

Stimulating Managerial Capital in Emerging Markets

The Impact of Business and Financial Literacy
for Young Entrepreneurs

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Abstract

Identifying the determinants of entrepreneurship is an important research and policy goal, especially in emerging market economies where lack of capital and supporting infrastructure often imposes stringent constraints on business growth. This paper studies the impact of a comprehensive business and financial literacy program on firm outcomes of young entrepreneurs in an emerging post-conflict economy, Bosnia and

Herzegovina. The authors conduct a randomized control trial and find that while the training program did not influence business survival, it significantly improved business practices, investments, and loan terms for surviving businesses. Entrepreneurs with higher ex-ante financial literacy further exhibited some improvements in business performance and sales.

This paper is a product of the Finance and Private Sector Development Team, Development Research Group. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at mbruhn@worldbank.org and bzia@worldbank.org.

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**Stimulating Managerial Capital in Emerging Markets:
The Impact of Business and Financial Literacy for Young Entrepreneurs**

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I. Introduction

Much of the literature on the determinants of entrepreneurship and firm growth has focused on access to physical capital and external finance (e.g. Banerjee et al., 2010; Bruhn and Love, 2009; and De Mel, McKenzie and Woodruff, 2008). However, a number of recent papers argue that “managerial capital” or business skills are another important driver of firm growth and a key determinant of productivity (e.g. Bloom et al, 2010; Bruhn, Karlan, and Schoar, 2010).

This emerging academic interest in identifying alternate channels of firm growth has been accompanied by an equally strong policy interest in education programs geared towards enhancing financial and business skills. Governments and private organizations alike are investing heavily in financial literacy programs throughout the world.² Despite this attention, we know very little about what kinds of education programs are effective and for whom.

For example, the only completed randomized evaluation of a financial literacy training program designed to promote savings behavior (Cole, Sampson, and Zia, 2010) finds no effect of the training on the overall population in Indonesia, though it does find a small increase in the probability that individuals with low initial levels of financial literacy open bank accounts following the training.

² See, for example, Cole and Fernando (2008), or <http://corporate.visa.com/viewpoints/responsible-spending/financial-literacy.shtml>

The evidence on the effects of business training on entrepreneurial outcomes is also scarce. Karlan and Valdivia (2010) find that a business education program for female micro-entrepreneurs in Peru improves record-keeping, though not profits; and Drexler, Fischer and Schoar (2010) show that a basic rules-of-thumb based training, but not formal business training, leads to improvements in business outcomes for micro-entrepreneurs in the Dominican Republic.

Our paper adds to the sparse knowledge base on the effects of business and financial education. We focus on young borrowers in Bosnia and Herzegovina who are business loan clients of our partner financial institution, Partner Microcredit Foundation (henceforth Partner), operating within and near the metropolitan city of Tuzla. Bosnia and Herzegovina is an important location choice since it represents an emerging post-conflict economy, struggling with the burden of high youth unemployment and low business survival. In such a setting, the marginal value of a business and financial education program is likely very high.

At the time of the baseline survey, approximately one-third of our sample did not own a business but had a business exploration loan with Partner. These sample features enable us to make three important contributions to the literature: (i) we study the effects of financial and business training not only on existing business owners, but also on potential entrepreneurs to

identify impacts on business startup; (ii) we focus on slightly larger businesses than micro-enterprises, some of which have employees, own operational assets, make business investments, and are formally registered; and (iii) we utilize very detailed and high quality administrative loan data to study impacts on default rates and loan terms, in addition to analyzing survey measures on business outcomes.

Our research design is a randomized control trial with 445 Partner loan clients, two-thirds of whom received an invitation to attend a comprehensive business and financial education program run by a highly experienced and reputable training institute in the city. The remaining one-third of the sample is our control group. The randomization was stratified by baseline financial literacy level, gender, industry, and baseline profits.

We find that financial literacy is a strong predictor of baseline financial and business outcomes, consistent with the existing literature. Further, our experimental results show that the training program led to significant improvements in basic financial knowledge for those who start out with low levels of financial literacy at baseline.

Our results on business outcomes, on the other hand, are quite stark. We do not find any significant treatment effects on the extensive margin. Specifically, treatment businesses were no more likely to survive than control businesses in a period where 36 percent of businesses

shut down by the time of the follow-up.³ In addition, we find no significant treatment effect on business start-up, with only one new business starting up during our study period. These results clearly suggest that lack of business acumen is not the primary driver of business entry and survival.

While the extensive margin results are not significant, we identify positive treatment effects for businesses that remain operational during the study period. The strongest effects are on improvements in business practices and investments. We find that our treatment group was 17 percent more likely to implement new production processes than the control group, and 11 percent more likely to inject new investment into the business. These results are consistent with the central theme of our business training program, which was to encourage capital investment among young businesses. Further, those invited to the business and financial training were substantially more likely to separate their business and personal accounts, which was also emphasized in the business training course.

In terms of business performance, while we do not find significant average treatment effects of our training program, we identify significant heterogeneous effects. Specifically, entrepreneurs with high ex-ante financial literacy exhibit significantly greater improvements in sales due to

³ The large proportion of firms shutting down is consistent with Demirguc-Kunt, et. al. (2007), who find that nearly 50 percent of new businesses in Bosnia and Herzegovina do not survive beyond their first year.

the training program than entrepreneurs with low ex-ante financial literacy. The effects on profits are also positive for this sub-group, showing an increase in profits due to the training of 54 percent, though only statistically significant at the 15 percent level.

Next, we study treatment effects on external finance. We use detailed administrative data from Partner to study the effect of the training on default rates, propensity to refinance, and terms for new loans. Although we do not identify average treatment effects on default rates, we find that our treatment group was significantly more likely to refinance its existing loans with Partner. This restructuring can take the form of a lower interest rate or longer loan term. Further, we find treatment firms that take on new loans were significantly more likely to negotiate larger number of installments, controlling for loan amount. These results are again consistent with the notion of larger up-front capital investment, a concept that was central to our business training program.

Overall, our results have important policy implications for business promotion and growth. First, our results clearly indicate that lack of business acumen is not the primary constraint to business survival. Hence, business training programs alone are likely not the panacea for promoting new business growth in emerging markets. Our second set of results, however, shows that business training indeed is a strong complement to achieving such growth. In particular, we find business training can provide the necessary motivation and entrepreneurial

impetus for existing businesses to grow. Further, our analysis identifies specific business decisions for which financial education for entrepreneurs can be particularly effective. These insights are very helpful for formulating and adjusting policy advice so limited development resources can be effectively targeted.

This paper proceeds as following. Section II describes the setting and sample selection, and Section III outlines the research design and summarizes the business and financial literacy program. More details on the program are provided in Appendix 1. Section IV describes the implementation challenges we faced and provides summary statistics. Section V presents the baseline analysis, as well as the evaluation results. Section VI concludes.

II. Setting and Sample Selection

For the implementation of this study, we partnered with one of the largest microcredit institutions in Bosnia, Partner Microcredit Foundation.⁴ Unlike typical microfinance institutions that cater to the poorest segments of the population, Partner regularly makes large loans, all on an individual basis and with full credit checks.

All participants in our study are Partner's loan clients. In order to select our study sample, Partner provided us with a list of their active borrowers between the ages of 18 and 35. We

⁴Partner had close to 55,000 active borrowers in 2009.

chose loan clients in this age bracket because Partner felt that business and financial education could have a particularly large impact on this group. Youth unemployment is high in Bosnia, about 58 percent according to the 2007 Labor Force Survey, and self-employment provides a viable solution to this problem. In this type of environment, it is particularly important to explore strategies to promote the entry, survival, and growth of youth-led businesses.

We limited our study sample geographically to areas around Tuzla,⁵ where Partner is headquartered, to facilitate the logistics of the business training. Moreover, we dropped clients who had not taken out a loan for business purposes from our sample in order to target clients who were either running a business or planning to start a business. We also did not include clients who were delinquent on their loan payments according to Partner's definition.⁶

All 2,274 Partner clients meeting these criteria received an initial screening phone call, asking them whether they would be interested in participating in a business and financial education training course. About 500 clients could not be reached over the phone. Among the 1,783 clients who were reached, half reported being interested in participating in the course. Table 1

⁵We limited the sample to clients living in the municipalities of Banovici, Gracanica, Gradacac, Kalesija, Lukavac, Sebrenek, Tuzla, and Živinice.

⁶ Partner's definition of delinquent loans is either being more than 15 days late on the current payment or having a cumulative number of late payment days over 15. The reason for not including these clients in the sample is that it is Partner's policy not to offer any programs or new loans to delinquent clients.

examines which borrower and loan characteristics predict whether the client was interested in the course. These characteristics all come from Partner's client database.

