Keeping it Simple: Financial Literacy and Rules of Thumb

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Abstract

Individuals and business owners engage in an increasingly complex array of financial decisions that are critical for their success and well-being. Yet a growing literature documents that in both developed and developing countries, a large fraction of the population is unprepared to make these decisions. Evidence on potential remedies is limited and mixed. Two randomized trials test the impact of financial training on firm-level and individual outcomes for microentrepreneurs in the Dominican Republic. We find no significant effect from a standard, fundamentals-based accounting training. However, a simplified, rule-of-thumb training produced significant and economically meaningful improvements in business practices and outcomes.

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1. Introduction

Individuals are asked to make financial decisions in many areas of life, whether in their personal finances in the form of savings decisions and retirement planning or in a business context as small business owners or investors. However, a growing literature shows that a large fraction of the population is woefully unprepared (or underprepared) to make these decisions. Lusardi and Mitchell (2007b) or Lusardi and Tufano (2009), for example, find low levels of financial literacy in the US population, an inability to understand basic financial concepts such as the importance of retirement savings, and poor judgment in borrowing decisions. Similarly, Cole, Sampson and Zia (2009) document very low levels of financial literacy for households in India and Indonesia. In addition, these studies find a strong association between understanding financial concepts, better financial decisions, and household well-being.

The challenge is to determine whether and how financial literacy can be taught and, closely related, whether there is causal link between improving financial literacy and financial outcomes. The evidence so far has been mixed, with large heterogeneity in the estimated success of training programs. For example, Bernheim and Garrett (2003) and Lusardi (2004) provide survey evidence that people who attend financial counseling programs subsequently make better financial decisions, especially those attendees with low income and education levels. The estimated effects of the program are large, but due to the non-random treatment assignment might be overstated due to selection bias. In contrast, Duflo and Saez (2004) conduct a randomized control trial to expose employees to a benefits fair to raise awareness about retirement savings, but they find only a small effect on savings plan enrollment. Similarly, Cole, Sampson and Zia (2009) find only modest effects from a financial literacy training program in Indonesia.

The contribution of our paper is twofold. The first is methodological: we conduct a randomized control experiment to test the impact of financial training on firm-level and individual outcomes for microentrepreneurs in the Dominican Republic. It is important to keep in mind that any study of this kind tests not only the impact of financial literacy but implicitly also whether these skills can be transmitted via classroom training. Therefore our second contribution is conceptual: we

test whether the type of program determines the effectiveness of the training. The impact of a program might be crucially driven by the complexity of the materials, since any training program faces a trade-off between ease at which participants can grasp the concepts and the depth of understanding.

In order to analyze what are the most effective ways of teaching financial accounting skills to small business owners, we developed two distinct types of financial accounting training that rely on different approaches to training. We focus on the tradeoff between a standard approach to small business training, which teaches the fundamentals of financial accounting, and training based on simple rules of thumb. The former aims to provide a relatively complete understanding of financial decision making, with concepts and materials targeted towards the typical microfinance client. Similar programs are used around the world by groups such as Freedom for Hunger, the International Labor Organization, and BRAC. The latter provides a simplified view of financial decision making, teaching easily implemented decision rules without explaining the underlying accounting motivation. For example, instead of teaching the details of working capital management at even the rudimentary level of traditional accounting training, the rule-of-thumb training instructs micro-entrepreneurs to assign themselves a wage at the beginning of each month, which they pay out to themselves on a weekly basis, but apart from this they cannot take any money out the firm. This way the owner can learn how profitable the business without having to do any cash flow analysis. In contrast, the basic accounting training is designed to teach micro-entrepreneurs the basics of double-entry accounting, cash and working capital management and investment decisions. This class follows the traditional approach of teaching first principals. Our aim is to quantify the effectiveness of training when trading off the complexity of the material versus the depth of the concepts that are taught.

Between November 2006 and July 2008, we implemented a randomized control trial of these different financial accounting classes in collaboration with ADOPEM, a microfinance institution that lends to individuals and small businesses in the Dominican Republic. We selected 1200 existing clients of ADOPEM who had expressed an interest in training and randomly assigned them to one of the two accounting trainings or a control group that did not receive any training. In order to begin understanding the potential limitations to classroom-based, financial training, we also randomly assigned half of the people in each of the treatment and control groups to

receive follow-on training consisting of in-person visits of a financial trainer to the micro-entrepreneur's business. When necessary, the trainers reviewed the class materials with the entrepreneurs and helped clarify any questions they might have had. The purpose of the on-site visits was to ensure that individuals understood the material and were capable of implementing their newly-acquired financial accounting skills in their businesses.[1] This structure allows us to differentiate the channel by which training affects the participants: If we do not find an effect of training we can determine whether this result is due to the inability of the participants to understand what was taught in class or whether the material itself, even when properly understood, is not helpful.

Our results show an asymmetric impact of the rule-of-thumb training compared to the basic accounting training. People who were offered rule-of-thumb based training showed significant improvements in the way they managed their finances as a result of the training relative to the control group which was not offered training. They were more likely to keep accounting records, calculate monthly revenues and separate their books for the business and the home. Improvements along these dimensions are on the order of a 10% increase. In contrast, we did not find any significant changes for the people in the basic accounting training. It appears that in this context, the rule-of-thumb training is more likely to be implemented by the clients than the basic accounting training.

When looking at the impact of training on the outcomes of the business we again find a more significant change in the group that received the rule-of-thumb training compared to the group in the basic accounting training. We see an especially large improvement in the level of sales during bad weeks—30% for people in the rule of thumb based training—and a substantial but not statistically significant increase in average sales. The basic accounting training produces no significant effects. We do not see any discernable effects on investment behavior or profitability of the firms in either treatment group; however, these variables are reported with such noise that we are unable to reject even large effects. Taken together, these results suggest that effective

[1] The control group received placebo follow-up visits to control for possible monitoring effects.

training may operate by helping individuals to better manage negative shocks or by alerting them to such shocks such that they can counteract the effect of slow weeks.

We also find an economically large increase in savings of 6% for the rule-of-thumb trainings, but the result is only significant at the 10%-level. We do not find any effect on savings for the group that received the basic accounting training.[2]

Finally, we find that in-depth follow-on training at the business of the borrower did not affect the outcomes for clients in the rule-of-thumb based training. We neither see a change in the likelihood of implementing the accounting methods learned in class nor an impact on actual outcomes for the business. In contrast, people who received the follow-on training in the basic accounting group did show a significant increase in the probability of implementing the accounting practices taught in class. They also had a significant increase in savings levels of about 10%. However, we did not find an improvement on real outcomes of the businesses such as sales or investments. These results support the idea that the rule-of-thumb training is more effective because it is easier to understand, but it also generate larger results conditional on understanding, which was ensured through follow-on visits. This difference may stem from either the rule-of-thumb techniques being more effective once implemented or from individuals being more likely to implement these techniques, even conditional on understanding.

The findings from this study also have important implications for programs designed to help micro entrepreneurs. International development organizations, NGOs and others spend a lot of effort financial literacy training in their technical assistance programs but often report only mixed success.But if micro-entrepreneurs are unable to effectively control the finances in their

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[2] We also investigate whether there are heterogeneous treatment effects of the treatment for people with different levels of educational background and for borrowers that have individual loans versus group loans. We do not find any consistent differences in outcomes for the borrowers with two different loan types. But we find some heterogeneous treatment effects for more educated clients in the basic accounting training. More educated clients tend to show significant improvements when allocated to the basic accounting training, e.g. their savings and likelihood of record keeping increases. But the effects are not significant across all outcomes. In contrast we do not find any differential effect of education for clients in the rule of thumb based training.

businesses, it is very difficult to efficiently scale up operations even if the firm has access to other resources. Thus our results suggest that lack of knowledge in finance and financial accounting might impede the growth of small businesses.

The rest of the paper is organized as follows. Section 2 briefly describes the related literature, and Section 3 details the experimental design. Section 4 describes the data and empirical strategy, Section 5 presents the results, and Section 6 concludes.

2. Related Literature and Background

A growing literature focuses on estimating the impact of financial literacy training, with programs targeting individual financial education receiving the most intense attention. Many of these programs are designed to help people manage and improve their personal finances, including savings and retirement planning, credit and debit card usage, credit score management, mortgages and real estate acquisition. The overall results of these studies are mixed, and most evaluations fail to find consistent effects of financial literacy training. Lusardi (2008) demonstrates widespread lack of financial literacy among large sections of the U.S. population, especially among people with low levels of education, women, and ethnic minorities. These studies also show that lack of financial literacy is associated with poor financial decision making, in particular, regarding retirement planning (Lusardi and Mitchell, 2007a), borrowing decisions (Lusardi and Tufano, 2008; Stango and Zinman, 2009), and investment choices (Lusardi and Mitchell, 2007b).

