impact. Instead, one may

want free-trial periods to convince the less informed about the quality of the training. Or, this suggests making the business training mandatory for borrowers (or linked to a service of high-perceived value) may be beneficial.[25].

With respect to education and business size as measured by sales, results are more inconclusive. The positive impact of training on business practices seems stronger for the less educated, and for the larger businesses. But the results on business results and institutional outcomes are not heterogeneous in this respect.

5.3) Attrition from the Follow-up Survey

We had a response rate of 76% for the follow up survey. Table 6 shows that response rate was lower in the treatment group (75.2%) compared to the control group (77.9%). This differential response rate occurred in Ayacucho site and for former clients, but not in Lima and for current clients.

Given our non-response rate, we analyze the implications of different plausible assumptions upon our estimated treatment effects, in the lines of the nonparametric approaches followed in Horowitz and Manski (2000) and Lee (2002). In Table 7, we report the lower and upper bound estimates for the mean standardized treatment effects of the outcome under various assumptions about missing data. Column 5 reproduces the mean standardized treatment effects in table 5. Columns 1 and 9 present the lower and upper bounds obtained under the worst-case scenario. For the lower (upper) bound, we impute the minimum (maximum) value of each variable in the observed treatment distribution to the non-responders in the treatment group, and

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[25] However, a surprising outcome is that training also led to a reduced role of the female client in business decisions. That is, amongst those less interested in training, treated clients were less likely to report having decision-making power in their business than control clients.

the maximum (minimum) value of the observed control distribution to the non-responders in the control group.

The second scenario (columns 2 and 8) adjusts the worst-case scenario for the set of indicators for which we use the DD estimator, that is, those for which we observe the outcome at baseline. If variables are dichotomous, the lower (upper) bound assumes non-reversal for the non-responders in the control group. If variables are continuous or categorical, it imputes the median growth rate of the bottom (top) growth quintile of each variable in the observed treatment distribution to the non-responders in the treatment group, and the median growth rate of the top (bottom) growth quintile of the observed control distribution to the non-responders in the control group.

The third scenario (columns 3 and 7) follows Kling and Liebman (2004) and imputes to the lower (upper) bound the mean minus (plus) 0.25 standard deviations of the observed treatment distribution to the non-responders in the treatment group, the mean plus (minus) 0.25 standard deviations of the observed control distribution to non-responders in the control group. The fourth scenario (columns 4 and 6) repeats the third scenario but with a 0.1 standard deviations.

Given the 24% attrition rate, it is not surprising to find very large differences between the lower and upper bounds of the worst-case scenario. In the case of the index for the family of business results, the mean standardized treatment effect can be either largely negative (a reduction of 1.01 standard deviations) or largely positive (an increase of 1.12 standard deviations). The next three scenarios reduce the range gradually, with the last one implying a mostly positive range for the mean standardized treatment. That is, with our level of non-response and size effect, if the treatment effect for the non-response varies by more than 0.1

standard deviations from the observed, then the results are no longer statistically different than zero.

6) Conclusion

We raised a fundamental question regarding informal economies in developing countries: are microentrepreneurs maximizing profits given a financial constraint, or can basic entrepreneurship training lead to improved managerial decisions, and thus profits? We find positive results, but on a preponderance of the outcomes.

We find that basic training can lead to higher profits, even though the participants were all pre-existing and experienced micro-entrepreneurs. Specifically, clients report engaging in some of the exact activities being taught in the program: separating money between business and household, reinvesting profits in the business, maintaining records of sales and expenses, and thinking proactively about new markets and opportunities for profits. The implementation of these strategies seemed to have helped clients increased business income, mainly by smoothing fluctuations between good and bad periods.

However, many predicted positive impacts did not come to fruition. For example, microentrepeneurs did not register for formal business licenses, did not increase the number of sales locations, keep records to payments of workers, start a new business (point estimate was actually negative, p-value of 0.163), reduce the proportion who reported having problems in their business, or increase the number of business that reported planning innovations.

Many of our models of entrepreneurial activity in developing countries treat human capital as fixed, and focus instead on financial constraints and information asymmetries in credit and equity markets (Banerjee and Newman 1993; Paulson and Townsend 2004). Similarly, much of

the microfinance industry focuses on the infusion of *financial* capital into micro-enterprises, not *human* capital, as if the entrepreneurs already have the necessary human capital. Some development practitioners, however, actively pursue strategies to teach adults (typically women) entrepreneurial skills. These programs are strikingly heterogeneous, and little is known about their impact on economic outcomes for the poor.

Indeed, as a result, much tension exists in the development finance community regarding whether lenders should specialize on financial services only, or should integrate non-financial services into their programs (MkNelly, Watetip, Lassen and Dunford 1996).[26] The idea that specialization is good is certainly not new, but in this setting it is unknown whether the economies of scope outweigh the risks of having credit officers simultaneously become "teachers."[27] Aside from losing focus on the lending and savings activities, providing detailed business advice may lead to higher default if the borrower then perceives the lender as partially responsible for any business changes that do not succeed (i.e., does a lender giving business advice effectively convert the debt into equity?). Thus, examining the effects on the institution, not just the client, is important.