Table 1 shows three specifications, one with demographic characteristics alone, the next one adding loan characteristics, and the final one with Partner branch fixed effects. All specifications show that women were about 13 percent less likely to be interested in participating in the training.⁷ In addition, clients who had been late on at least one of their loan payments (during the course of the loan) were 5 percent more likely to be interested in training. On average, almost 60 percent of clients had made a loan payment at least one day late, but the median number of days late was relatively small (i.e. two days). This last result is promising in that people who were late on payments perceive business and financial education as being valuable.

None of the other variables show a statistically significant correlation with being interested in training. Most notably, neither the client's age, nor the loan amount, predicts whether the client is interested in participating in the business and financial education course.

In our study, we only include clients who were interested in the training. This implies that we measure the impact of training only on the population of interested clients. For policy

⁷ About 35 percent of the clients who met all selection criteria were women.

purposes, this is probably the most relevant sample since only clients who are interested in the training will take it up if offered the training.

III. Curriculum Details and Research Design

III.1. Curriculum Details

The business training was provided through a local NGO, the Entrepreneurship Development Center (EDC). EDC is located on the premises of the Chamber of Commerce of Tuzla Canton and has extensive experience with providing entrepreneurship training to university students. Most of EDC's instructors are faculty members at the University of Tuzla.

For the purposes of our study, EDC adapted its regular business training course curriculum to meet the needs of our target audience. In order to do this, they conducted face-to-face interviews with existing Partner loan clients and consulted with Partner's credit officers in various field offices in the Tuzla region. Moreover, EDC pilot tested the new curriculum with first year university students who resembled our target group in terms of age, previous education, and income.

The business training offered through our study consists of six comprehensive modules. These modules introduce basic business concepts and accounting skills, such as separation of business and personal household accounts, and they also explore deeper concepts such as business

investment and growth strategies. The advantages of up-front capital investment are particularly highlighted throughout the course. Appendix 1 includes a detailed description of the topics covered in each module.

As part of our implementation strategy, we hired two local consultants to handle the logistics of the business training, including calling Partner's clients and scheduling them for make-up sessions in case a session was missed. The training was typically held in groups of six to ten clients. The consultants also kept track of attendance, administered a short follow-up test at completion of the course, collected course evaluation forms, and distributed certificates for completing the course. Clients were paid 50 KM (approximately US\$35) for participating in the course in order to compensate them for the opportunity cost of their time⁸.

III.II. Research Design

Our research design is a randomized control trial with a sample size of 445 active business loan clients⁹. We originally envisioned two distinct treatment groups, one receiving the first five modules of the business training course, and the other an additional module on issues pertaining to the financial crisis. 149 clients were randomly allocated into treatment group 1

⁸ We also offered clients free of charge transportation to the training location.

⁹ These 445 are a subgroup of the clients who said that they were interested in the training in our screening phone calls. We provided the list of interested clients to the survey firm for the baseline survey and asked them to stop surveying after they had completed 450 interviews. For various reasons, we only ended up with 445 valid baseline interviews, which form the sample for our experiment.

and 148 clients were randomly allocated into treatment group 2, while the remaining 148 acted as the control group.

We performed a stratified randomization, using information from Partner's database and from a baseline survey conducted in April and May 2009. In the baseline, we collected information on measures of financial and business knowledge, education, and risk aversion, as well as business employment, assets, expenditures, sales, profits, and use of external finance.

The randomization was stratified by gender, sector (Farming & Livestock, Services, and other), above and below the median of the business knowledge/financial literacy score in the baseline questions, and a dummy for whether profits were missing in the data. Within strata, we sorted by baseline profits and randomly allocated clients to our three experimental groups within each sequence of three observations.

The implementation of the business training was carried out soon after the baseline, between June and December 2009. An exit test to measure business and financial knowledge was administered at the end of the training to all participants. Finally, a telephone-based follow-up survey was conducted in May and June 2010, one year after the baseline survey. For the follow-up, we were able to track down and interview 396 out of the 445 individuals in our study. The attrition rate was relatively low, and uncorrelated with our treatment.

IV. Implementation Challenges and Summary Statistics

The implementation of the business training program was quite challenging. We faced considerable reluctance from our treatment group for attending the course, despite the fact that our entire sample consisted of individuals who had initially expressed interest in such a course. Out of 297 individuals in the treatment group, only 117 (39 percent) actually attended the course.

In the follow-up survey, we asked for the main reason why treatment individuals did not participate in the training program, and the overwhelming reason was lack of time. However, among the people who did attend, the satisfaction rate was quite high, with more than 96 percent of people agreeing that they would recommend this course to a friend.

Given our low attendance figures, and the fact that only a handful of individuals in the second treatment actually attended the sixth module, we decided to forego our original experiment design of two separate treatment groups, and merged both treatment groups into one.

Yet another complication we faced was that not all of the 445 clients in our sample actually had a business at baseline, even though they had a business loan at that time. We were not aware of this at the time we were designing the experiment protocols, and only later did we identify

that about one-third of our baseline clients did not have an operating business at baseline. Partner later explained to us that these clients most likely received the business loans for a planned or potential business venture. While on the one hand, we were unable to stratify on this variable, on the other hand this variation in the sample offers us the opportunity to study the impact of business training on new business start-up. Indeed, potential entrepreneurs are likely prime candidates for whom business training would be beneficial.

From a sample composition point of view, our treatment group is not unbalanced in terms of individuals who did or did not have a business at baseline. In fact, there are no statistical differences between the ratio of treatment and control samples for these two groups. Further, the business training attendance data shows that individuals with and without businesses at baseline were equally likely to attend and complete the course, with a mean attendance rate of 39.4 percent and 39.3 percent, respectively.

Table 2 provides summary statistics for the baseline survey, broken down by treatment and control groups. The last column provides p-values for a difference-in-means test between the two groups. Panel A presents a summary of demographic and stratification variables, and Panel B focuses on business characteristics for those individuals who had a business at baseline. The businesses in our sample have about two employees on average (including the owner) and

monthly profits of around KM 1,000 (US\$700). They are about 5 years old and 20-30 percent of them are registered with the authorities.

Overall, the means of the baseline variables are very similar across the treatment and control groups. In particular, none of the stratification variables are significantly different in the subsample of business owners. There are only a few exceptions, most notably among the business variables. However, these differences are entirely due to chance. We can be sure of this since we performed the randomization ourselves. Following the suggestions in Bruhn and McKenzie (2009), we control for strata dummies and also for baseline outcome levels in our regression analysis.

V. Analysis

V.I. Baseline Analysis of Financial and Business Knowledge

Our baseline survey measures business and financial knowledge through eight questions that are listed in Appendix 2. We construct an overall business and financial literacy score by tallying the correct answers to these eight questions. The score thus runs from zero to eight. The average of this score is about 2.7, meaning that, on average, clients gave the correct answer to 2.7 out of 8 questions.

Table 3 studies the determinants of formal financial services usage and business practices. The first column for each dependent variable includes the full sample and the second column focuses exclusively on individuals who had a business at baseline. Consistent with the existing literature from developed and developing countries (e.g. Lusardi and Tufano (2008) in the US; Cole, Sampson, and Zia (2010) in Indonesia and India; and Klapper and Lusardi (2010) in Russia), we find that business and financial knowledge is a strong predictor of usage of financial services, including having a bank account and a credit line. Further, entrepreneurs with higher business and financial literacy are more likely to use trade credit and to keep business accounts.

Apart from business and financial literacy, we find that being formally registered, having participated in a business training program in the past, and having business assets are significant predictors of financial services usage. These results are consistent with standard models of firm behavior as entrepreneurs with more experience and who operate larger firms are likely to interact more with the formal financial system.

V.II. Predictors of Take Up

As mentioned above, 39% of the individuals who were invited to the business training program actually attended. Table 4 presents results of regressing attendance on various baseline characteristics of those invited. We find that individuals in rural areas were significantly less likely to attend training, even though all participants were compensated for their travel.

Perhaps the greater distance and time of travel imposed restrictions on their attendance. There are some significant differences by ethnicity, but more than 95% of the sample was Bosniak, and hence this represents only a small difference in real terms. Importantly, we do not find any significant differences in attendance rates by baseline levels of financial literacy, schooling and age. These results are similar within the sample of individuals who had a business at baseline (Column 2).

V.III. Evaluation Specification

Since treatment was randomly assigned, we estimate causal impacts with the following equation:

$$y_i = \alpha + \beta * TrainingInvite_i + \varepsilon_i \quad (1)$$

where the dependent variable is the knowledge, business performance, or loan behavior metric used in the regressions. The main coefficient of interest is β , which represents the treatment effect of being invited to our business and financial education program. We focus on the reduced-form relationship because it is difficult to compel people to attend a training session; thus, the intention-to-treat estimate may be of greatest interest.