Yet despite the strong association between financial literacy and a range of measures of financial well-being, little is known about the efficacy of financial literacy training programs in improving these outcomes. Cole, Sampson and Zia (2009) address this question in the context of India and Indonesia. They find that while financial literacy is strongly correlated with the demand for financial services, financial literacy education had at most modest effects on demand, which was dwarfed by the effect of even a small subsidy to opening a savings account.

In contrast to this attention on the financial literacy of individuals, few studies have looked at financial literacy for small business owners. This is surprising for two reasons. First, significant resources are devoted to accounting and financial literacy training for small businesses including

the U.S. Small Business Administration's (SBA) small business training network, the World Bank's SME Toolkit, the International Labour Organization's Know About Business Programme, and the Financial Education for the Poor (FEP) project sponsored by Microfinance Opportunities, the Citigroup Foundation, and Freedom From Hunger, among others.[3] Second, for small businesses, particularly in less developed countries, the distinction between individual and business financial practices is blurred. One notable exception is Karlan and Valdivia (2010), which studies the impact of teaching basic finance concepts to micro-entrepreneurs. The micro-entrepreneurs in their study are part of a group lending program which meets weekly. In these weekly sessions the clients in the treatment group also receives training. The study finds a large impact on the MFI clients' knowledge of financial terms and reported business practices. The results are more mixed on real outcomes such as sales or consumption, but the microfinance institution benefited from increased retention and repayment. Field, Jayachandran and Pande (2010) evaluate a two-day training program for clients of an Indian microfinance institution. Their study focuses on constraints to women's entrepreneurial choices and finds that being invited to the training program increased both borrowing and the likelihood of personal labor income.

There is a related strand in the literature on capacity building for small- and medium-size enterprises that focuses on providing consulting and management services to firms. Bloom et al (2009) study the impact of intensive consulting services from an international management consulting firm on the business practices of medium- to large-size firms in the Indian textile industry. They find that even these large firms were unaware of many modern management practices, and treated plants significantly improved their management practices. Bruhn, Karlan and Schoar (2010) conduct a randomized control trial of consulting services in which small businesses were paired with a local management consultant for one year. The study assigned

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[3] The SBA training includes modules on finance and accounting, business planning, business start up, business management, government contracting, marketing and advertising, and how to survive in a slow economy. The training is available online at http://www.sba.gov/training/. The FEP targets microfinance clients, many of them having only subsistence level business activity. The FEP project includes five modules: credit administration, savings, financial negotiation, budgeting, and bank services.

firms to a wide range of management consulting services, with financial literacy was an integral part of the intervention. More than 30% of the firms requested financial advice as one of the main inputs.

3. Experimental Design

ADOPEM is a savings and credit bank based in Santo Domingo, Dominican Republic and serving primarily low-income, urban individuals and small businesses. ADOPEM was founded in 1982 as a non-governmental organization providing a range programs aimed at reducing poverty levels in the Dominican Republic. Since then, they have increased their focus on financial services and related activities, incorporating as a bank in 2004. Large by Dominican standards, in 2006 ADOPEM had approximately 59,000 in 19 branches. The bank offers a wide range of lending products; in 2006, 90% of loans were for amounts between RD$2,500 and RD$50,000 (US$70-1,400). Over that same period, 56% of loans were made to individual persons or businesses and 44% were made to solidarity groups of two to five borrowers.[4] Approximately 80% of these clients were women.

In addition to extending loans, ADOPEM offers savings, insurance, and remittance products. It also operates a training center, with programs ranging from basic computing, entrepreneurship, and specific trade skills. In the year before this experiment was launched, ADOPEM was actively planning to launch a dedicated financial education program and was interested in evaluating different approaches.

We worked with ADOPEM and Dominican training experts to develop two alternative financial education training programs. The *Accounting* treatment offered a traditional, principles-based course in basic accounting techniques. Topics covered included daily record keeping of cash sales and expenses, aggregation of daily records into weekly and monthly reports, inventory management, accounts receivable and accounts payable, calculating cash profits, and investment

[4] ADOPEM's solidarity groups follow the traditional joint liability model. Each borrower takes out his or her loan as an individual, but all group members are jointly responsible for one another's repayment. Should any member fail to repay, each member suffers the default consequences as if she herself failed to repay.

planning. The materials and capacitator training program for the Accounting treatment were based on the financial education program designed by Freedom from Hunger, a US-based non-profit organization, and the Citigroup Foundation[5] and adapted to local conditions.

The *Rule of Thumb* treatment taught participants simple rules for financial decision making, focusing on the need to separate business and personal accounts. Account separation is a staple rule in developed country entrepreneurship. In developing countries, where the tax and legal motivations for account separation often are weaker, it continues to receive a great deal of attention. The proposed benefits of account separation are twofold. On the one hand it is seen as a very crude but easy way to monitor whether the business is self sustainable and provides an estimate of the profitability of the business. The second rationale is more behavioral: keeping accounts separate serves as a commitment device for the business owner (or the family members and relatives) not to over consume and deplete the working capital in the business. In addition to presenting several strategies for physically separating business and personal funds, the *Rule of Thumb* treatment taught how to estimate business profits by simple changes in business cash on hand, paying oneself a fixed salary, distinguishing business and personal expenses, and easy-to-implement tools for reconciling accounts when business funds have been used for personal expenses or the reverse. In both treatments, clients received handouts and homework assignments to reinforce ideas or techniques from the meetings. Both classes were offered once a week for three hours at a time. The Accounting treatment lasted for six weeks and the Rule of Thumb treatment for five.

The sample consisted of 1,193 existing ADOPEM business or personal loan clients from Santo Domingo.[6] Of these, we assigned 402 to the Accounting treatment, 404 to the Rule-of-Thumb

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[5] The ADOPEM training program is most closely related to the budgeting module of the FFH training program. This module include training on: how to develop a financial plan for the household expenses, how to adapt the spending to a restricted income, how to develop a budget for the house and the business, how to prioritize spending, how to record income and expenses, how to use income and expenses book keeping to make financial decisions, and how to store financial documents. Importantly, both ADOPEM training programs focused on maintaining a clear separation of business accounts.

treatment, and 387 to a control group which received no additional training services. The treatment was assigned at the individual level and administrative data was used to stratify according to loan size, years of borrowing, and whether or not a client maintained a formal savings account with the bank. ADOPEM made no additional policy changes concurrent with the training program. The treatment was conducted in two waves. The first wave, comprising 302 treatment assignments, was conducted from March to May 2007, and the second wave comprising the remainder ran from July to August of the same year.[7]

We also randomly assigned both treatment and control individuals to follow-up visits of varying intensity. This allows begins to unpack the mechanisms through which classroom-based training works or does not work. If the training does not change management practices or improve outcomes, it could be that individuals did not understand or were unable to implement new management techniques after classroom training. Alternatively, it could be that individuals understood the management techniques but chose not to implement. Finally, it could be that even when the material is understood and implemented, it does not affect business performance. In the intensive follow-up, training personnel visited participants eight times over three months in order to answer any questions that students have about the materials, to verify and encourage completion of accounting books, and to correct any mistakes made in completing these books. The intermediate follow-up comprised five visits over six weeks.[8] These treatments were randomly assigned conditional on a client attending the first. In order to assess potential Hawthorne Effects induced by the follow-up, randomly selected members of the control group

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[6] At the request of ADOPEM, group loan clients with loans smaller than $RD15,000 were excluded from the study. The original sample comprised 1,200; however, 7 observations were discarded due to errors in the baseline survey.

[7] A third wave of 800 individuals across all three assignment categories was planned for late 2007, but was cancelled due to the disruption caused by Hurricanes Dean and Noel and Tropical Storm Olga.

[8] While the visits in the intermediate follow-up were initially intended only to verify understanding and not implement techniques, in practice it was not feasible for training personnel to deny requests for assistance when visiting treated households. At the request of training personnel and ADOPEM, the intermediate follow-up was implemented as a lower-intensity version of the full follow-up. In the analysis that follows, we group both treatments together.

also received a “dummy” follow-up, in which they were visited by training staff and asked questions about their business performance over a period of six weeks.