Another important result is that we sometimes find the stronger effects for those clients who expressed less interest in the training in the baseline survey. This result implies that demand-driven "market" solutions may not be as simple as charging for the marginal cost of the services. It is possible that after a free trial, clients with low-prior demand would appreciate the

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[26] In a third alternative, the "parallel" approach, non-financial services are provided to the same individuals by another organization (or other employees of the same organization) in coordination with the financial service provider.

[27] The issue is even starker in other "education" add-on components such as health and nutrition training, which are often part of the "credit with education" approach. Such modules were not part of this initiative.

value and demand the services. Or, eventually, word of mouth may lead to higher demand by the less informed. Alternatively, programs could make the training a necessary component of some of other desired commodity (such as credit). The experimental setup and outcomes measured here do not allow us to examine the exact prescription from this finding, nor was the finding particularly strong and consistent across all outcomes.

Although this paper has broader implications to theories about what constrains poor entrepreneurs from expanding their enterprises, this is at a basic level an exercise in program evaluation. We suggest, however, that it is a necessary exercise both for policymakers and academics. Given the plethora of these projects, and given the importance of human capital to our thinking about growth and development, it is imperative that we know whether these efforts can have a positive effect on the poor. Many disagree on whether such programs should be implemented. In fact, the very origins of the microfinance movement, led by Muhammad Yunus of the Grameen Bank, are based on the presumption that credit constraints alone, not skills, are the obstacle to the entrepreneurial poor.

Having found a suggestive positive answer in our setting, further experimentation is now needed to verify the replicability in different contexts, on non-prior borrowers from a microcredit institution, as well as on inexperienced microentrepreneurs. It also would be important to evaluate the ongoing sustainability of the business improvements for the client and the lending institution. For instance, will the selection of clients differ if the training is incorporated and well publicized, and if so how will that affect the impact of the intervention? Lastly, an open debate exists regarding alternative delivery processes, such as whether credit officers rather than training specialists should be delivering the education, as well as the relative merits of different training modules and pedagogies.

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Appendix A: Business Training Materials

In Lima, the training was administered as a two-part program [1]. Module 1, "Training for Success," consists of 15 sessions that introduce the topics of business administration and marketing. Classes begin by introducing attendees to what a business is, how a business works, and the marketplace. Women are taught to identify their customers, business competitors, and the position of the business in the marketplace. Later in the module, sessions cover topics on product, price, and promotional strategies and a commercial plan. The module also includes review sessions and a business game that participants play in several sessions.

The second module, "Business and Family: Costs and Finances," consists of 10 sessions that explain how to separate business and home finances. The classes cover the differences between income, costs, and profit, how to calculate production costs, and product pricing. Other sessions cover maintaining records of business' operations, business growth, loan repayment, and taxes.

Every session of these two modules included worksheets on the topics taught for the clients to practice and review at the meetings or at home.

In Ayacucho, the training program was grouped into 3 modules with topics less advanced than those taught in Lima [2]. Sessions were presented in 30 minute classes and did not used worksheets as in Lima. Module 1, "Manage Your Business Money," begins by defining the differences between money for personal expenses and for the business. Women are taught how to calculate profits and about the use of profits for the household and business. Sessions cover how to handle selling to customers on credit, how to record business expenses, how to prevent losses, and the importance of investing in the business. The module also includes a review session.

Module 2, "Increase Your Sales" begins by providing an overview of five key elements in sales: 1) customers, 2) business product or service, 3) product placement, 4) pricing, and 5) marketing. Many of the following sessions are dedicated to provide women with practical means of applying these concepts. The topics covered include the key elements of good customer relations, how to target sales to different types of customers, and approaches for varying the types and timing of the products that are sold in order to increase sales. Participants are also taught about how to identify locations, price goods, and conduct activities that increase sales and profits.

The third module, "Plan for a Better Business," teaches members how to incorporate planning into their business. Sessions begin by presenting why planning is beneficial and what traits characterize a successful business. Attendees are instructed on how to solve business problems and how to introduce new products or changes. Later sessions teach the tools needed to prepare a sales plan, calculate business and loan costs, search for new resources, and handle unexpected problems and opportunities.

[1] Table A1 provides a list of lessons presented in modules 1 and 2 in Lima.
[2] Table A2 provides a list of lessons presented in modules 1 -3 in Ayacucho.