Whenever available, we follow the recommendation in McKenzie (2011) and control for the baseline value of our dependent variable and run an Analysis of Covariance (ANCOVA) specification. In addition, all specifications include strata dummies and a survey wave dummy since our follow-up survey was conducted over two waves.¹⁰

V.IV. Evaluation Results – Effects on Business and Financial Knowledge and Perceptions

In order to assess the effect of the training on business and financial knowledge, we first examine the results from the exit test that participants filled out at the end of the training. This test includes the same eight business and financial knowledge questions as the baseline survey. Results from this exit test are only available for entrepreneurs who attended the training and thus cannot be compared to a randomly chosen control group. However, comparing exit test results to baseline answers provides a first indication of whether participants improved their business and financial knowledge after the training.

Panel A in Table 5 shows the fraction of respondents who answered each question correctly, at baseline and during the exit test. The fraction of correct answers during the exit test is significantly higher than at baseline for three out of the eight questions. Somewhat surprisingly, respondents also did significantly worse during the exit test in answering two out of the eight

¹⁰ The second wave was necessary as the response rate was initially very low. This initial non-response is not correlated with treatment.

questions, compared to the baseline. However, the total score (i.e. the sum of correct answers on the eight questions) increased significantly from 2.6 to 2.9 after the training, suggesting that the training improved business and financial knowledge on average.

The baseline and exit test also included a number of questions to measure financial perception and attitudes, such as risk aversion and preference for using credit vs. own funds to finance purchases. Panel A in Table 6 illustrates that financial perceptions changed significantly from baseline to the exit test. Specifically, respondents were more risk averse after the training and less likely to prefer using credit instead of own funds. Moreover, respondents had a better understand of the importance of having a good credit history. In fact, before the training only 22 percent of entrepreneurs thought that a good credit history could help them obtain larger or better loans, while 75 percent of entrepreneurs thought so after the training.

Our follow-up survey was conducted over the phone, and therefore did not allow us to ask all of the business and financial knowledge and financial perception questions. Instead, we chose to include only the three shortest and easiest to administer business and financial knowledge questions in the follow-up survey. As shown in Table 5, these questions test whether the respondents know VAT law, whether they know what the credit registry is, and whether they understand diversification. The results in the last column of Table 4 indicate that all training participants were significantly more likely to answer these questions correctly at follow-up than

at baseline. However, entrepreneurs in the treatment group who did not participate in the training, as well as entrepreneurs in the control group also did better at answering two of these questions at follow-up than at baseline.

In Table 7, we thus turn to estimating the causal impact of the training on business and financial knowledge, using the specification described in Section V.III. Here, our measure of business and financial knowledge is the sum of correct answers to the three questions that were included in the follow-up survey, as explained in the previous paragraph. The result in Column 1 indicates that the average treatment effect of the training on business and financial knowledge is positive, but not statistically significant. We then examine whether this treatment effect differed by whether the entrepreneur had a baseline financial literacy level above or below the median. Column 2 shows that the effect of the training on business and financial knowledge is positive and statistically significant for individuals with below median financial literacy at baseline. For these individuals, the training increased the business and financial knowledge score by 0.239 compared to the control group mean of 0.897. On the other hand, for individuals with above the median financial literacy at baseline, the training appears to have had no effect on our measure of business and financial knowledge. This does not necessarily imply that individuals with above median financial literacy at baseline did not learn anything in the training since the course content was much richer than what is captured by the three business and financial knowledge questions included in our follow-up survey. In particular, the course

discussed business practices, such as account keeping and use of bank accounts, the impact on which we examine in the following section.

Finally, we test whether the training had a differential effect on individuals who had a business at baseline and who did not.¹¹ The results in Column 3 of Table 7 indicate that the effect is slightly larger for individuals who owned a business at baseline than for individuals who did not, but this difference is not statistically significant.

V.V. Evaluation Results – Effects on Business Outcomes

This section examines the effects of the training on business outcomes, including survival, practices, and performance.

Business Creation and Survival

First, we study whether the training had an effect on business survival and business creation. Table 8 includes our complete sample, i.e. all entrepreneurs who responded to the follow-up survey, independent of whether they had a business at baseline or not. We find that the training had no significant effect on whether our study participants had a business at follow-up (Column 1). This is true for individuals with below and above median financial literacy levels at

¹¹ As mentioned above, we did not stratify by this variable in the randomization, but the variable is balanced across treatment and control groups.

baseline (Column 2). It is also true for individuals who had a business at baseline and for individuals who did not have a business at baseline (Column 3), implying that the training did not increase the likelihood of starting a business among potential entrepreneurs. In fact, our data shows that only one new business started up in our sample during the study period. The last two columns of Table 8 include only individuals who had a business at baseline in order to examine whether the training promoted business survival. We do not find this to be the case. Overall, we find no evidence that the training had an effect on business entry and survival.

Business Performance

The remainder of this section analyzes the effect of the training on business outcomes for individuals who had a business at baseline and at follow-up. We start by examining the impact on business performance, as measured by one-month profits. On average, the training did not increase business profits (Column 1 of Table 9). However, the heterogeneous treatment effects analysis in Column 2 suggests that the training increased profits by KM 1,190 for individuals with above median financial literacy at baseline, compared to an average of KM 2,218 in the control group.¹² This effect corresponds to a 54 percent increase in profits. However, the effect is only statistically significant at the 15 percent level, possibly because the profit data are noisy

¹² As a robustness check, Columns 3 and 4 of Table 9 display profits regressions with data winsorized at the 1% level. The results are essentially the same as in Columns 1 and 2, implying that the results are not driven by outliers.

and because about one-third of the clients did not provide profit data, reducing the sample size to 108.

To supplement the profit data, we also asked business owners whether they had maintained, increased, or decreased monthly profits compared to one year earlier. All entrepreneurs who had a business at baseline and at follow-up answered this question. Consistent with the results in Columns 1 through 4 of Table 9, the last two columns of Table 9 show that, on average, entrepreneurs in the treatment group were not significantly more likely to have said that their profits increased over the past year, compared to the control group. However, entrepreneurs with above median financial literacy at baseline were 14.3 percent more likely than their peers in the control group to have stated that their profits increased over the past year (compared to a base of 18.9 percent in the control group). However, this effect is also only statistically significant at the 15 percent level. Overall, the evidence in Table 9 suggests that the training increased business profits for entrepreneurs with above median financial literacy at baseline by (by 54 percent), although the results are not statistically significant at conventional levels.

Business Growth

Next, we examine whether the training promoted business growth among existing firms. We consider different measures of business size, as reported in Table 10. First, similar to our question regarding profits, we asked entrepreneurs whether they had maintained, increased or

decreased sales, compared to one year ago. As with profits, we do not find a statistically significant effect of the training on whether sales increased over the past year, on average (Column 1). However, entrepreneurs with above median financial literacy at baseline were 16.7 percent more likely to say that their sales increased over the past year than their peers in the control group. This increase is equivalent to a doubling in the percentage of entrepreneurs who said that their sales increased compared to one year ago, going from about 16 to 33 percent.

Our second measure of business size is number of employees, but we do not find a statistically significant effect of the training on this variable (Columns 3 and 4). Finally, we asked respondents whether their firm expanded its installations during the past year. As shown in Columns 5 and 6, the training did not cause firms to expand their installations.

To summarize, the results in Table 10 indicate that the training increased sales for entrepreneurs with above median financial literacy at baseline, but we do not find an effect on the more slow-moving measures of firm growth, such as number of employees or expansion of business installations. Such variables tend to be sticky and it is possible that changes would be observed in the long-run.

Business Practices and Investments

In order to gain a better understanding of the channels through which the training affected business decisions, we examine the impact on a number of self-reported business practices (Table 11) and investments (Table 12). First, we find that entrepreneurs in the treatment group are 22 percent less likely than entrepreneurs in the control group to use personal accounts for their business (Column 1 of Table 11). This effect appears to be equally strong for entrepreneurs with below and above median financial literacy at baseline (Column 2). Second, we test whether the training had an effect on using credit cards for the business, but do not find this to be the case (Columns 3 and 4)¹³.

Next, Table 12 displays the effects of the training on a number of investments or changes that the entrepreneurs report to have made in their businesses during the past year. The results show that the training caused treatment group entrepreneurs to be 10.6 percent more likely to invest their savings in the business than their peers in the control group (Columns 1 and 2). We also find that treatment group entrepreneurs were 16.5 percent more likely to have implemented new production processes than control group entrepreneurs (compared to a mean of 12 percent). On the other hand, Table 12 does not show a significant effect of the training on developing new products and on starting new marketing campaigns. As a final measure, we compute RHS aggregated z-scores for all outcome measures reported in this table,

¹³ Note that we do not find any effects on keeping business accounts. However, our follow-up data shows that the proportion of businesses in both treatment and control groups that keep accounts is very high, more than 95 percent in each group.

following the methodology in Kling, Leibman, and Katz (2007). These results are reported in Columns 9 and 10, and show that the aggregate impact on business investments is large, positive, and statistically significant.