All courses were taught by qualified local instructors. The majority had university degrees and experience with adult education, in most cases with ADOPEM directly. Courses were offered at seven schools throughout Santo Domingo and scheduled based on preferences elicited during the baseline survey. In addition, the course was heavily subsidized. Fees were randomly assigned at RD$200 (US$0) or zero, relative to an overall program cost of approximately RS$700. We varied fees in order to test for selection effects. As noted in Karlan and Valdivia (2010), the emerging approach to business development services calls for pricing training services at or above marginal costs. However, if those entrepreneurs who would most are uncertain of the program’s benefits or subject to tighter credit constraints, this approach may induce adverse selection.

4. Data and Empirical Strategy

We constructed the original sample frame based on administrative data collected by ADOPEM in the ordinary course of operations. In November 2006, we conducted a baseline survey of each study participant using a professional survey firm unaffiliated with ADOPEM. We collected information on household and business characteristics, business practices and performance, business skills, training history, and interest in future training. The endline survey was conducted during the summer of 2008, at least 12 months after training was completed. We augmented the surveys with administrative data from ADOPEM.

Table 1 reports summary statistics for the full sample and each of the three assignment groups from the baseline data collected in November 2006. Given that the treatments were randomly assigned, we expect individuals in the three assignment groups to be similar in the baseline.[9] As shown in the table, this expectation generally holds; however, individuals assigned to the accounting treatment are marginally less likely to report keeping accounting records or

[9] As described above, stratification utilized administrative records. Baseline survey data was not available at the time of assignment.

separating their business and personal accounts. Individuals in the rule of thumb training also report lower revenues in average and bad weeks, although these differences fall just below the 10%-significance level. Therefore, we control for these characteristics in the regression analytics that follow. Based on our sample size of approximately 400 individuals per assignment group, any small-sample bias introduced by inclusion of these baseline characteristics as covariates is minimal.

As shown in the table, the average loan size for all participants in the study was RD$26,514, approximately US$750; the median was RD$20,000. The median borrower in the sample reported revenues during an average week of RD$3,000 (US$85). Median good week and bad week revenues were RD$4,000 and RD$1,500, respectively. Approximately 60% of the businesses were sole proprietorships—with no employees in addition to the borrower. Of the rest, 80% have one or two employees in addition to the borrower and few have more than five. Typical businesses include small retail shops, general stores (*colmados*), beauty salons and food service. Approximately half of participants operate businesses engaged in retail sales and trading.

The endline survey conducted in mid 2008 reached 87% of participants reporting in the baseline. Intensive efforts were made to contact all participants using bank and phone records, and we believe that many of the individuals we were unable to reach in the endline had migrated outside of the Dominican Republic. There is some evidence for selective attrition. Treatment group individuals who were not reached for the endline survey have higher baseline revenues than those who dropped from the control group. The differences in reported weekly sales range from 0.27 standard deviations (average weekly sales) to 0.45 standard deviations (bad week sales). This suggests that the reported results for business outcomes may understate the program's true effect. Table 14 reports non-parametric bounds on the treatment effect following Horowitz and Manski (2000) and Lee (2002).

Random assignment of treatment allows us to obtain unbiased estimates of the effect of being offered the training program by estimating the following equation:

$$y_i^E = \alpha + \beta \times Treat_i + \gamma X_i + \delta y_i^B + \varepsilon_i, \qquad (1)$$

where y_i^E is the endline value of the outcome variable of interest; $Treat_i$ is an indicator for being assigned to the treatment; X_i is a matrix of baseline-measured covariates including business types, loan size, and participation in an ADOPEM savings account. The pre-treatment measure of the outcome variable, y_i^B, explains a substantial share of the variance in outcomes across individuals and is included where available. We estimate equation (1) separately for each training type, alternately excluding participants assigned to the other training program. The parameter β is an estimate of the program's average effect on outcome *y*. For binary outcome variables, we estimate a linear probability model following the same specification in (1), which allows interpretation of β as the difference in the mean level of an activity, e.g., keeping formal accounts, conditional on assignment to the particular treatment group. Errors are clustered at the *barrio* level, to account for community-level shocks to business conditions. While covariates were specified in advance of final data collection, we also estimate the simple cell means regression,

$$y_i^E = \alpha + \beta \times Treat_i + \delta y_i^B + \varepsilon_i, \tag{2}$$

to verify that the choice of covariates is not affecting parameter estimates.

We test for heterogeneous treatment effects with respect to education, business type, loan type (individual or group), and prior interest in training re-estimating equation (1) while restricting the sample in turn to each of the partitioning subgroups. Each of these subgroups was specified in the analysis plan before the endline data was collected.

Because follow-up for the treated participants was assigned conditional the first, we estimate the effect of the follow-up with the following specification, restricting the sample to only those participants who were randomly assigned to one of the follow-up conditions:

$$y_i^E = \alpha + \beta \times Follow_i + \gamma X_i + \delta y_i^B + \varepsilon_i, \tag{3}$$

where $Follow_i$ is an indicator for assignment to either the intensive or intermediate follow-up.[10] To assess the possibility that the act of training personnel visiting participants affected outcomes independent of training content, we also estimate (3) for those assigned to the placebo follow-up.

We also estimate the effect of treatment on the treated by estimating the equation,

$$y_i^E = \alpha + \beta \times AttendAny_i + \gamma X_i + \delta y_i^B + \varepsilon_i \,, \tag{4}$$

where $AttendAny_i$ is an indicator for whether individual i attended any of the training classes. Because attendance is endogenous, we instrument for attendance in (4) with assignment to the treatment.

While we focus on a few key business practice and performance outcomes, we consider the effect of training of 38 distinct outcomes. Because testing multiple outcomes independently increases the probability that we will reject at least one outcome, we follow Kling, Liebman, and Katz (2007) and Karlan and Valdivia (2010) in constructing summary measures of standardized treatment effects for four classes of outcomes: business practices, business performance, personal outcomes, and personal financial practices. Within each category, we rescale each outcome such that larger values indicate better values for the individual or business and convert each measure to a z-score such that $z_{ki} = (y_{ki} - \mu_k) / \sigma_k$, where μ and σ are the mean and standard deviation of y_k for the control group. For each category, we then construct a summary measure $Z_i = \sum_k z_{ki} / k$. We then estimate equation (1) for each of the four categories in order to test whether the training treatments affected the set of outcomes within the category. We then estimate

$$Z_i^E = \alpha + \beta \times Treat_i + \gamma X_i + \delta Z_i^B + \varepsilon_i \tag{5}$$

[10] As discussed above, we group both the intensive and intermediate follow-up treatments into one because practical implementation considerations required that the two treatments differed only in the number of follow-up visits and not in the substance of material covered.

Self-reporting bias raises concerns about our measures of business management practices. Treated individuals may, for example, report maintaining separate business and personal accounts because they were told this was important and not because they actually do so. To allay such concerns, we construct an objective index of financial reporting errors. We classify as an error any report of (i) bad period sales greater than average or good, (ii) average period sales better than good, or (iii) average period profits better than good period sales for each of daily, weekly and monthly reported outcomes. In the baseline, 45% of subjects make at least one mistake and 11% make three or more. We then estimate the effect of each treatment on reporting errors following equation (1). We also consider the interaction of education and training, estimating

$$y_i^E = \alpha + \beta_1 \times Treat_i + \beta_2 HighEd_i + \beta_3 Treat_i \times HighEd_i + \gamma X_i + \delta y_i^B + \varepsilon_i \,, \qquad (6)$$

where $HighEd_i$ is an indicator for whether or not individual i completed high school or better and the coefficient β_3 reflects whether more highly educated subjects respond differentially to the treatment.

Finally, although attrition in our sample was relative low (13%), we follow Lee (2002) in constructing non-parametric bounds on the category aggregate treatment effects using a range of assumptions for the pattern of attrition. To compute lower bounds, we assign to all those who attrited from the treatment group the mean value of the non-attritors minus some faction of the standard deviation for the group. For all those who attrited from the control group, we assign an outcome equal to the mean value of the non-attritors from the control group plus some faction of the reported standard deviation. We then estimate equation (1) on the imputed values for missing observations. Upper bounds on the treatment effect are computed following the same procedure, *mutatis mutandis*.

5. Results

Table 2 presents the effect of each training program on business practices an performance. Assignment to the rule-of-thumb training substantially increases the likelihood that individuals report separating business and personal cash and accounts, keep accounting records, and calculate revenues formally. Each of these measures increases by 6% to 12% relative to the

control group, which did not receive training, and all estimates are significant at the 5%-level or better. In contrast, we find no statistically significant effects on the business practices of those assigned to the accounting treatment.