Graph 1. Distribution of the individual attendance, by treatment and location

Ayacucho Mandatory
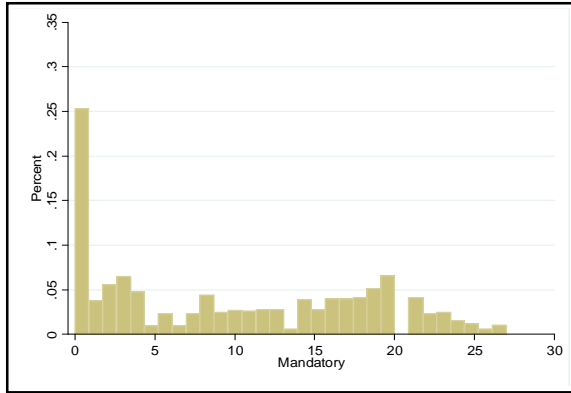
Lima
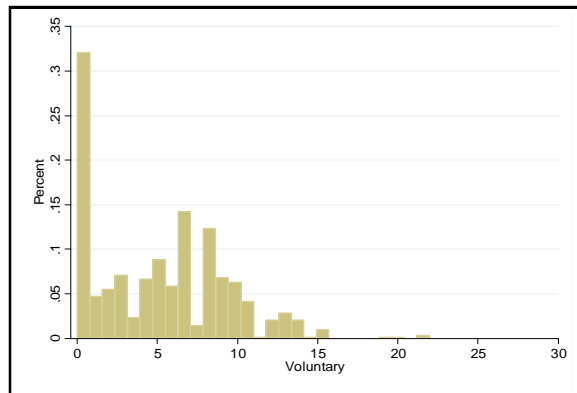
Ayacucho Voluntary

Table 1. Impact of training on business results

Dependent variable [a]	Nº of clients	Summary statistics: Mean, standard errors and differences						OLS	
		Baseline			Follow-up			without covariates	with covariates
		Treatment	Control	Diff	Treatment	Control	Diff		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Double difference estimate reported									
Sales (log)									
Last month	2807	6.571	6.652	-0.081	7.247	7.176	0.072	0.153	0.153
				(0.055)			(0.055)	(0.078)	(0.079)
Good month	2807	7.933	7.909	0.024	8.083	8.070	0.013	-0.011	-0.011
				(0.049)			(0.049)	(0.050)	(0.050)
Normal month	2807	7.141	7.182	-0.041	7.338	7.292	0.046	0.088	0.088
				(0.046)			(0.046)	(0.052)	(0.052)
Bad month	2807	5.871	6.003	-0.132	6.513	6.383	0.130	0.262	0.262
				(0.075)			(0.075)	(0.100)	(0.100)
Difference good-bad month	2807	2.062	1.906	0.157	1.570	1.687	-0.116	-0.273	-0.273
				(0.064)			(0.064)	(0.103)	(0.104)
Number of workers									
Total	2966	2.004	1.956	0.048	2.215	2.163	0.053	0.004	0.004
				(0.056)			(0.056)	(0.065)	(0.065)
Paid workers, non-family members	2964	0.280	0.218	0.062	0.311	0.301	0.009	-0.052	-0.052
				(0.040)			(0.040)	(0.044)	(0.044)
First difference estimate reported									
Weekly profit from main product	1767	n.a.	n.a.	n.a.	12.624	10.931	1.694	1.862	1.665
							(2.267)	(2.348)	(2.238)

Notes: Each coefficient reported in the table is from a separate regression. OLS regressions include credit-officer fixed effects; standard errors are clustered by village bank.

[a] Dependent variables are defined as follows. Last month sales: Logarithm of main business's sales in the month preceding each survey. Good/ Normal/ Bad month sales: Logarithm of main business's sales in a good/normal/bad month. Difference good-bad month sales: Logarithm of difference in monthly sales between good and bad month. Number of total workers: Number of workers in the main business. Number of paid workers, not family members: Number of workers in the main business that are not household members. Weekly profit from main product: Difference between the weekly revenue and cost of the most profitable product in the main business (soles).

[b] The covariates include location (Ayacucho or Lima), business activity, business size, age, schooling and number of FINCA loans received by the client.

Table 2. Impact of training on business practices

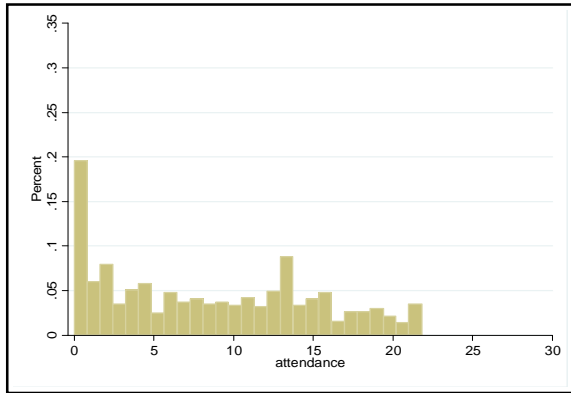| Dependent variable[a]	N° of clients	Summary statistics: Mean, standard errors and differences						OLS	
		Baseline			Follow-up			without covariates	with covariates
		Treatment	Control	Diff	Treatment	Control	Diff		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Double difference estimate reported									
Tax formality	2989	0.148	0.154	-0.006	0.154	0.154	0.001	0.007	0.007
				(0.013)			(0.013)	(0.012)	(0.012)
Paid fixed salary to self	2824	0.051	0.029	0.022	0.143	0.149	-0.006	-0.028	-0.028
				(0.011)			(0.011)	(0.027)	(0.027)
Keeping records of:									
Sales	2911	0.292	0.289	0.003	0.403	0.371	0.031	0.028	0.028
				(0.018)			(0.018)	(0.020)	(0.020)
Withdrawals (Lima only)	988	0.093	0.096	-0.003	0.291	0.217	0.075	0.078	0.078
				(0.024)			(0.024)	(0.031)	(0.031)
Number of sales locations	3431	1.073	1.073	-0.001	1.036	1.028	0.008	0.009	0.009
				(0.016)			(0.016)	(0.026)	(0.026)
Level of diversification - Number of income sources (Ayacucho only)	2378	2.318	2.336	-0.018	1.450	1.486	-0.036	-0.018	-0.018
				(0.029)			(0.029)	(0.038)	(0.038)
Allows sales on credit	3431	0.602	0.579	0.023	0.570	0.549	0.021	-0.002	-0.002
				(0.017)			(0.017)	(0.015)	(0.015)
First difference estimate reported (no baseline data available)									
Keeping records of payments to workers	2999	n.a.	n.a.	n.a.	0.158	0.149	0.009	0.009	0.009
							(0.013)	(0.015)	(0.014)
Business knowledge index	3431	n.a.	n.a.	n.a.	3.359	3.247	0.112	0.105	0.089
							(0.049)	(0.058)	(0.054)
Started new business	3431	n.a.	n.a.	n.a.	0.136	0.153	-0.016	-0.019	-0.020
							(0.012)	(0.013)	(0.013)
Profit used for business growth	3431	n.a.	n.a.	n.a.	0.688	0.652	0.036	0.029	0.024
							(0.016)	(0.018)	(0.017)
Proportion of clients who faced problems with business (Lima only)	1053	n.a.	n.a.	n.a.	0.653	0.636	0.017	0.023	0.026
							(0.030)	(0.030)	(0.031)
Proportion of clients who:									
Planned innovations in their businesses	3431	n.a.	n.a.	n.a.	0.657	0.635	0.022	0.021	0.025
							(0.016)	(0.017)	(0.016)
Executed innovations in their businesses		n.a.	n.a.	n.a.	0.410	0.359	0.052	0.045	0.046
							(0.017)	(0.019)	(0.018)