A notable finding in this analysis of business outcomes and practices is the difference in effects of the training on individuals with below and above median financial literacy at baseline. We find that both entrepreneurs with below and above median financial literacy changed some of their business practices, such as separating personal accounts from business, and making investments in their business; however, only entrepreneurs with above median financial literacy at baseline reported increases in sales and profits as a result of the training. These findings suggest that baseline knowledge and information conveyed in the training act as complements in increasing the productivity and sales of a business.

V.VI. Evaluation Results – Treatment Effects on Loan Behavior

Adding to our analysis on business outcomes, this section investigates whether the business training program changed loan behavior. In order to do so, we analyze very detailed, high frequency administrative data from Partner. Since our sample may borrow from other sources than Partner, we supplement the administrative data with a question on the firms' overall loan portfolio from the follow-up survey.

We start by examining whether the training had an effect on the number of loans taken out from Partner. As reported in Table 13, there is no statistically significant effect of the training on the probability of taking out a loan from Partner in the post-training period (Columns 1 and 2). Similarly, the training did not have an effect on the number of loans taken out (Columns 3 and 4). Finally, the treatment effect on the overall loan portfolio, that is having a business loan from any source, is also negligible (Columns 5 and 6).

Next, we examine the treatment effects on the characteristics of new loans taken out from Partner, using the sample of loans that our study participants took out after the training (80 loans). The training did not significantly change the average loan amount (Columns 1 and 2 of Table 14). However, we detect a significant treatment effect on the number of installments. Specifically, the results in Columns 3 and 4 show that treatment entrepreneurs are more likely to negotiate a larger number of installments than control group entrepreneurs. On average, the training increased the number of installments from 22.7 to 27.6 (a difference of about 5 months). The fact that treatment group entrepreneurs tend to obtain longer-term loans than control group entrepreneurs is consistent with our finding from the previous section that they tend to make new investments in their businesses (since investment loans often have longer terms than working capital loans). Finally, the treatment effect on the interest rate is negative, but it is small and not statistically significant.

In Table 15, we examine loan default and restructuring. We find that the treatment effect on loan payments being past due and loan write-off is negative, but not statistically significant (Columns 1-4). Note, however, that the average values of these variables in the control group are very low, ranging from less than 1 to 6 percent, depending on how default is defined.

The significant finding from Table 15 is on loan restructuring. We find that the treatment group is 3.4 percent more likely than the control group to refinance its loans with Partner (Column 4). This is a large effect considering that only 4 percent of the control group refinanced its loans with Partner during this period. Hence, the treatment almost doubles the likelihood of refinancing loans. This refinancing typically takes the form of a lower interest rate or a longer loan term.

Table 16 repeats the default and restructuring analysis with heterogeneous effects. Here, we find negative treatment effects on loan default, though these are only significant at the 15 percent level.

Overall, the loan analysis shows no impact on loan amounts, but significant impacts on loan restructuring for existing loans and longer terms for new loans. The results on loan default are weak, and show some negative impact for firms with low ex-ante financial literacy.

VI. Conclusion

In this paper, we rigorously test the impact of business and financial training for young entrepreneurs in Bosnia. We find that while the training program does not influence business survival, it does significantly improve business practices and investments among surviving businesses. Specifically, treatment businesses are significantly more likely to implement new production processes and to inject new investment into the business, consistent with the central theme of the training which was to encourage more capital growth. Further, we find treatment businesses are more likely to separate personal and business accounts, refinance their loans for more favorable terms, and obtain new loans with lower repayment installments.

We do not find significant average treatment effects of our training program on business performance. However, we identify significant heterogeneous effects. Specifically, entrepreneurs with relatively high ex-ante financial literacy exhibit improvements in sales due to the training program. The effects on profits are also positive for this sub-group, showing an increase in profits due to the training by 54 percent, though only statistically significant at the 15 percent level.

Our results have important policy implications for business promotion and growth. One clear message from our analysis is that lack of business knowledge is not the primary constraint to new entrepreneurship; we do not find any significant impact of our treatment on business

entry or exit. Hence, while programs aimed to promote new business start-up should certainly consider business training as part of their promotion package, this training should not be the sole intervention. Related research has identified other much stronger constraints to business development and growth, such as lack of capital (Bianchi and Bobba, 2010; De Mel, McKenzie and Woodruff, 2008; and Gertler, Martinez, and Rubio-Codina, 2006).

While business training does not impact the extensive margin, we show significant effects on existing entrepreneurs, and on specific aspects of their businesses. We find that teaching entrepreneurs the value of capital investment indeed encourages them to change business practices that allow for greater innovation, for instance by implementing new production processes and making personal investments in the business. These are encouraging results and identify business training as an important policy tool to help improve outcomes for youth-led businesses.

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Appendix 1: Content of Business and Financial Education Training Courses

Day 1

Module 1: General Concepts (1 hour)

- What is entrepreneurship? – General knowledge, facts and ideas.
- Who is an entrepreneur? – General info about who is an entrepreneur
- Advantages and disadvantages of being an entrepreneur
- What are micro, small and medium enterprises?
- How to recognize a business opportunity?
- Types of business activities:
 - Main business activity/source of income
 - Secondary business activity/source of income
- Legal business types
 - Independent businesses/sole proprietors (crafts, sales, services, etc...)
 - Limited liability companies (LLC)
 - Advantages of independent business and LLC
- To register or not? Steps for registering a business.
- Making investments in the business for it to grow

- Tax system in Bosnia and Herzegovina. What is VAT? Difference between independent businesses and mandatory VAT payers. Examples to illustrate how VAT works. VAT was introduced in Bosnia in 2008, so many are still unfamiliar with how it works.

Module 2: Business Plan (2 hours)

- What is a business plan?
- Importance of business planning and a business plan
- Steps in developing a business plan
 - Analysis of current situation:
 - Internal organization
 - SWOT analysis
 - Team exercise to practice SWOT analysis for business type of their choice
 - Defining business goals
 - Importance of business investment
 - Basics of marketing and market research
 - Basics of financial planning, projecting financial performance/income

Day 2

Module 3: Marketing (1 hour)

- What is marketing and why it is important for business?
- What is market? Supply and demand. Market research (size, potential, segmentation, etc. – all in the context of the business plan)
- Customer behavior? What is important to know about our buyers? How to communicate through marketing?
- Marketing mix 4P
 1. Product. Brand. Packaging.
 2. Price. Sales strategies. Discounts, etc.
 3. Promotion
 4. Place (distribution)

Module 4: Understanding and Managing the Firm's Finances (1 hr 30 min)

- What are finances? Basics of financial analysis as related to a business plan.
- Costs. What are costs? Types of costs. Managing and cost planning.
- Income and expenses and related planning.
- Keeping household finances separate from business income and expenses
- Basic financial reports. Balance sheet and income sheet.
- What is a cash flow? How to analyze cash flow for the needs of a business plan?

Module 5: Business Growth (30 min)

- What are investments and why are they important?
- Growth planning. What is growth and what is business development? Internal and external growth.
- How to grow healthy?
- Financing a growing venture. Internal and external sources. Personal investments and Partnerships
- Final thoughts (for those doing only 5 modules)

Day 3

Module 6: The Importance of Financial Literacy in times of Financial Crisis (3 hours)

- Financing sources (pro's and cons)
 - Internal financing
 - Loans & how to get them
 - Purchase of an investment or appreciable asset via debt as leverage
 - Upsides – greater returns, availability of funds, etc...
 - Downsides – risk, loss of investment, loan balance payment, etc...
 - Banks
 - Microcredit organizations

- Family/Friends
- Government sources
 - Funds available at Municipality, Canton and Entity level
- Non-governmental sources
- International & EU acceptance funds
- Importance of financial responsibility
 - CRK (Central Credit Registry)
 - What it is and how it works
 - Credit consequences for failure to pay on time
 - Managing your credits & loans
- Interest rates
 - Description of simple and compound interest
 - Compare bank interest rates and show matrix of potential returns
 - Basic formula to calculate simple & compound interest
 - Rule of 70 or 72 (doubling shortcut)
 - Common types of interest charged
 - Annual vs. effective interest rate
 - Credit cards and interest
 - Interest on credit
 - Interest on cash

- Financial help resources
- Diversification
 - Why diversity
 - Real life example i.e. selling umbrellas and sunscreen
 - Diversification effects & return expectations
 - Smaller returns but smaller losses
 - Reduction in fluctuation of income
 - Concept of correlation
 - Income from correlated vs. uncorrelated assets
 - Example – i.e. investing in crops whose yield depends on different set of preconditions
 - Investing money in stock market vs. savings account deposits
 - Diversification strategies
 - Spread the investment portfolio through different vehicles – in this case different sources of income
 - By risk
 - By industry or geography
- Short & Long term
 - Definition of short and long term investing in real assets & ventures
 - Importance of seeing the entire picture

- Do you have necessary information to make sound decisions
 - Compare your options on their true merits
- Why long term is more predictive of future performance
- Understanding periodic fluctuations in performance
- Defining investment goals
- The Devil's in the Details
 - Legal language
 - Penalty clauses with loans
 - Hidden fees
 - Marketing traps
- Final thoughts
 - Managing yours and expectations of others
 - What can you fall back on?