Individuals assigned to the Rule of Thumb treatment report a substantial increase in revenues during bad weeks. This increase of RD$1,290 is economically large, 25% of mean endline reports and nearly 60% of the median, and significant at the 5%-level. As is shown in columns 5 and 6 of Table 2, those assigned to the rule of thumb training also reported higher revenues in both average weeks and the immediately preceding week; however, neither result is statistically significant. These results should be interpreted with some caution. As noted, individuals assigned to the rule of thumb training reported lower revenues in these periods than those assigned to the control group. These differences in baseline characteristics are not significant at conventional levels; however, the treatment effect is insignificant when the controls for baseline revenues are dropped. With this caveat in mind, the results remain consistent with the possibility that effective training may operate by helping individuals to better manage negative shocks or by alerting them to such shocks such that they can counteract the effect of slow weeks. There are no discernable effects of the accounting program on revenues.

Table 3 describes the effects of training on institutional outcomes. The accounting treatment had no discernable effects on loan size, loan type, savings, or dropout. Those assigned to the rule of thumb treatment are approximately 7% more likely to save, with the result marginally significant. Point estimates for effect of training on their savings in the month immediately prior to the endline survey are large—an increase of RD$1,504 or nearly 40% of the endline mean—but not statistically significant. There is no evidence that the rule of thumb training causes any other changes in institutional outcomes.

In Tables 4 and 5 we now want to test whether there are heterogeneous treatment effects for different subgroups of the population. In particular we focus on three dimensions: (1) we differentiate participants high school education or above versus those with less education in order to test whether the effectiveness of training depends on the participants schooling level; (2) we compare firms that are predominantly in trade (buying and selling of goods) versus small manufacturing and services since the former businesses might show results more quickly due to

the faster working capital cycle in these firms, and (3) we compare participants who have group loans versus individual loans since one might be concerned that the difference in the structure of these two loan groups could interact with the effectiveness of training.

Table 4 reports the impact of the rule of thumb training for these different subgroups while Table 5 repeats the regressions for the accounting training. Each of the cells in these tables reports the coefficient on the treatment dummy for separate regressions the outcome variables indicated. In the first two columns of Table 4 we compare the impact of the rule of thumb treatment when splitting the sample into clients with at least a high school education and those who completed less than high school. The treatment had a larger effect on more educated clients' likelihood to separate business and personal cash and likelihood to save, but otherwise there is not a consistent difference in the treatment effect between these two groups. The rule of thumb treatment had positive effects on both groups. Next in columns 3 and 4 we split the sample into trading businesses (buy and sell) versus others. There is some suggestive evidence that the rule of thumb trading had a larger effect on trading businesses; however, only the difference in savings rates is significant at conventional levels, and the aggregate difference is inconclusive. Similarly, and in contrast to the expectations, columns 5 and 6 demonstrate that treatment effects are nearly identical for group versus individual borrowers. Interestingly and consistent with Karlan and Valdivia (2010), columns 7 and 8 show the rule of thumb treatment has a larger effect on the business practices of those individuals who did not express an interest in accounting training during the baseline survey. This suggests that charging fees or making training programs optional may not optimally target programs to those who benefit most.

In Table 5 we now repeat the exact same set of regressions for the different subsamples as in Table 4 but for the sample of participants who received the accounting training. Parallel to the overall results reported in Table 2 we do not find a significant impact of the accounting treatment on the different subgroups of clients and their outcomes. However, there is one notable exception: Less educated clients seem to experience a significant drop in their weekly sales as measured by "last week sales" and also when asked about their "sales in a bad week". The effect is substantial, 0.2 standard deviations from the baseline reported value. This result is quite surprising but could be driven by several different channels besides a causal effect of lower sales from accounting training. We conjecture that one possible interpretation for this finding is that

clients either are more realistic about their actual sales once they went through the training while prior to the training they might have inflated the number.

Table 6 reports the impact of follow-up visits, conditional upon attending the first class, at which follow-up treatments were randomly assigned. There is no evidence of any positive impact from these visits. If anything, those receiving the intense follow up may be slightly less likely to follow good business and personal financial practices. Table 7 looks at the correlates of attendance. Conditional on assignment to the treatment group, those with at least a high school education are more likely to attend any class, with the overall effect driven by those assigned to the accounting treatment. Women are more likely to attend the rule of thumb training, as are individuals reporting below average sales performance.

Table 8 reports the effects of the treatment on the treated for both the accounting and rule of thumb training according to equation (4). These estimates represent the Wald Estimator for the treatment effect, effectively rescaling the intention to treat effect by the probability of attending the course conditional on assignment to the treatment. Consistent with the results reported in Table 2, we see large and statistically significant effects from the rule of thumb treatment on business practices and an economically and statistically significant increase in reported sales in bad weeks. While the effects of the accounting training lack statistical significance, there is a consistent pattern of negative reported effects on measures of sales performance.

Tables 9 through 12 report the results for regression of standardized treatment effects for each component and aggregate family totals grouped as business practices, business performance, personal outcomes, and personal financial practices. Tables 9 and 12 show that the rule of thumb training substantially improved aggregate measures of business and personal financial practice. While the aggregate business and personal outcome measures are positive, they are neither economically nor statistically significant. There is no demonstrable effect from the accounting training.

Finally, we consider the effect of both training programs on the objective measure of financial reporting quality. Table 13 reports the results of estimating equations (1) and (6) where the outcome of interest is the index of reporting errors as described in the prior section. As shown in columns (3) and (4), the rule of thumb training reduced the incidence of reporting errors by 8 to

9 percentage points relative. This effect appears to be independent of education levels. In contrast, the main effect of the accounting training shows little effect; however, those individuals with at least a high school education who were assigned to the accounting training committed 16 percentage points fewer errors than the control group. This result suggests that even seemingly simple training programs may require relatively high levels of existing education to be effective. In contrast, well-chosen, easily-learned rules of thumb appear to be more robust and more likely to be followed.

Table 14 reports the results of bounds estimation on the treatment effect for the rule of thumb training.[11] While the bounds span a large range of potential effects, the estimated effect on business practices is quite robust. Even with the relatively severe assumption that those attriting from the treatment group are 0.25 standard deviations below the mean and those attriting from the control group are 0.25 standard deviations above, we still find a significant, positive effect from the rule of thumb training.

6. Conclusion

The results from this study suggest that improved knowledge of finance and financial accounting indeed has a positive effect on the growth of small businesses in an emerging market such as the Dominican Republic. However, we show that the impact of such training crucially depends on the form in which financial literacy training is provided. In this setting, training that relies on the standard approach to small business training, teaching the fundamentals of financial accounting, had no measurable effect. But the training program based on simple rules of thumb led to significant improvements in the way SMEs managed their finances relative to the control group that was not offered training. Businesses in the rule of thumb training were more likely to implement the material that was taught, keep accounting records, calculate monthly revenues and separate their business and home financial records. Improvements along these dimensions are on the order of ten percentage points.

[11] Results for the accounting training, not reported here, are available upon request.

These changes in management practices translate into business outcomes. We find larger improvements for the group receiving the rule-of-thumb training compared to the group in the basic accounting training. In particular, we see a large increase in the level of sales during bad weeks—30% for people in the rule-of-thumb-based training—and a substantial but not statistically significant increase in average sales and an aggregate measure of business outcomes. We also find an economically large increase in savings of 6% for the rule-of-thumb training, but the result is only significant at the 10%-level. In contrast the basic accounting training produces no significant effects.[12]

Based on these findings, it appears that significant gains could be made by simplifying training programs and relying more on easy-to–implement, practical "rules of thumb." On a day-to-day basis, the rule-of-thumb-based approach performs better than teaching accounting and finance from first principles. However, more research is needed to investigate how the results generalize and how rules of thumb can be optimized for maximum impact and adjusted to the level of experience and expectation of different types of business owners. Moreover, we believe that going forward it will important to understand in more detail the potential costs and benefits of rule of thumb based learning, e.g., are there situations where rule-of-thumb-based training make it more difficult for SMEs to adjust to new circumstances or make sense of unforeseen developments.