Notes: Each coefficient reported in the table is from a separate regression. LPM used for dichotomic variables (tax formality, profit used for business growth, fixed salary, keeping records, started new business, allowing sales on credit and proportion of clients who faced problems/planned innovations/executed innovations). OLS regressions include credit-officer fixed effects; standard errors are clustered by village bank.

[a] Dependent variables are defined as follows. Tax Formality: Binary variable equal to one if client has a tax ID number. Paid fixed salary to self: Binary variable equal to one if client pays herself a fixed salary. Missing observations due to refusal to answer or inability to provide clear answer. Keeping records of sales/ withdrawals/ paymento to workers: Binary variable equal to one if client records sales/withdrawals/ payments to workers in a registry or notebook. Number of sales locations: Number of locations where the client sells her main business's products. Level of diversification- Number of income sources (Ayacucho only): Number of income sources the client reports (personal/family businesses, other jobs or working activities, etc). Allows sales on credit: Binary variable equal to one if client makes sales on credit. Business knowledge index: Number of right answers given by the client when asked about what should be done to increase business sales and to plan for a new business. Started new business: Binary variable equal to one if

client reports that she began a new business in the last year (Ayacucho) or the last two years (Lima). Profit used for business growth: Binary variable equal to one if client reported re-investing profits for the growth or continuity of the business. Proportion of clients who faced problems with business: Binary variable equal to one if client reports that her business faced a specific problem in the last year (Ayacucho) or the last two years (Lima). Proportion of clients who planned/ executed innovations in their businesses: Binary variable equal to one if client had an idea for /implemented a change or innovation to improve the business (Ayacucho) or to solve the problems faced (Lima).

[b] The covariates include location (Ayacucho or Lima), business activity, business size, age, schooling and number of FINCA loans received by the client.

Table 3. Impact of training on household outcomes

Dependent variable [a/]	Nº of clients	Summary statistics: Mean, standard errors and differences						OLS	
		Baseline			Follow-up			without covariates	with covariates
		Treatment	Control	Diff	Treatment	Control	Diff		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Double difference estimate reported									
Client's participation on									
Saving for business	3354	0.952	0.959	-0.008	0.957	0.959	-0.002	0.006	0.006
				(0.007)			(0.007)	(0.009)	(0.009)
Saving for households	3398	0.849	0.837	0.012	0.908	0.905	0.003	-0.009	-0.009
				(0.012)			(0.012)	(0.015)	(0.015)
Borrowing for business	3317	0.947	0.939	0.008	0.912	0.910	0.001	-0.006	-0.006
				(0.009)			(0.009)	(0.013)	(0.013)
Borrowing for households	3326	0.802	0.821	-0.019	0.917	0.913	0.004	0.023	0.023
				(0.012)			(0.012)	(0.017)	(0.017)
Number of children	3053	0.690	0.708	-0.018	0.602	0.627	-0.024	-0.006	-0.006
				(0.018)			(0.018)	(0.020)	(0.020)
Taking money/products from business	2747	0.964	0.973	-0.009	0.969	0.972	-0.003	0.006	0.006
				(0.007)			(0.007)	(0.008)	(0.008)
Keeping track of household bills	3358	0.604	0.603	0.001	0.611	0.613	-0.002	-0.003	-0.003
				(0.017)			(0.017)	(0.021)	(0.021)
T-C difference estimate reported (no baseline data available)									
No need to separate money	3417	n.a.	n.a.	n.a.	0.616	0.630	-0.014	-0.014	-0.013
							(0.017)	(0.018)	(0.017)
Child labor (Individual level data - Lima only) [b/]									
Working children	675	n.a.	n.a.	n.a.	0.307	0.325	-0.018	-0.032	-0.026
							(0.029)	(0.038)	(0.039)
Daily hours dedicated to									
House work	675	n.a.	n.a.	n.a.	1.019	1.008	0.011	0.002	0.000
							(0.052)	(0.066)	(0.065)
Child labor	675	n.a.	n.a.	n.a.	0.558	0.614	-0.056	-0.077	-0.071
							(0.068)	(0.081)	(0.085)
Schooling	674	n.a.	n.a.	n.a.	7.398	7.307	0.091	0.099	0.087
							(0.091)	(0.137)	(0.138)
Children with perfect attendance	664	n.a.	n.a.	n.a.	0.973	0.962	0.011	0.011	0.011
							(0.011)	(0.013)	(0.013)