Appendix 2: Survey Questions Measuring Financial Literacy and Business Knowledge

1. If you have a choice to invest 1,000 KM with one of three friends with whom would you invest? Note, there is a possibility your investment will fail and you would lose your invested money.

- 1 Friend with an investment with highest return in the past month
- 2 Friend with an investment with the highest return in the previous year
- 3 Friend with investment with low return and low risk
- 4 Invest a portion with all of them
- 997 Don't know

2. Suppose you owe 1,000 KM on a loan from Partner and the interest rate you are charged is 20% per year compounded annually. Compounding means that interest for the year is calculated at the end of each year based on the total outstanding amount, inclusive of principal and interest. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double? *Read the options and mark the box in front of the indicated answer.*

1	<input type="checkbox"/>	2 years;
2	<input type="checkbox"/>	less than 5 years;

3		5 to 10 years;
4		more than 10 years;
5		Do not know.
6		Refuse to answer.

3. Suppose you owe 3,000 KM on a loan from Partner. You pay a minimum payment of \$30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your debt if you made no additional new charges? *Read the options and mark the box in front of the indicated answer.*

1		Less than 5 year;
2		Between 5 and 10 years;
3		Between 10 and 15 years;
4		Never, you will continue to be in debt;
5		Do not know.
6		Refuse to answer.

4. All individuals & legal subjects making less than 50,000 in taxable income are obligated to pay VAT? *Listen and mark the indicated response.*

1 Yes

2 No

997 Do not know

5. Do you know what the Central Credit Registry is? *Listen and mark the indicated response.*

1 Yes

2 No

6. In difficult times businesses sometimes seek to temporarily lower prices in hope of attracting new customers. They plan to increase prices at a later day when market conditions improve. If price of a product is 100 KM and is lowered by 30% how many percent does the product price have to be increased by to return to the original 100 KM price. *Read the options and mark the indicated response.*

1		By 30%
2		Less than 30%
3		More than 30%
4		Do not know

7. Suppose you are a farmer facing unpredictable market conditions where prices are fluctuating. In order to best protect your income stream, you should: *Read the options and mark the indicated response.*

1 Specialize in one crop

2 Grow multiple crops for which historically prices have moved in the same direction

3 Grow multiple crops for which historically prices have moved in different directions

997 Do not know

8. Suppose you operate a farm and are interested in purchasing a crop processing machine.

The machine costs 1,000KM. You do not have the resources to pay for the machine in cash

so the seller offers you two financing options: a) Pay 12 fixed monthly installments of

100KM each; b) Borrow \$1,000KM from the seller for a 12 month loan at a 15% annual

interest rate. Which is the more advantageous offer? *Read the options and mark the*

indicated response.

1 Option (a)

3 They are the same

2 Option (b)

997 Do not know

Table 1: Dependent Variable: Interested in Participating in Training Program?

This table reports the results from OLS regressions estimating which borrower and loan characteristics predict whether the client was interested in the business training course. These characteristics all come from Partner's client database. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1)	(2)	(3)
Female	-0.127*** (0.025)	-0.125*** (0.025)	-0.131*** (0.025)
Residence Status == Domiciled	0.012 (0.037)	0.013 (0.037)	-0.025 (0.041)
Rural	-0.027 (0.027)	-0.021 (0.027)	-0.013 (0.030)
Ethnicity == Bosniak	0.052 (0.063)	0.049 (0.063)	0.061 (0.064)
Age	-0.047 (0.041)	-0.046 (0.041)	-0.053 (0.041)
Age Squared	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Sector == Farming & Livestock	-0.010 (0.034)	-0.005 (0.035)	0.005 (0.035)
Sector == Services	0.011 (0.029)	0.013 (0.029)	0.021 (0.029)
Loan Amount Outstanding		-0.000 (0.000)	-0.000 (0.000)
Dummy Late Days of Payment in Current Loan ≥ 1		0.053** (0.024)	0.057** (0.024)
Constant	1.067* (0.553)	1.011* (0.554)	1.646*** (0.560)
Branch FEs	No	No	Yes
R-squared	0.015	0.016	0.019
N	1783	1783	1783

Table 2: Baseline Characteristics

This table reports summary statistics for the business loan clients included in an experiment on the impact of a comprehensive business and financial literacy program. Panel A describes the full sample consisting of 445 clients. Panel B describes the subsample of clients who had a business at baseline, consisting of 267 clients. The last column provides p -values for a difference-in-means test between the treatment and control groups. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Total	Treatment	N	Control	N	p -value
Panel A. Full Sample						
<i>Demographics</i>						
Age	445	28.138	297	28.041	148	.802
Rural	445	.714	297	.696	148	.697
Ethnicity == Bosniak	445	.97	297	.959	148	.574
Residence Status == Domiciled	445	.889	297	.851	148	.258
Completed Secondary School	444	.852	297	.803	147	.19
Risk Averse	445	.68	297	.709	148	.53
<i>Stratification Variables</i>						
Female	445	.35	297	.351	148	.98
Baseline Fin Lit Score	445	2.673	297	2.608	148	.63
Missing Profit in March 2009	445	.202	297	.209	148	.855
Sector == Farming & Livestock	445	.266	297	.27	148	.924
Sector == Services	445	.461	297	.466	148	.922
Panel B. Had a Business at Baseline						
<i>Business Characteristics</i>						
No. of Employees (incl. owner)	260	2.28	168	2.054	92	.562
Net Profits in March 2009 (KM)	229	1365.238	147	905.122	82	.302
Net Profits in March 2009 (KM), Winsorized Top and Bottom 1%	229	841.429	147	728.293	82	.381
Business Age (Months)	253	58.267	165	59.739	88	.823
Has Any Business Assets	267	.936	172	.916	95	.539
Registered	267	.203	172	.295	95	.093*
Has Checking/Savings Account For Business	267	.483	172	.463	95	.762
Has Credit Line	267	.907	172	.916	95	.81
Has Credit Card	267	.07	172	.063	95	.837
Extends Trade Credit	255	.79	167	.807	88	.758
Accepts Trade Credit	249	.627	161	.67	88	.499
Keeps Business Accounts	267	.494	172	.6	95	.098*
Has Participated In Other Financial Literacy Course	267	.087	172	.053	95	.306
<i>Stratification Variables</i>						
Female	267	.314	172	.337	95	.703
Baseline Fin Lit Score	267	2.692	172	2.663	95	.871
Missing Profit in March 2009	267	.163	172	.158	95	.917
Sector == Farming & Livestock	267	.198	172	.253	95	.299
Sector == Services	267	.541	172	.463	95	.226