[12] We also investigate whether there are heterogeneous treatment effects of the treatment for people with different levels of educational background and for borrowers that have individual loans versus group loans. We do not find any consistent differences in outcomes for the borrowers with two different loan types. But we find some heterogeneous treatment effects for more educated clients in the basic accounting training. More educated clients tend to show significant improvements when allocated to the basic accounting training, e.g. their savings and likelihood of record keeping increases. But the effects are not significant across all outcomes. In contrast we do not find any differential effect of education for clients in the rule of thumb based training.

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Table 1: Baseline Summary Statistics

	Obs. (1)	Full Sample Mean (2)	Control (3)	Accounting Treatment (4)	Diff. from Control (5)	Rule of Thm. Treatment (6)	Diff. from Control (7)
A. Borrower Characteristics							
Age	1,189	40.2	40.1	40.7	0.58	40.0	-0.08
		(10.4)	(10.5)	(10.3)	[0.44]	(10.5)	[0.92]
Female	1,193	0.90	0.90	0.90	0.00	0.90	0.01
		(0.30)	(0.30)	(0.30)	[0.86]	(0.30)	[0.75]
Number of Children	1,193	2.9	2.9	3.1	0.17	2.9	0.00
		(1.7)	(1.7)	(1.8)	[0.17]	(1.7)	[0.98]
Any Savings	1,193	0.66	0.68	0.62	-0.06	0.68	-0.01
		(0.47)	(0.47)	(0.49)	[0.08]	(0.47)	[0.85]
High school education or more	1,193	0.35	0.37	0.36	-0.01	0.33	-0.04
		(0.48)	(0.48)	(0.48)	[0.69]	(0.47)	[0.27]
Expressed interest in financial training	1,193	0.63	0.65	0.59	-0.06	0.65	0.00
		(0.48)	(0.48)	(0.49)	[0.09]	(0.48)	[0.99]
Sales and trading business	1,193	0.50	0.48	0.50	0.02	0.52	0.04
		(0.50)	(0.50)	(0.50)	[0.49]	(0.50)	[0.27]
B. Loan Characteristics							
Individual loan	1,183	0.61	0.61	0.60	0.00	0.62	0.01
		(0.49)	(0.49)	(0.49)	[0.89]	(0.49)	[0.70]
Amount of last ADOPEM loan	1,191	26,514	26,702	26,500	-202	26,349	-353
		(17,411)	(18,126)	(17,366)	[0.87]	(16,790)	[0.78]
C. Sales Performance, $RD							
Weekly Average	972	6,591	6,855	6,791	-64	6,133	-722
		(10,719)	(11,087)	(11,737)	[0.94]	(9,199)	[0.37]
Last Week	940	5,317	5,923	5,264	-659	4,760	-1163
		(9,804)	(10,480)	(10,085)	[0.42]	(8,742)	[0.13]
Good Week	961	8,111	8,188	8,254	66	7,886	-302
		(13,765)	(13,980)	(14,344)	[0.95]	(12,962)	[0.78]
Bad Week	960	3,730	4,275	3,708	-567	3,207	-1067
		(8,253)	(10,588)	(7,735)	[0.44]	(5,701)	[0.11]
D. Business Practices							
Sep. business and personal cash	1,159	0.74	0.75	0.74	-0.01	0.72	-0.03
		(0.44)	(0.43)	(0.44)	[0.82]	(0.45)	[0.30]
Keep accounting records	1,163	0.66	0.68	0.61	-0.07	0.68	0.00
		(0.47)	(0.47)	(0.49)	[0.05]	(0.47)	[0.95]
Sep. business and personal acct.	1,160	0.53	0.56	0.50	-0.07	0.54	-0.02
		(0.50)	(0.50)	(0.50)	[0.07]	(0.50)	[0.51]
Calculate revenues formally	1,161	0.80	0.80	0.82	0.02	0.79	-0.01
		(0.40)	(0.40)	(0.39)	[0.50]	(0.41)	[0.82]
Observations		1,193	387	402		404	

Notes: This table presents summary statistics based on baseline survey data. Standard errors of variables appear in parenthesis and p-values for differences of means appear in square brackets. Both treatment groups, columns (4) and (6), comprised a six-week training program. Section 3 describes the treaments in detail.

Table 2: Impact of Training on Business Practices and Performance[/a]

	Accounting			Rule of Thumb		
	Obs.	Treatment Only	Incl. Covariates[/b]	Obs.	Treatment Only	Incl. Covariates[/b]
	(1)	(2)	(3)	(4)	(5)	(6)
Business and Personal Financial Practices						
Sep. business and personal cash	524	0.00	0.00	533	0.08***	0.08***
		(0.03)	(0.03)		(0.03)	(0.03)
Keep accounting records	524	0.04	0.04	534	0.11***	0.11***
		(0.05)	(0.05)		(0.03)	(0.03)
Sep. business and personal acct.	521	0.04	0.04	533	0.11***	0.12***
		(0.05)	(0.05)		(0.03)	(0.03)
Calculate revenues formally	524	0.02	0.01	534	0.06**	0.06**
		(0.04)	(0.04)		(0.03)	(0.03)
Has employees	523	0.03	0.03	533	-0.03	-0.03
		(0.04)	(0.04)		(0.04)	(0.04)
Total number of employees	523	0.07	0.08	533	-0.05	-0.04
		(0.09)	(0.09)		(0.09)	(0.09)
Sales Performance, $RD						
Weekly Average	367	-558	-649	387	652	630
		(795)	(810)		(901)	(942)
Last Week	334	-986	-1,044	345	547	583
		(637)	(644)		(795)	(776)
Good Week	372	-801	-787	383	81	13
		(925)	(957)		(949)	(915)
Bad Week	359	-687	-672	373	1,095**	1,168**
		(502)	(513)		(523)	(538)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (1) for columns (3) and (6) and equation (2) for columns (2) and (5). Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account.

Table 3: Impact of Training on Institutional Outcomes[/a]

		Accounting			Rule of Thumb		
	Control Obs.	Treatment Only	Incl. Covariates[/b]	Treatment Obs.	Treatment Only	Incl. Covariates[/b]	Treatment Obs.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan size, $RD	334	-472	-423	349	851	704	347
		(1,047)	(944)		(1,414)	(1,332)	
Any savings	335	0.00	0.00	349	0.06	0.07*	348
		(0.04)	(0.04)		(0.04)	(0.04)	
Savings last month, $RD[/c]	172	667	920	177	1,612	1,504	201
		(1,221)	(1,270)		(1,275)	(1,228)	
Individual loan	333	0.01	0.01	349	0.00	0.01	348
		(0.02)	(0.02)		(0.03)	(0.03)	
Dropout[/d]	387	0.02	0.01	402	0.05	0.05	404
		(0.05)	(0.05)		(0.04)	(0.04)	

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation in equation (1) for columns (3) and (6) and equation (2) for columns (2) and (5). Baseline level of dependent variable excluded for dropout regression. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account.

[/c] Results reflect OLS regression of savings amount on treatment indicator, unconditional on any savings. Results of CLAD and Tobit regressions are not significant at the 10%-level.

[/d] No loans taken in prior twelve months.

Table 4: Impact of Rule of Thumb Training, by Subgroup[/a]

	Eduction level[/b]		Business Type		Loan Type, Baseline		Prior Interest in Training	
	Low	High	Buy-Sell[/b]	Other	Group	Indiv.	Yes	No
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Business and Personal Financial Practices								
Sep. business and personal cash[/c]	0.06	0.12**	0.10**	0.06	0.08*	0.08**	0.08*	0.09*
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Keep accounting records[/c]	0.11***	0.11	0.12***	0.10*	0.11**	0.10**	0.08	0.14**
	(0.04)	(0.08)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)
Sep. business and personal acct.[/c]	0.11***	0.11*	0.13**	0.10*	0.15**	0.09*	0.07	0.16***
	(0.04)	(0.06)	(0.05)	(0.05)	(0.07)	(0.05)	(0.05)	(0.05)
Calculate revenues formally[/c]	0.09**	0.02	0.10**	0.03	0.08*	0.06	0.07	0.06
	(0.04)	(0.06)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)
Has employees[/c]	-0.11**	0.10	-0.03	-0.02	-0.02	-0.03	-0.02	-0.04
	(0.05)	(0.07)	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)	(0.06)
Any savings	0.01	0.15**	0.12**	0.01	0.04	0.07	0.04	0.08
	(0.05)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)
Savings amount, $RD[/e]	816	4,367	993	2,063	1,907	1,213	-2,303	4,596
	(3,044)	(5,554)	(2,668)	(4,412)	(2,513)	(3,562)	(2,720)	(4,091)
Dropout[/f]	0.07	0.00	0.03	0.06	0.04	0.06	0.00	0.09
	(0.06)	(0.05)	(0.04)	(0.05)	(0.06)	(0.04)	(0.04)	(0.06)
Business Performance								
Total number of employees[/c]	-0.28***	0.29*	0.01	-0.07	0.08	-0.11	0.00	-0.09
	(0.10)	(0.16)	(0.11)	(0.16)	(0.12)	(0.12)	(0.11)	(0.14)
Weekly Average, Sales[/c/d]	1,034	-189	-927	1,605	-1,264	1,800	647	596
	(1,202)	(1,608)	(1,378)	(1,186)	(1,355)	(1,134)	(1,112)	(1,520)
Last Week, Sales[/c/d]	42	935	-222	1,322	-670	1,109	-63	1,157
	(1,054)	(1,542)	(1,063)	(1,273)	(1,175)	(978)	(711)	(1,492)
Good Week, Sales[/c/d]	745	-577	-1,309	1,019	-837	692	-417	601
	(1,203)	(1,562)	(1,364)	(1,215)	(1,621)	(1,146)	(1,079)	(1,596)
Bad Week, Sales[/c/d]	939	1,258	535	1,329	-617	1,893***	896	1,218
	(635)	(1,114)	(904)	(940)	(907)	(677)	(724)	(1,010)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (1). Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Eduction subgroups separated by high school or above (High) or less than high school (Low); trading business or other type of business; and participation in individual or group loan in baseline.