Notes: Each coefficient reported in the table is from a separate regression. LPM used for dichotomic variables (no need to separate money, working children and children with perfect attendance). OLS regressions include credit-officer fixed effects; standard errors are clustered by village bank.

[a/] Dependent variables are defined as follows. Client's participation on: Binary variable equal to one if the client participates on making key decisions for household and business, planning the number of children to have, deciding the amount of money/products taken from the business, and paying household bills. No need to separate money: Binary variable equal to one if the client thinks that is not necessary to separate her money from that of her husband/partner or other adult in the household to control expenses and savings. Working children: Binary variable equal to one if the child works. Daily hours dedicated: Number of hours the child dedicated to each activity in the week before the survey; schooling includes the time the child spent at school, as well as the time he/she dedicates to do homework or study at the household. Children with perfect attendance: Binary variable equal to one if the child attended school all the days that he/she could have.

[b/] Sample for the analysis on child labor includes school-aged children (between 6 and 15 years of age).

[c/] The covariates include location (Ayacucho or Lima), business activity, business size, age, schooling and number of FINCA loans received by the client.

Table 4. Impact of training on institutional outcomes

Dependent variable [a/]	N° of clients	Summary statistics: Mean, standard errors and differences						OLS	
		Baseline			Follow-up			without covariates	with covariates
		Treatment	Control	Diff	Treatment	Control	Diff		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Double difference estimate reported									
Loan size	3170	209.32	216.55	-7.23	190.01	183.22	6.80	19.34	23.01
				(9.29)			(9.28)	(16.97)	(15.36)
Cumulative savings	3170	307.07	300.49	6.58	212.72	209.46	3.25	-6.15	-0.54
				(14.36)			(14.34)	(17.75)	(17.34)
First difference estimate reported (no baseline data available)									
Perfect repayment	3170	n.a.	n.a.	n.a.	0.813	0.783	0.031	0.029	0.028
							(0.015)	(0.020)	(0.018)
Dropout									
Permanent or Temporary Dropout	3170	n.a.	n.a.	n.a.	0.593	0.633	-0.040	-0.041	-0.040
							(0.018)	(0.025)	(0.021)
Permanent Dropout	3170	n.a.	n.a.	n.a.	0.437	0.461	-0.024	-0.026	-0.026
							(0.018)	(0.025)	(0.020)

Notes: Each coefficient reported in the table is from a separate regression. LPM used for dichotomic variables (perfect repayment, permanent or temporary dropout and permanent dropout). OLS regressions include credit-officer fixed effects; standard errors are clustered by village bank.

[a/] Dependent variables are defined as follows. Loan size: Amount borrowed from FINCA's external account at beginning of loan cycle (US$). Cumulative savings: Balance at end of loan cycle (US$). Perfect Repayment: Binary variable equal to one if, since the beginning of training, the client made all her payments on time or had sufficient savings to cover missed payments. Permanent or Temporary Dropout: Binary variable equal to one if client had left a FINCA village bank ever after the beginning of the training. Permanent Dropout: Binary variable equal to one if client had left a FINCA village bank by December 2005.

[b/] The covariates include location (Ayacucho or Lima), business activity, business size, age, schooling and number of FINCA loans received by the client.

Table 5. Impact of training on outcome indexes, and heterogeneous treatment effects