Table 3: Predictors of Use of Financial Services

This table reports the results of OLS regressions of the determinants of formal financial services usage and business practices. The first column for each dependent variable includes the full sample and the second column focuses exclusively on individuals who had a business at baseline. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Has Bank Account (Check- ing or Savings)	(2) Has Bank Account (Check- ing or Savings)	(3) Has Credit Line	(4) Has Credit Line	(5) Has Credit Card	(6) Has Credit Card	(7) Accepts Trade Credit	(8) Accepts Trade Credit	(9) Extends Trade Credit	(10) Extends Trade Credit	(11) Keeps Business Accounts	(12) Keeps Business Accounts
Baseline Financial Literacy Score	0.057*** (0.017)	0.042** (0.021)	0.019* (0.010)	0.019+ (0.012)	0.000 (0.009)	0.008 (0.014)	0.034* (0.018)	0.033+ (0.022)	0.031** (0.016)	0.037* (0.021)	0.041** (0.018)	0.032+ (0.022)
Female	-0.111** (0.049)	-0.149** (0.062)	0.054* (0.029)	0.062* (0.035)	-0.045** (0.019)	-0.033 (0.030)	-0.107** (0.054)	-0.132* (0.071)	-0.078* (0.047)	-0.039 (0.064)	-0.037 (0.052)	-0.020 (0.066)
Residence Status ==	0.001 (0.068)	0.021 (0.075)	0.165*** (0.058)	0.152** (0.074)	-0.042 (0.042)	-0.000 (0.051)	0.143* (0.074)	0.086 (0.098)	0.174** (0.071)	0.150+ (0.091)	0.047 (0.071)	0.079 (0.094)
Domiciled Rural	-0.159*** (0.051)	-0.073 (0.062)	0.065* (0.035)	0.010 (0.045)	-0.032 (0.028)	-0.041 (0.041)	-0.075 (0.054)	-0.052 (0.067)	0.027 (0.046)	0.002 (0.059)	-0.070 (0.053)	-0.006 (0.062)
Ethnicity == Bosniak	-0.001 (0.133)	-0.194+ (0.125)	-0.051 (0.074)	-0.018 (0.121)	-0.140 (0.106)	-0.252+ (0.166)	0.045 (0.146)	0.026 (0.161)	-0.093 (0.100)	-0.117 (0.109)	-0.047 (0.133)	-0.040 (0.134)
Age	0.103 (0.086)	0.072 (0.118)	0.033 (0.053)	0.047 (0.081)	0.045* (0.025)	0.010 (0.042)	0.043 (0.089)	-0.131 (0.112)	0.037 (0.076)	-0.045 (0.097)	-0.036 (0.085)	-0.090 (0.110)
Age ²	-0.002 (0.086)	-0.001 (0.118)	-0.001 (0.053)	-0.001 (0.081)	-0.001* (0.025)	-0.000 (0.042)	-0.001 (0.089)	0.003 (0.112)	-0.001 (0.076)	0.001 (0.097)	0.001 (0.085)	0.002 (0.110)
Completed Secondary School	0.182*** (0.058)	0.136* (0.070)	-0.015 (0.038)	-0.053 (0.047)	0.033+ (0.021)	0.008 (0.034)	-0.054 (0.069)	-0.103 (0.088)	-0.085+ (0.058)	-0.067 (0.082)	0.095 (0.068)	0.009 (0.090)
Has Participated in Other Business Training	0.341*** (0.084)	0.341*** (0.084)	0.341*** (0.084)	0.341*** (0.084)	0.341*** (0.084)	0.115 (0.093)	0.115 (0.093)	0.144 (0.103)	0.144 (0.103)	-0.087 (0.105)	0.108 (0.098)	0.108 (0.098)
Risk Averse	-0.001 (0.062)	-0.001 (0.062)	-0.001 (0.062)	-0.001 (0.062)	-0.001 (0.062)	-0.045 (0.036)	-0.045 (0.036)	-0.101* (0.061)	-0.101* (0.061)	0.057 (0.058)	-0.116** (0.058)	-0.116** (0.058)
Registered	0.369*** (0.063)	0.369*** (0.063)	0.369*** (0.063)	0.369*** (0.063)	0.369*** (0.063)	0.021 (0.046)	0.021 (0.046)	0.223*** (0.070)	0.223*** (0.070)	0.085 (0.061)	0.485*** (0.056)	0.485*** (0.056)
Sector == Farming & Livestock	-0.077 (0.088)	-0.077 (0.088)	-0.077 (0.088)	-0.077 (0.088)	-0.077 (0.088)	0.008 (0.044)	0.008 (0.044)	0.178* (0.096)	0.178* (0.096)	0.120 (0.091)	0.064 (0.093)	0.064 (0.093)
Sector == Services	-0.083 (0.071)	-0.083 (0.071)	-0.083 (0.071)	-0.083 (0.071)	-0.083 (0.071)	0.017 (0.043)	0.017 (0.043)	0.178** (0.077)	0.178** (0.077)	0.143** (0.070)	-0.110+ (0.068)	-0.110+ (0.068)
Has Any Business Assets	0.157+ (0.096)	0.157+ (0.096)	0.157+ (0.096)	0.157+ (0.096)	0.157+ (0.096)	0.033 (0.025)	0.033 (0.025)	-0.137 (0.150)	-0.137 (0.150)	-0.099 (0.137)	0.147 (0.126)	0.147 (0.126)
Constant	-1.038 (1.168)	-0.565 (1.614)	0.215 (0.727)	0.016 (1.132)	-0.362 (0.331)	0.153 (0.572)	-0.282 (1.216)	2.282+ (1.572)	0.145 (1.051)	1.307 (1.356)	0.677 (1.155)	1.533 (1.513)
R-squared	0.090	0.253	0.047	0.024	0.022	0.038	0.022	0.068	0.023	0.008	0.017	0.201
N	444	267	444	267	444	267	407	249	414	255	444	267
Baseline Mean of Dep Var	0.446	0.476	0.905	0.910	0.059	0.067	0.582	0.643	0.778	0.796	0.457	0.532

Table 4: Predictors of Take Up

This table reports the results of OLS regressions of the determinants of take up of the business training program. The first column for each dependent variable includes the full sample of treated individuals and the second column focuses on the subsample of treated individuals who had a business at baseline. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Attended training	(2) Attended training
Baseline Financial Literacy Score	-0.004 (0.017)	-0.011 (0.024)
Female	0.044 (0.054)	0.096 (0.080)
Residence Status == Domiciled	-0.007 (0.078)	0.065 (0.106)
Rural	-0.144** (0.059)	-0.115+ (0.077)
Ethnicity == Bosniak	-0.284* (0.168)	-0.464*** (0.164)
Age	-0.096 (0.093)	-0.100 (0.159)
Age ²	0.002 (0.002)	0.002 (0.003)
Completed Secondary School	-0.004 (0.071)	-0.061 (0.105)
Has Participated in Other Business Training		0.045 (0.120)
Risk Averse		-0.036 (0.067)
Registered		0.114 (0.092)
Sector == Farming & Livestock		-0.064 (0.110)
Sector == Services		-0.019 (0.092)
Has Any Business Assets		0.137 (0.136)
Constant	1.938+ (1.276)	2.247 (2.182)
R-squared	0.025	0.046
N	297	172
Baseline Mean of Dep Var	0.219	0.227

Table 5: Business and Financial Knowledge

This table reports business and financial knowledge at baseline, exit test, and follow up among the sample of follow up respondents. The exit test was administered after the training, and is thus available only for respondents who attended the training. The p -values reported in column 6 report the statistical significance of a paired mean-comparison test between the exit test and the baseline. The p -values reported in column 8 report the statistical significance of a paired mean-comparison test between the follow up and the baseline. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level.

	N	Baseline	Exit Test	Follow Up	Exit Test – Baseline	p -value	Follow Up – Baseline	p -value
Panel A. Treatment								
<i>Invited to Training</i>								
Q1. Knows past returns doesn't predict future returns	264	.375						
Q2. Knows compound interest	264	.538						
Q3. Knows making min. payments doesn't eliminate debt	264	.057						
Q4. Knows VAT law	264	.36		.402			.042	.25
Q5. Knows what the credit registry is	264	.193		.356			.163	0**
Q6. Understands percentage calculations	264	.519						
Q7. Understands diversification	264	.17		.458			.288	0**
Q8. Can compare financing options	264	.455						
Total Score (all 8 questions)	264	2.667						
Total Score (Q4 and Q5)	264	.553		.758			.205	0**
<i>Attended Training</i>								
Q1. Knows past returns doesn't predict future returns	112	.393	.33		-.062	.252		
Q2. Knows compound interest	112	.527	.33		-.196	.002**		
Q3. Knows making min. payments doesn't eliminate debt	112	.045	.063		.018	.482		
Q4. Knows VAT law	112	.339	.625	.464	.286	0**	.125	.022**
Q5. Knows what the credit registry is	112	.241	.571	.429	.33	0**	.188	0**
Q6. Understands percentage calculations	112	.527	.411		-.116	.085*		
Q7. Understands diversification	112	.17	.304	.446	.134	.008**	.277	0**
Q8. Can compare financing options	112	.366	.277		-.089	.15		
Total Score (all 8 questions)	112	2.607	2.911		.304	.083*	.313	0**
Total Score (Q4 and Q5)	112	.58	1.196	.893	.616	0**		
Panel B. Control								
Q1. Knows past returns doesn't predict future returns	132	.348						
Q2. Knows compound interest	132	.53						
Q3. Knows making min. payments doesn't eliminate debt	132	.045						
Q4. Knows VAT law	132	.371		.348			-.023	.614
Q5. Knows what the credit registry is	132	.212		.326			.114	.005**
Q6. Understands percentage calculations	132	.538						
Q7. Understands diversification	132	.182		.455			.273	0**
Q8. Can compare financing options	132	.439						
Total Score (all 8 questions)	132	2.667		.674			.091	.146
Total Score (Q4 and Q5)	132	.583						

Table 6: Financial Perception

This table reports financial perception at baseline and exit test among the sample of follow up respondents. The exit test was administered after the training, and is thus available only for respondents who attended the training. The p -values reported in the last column report the statistical significance of a paired mean-comparison test between the exit test and the baseline. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level.