[/c] Regression includes only those individuals with own business.

[/d] Variable winsorized at 1%.

[/e] Results reflect OLS regression of savings amount on treatment indicator, unconditional on any savings. Results of CLAD and Tobit regressions are not significant at the 10%-

[/f] No loans taken in prior twelve months.

Table 5: Impact of Accounting Training, by Subgroup[a]

	Eduction level[b]		Business Type		Loan Type, Baseline		Prior Interest in Training	
	Low	High	Buy-Sell[b]	Other	Group	Indiv.	Yes	No
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Business and Personal Financial Practices								
Sep. business and personal cash[c]	-0.02	0.03	0.00	0.00	-0.03	0.02	0.05	-0.05
	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)	(0.04)	(0.04)	(0.05)
Keep accounting records[c]	0.04	0.05	0.09	0.01	0.12**	0.00	0.06	0.03
	(0.05)	(0.11)	(0.07)	(0.07)	(0.06)	(0.06)	(0.08)	(0.05)
Sep. business and personal acct.[c]	0.03	0.04	0.08	0.01	0.07	0.02	0.09	0.01
	(0.04)	(0.09)	(0.07)	(0.06)	(0.06)	(0.06)	(0.07)	(0.05)
Calculate revenues formally[c]	0.02	0.01	0.05	-0.01	0.05	0.00	0.06	-0.01
	(0.04)	(0.07)	(0.04)	(0.06)	(0.05)	(0.05)	(0.04)	(0.06)
Has employees[c]	-0.04	0.15**	0.03	0.02	0.06	0.02	0.06	0.00
	(0.05)	(0.08)	(0.05)	(0.05)	(0.06)	(0.04)	(0.05)	(0.06)
Any savings	-0.04	0.07	0.08*	-0.07	0.00	0.02	-0.01	0.03
	(0.05)	(0.06)	(0.04)	(0.07)	(0.05)	(0.06)	(0.06)	(0.05)
Savings amount, $RD[e]	2,326	2,394	-1,449	5,668	-2,181	5,375	4,469	-1,109
	(7,256)	(4,860)	(2,478)	(10,339)	(2,783)	(8,666)	(8,491)	(4,294)
Dropout[f]	0.05	-0.04	0.05	-0.02	0.04	0.00	0.01	0.03
	(0.05)	(0.06)	(0.09)	(0.04)	(0.08)	(0.05)	(0.06)	(0.05)
Business Performance								
Total number of employees[c]	-0.17*	0.46**	0.09	0.06	0.11	0.06	0.23	-0.03
	(0.09)	(0.20)	(0.11)	(0.15)	(0.18)	(0.11)	(0.16)	(0.14)
Weekly Average, Sales[c/d]	-873	-273	-1,507	98	280	-670	1,475	-2,212*
	(1,028)	(1,690)	(1,487)	(1,188)	(1,907)	(994)	(1,452)	(1,213)
Last Week, Sales[c/d]	-1,777**	-22	-1,193	-659	9	-1,422*	-329	-1,485
	(755)	(1,355)	(903)	(1,082)	(1,351)	(740)	(615)	(1,066)
Good Week, Sales[c/d]	-1,950	1,130	-2,258	438	1,355	-1,290	-1,440	-541
	(1,296)	(1,995)	(1,625)	(1,309)	(1,900)	(1,062)	(1,278)	(1,585)
Bad Week, Sales[c/d]	-1,456***	451	-1,450	-113	115	-895	-514	-639
	(552)	(1,087)	(1,107)	(667)	(1,078)	(563)	(645)	(815)

Notes:

[a] Each coefficient reported in the table is from a separate regression of the form described in equation (1). Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[b] Eduction subgroups separated by high school or above (High) or less than high school (Low); trading business or other type of business; and participation in individual or group loan in baseline.

[c] Regression includes only those individuals with own business.

[d] Variable winsorized at 1%.

[e] Results reflect OLS regression of savings amount on treatment indicator, unconditional on any savings. Results of CLAD and Tobit regressions are not significant at the 10%-

[f] No loans taken in prior twelve months.

Table 6: Impact of Training on Business Practices and Performance, by Intensity Conditional on Attending First Class

	Accounting	Rule of Thumb
	Intense[/a]	Intense[/a]
	(2)	(8)
Business and Personal Financial Practices [/c]		
Sep. business and personal cash[/d]	0.06	-0.11
	(0.09)	(0.07)
Keep accounting records[/d]	-0.03	0.00
	(0.09)	(0.09)
Sep. business and personal acct.[/d]	-0.05	-0.06
	(0.09)	(0.08)
Calculate revenues formally[/d]	-0.11*	0.07
	(0.06)	(0.09)
Has employees[/d]	0.07	-0.04
	(0.07)	(0.07)
Any savings	0.07	-0.18**
	(0.07)	(0.09)
Savings amount, $RD[/f]	524	-7,721
	(6,255)	(5,515)
Dropout[/g]	-0.06	-0.06
	(0.09)	(0.10)
Business Performance		
Total number of employees[/d]	-0.19	0.07
	(0.29)	(0.25)
Weekly Average, Sales[/d/e]	349	2,477
	(1,306)	(2,148)
Last Week, Sales[/d/e]	567	1,344
	(1,187)	(1,654)
Good Week, Sales[/d/e]	1,537	-621
	(1,715)	(2,184)
Bad Week, Sales[/d/e]	1,024	1,767
	(712)	(1,432)

Notes:

[/a] Values in each row in each set of basic and intense columns (e.g., (1) and (2)) represent the coefficients from a regression of the form $y_{i,E} = \alpha + \beta_1 \times \text{Intensity} + \gamma \times y_{i,B} + \varepsilon_i$ as shown in equation (3). Sample restricted to those attending first class, where intensity was assigned. Intensity is an indicator for additional training follow up visits, as described in Section 4. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Low education is defined as less than high school. High education includes completing high school or greater.

[/c] See section 3 for detailed description of treatments.

[/d] Regression includes only those individuals reporting own business in baseline survey.

[/e] Variable winsorized at 1%.

[/f] Results reflect OLS regression of savings amount on treatment indicator, unconditional on any savings. Results of CLAD and Tobit regressions are not significant at the 10%-level.

[/g] No loans taken in prior twelve months.