	Business results		Business practices		Institutional index		Empowerment					
							All decisions		Household decisions		Business decisions	
	N° of clients	coefficient and SE	N° of clients	coefficient and SE	N° of clients	coefficient and SE	N° of clients	coefficient and SE	N° of clients	coefficient and SE	N° of clients	coefficient and SE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	11)	(12)
Panel A: Base model												
Without covariates	2751	0.052	2690	0.030	3170	0.049	2346	-0.017	2893	0.001	2697	-0.009
		(0.027)		(0.016)		(0.040)		(0.025)		(0.024)		(0.036)
With covariates	2751	0.052	2690	0.024	3170	0.049	2346	-0.017	2893	0.001	2697	-0.009
		(0.027)		(0.014)		(0.032)		(0.025)		(0.024)		(0.036)
Panel B: Heterogeneous Treatment Effects												
Ex-ante Attitude Towards Training												
Low interest	1493	0.056	1444	0.042	1680	0.099	1294	-0.079	1561	-0.035	1490	-0.082
		(0.034)		(0.018)		(0.043)		(0.034)		(0.036)		(0.047)
High interest	1258	0.046	1246	0.014	1490	-0.005	1052	0.045	1332	0.031	1207	0.069
		(0.039)		(0.022)		(0.052)		(0.033)		(0.031)		(0.053)
Education												
Below high school	2179	0.044	2141	0.030	2579	0.052	1892	-0.030	2289	0.004	2152	-0.035
		(0.029)		(0.015)		(0.041)		(0.027)		(0.027)		(0.040)
Above high school	572	0.082	549	0.002	591	0.040	454	0.006	604	-0.045	545	0.072
		(0.062)		(0.034)		(0.068)		(0.058)		(0.052)		(0.085)
Business size												
Below median	1388	0.076	1375	0.025	1483	0.048	1173	-0.029	1538	-0.020	1358	-0.023
		(0.036)		(0.019)		(0.044)		(0.038)		(0.036)		(0.055)
Above median	1363	0.029	1315	0.037	1687	0.053	1173	-0.017	1355	0.013	1339	-0.008
		(0.035)		(0.021)		(0.050)		(0.031)		(0.032)		(0.047)

Notes: Post only difference estimate for Institutional Index and Business Practices. Double difference estimate for Business results and Empowerment Index. OLS regressions include credit-officer fixed effects; standard errors are clustered by village bank. Effects by sub-group are estimated using interactions with the treatment coefficient (institutional and business practices) or the post*treatment coefficient (business results) as indicated in equation (3) in the methodological section. For example, for ex-ante attitutde towards training, the "low interest" estimate in Column 2 of 0.056 is the coefficient on the treatment variable, and the 0.046 estimate for "high interest" is the sum of the coefficient on treatment plus the coefficient on the interaction term of treatment and "high interest."

Table 6: Response rate by the follow up survey by location and retention in FINCA

	Treatment	Control	Difference	T-stat
Global	75.2	77.9	-2.7	-2.06
By Location				
Lima	77.2	83.5	-6.2	-2.85
Ayacucho	74.5	74.8	-0.3	-0.17
By Retention in FINCA				
Clients	83.2	83.9	-0.6	-0.34
Ex-clients	69.9	74.2	-4.3	-2.44

Table 7: Mean standarized treatment effects under varying missing data assumptions

	Lower Bounds					Unadjusted treatment effect estimate	Upper Bounds				
	(1)	(2)	(3)	(4) 0.10sd	(4) 0.05sd	(5)	(6) 0.05sd	(6) 0.10sd	(7)	(8)	(9)
Business results	-1.016	-0.741	-0.124	-0.013	0.025	0.052	0.099	0.136	0.248	0.906	1.249
	(0.046)	(0.034)	(0.027)	(0.026)	(0.026)	(0.027)	(0.026)	(0.025)	(0.025)	(0.028)	(0.039)
Business practices	-0.545	-0.410	-0.103	-0.023	0.004	0.024	0.058	0.084	0.164	0.602	0.784
	(0.020)	(0.017)	(0.012)	(0.012)	(0.012)	(0.014)	(0.012)	(0.012)	(0.013)	(0.022)	(0.027)
Empowerment											
All decisions	-0.883	-0.214	-0.133	-0.045	-0.016	-0.017	0.043	0.073	0.161	0.293	1.052
	(0.032)	(0.016)	(0.019)	(0.018)	(0.018)	(0.025)	(0.018)	(0.018)	(0.019)	(0.022)	(0.050)
Household decisions	-0.661	-0.216	-0.121	-0.042	-0.016	0.001	0.037	0.063	0.142	0.250	0.669
	(0.029)	(0.021)	(0.021)	(0.021)	(0.021)	(0.024)	(0.021)	(0.021)	(0.022)	(0.023)	(0.037)
Business decisions	-1.179	-0.212	-0.150	-0.049	-0.015	-0.009	0.052	0.085	0.186	0.350	1.562
	(0.045)	(0.023)	(0.027)	(0.027)	(0.027)	(0.036)	(0.027)	(0.027)	(0.027)	(0.034)	(0.075)

(1) imputes minimum value of each variable in the non-attrited treatment distribution to attrited in treatment group, maximum value of non-attrited control distribution to attrited in control group.

(2) same as (1) for those variables for which we have no baseline (BL) observation. If variables are dichotomic and observed at BL, it assumes non-reversal for attrited in treatment group. If variables are continuous or categorical and observed at BL, it imputes the median growth rate of bottom growth quintile of each variable in the non-attrited treatment distribution to attrited in treatment group, median growth rate of top growth quintile of non-attrited control distribution to attrited in control group.

(3) imputes mean minus 0.25 s.d. of the non-attrited treatment distribution to attrited in treatment group, mean plus 0.25 s.d. of the non-attrited control distribution to attrited in control group.

(4) imputes mean minus 0.10 s.d. of the non-attrited treatment distribution to attrited in treatment group, mean plus 0.10 s.d. of the non-attrited control distribution to attrited in control group.