	N	Baseline	Exit Test	Exit Test – Baseline	p -value
Panel A. Treatment					
<i>Invited to Training</i>					
Thinks Financial are Skills Important in Business	264	.216			
Risk Averse (Coin Toss)	264	.686			
Strongly Agree/Agree w/: Not sure risky investment even if big possible profit	264	.451			
Prefers to finance vehicle via credit	264	.542			
Thinks good credit history can help obtain larger/better loans	264	.174			
<i>Attended Training</i>					
Thinks Financial are Skills Important in Business	112	.205	.563	.357	0**
Risk Averse (Coin Toss)	112	.679	.804	.125	.01**
Strongly Agree/Agree w/: Not sure risky investment even if big possible profit	112	.384	.42	.036	.558
Prefers to finance vehicle via credit	112	.607	.464	-.143	.009**
Thinks good credit history can help obtain larger/better loans	112	.223	.75	.527	0**
Panel B. Control					
Thinks Financial are Skills Important in Business	132	.235			
Risk Averse (Coin Toss)	132	.735			
Strongly Agree/Agree w/: Not sure risky investment even if big possible profit	132	.417			
Prefers to finance vehicle via credit	132	.538			
Thinks good credit history can help obtain larger/better loans	132	.212			

Table 7: Impact on Business and Financial Knowledge

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. The questions included in the dependent variable are the following: knows VAT law (Q53), knows what the credit registry is (Q55), diversification (Q59). The specification in column 1 is given by $Y_{1i} = Treatment_i + Strata_i + Y_{0i} + Wave2_i + \varepsilon_i$ where i indexes individuals, Y_{1i} refers to values at follow up, and Y_{0i} refers to values at baseline. *Wave2* is a dummy for the second wave of the follow up survey. Strata are defined by gender, financial literacy score at baseline ≥ 3 sector, and missing profits. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Q53, Q59	(2) Q53, Q59	(3) Q53, Q55, Q59
Treatment	-0.002 (0.104)	0.239* (0.131)	0.045 (0.165)
Treatment * Above Median Baseline Financial Literacy		-0.248 (0.181)	
Has Business at Baseline			0.105 (0.168)
Treatment * Has Business at Baseline			0.092 (0.205)
Strata Dummies	Yes	Yes	Yes
Control for Baseline Outcome	Yes	Yes	Yes
Wave 2 Dummy	Yes	Yes	Yes
R-squared	0.188	0.183	0.186
N	396	396	396
Mean of Dep Var in Control Group	1.129	1.129	1.129
Mean of Dep Var for [Above Median Baseline Fin Lit/Has Business at Baseline] in Control Group		1.311	1.189
Mean of Dep Var for [Below Median Baseline Fin Lit/Did Not Have Business at Baseline] in Control Group		0.897	0.973

Table 8: Impact on Business Survival and Business Entry

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. The specification in columns 1 and 4 is given by $Y_i = Treatment_i + Strata_i + Wave2_i + \varepsilon_i$ where i indexes individuals. Columns 2, 3, and 5 add interaction terms. *Wave2* is a dummy for the second wave of the follow up survey. *Strata* are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Has Business at Follow up	(2) Has Business at Follow up	(3) Has Business at Follow up	(4) Business Sur- vived	(5) Business Sur- vived
Treatment	-0.015 (0.053)	0.021 (0.079)	0.030 (0.027)	0.021 (0.062)	0.063 (0.099)
Treatment * Above Median Baseline Financial Literacy		-0.063 (0.107)			-0.074 (0.128)
Has Business at Baseline			0.645*** (0.055)		
Treatment * Has Business at Baseline			-0.004 (0.068)		
Constant	-0.001 (0.045)	-0.019 (0.057)	-0.270 (0.279)	0.489 (0.364)	0.506 (0.378)
Strata Dummies	Yes	Yes	Yes	Yes	Yes
Wave 2 Dummy	Yes	Yes	Yes	Yes	Yes
R-squared	0.089	0.089	0.409	0.115	0.117
N	396	396	396	267	267
Mean of Dep Var in Control Group	0.439	0.439	0.439	0.611	0.611
Mean of Dep Var for [Above Median BL Fin Lit/Has Business at BL] in Control Group		0.500	0.611		0.500
Mean of Dep Var for [Below Median BL Fin Lit/Did Not Have Business at BL] in Control Group		0.362	0.000		0.362

Table 9: Impact on Business Performance

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. The specification in columns 1, 3, and 5 is given by $Y_{1i} = Treatment_i + Strata_i + Wave2_i + Y_{0i} + MissingY_{0i} + \varepsilon_i$, and columns 2, 4, and 6 add interaction terms. i indexes individuals, Y_{1i} refers to values at follow up. Y_{0i} refers to values at baseline, and missing values are replaced with zero. $MissingY_{0i}$ is a dummy equal to 1 if Y_{0i} is missing and was replaced with zero. $Wave2$ is a dummy for the second wave of the follow up survey. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Net Profits May 2010	(2) Net Profits May 2010	(3) Net Profits May 2010 winsorized top and bottom 1%	(4) Net Profits May 2010 winsorized top and bottom 1%	(5) Increased profits	(6) Increased profits
Treatment	-65.828 (837.310)	-1485.965 (1149.150) 2675.040 ⁺	-163.190 (780.597)	-1500.938 (1149.533) 2519.111 ⁺	0.051 (0.080)	-0.102 (0.129) 0.245 ⁺
Constant	2377.752** (1155.323)	(1635.066) 2677.872** (1156.483)	2331.718** (1094.439)	(1556.320) 2622.510** (1080.078)	0.103 (0.193)	(0.162) 0.168 (0.192)
Strata Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave 2 Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Control for BL Outcome and Dummy for Missing BL Outcome	Yes	Yes	Yes	Yes	No	No
R-squared	0.179	0.202	0.189	0.212	0.084	0.099
N	108	108	108	108	170	170
Mean of Dep Var in Control Group	2642.162	2642.162	2642.162	2642.162	0.224	0.224
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group		2217.500		2217.500		0.189
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group		3141.765		3141.765		0.286

Table 10: Impact on Business Growth

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. The specification in columns 1, 3, and 5 is given by $Y_{1i} = Treatment_i + Strata_i + Wave2_i + Y_{0i} + MissingY_{0i} + \varepsilon_i$, and columns 2, 4, and 6 add interaction terms. i indexes individuals, Y_{1i} refers to values at follow up. Y_{0i} refers to values at baseline, and missing values are replaced with zero. $MissingY_{0i}$ is a dummy equal to 1 if Y_{0i} is missing and was replaced with zero. $Wave2$ is a dummy for the second wave of the follow up survey. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. Missing baseline outcome values have been replaced with zero, and regressions that control for the baseline outcome include a dummy for missing baseline outcome. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Increased sales	(2) Increased sales	(3) Log num of employees	(4) Log num of employees	(5) Expanded installations in past year	(6) Expanded installations in past year
Treatment	0.062 (0.079)	-0.115 (0.127)	-0.011 (0.120)	-0.116 (0.239)	-0.024 (0.074)	-0.002 (0.113)
Treatment * Above Median Baseline Financial Literacy		0.282* (0.158)		0.169 (0.274)		-0.035 (0.148)
Constant	0.095 (0.194)	0.170 (0.191)	0.027 (0.301)	0.075 (0.327)	-0.018 (0.213)	-0.027 (0.221)
Strata Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave 2 Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Control for Baseline Outcome and Dummy for Missing Baseline Outcome	No	No	Yes	Yes	Yes	Yes
R-squared	0.067	0.087	0.306	0.308	0.233	0.234
N	169	169	170	170	170	170
Mean of Dep Var in Control Group	0.207	0.207	0.681	0.681	0.276	0.276
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group		0.162		0.657		0.324
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group		0.286		0.724		0.190