Table 7: Baseline Summary Statistics for Attendees and Non-Attendees

			Any Treatment			Accounting Treatment			Rule of Thumb Treatment		
		Full Sample	Attended Any Class			Attended Any Class			Attended Any Class		
	Obs.	Mean	No	Yes	Diff	No	Yes	Diff	No	Yes	Diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A. Borrower Characteristics											
Age	802	40.3	40.2	40.5	0.36	41.2	40.0	-1.12	39.2	41.0	1.80
		(10.4)	(10.5)	(10.2)	[0.62]	(10.8)	(9.7)	[0.28]	(10.2)	(10.8)	[0.09]
Female	806	0.90	0.89	0.92	0.04	0.89	0.91	0.01	0.88	0.94	0.06
		(0.30)	(0.32)	(0.27)	[0.09]	(0.31)	(0.29)	[0.66]	(0.33)	(0.24)	[0.05]
Lives with spouse	806	0.77	0.75	0.78	0.03	0.77	0.79	0.03	0.74	0.77	0.03
		(0.42)	(0.43)	(0.41)	[0.32]	(0.42)	(0.41)	[0.51]	(0.44)	(0.42)	[0.48]
Number of Children	806	3.0	2.9	3.1	0.25	2.9	3.2	0.28	2.8	3.0	0.21
		(1.7)	(1.8)	(1.6)	[0.04]	(1.9)	(1.6)	[0.11]	(1.7)	(1.6)	[0.20]
Any Savings	806	0.65	0.64	0.66	0.02	0.61	0.64	0.04	0.67	0.68	0.01
		(0.48)	(0.48)	(0.47)	[0.49]	(0.49)	(0.48)	[0.46]	(0.47)	(0.47)	[0.76]
High school education or more	806	0.34	0.31	0.38	0.07	0.32	0.40	0.09	0.31	0.36	0.05
		(0.48)	(0.46)	(0.49)	[0.04]	(0.47)	(0.49)	[0.07]	(0.46)	(0.48)	[0.26]
Expressed interest in financial training	806	0.62	0.61	0.64	0.02	0.58	0.61	0.03	0.64	0.67	0.02
		(0.48)	(0.49)	(0.48)	[0.50]	(0.49)	(0.49)	[0.60]	(0.48)	(0.47)	[0.63]
Sales and trading business	806	0.51	0.50	0.52	0.02	0.52	0.48	-0.03	0.49	0.56	0.07
		(0.50)	(0.50)	(0.50)	[0.63]	(0.50)	(0.50)	[0.49]	(0.50)	(0.50)	[0.16]
B. Loan Characteristics											
Individual loan	801	0.61	0.61	0.61	0.00	0.59	0.61	0.02	0.62	0.62	-0.01
		(0.49)	(0.49)	(0.49)	[0.90]	(0.49)	(0.49)	[0.72]	(0.49)	(0.49)	[0.87]
Amount of last ADOPEM loan	805	26,424	26,409	26,444	35	25,970	27,125	1,155	26,823	25,723	-1,100
		(17,069)	(17,232)	(16,887)	[0.98]	(17,047)	(17,761)	[0.51]	(17,432)	(15,930)	[0.51]
C. Sales Performance											
Weekly Average	654	6,462	7,105	5,665	-1,440	7,554	5,902	-1,652	6,680	5,411	-1,268
		(10,542)	(11,513)	(9,153)	[0.08]	(13,982)	(8,358)	[0.20]	(8,564)	(9,959)	[0.22]
Last Week	627	5,015	5,231	4,758	-473	5,483	4,998	-485	4,968	4,514	-454
		(9,443)	(9,896)	(8,883)	[0.53]	(11,834)	(7,478)	[0.67]	(7,382)	(10,132)	[0.65]
Good Week	643	8,072	8,793	7,189	-1,604	8,295	8,206	-88	9,286	6,106	-3,180
		(13,668)	(14,276)	(12,855)	[0.14]	(13,933)	(14,861)	[0.96]	(14,629)	(10,243)	[0.03]
Bad Week	643	3,461	3,862	2,973	-889	4,031	3,329	-702	3,694	2,591	-1,103
		(6,808)	(7,098)	(6,416)	[0.10]	(8,417)	(6,859)	[0.41]	(5,501)	(5,906)	[0.09]
D. Business Practices											
Sep. business and personal cash	781	0.73	0.72	0.75	0.03	0.71	0.79	0.08	0.73	0.70	-0.03
		(0.44)	(0.45)	(0.44)	[0.41]	(0.46)	(0.41)	[0.07]	(0.44)	(0.46)	[0.53]
Keep accounting records	783	0.65	0.66	0.63	-0.03	0.61	0.61	0.00	0.70	0.65	-0.05
		(0.48)	(0.47)	(0.48)	[0.44]	(0.49)	(0.49)	[0.93]	(0.46)	(0.48)	[0.33]
Sep. business and personal acct.	781	0.52	0.54	0.50	-0.04	0.51	0.49	-0.02	0.57	0.51	-0.06
		(0.50)	(0.50)	(0.50)	[0.28]	(0.50)	(0.50)	[0.72]	(0.50)	(0.50)	[0.26]
Calculate revenues formally	782	0.81	0.81	0.80	-0.01	0.81	0.83	0.02	0.80	0.78	-0.03
		(0.40)	(0.39)	(0.40)	[0.86]	(0.39)	(0.38)	[0.69]	(0.40)	(0.42)	[0.52]

Notes: This table presents summary statistics based on the baseline survey data conditional on assignment to one of the treatments. Standard errors of variables appear in parenthesis and p-values for differences of means appear in square brackets. Columns (3), (6) and (9) are means for individuals assigned to training who did not attend. Columns (4), (7) and (10) are means for individuals assigned to training who attended at least one class.

Table 8: Impact of Training on Business Practices and Performance
Treatment on the Treated[/a/b]

	Accounting			Rule of Thumb		
	Obs.	Treatment Only	Incl. Covariates[/c]	Obs.	Treatment Only	Incl. Covariates[/c]
	(1)	(2)	(3)	(4)	(5)	(6)
Business and Personal Financial Practices						
Sep. business and personal cash	524	0.00	-0.02	533	0.17**	0.18**
		(0.06)	(0.07)		(0.07)	(0.07)
Keep accounting records	524	0.08	0.01	534	0.23***	0.24***
		(0.10)	(0.10)		(0.06)	(0.06)
Sep. business and personal acct.	521	0.08	0.01	533	0.24***	0.25***
		(0.09)	(0.10)		(0.06)	(0.06)
Calculate revenues formally	524	0.03	0.04	534	0.13**	0.13**
		(0.07)	(0.08)		(0.06)	(0.06)
Has employees	523	0.05	0.06	533	-0.07	-0.06
		(0.07)	(0.07)		(0.09)	(0.09)
Total number of employees	523	0.14	0.25	533	-0.11	-0.09
		(0.17)	(0.19)		(0.18)	(0.18)
Business Performance						
Weekly Average, Sales[/d]	367	-1,091	-1,485	387	1,388	1,366
		(1,522)	(1,802)		(1,925)	(2,025)
Last Week, Sales[/d]	334	-1,857	-2,361*	345	1,082	1,162
		(1,200)	(1,424)		(1,562)	(1,514)
Good Week, Sales[/d]	372	-1,528	-1,239	383	167	28
		(1,748)	(2,186)		(1,944)	(1,876)
Bad Week, Sales[/d]	359	-1,331	-1,637	373	2,328**	2,496**
		(944)	(1,263)		(1,129)	(1,150)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (4). Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Excludes individuals assigned to treatment who did not attend any training sessions.

[/c] Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account.

[/d] Variable winsorized at 1%.

Table 9: Standardized Treatment Effects
Business Practices

	Accounting		Rule of Thumb	
	Treatment Only	Incl. Baseline	Treatment Only	Incl. Baseline
	(1)	(2)	(3)	(4)
Keep accounting records	-0.02	0.02	0.16***	0.18***
	(0.07)	(0.08)	(0.06)	(0.06)
Sep. business and personal acct.	-0.03	0.02	0.15**	0.19***
	(0.07)	(0.07)	(0.06)	(0.06)
Sep. business and personal cash	-0.07	-0.07	0.09	0.13*
	(0.07)	(0.07)	(0.07)	(0.07)
Plans cash needs	0.04	0.03	0.15**	0.15**
	(0.07)	(0.07)	(0.07)	(0.06)
Calculates profits	0.01	0.00	0.10	0.13*
	(0.07)	(0.08)	(0.07)	(0.07)
Keeps accounts for Acct Receivable	-0.02	0.01	0.14**	0.14**
	(0.07)	(0.07)	(0.06)	(0.06)
Keeps accounts for Acct Payable	-0.01	0.00	0.12*	0.11*
	(0.06)	(0.07)	(0.06)	(0.06)
Keeps accounts for Expenses	0.06	0.07	0.14**	0.13**
	(0.06)	(0.06)	(0.05)	(0.06)
Keeps accounts for Sales	0.08	0.09	0.05	0.05
	(0.06)	(0.06)	(0.06)	(0.06)
Keeps accounts for Inventory	0.02	0.03	-0.02	-0.02
	(0.06)	(0.06)	(0.06)	(0.06)
Any financial reporting mistakes	0.09	0.09	0.15**	0.15**
	(0.08)	(0.08)	(0.07)	(0.07)
Aggregate business practices[/b]	0.02	0.03	0.12***	0.11***
	(0.04)	(0.04)	(0.04)	(0.04)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (5). Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account. All measures converted to standardized z-scores and scaled such that postive values indicate descireable outcomes, as described in text. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Aggregate value is unweighted sum of all individual measures.