(5) mean standardized treatment effect on the non-attrited.

(6) imputes mean plus 0.10 s.d. of the non-attrited treatment distribution to attrited in treatment group, mean minus 0.10 s.d. of the non-attrited control distribution to attrited in control group.

(7) imputes mean plus 0.25 s.d. of the non-attrited treatment distribution to attrited in treatment group, mean minus 0.25 s.d. of the non-attrited control distribution to attrited in control group.

(8) same as (9) for those variables for which we have no baseline (BL) observation. If variables are dichotomic and observed at BL, it assumes non-reversal for attrited in control group. If variables are continuous or categorical, and observed at BL, it imputes the median growth rate of top growth quintile of each variable in the non-attrited treatment distribution to attrited in treatment group, median growth rate of bottom growth quintile of non-attrited control distribution to attrited in control group.

(9) imputes maximum value of each variable in the non-attrited treatment distribution to attrited in treatment group, minimum value of non-attrited control distribution to attrited in control group.

Appendix Table 1: Descriptions of outcome variables

Variable	Description	Time of measurement
1. Institutional outcomes		
Loan size	Amount borrowed from FINCA's external account at beginning of loan cycle (US$).	Last cycle before and last available after the training
Cumulative savings	Balance (voluntary and mandatory) at end of loan cycle (US$).	Last cycle before and last available after the training
Perfect repayment	Binary variable equal to one if, since the beginning of training, the client made all her payments on time or had sufficient savings to cover missed payments	Every cycle since the beginning of training
Permanent or Temporary Dropout	Binary variable equal to one if client had left a FINCA village bank ever after the beginning of the training.	
Permanent Dropout	Binary variable equal to one if client had left a FINCA village bank by December 2005.	
2. Business results		
Last month sales (log)	Logarithm of main business's sales in the month preceding each survey	BL and FU
Good month sales (log)	Logarithm of main business's sales in a good month.	BL and FU
Normal month sales (log)	Logarithm of main business's sales in a normal month	BL and FU
Bad month sales (log)	Logarithm of main business's sales in a bad month	BL and FU
Difference good-bad month sales (log)	Logarithm of difference in monthly sales between good and bad month	BL and FU
Number of total workers	Number of workers in the main business.	BL and FU
Number of paid workers, not family members	Number of workers in the main business that are not household members.	BL and FU
Weekly profit from main product	Difference between the weekly revenue and cost of the most profitable product in the main business (soles)	FU
3. Business practices		
Tax formality	Binary variable equal to one if client has a tax ID number.	BL and FU
Paid fixed salary to self	Binary variable equal to one if the client pays herself a fixed salary. Missing observations due to refusal to answer or inability to provide clear answer	BL and FU
Keeping records of sales	Binary variable equal to one if client records sales in a registry or notebook.	BL and FU
Keeping records of withdrawals (Lima only)	Binary variable equal to one if client records her cash or withdrawals in a registry or notebook.	BL and FU
Number of sales locations	Number of locations where the client sells her main business' products.	BL and FU
Level of diversification - Number of income sources (Ayacucho only)	Number of income sources the client reports (personal/family businesses, other jobs or working activities, etc). Only available for Ayacucho.	BL and FU

Allows sales on credit	Binary variable equal to one if client makes sales on credit.	FU, but recalling situation 12 months before survey
Keeping records of payments to workers	Binary variable equal to one if client records payments to workers that are not household members in a registry or notebook	FU
Business knowledge index	Number of right answers given by the client when asked about what should be done to increase business sales and to plan for a new business.	FU
Started new business	Binary variable equal to one if client reports that she began a new business in the last year (Ayacucho) or the last two years (Lima).	FU
Profit used for business growth	Binary variable equal to one if client reported re-investing profits for the growth or continuity of the business.	FU
Proportion of clients who faced problems with business (Lima only)	Binary variable equal to one if client reports that her business faced a specific problem in the last year (Ayacucho) or the last two years (Lima).	FU
Proportion of clients who planned innovations in their businesses	Binary variable equal to one if client had an idea for a change/innovation to improve the business (Ayacucho) or to solve the problems faced (Lima).	FU
Proportion of clients who executed innovations in their businesses	Binary variable equal to one if client implemented a change/innovation to improve the business (Ayacucho) or to solve the problems faced (Lima).	FU
4. Empowerment outcomes		
Financial decisions	Binary variable equal to one if the client participates on making key decisions for household and business finance.	BL and FU
Number of children	Binary variable equal to one if the client participates in making decisions regarding family size.	BL and FU
Taking money/product from business	Binary variable if the client participates on deciding the amount of money/products taken from the business.	BL and FU
Keeping track of household bills	Binary variable equal to one if the client is also in charge of ensuring that the household bills have been paid.	BL and FU
No need to separate money	Binary variable equal to one if the client thinks that is not necessary to separate her money from that of her husband/partner or other adult in the household to control expenses and savings.	FU
5. Child labor outcomes		
Working children	Binary variable equal to one if the child works.	
Daily hours dedicated to house work/child labor/schooling	Number of hours the child dedicated to each activity in the week before the survey; schooling includes the time the child spent at school, as well as the time he/she dedicates to do homework or study at the household.	
Children with perfect attendance	Binary variable equal to one if the child attended school all the days that he/she could have.	