Table 11: Impact on Business Practices

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. The specification in columns 1 and 3 is given by $Y_{1i} = Treatment_i + Strata_i + Wave2_i + Y_{0i} + MissingY_{0i} + \varepsilon_i$, and columns 2 and 4 add interaction terms. i indexes individuals, Y_{1i} refers to values at follow up. Y_{0i} refers to values at baseline, and missing values are replaced with zero. $MissingY_{0i}$ is a dummy equal to 1 if Y_{0i} is missing and was replaced with zero. $Wave2$ is a dummy for the second wave of the follow up survey. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. Missing baseline outcome values have been replaced with zero, and regressions that control for the baseline outcome include a dummy for missing baseline outcome. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Uses personal account business	(2) Uses personal for account business	(3) Has credit card for business	(4) Has credit card for business
Treatment	-0.218*** (0.079)	-0.278** (0.137)	-0.000 (0.063)	-0.022 (0.095)
Treatment * Above Median Baseline Financial Literacy		0.095 (0.166)		0.034 (0.129)
Constant	0.517** (0.217)	0.542** (0.219)	0.056 (0.059)	0.065 (0.067)
Strata Dummies	Yes	Yes	Yes	Yes
Wave 2 Dummy	Yes	Yes	Yes	Yes
Control for Baseline Outcome and Dummy for Missing Baseline Outcome	Yes	Yes	Yes	Yes
R-squared	0.287	0.289	0.146	0.147
N	169	169	170	170
Mean of Dep Var in Control Group	0.655	0.655	0.172	0.172
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group		0.676		0.189
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group		0.619		0.143

Table 12: Impact on Business Investments

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. The specification in columns 1, 3, 5, and 7 is given by $Y_{1i} = Treatment_i + Strata_i + Wave2_i + Y_{0i} + MissingY_{0i} + \epsilon_i$, and columns 2, 4, 6, and 8 add interaction terms. i indexes individuals, Y_{1i} refers to values at follow up, Y_{0i} refers to values at baseline, and missing values are replaced with zero. $MissingY_{0i}$ is a dummy equal to 1 if Y_{0i} is missing and was replaced with zero. $Wave2$ is a dummy for the second wave of the follow up survey. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. Missing baseline outcome values have been replaced with zero, and regressions that control for the baseline outcome include a dummy for missing baseline outcome. Robust standard errors. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Invests sav- ings in busi- ness	Invests sav- ings in busi- ness	Developed new prod- ucts in past year	Developed new prod- ucts in past year	Implemented new pro- duction processes in past year	Implemented new pro- duction processes in past year	Started new marketing campaign in past year	Started new marketing campaign in past year	Average score	Average score
Treatment	0.106** (0.044)	0.087* (0.047)	0.067 (0.064)	0.091 (0.093)	0.165*** (0.061)	0.156** (0.077)	0.002 (0.059)	-0.068 (0.093)	0.398*** (0.119)	0.321* (0.176)
Treatment * Above Median Baseline Fin Lit		0.029 (0.079)		-0.039 (0.127)		0.014 (0.115)		0.110 (0.118)		0.122 (0.235)
Constant	-0.053 (0.048)	-0.046 (0.046)	0.210 (0.220)	0.199 (0.232)	-0.202** (0.095)	-0.198** (0.100)	0.230 (0.209)	0.260 (0.209)	-0.144 (0.359)	-0.112 (0.358)
Strata Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave 2 Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control for Baseline Outcome and Dummy for Missing Baseline Outcome	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
R-squared	0.190	0.190	0.243	0.244	0.227	0.227	0.131	0.137	0.242	0.243
N	169	169	170	170	170	170	170	170	170	170
Mean of Dep Var in Control Group	0.017	0.017	0.155	0.155	0.121	0.121	0.121	0.121	0.000	0.000
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group		0.027		0.189		0.162		0.108		0.064
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group		0.000		0.095		0.048		0.143		-0.113

Table 13: Loan Outcomes

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. Data in columns 1 to 4 come from Partner's administrative loan data, data in columns 5 to 6 come from the follow up survey. *Wave2* is a dummy for the second wave of the follow up survey. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. OLS regressions at the client level, with robust standard errors. Took out **loan ex post** is a dummy equal to one if a client ever took out a loan after December 2009. Number of **loans taken out ex post** is equal to zero if the client never took out a loan ex post. The sample in the last two columns consists of respondents who had a business at both baseline and follow up. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Took out loan ex-post	(2) Took out loan ex-post	(3) Num of loans taken out ex post	(4) Num of loans taken out ex post	(5) Currently has loan for business	(6) Currently has loan for business
Treatment	0.002 (0.037)	-0.006 (0.055)	0.019 (0.040)	0.016 (0.059)	-0.045 (0.074)	-0.118 (0.120)
Treatment * Above Median Baseline Financial Literacy		0.014 (0.075)		0.004 (0.080)		0.118 (0.152)
Constant	0.159** (0.076)	0.164** (0.077)	0.187* (0.099)	0.189* (0.098)	0.565** (0.261)	0.581** (0.254)
Strata Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave 2 Dummy	No	No	No	No	Yes	Yes
Control for Baseline Outcome	No	No	No	No	Yes	Yes
R-squared	0.053	0.054	0.051	0.051	0.188	0.191
N	445	445	445	445	170	170
Mean of Dep Var in Control Group	0.169	0.169	0.169	0.169	0.759	0.759
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group		0.171		0.171		0.757
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group		0.167		0.167		0.762

Table 14: Partner Loan Data

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. Data come from Partner's administrative loan data. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. OLS regressions at the client-loan level. The sample in these regressions consists only of new loans that were disbursed starting January 2010. Robust standard errors clustered at the client level. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1) Loan amount	(2) Loan amount	(3) Num of in- stallments	(4) Num of in- stallments	(5) Nominal int rate	(6) Nominal int rate
Treatment	0.429 (849.055)	603.030 (1421.171)	4.939* (2.865)	7.866*** (2.918)	-0.117 (0.645)	0.205 (0.581)
Treatment * Above Median Baseline Financial Literacy		-1006.045 (1760.976)		-4.886 (5.268)		-0.537 (1.165)
Loan amount			0.002*** (0.001)	0.002*** (0.001)	-0.000*** (0.000)	-0.000*** (0.000)
Constant	5499.571*** (1549.940)	4896.970** (1931.229)	7.394 (6.142)	4.627 (5.895)	22.705*** (1.370)	22.400*** (1.329)
Strata Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.200	0.205	0.537	0.544	0.452	0.453
N	80	80	80	80	80	80
Mean of Dep Var in Control Group	4392.000	4392.000	22.680	22.680	20.461	20.461
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group		4500.000		23.429		21.383
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group		4254.545		21.727		19.288

Table 15: Partner Loan Data

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. Data come from Partner's administrative loan data. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. OLS regressions at the client-loan-month level. The sample in these regressions consists only of loans that are active starting January 2010. Robust standard errors clustered at the individual level. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1)	(2)	(3)	(4)	(5)
	More than 30 days past due	More than 60 days past due	Num of days past due	Given up or written off	Refinanced or restructured
Treatment	-0.019 (0.018)	-0.008 (0.013)	-1.993 (1.838)	-0.002 (0.003)	0.034* (0.020)
Loan amount	-0.000**	-0.000**	-0.000***	-0.000***	0.000
Constant	(0.000) 0.064** (0.030)	(0.000) 0.050** (0.022)	(0.000) 7.819** (3.274)	(0.000) 0.005 (0.005)	(0.000) 0.034 (0.055)
Strata Dummies	Yes	Yes	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes	Yes	Yes
R-squared	0.041	0.039	0.050	0.015	0.090
N	3901	3901	3901	3901	3901
Mean of Dep Var in Control Group	0.060	0.035	6.285	0.006	0.039

Table 16: Partner Loan Data

This table reports results from a randomized experiment measuring the impact of a comprehensive business and financial literacy program. Data come from Partner's administrative loan data. Strata are defined by gender, financial literacy score at baseline ≥ 3 , sector, and missing profits. OLS regressions at the client-loan-month level. The sample in these regressions consists only of loans that are active starting January 2010. Robust standard errors clustered at the individual level. *** indicates statistical significance at the 1% level, ** at the 5% level, * at the 10% level, and + at the 15% level.

	(1)	(2)	(3)	(4)	(5)
	More than 30 days past due	More than 60 days past due	Num of days past due	Given up or written off	Refinanced or restructured
Treatment	-0.048 ⁺ (0.032)	-0.028 (0.022)	-5.095 ⁺ (3.293)	-0.007 ⁺ (0.004)	0.015 (0.032)
Treatment * Above Median Baseline Financial Literacy	0.052 (0.037)	0.036 (0.026)	5.589 ⁺ (3.837)	0.009* (0.005)	0.034 (0.040)
Loan amount	-0.000**	-0.000**	-0.000**	-0.000***	0.000
Constant	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Strata Dummies	0.082**	0.062**	9.757**	0.009 ⁺	0.046
Month Dummies	(0.035)	(0.026)	(3.885)	(0.006)	(0.056)
	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes
R-squared	0.044	0.042	0.054	0.015	0.091
N	3901	3901	3901	3901	3901
Mean of Dep Var in Control Group	0.060	0.035	6.285	0.006	0.039
Mean of Dep Var for Above Median Baseline Financial Literacy in Control Group	0.038	0.021	3.989	0.003	0.028
Mean of Dep Var for Below Median Baseline Financial Literacy in Control Group	0.086	0.052	9.035	0.010	0.052