Table 10: Standardized Treatment Effects
Business Performance

	Accounting		Rule of Thumb	
	Treatment Only	Incl. Baseline	Treatment Only	Incl. Baseline
	(1)	(2)	(3)	(4)
Sales last day[/b]	-0.11*	-0.07	-0.04	-0.03
	(0.06)	(0.06)	(0.06)	(0.06)
Sales average day[/b]	-0.02	-0.04	0.05	0.03
	(0.08)	(0.07)	(0.08)	(0.08)
Sales last week[/b]	-0.13*	-0.10	0.00	0.04
	(0.08)	(0.06)	(0.08)	(0.08)
Sales average week[/b]	-0.06	-0.05	0.01	0.03
	(0.07)	(0.06)	(0.08)	(0.07)
Sales good week[/b]	-0.05	-0.06	0.01	0.00
	(0.08)	(0.07)	(0.07)	(0.06)
Sales bad week[/b]	-0.11	-0.08	-0.02	0.12*
	(0.08)	(0.07)	(0.07)	(0.07)
Sales last month[/b]	-0.02	0.05	0.08	0.05
	(0.07)	(0.08)	(0.07)	(0.06)
Sales average month[/b]	-0.02	-0.01	0.05	0.04
	(0.08)	(0.08)	(0.08)	(0.06)
Sales good month[/b]	0.02	-0.04	0.07	0.02
	(0.07)	(0.07)	(0.07)	(0.05)
Sales bad month[/b]	-0.01	-0.05	0.02	-0.01
	(0.07)	(0.09)	(0.06)	(0.07)
Plan any innovation in business	-0.10	-0.14*	-0.01	-0.02
	(0.07)	(0.08)	(0.08)	(0.08)
Total employees	0.08	0.05	0.02	-0.02
	(0.07)	(0.06)	(0.06)	(0.06)
Prefers own business to RD$10,000 salary/mo	0.00	-0.02	0.02	-0.01
	(0.06)	(0.06)	(0.05)	(0.05)
Aggregate business outcomes[/c]	-0.02	0.00	0.02	0.04
	(0.03)	(0.03)	(0.04)	(0.03)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (5). Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account. All measures converted to standardized z-scores and scaled such that postive values indicate descireable outcomes, as described in text. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Winsorized at 1%.

[/c] Aggregate value is unweighted sum of all individual measures.

Table 11: Standardized Treatment Effects
Personal Outcomes

	Accounting		Rule of Thumb	
	Treatment Only	Incl. Baseline	Treatment Only	Incl. Baseline
	(1)	(2)	(3)	(4)
First child in school	-0.05	-0.06	-0.06	-0.02
	(0.06)	(0.06)	(0.08)	(0.08)
First child working	-0.08	-0.09	0.05	0.07
	(0.07)	(0.06)	(0.09)	(0.08)
Spending on furniture for home	0.02	0.05	0.10	0.08
	(0.06)	(0.06)	(0.07)	(0.07)
Owns home	0.15**	0.09	0.00	-0.03
	(0.07)	(0.06)	(0.08)	(0.04)
Reports improving economic situation	0.03	0.02	0.09	0.08
	(0.09)	(0.08)	(0.06)	(0.06)
Total savings[/b]	-0.12	-0.05	0.01	0.05
	(0.08)	(0.08)	(0.07)	(0.07)
Dining out or eating meat	-0.14	-0.02	-0.03	-0.03
	(0.09)	(0.06)	(0.07)	(0.05)
Economic situation relative to neighbors	0.08	0.14**	0.13*	0.15**
	(0.07)	(0.07)	(0.07)	(0.07)
Aggregate personal outcomes[/c]	-0.01	0.01	0.04	0.05*
	(0.03)	(0.02)	(0.03)	(0.02)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (5). Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account. All measures converted to standardized z-scores and scaled such that postive values indicate descireable outcomes, as described in text. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Winsorized at 1%.

[/c] Aggregate value is unweighted sum of all individual measures.

Table 12: Standardized Treatment Effects
Personal Financial Practices

	Accounting		Rule of Thumb	
	Treatment Only	Incl. Baseline	Treatment Only	Incl. Baseline
	(1)	(2)	(3)	(4)
Buy from door-to-door vendors	0.05	0.04	0.06	0.04
	(0.10)	(0.09)	(0.07)	(0.07)
Regret purchase decisions	0.04	0.04	-0.02	-0.02
	(0.06)	(0.06)	(0.07)	(0.07)
Save regularly	-0.01	0.01	0.14*	0.13
	(0.08)	(0.07)	(0.08)	(0.08)
Amount saved last month	0.04	0.09	0.12	0.17
	(0.10)	(0.13)	(0.10)	(0.12)
Any gambling	0.10	0.07	0.05	0.01
	(0.08)	(0.07)	(0.07)	(0.06)
Use remittances for business purposes	0.05	--	0.15*	--
	(0.07)		(0.08)	
Aggregate personal financial practices[/b]	0.04	0.03	0.07**	0.05*
	(0.03)	(0.03)	(0.03)	(0.03)

Notes:

[/a] Each coefficient reported in the table is from a separate regression of the form described in equation (5). Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account. All measures converted to standardized z-scores and scaled such that postive values indicate descireable outcomes, as described in text. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, ** at the 5%-level, and *** at the 1% level.

[/b] Aggregate value is unweighted sum of all individual measures.

Table 13: Impact of Training on Reporting Quality

	Accounting		Rule of Thumb	
	(1)	(2)	(3)	(4)
Dependent Variable: Any Reporting Errors [/b]				
Treatment	-0.03	0.02	-0.09***	-0.08*
	(0.04)	(0.06)	(0.03)	(0.04)
High Education		0.02		0.02
		(0.07)		(0.07)
Interaction		-0.16		-0.02
		(0.10)		(0.09)
Observations	529	529	540	540

Notes:

[/a] Values in each column represent a single regression. High Education is an indicator equal to 1 if the individual has a high school education or better. Includes only those individuals reporting own business. Standard errors, clustered at the barrio-level, in parentheses. * Denotes significance at the 10%-level, , ** at the 5%-level, and *** at the 1% level.

Table 14: Bounds estimates for standardized treatment effects
Rule of Thumb Treatment

	Lower Bounds[/a]				Unadjusted Treatment Effect	Upper Bounds[/b]			
	0.50 sd	0.25 sd	0.10 sd	0.05 sd		0.05 sd	0.10 sd	0.25 sd	0.50 sd
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Business practices	0.022	0.064	0.088	0.097	0.108	0.113	0.122	0.146	0.188
	(0.036)	(0.036)	(0.036)	(0.036)	(0.042)	(0.037)	(0.037)	(0.038)	(0.039)
Business outcomes	-0.044	-0.005	0.019	0.026	0.040	0.042	0.050	0.073	0.113
	(0.031)	(0.031)	(0.030)	(0.030)	(0.033)	(0.030)	(0.030)	(0.031)	(0.031)
Personal outcomes	-0.012	0.015	0.032	0.037	0.045	0.048	0.053	0.069	0.096
	(0.022)	(0.022)	(0.022)	(0.022)	(0.025)	(0.022)	(0.022)	(0.022)	(0.023)
Personal financial practices	0.003	0.030	0.046	0.051	0.052	0.062	0.067	0.083	0.110
	(0.024)	(0.025)	(0.025)	(0.026)	(0.029)	(0.026)	(0.026)	(0.027)	(0.028)

Notes:

[/a] Columns (1) through (4) imputes attrited treatment group as mean of non-attrited treatment minus the indicated fraction of the standard deviation for the non-attrited treatment. Attrited control are imputed as mean of non-attrited control plus the indicated fraction of the standard deviation for the non-attrited control.

[/b] Columns (6) through (9) imputes attrited treatment group as mean of non-attrited treatment plus the indicated fraction of the standard deviation for the non-attrited treatment. Attrited control are imputed as mean of non-attrited control minus the indicated fraction of the standard deviation for the non-attrited control.

[/c] Covariates include variables used for stratification: business types, loan size, and participation in an ADOPEM savings account. All measures converted to standardized z-scores and scaled such that postive values indicate descireable outcomes, as described in text.