Appendix Table 2: Post intervention differences for dropout reasons, Ayacucho & Lima

	Total		Treatment		Control		Difference	T-stat	
	# obs	%	# obs	%	# obs	%			
Number of clients	3457		2093	60.54	1364	39.46			
5-I. Reasons related with the policies and procedures of the FINCA program									
Dissatisfied with FINCA's loan terms	227	6.57	131	6.26	94	6.89	-0.633	-0.737	
Dissatisfied with FINCA's saving terms	51	1.48	28	1.34	23	1.69	-0.348	-0.83	
Dissatisfied with the solidarity discounts (only Lima[a])	47	4.42	20	3.68	27	5.19	-1.509	-1.196	
activities)	404	11.69	256	12.23	145	10.63	1.601	1.437	*
Unequal / bad treatment to bank members	142	4.11	82	3.92	59	4.33	-0.408	-0.592	
Because of the training	0	0	0	0	0	0	0	-	
FINCA discovered loans from other institutions (only Ayacucho)[b]	13	0.54	7	0.45	6	0.71	-0.259	-0.825	
Found an institution with better loan terms	18	0.52	11	0.53	7	0.51	0.012	0.049	
5-II. Reasons related with the group loans									
The village bank "graduated" (or was dissolved)	30	0.87	14	0.67	13	0.95	-0.284	-0.928	
Personal conflicts in the bank (with other bank members or with the bank's president)	170	4.92	106	5.06	63	4.62	0.446	0.594	
5-III. Reasons related to the client's business									
No credit needs because of the good situation of the business (sufficient capital in the business or the business operates seasonally)	29	0.84	18	0.86	11	0.81	0.054	0.169	
No credit needs/could not pay the loan because of the bad situation of the business or other reasons	304	8.79	187	8.93	116	8.5	0.43	0.437	
Closed the business / new activity or job	69	2	38	1.82	30	2.2	-0.384	-0.794	
5-IV. Personal Reasons									
Expenses resulting from a family crisis (i.e. illness) or family event (i.e. wedding)	312	9.03	193	9.22	118	8.65	0.57	0.573	
Other personal problems	124	3.59	74	3.54	50	3.67	-0.13	-0.201	
Left the region/went on a long trip	215	6.22	140	6.69	75	5.5	1.19	1.417	*
A relative influenced the client	37	1.07	23	1.1	14	1.03	0.073	0.202	
5-V. Reasons due to Environmental Factors									
Environmental / macroeconomic factors	57	1.65	31	1.48	26	1.91	-0.425	-0.959	
5-VI. Other Reasons									
Other / Did not respond	221	6.39	134	6.4	85	6.23	0.171	0.201	

[a] There are 1063 observations: (543 received treatment)

[b] There are 2394 observations: (1550 received treatment)

Appendix A, Table 1. Business Training Sessions Presented in Lim

Module 1: Training for Success		Module 2: The Business and the Family: Costs and Finances	
Session	Title	Session	Title
1	Training for Success	1	The Business and the Family
2	What is a business?	2	Income, Costs, and Profit
3	How does a business work?	3	My Costs of Production and Operating Resources
4	The Market	4	How Do I Calculate the Cost of Production of My Product?
5	Who are my customers?	5	Prices and Price Equilibrium
6	Who are my competitors?	6	How to Make a Good Price Decision
7	Review Session 1	7	The Registers and Controls in My Business
8	Business game: Module 1	8	The Growth of My Business
9	My business' position in the market	9	Will I Be Able to Pay My Loan?
10	Product and Price Commercial Strategy	10	Taxes
11	Marketplace and Promotion Commercial Strategy		
12	My Commercial Plan		
13	Review Session 2		
14	Business Game: Module 2		
15	Business Game: Module 3		

Appendix A, Table 2: Business Training Sessions Presented in Lima

Module 1: Manage Your Business Money		Module 2: Increase Your Sales	
Session	**Title**	**Session**	**Title**
1	Separate Business and Personal Money	1	Know Your Customers
2	Use Business Loans for Your Business	2	Treat Your Customers Well
3	Calculating Profits	3	Sell to Different Kinds of Customers
4	Track, Plan and Invest Your Business Money	4	Improve Your Products and Services
5	Decide How to Use the Profits of the Business to Satisfy the Needs of the Business and Your Personal Needs	5	Sell New and Complementary Products and Services
6	Prevent Business Losses	6	Seize Opportunities to Sell
7	Manage Credit Sales	7	Sell Where Customers Buy the Most
8	Review of the Learning Sessions of "Manage Your Business Money"	8	Set the Right Price
		9	Promote Your Business With Good Selling Practices
		10	Plan for Increased Sales

Module 3: Plan for a Better Business	
Session	**Title**
1	Use Planning Steps to Grow Your Business
2	Examine How Your Business Is Doing
3	Decide How You Can Improve Your Business
4	Develop and Test New Business Ideas
5	Plan How Much to Make and Sell
6	Plan Business Costs
7	Plan for More Profit
8	Find Resources for Your Business
9	Prepare for Unexpected Events