Money or Management? A Field Experiment on Constraints to Entrepreneurship in Rural Pakistan*

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Abstract

This paper identifies the relative importance of human and physical capital for entrepreneurship. Microfinance clients were offered business training and a loan lottery of up to seven times the average loan size. Business training increased business knowledge, reduced business failure, improved business practices and increased household expenditures by $82 per year. It also improved financial and labor allocation decisions. These effects are concentrated among male clients, however. Access to larger loans, in contrast, had little effect, perhaps because current loan sizes already meet the demand of most clients. Despite these positive impacts, business training was not cost-effective for the lender.

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1. Introduction

Self-employment accounts for as much as 70 percent of employment in developing countries, especially among low income households. The majority of self-employed individuals, however, operate enterprises that are typically small, without paid employees and often poorly run (Gindling and Newhouse, 2014; De Mel et al. 2008; Banerjee and Duflo, 2008). As a result, estimates of the size of the informal economy as a percentage of "official" GDP are smaller, at around 33 percent (Schneider et al. 2010). This suggests that policies designed to alleviate barriers to productive self-employment could raise standards of living significantly, particularly in contexts where the supply of workers substantially exceeds available employment opportunities, whether in the organized or informal sector.

Policies designed to support self-employment typically target two main barriers: finance and managerial capital. There is a large empirical and theoretical literature that emphasizes distortions in the capital market as critical for business creation and survival (Blanchflower and Oswald, 1998; Holtz-Eakin, Joulfaian and Rosen, 1994a and 1994b and more recently Paulson, Townsend and Karaivanov, 2006; De Mel et al. 2008 and Banerjee et al., 2015).[1] Mohammed Yunus, founder of Grameen Bank, sides with this view by stating that "giving the poor access to credit allows them to immediately put into practice the skills they already know".[2]

An alternative view suggests that business skills, or managerial capital more generally, are missing in poor countries (Bloom and Van Reenen, 2010; Bloom et al. 2013; Bruhn, Karlan and Schoar, 2011 and Schoar, 2010) and, moreover, that such skills can be taught.

This paper reports on a field experiment that takes both barriers seriously by implementing a 2x2 design. Clients of a microfinance institution in rural Pakistan were

[1] Borrowing constraints can also reinforce poverty if the production technology is non-convex, featuring a region with returns that quickly taper off at low levels of investment and another region with higher returns at levels of investment above some threshold. Removing borrowing constraints could then allow liquidity-constrained individuals to access the more productive technology, increasing their income and reducing overall poverty (see for example Banerjee and Newman, 1993; Galor and Zeira, 1993; King and Levine, 1993 or Kraay and McKenzie, 2014 for a review; Giné and Townsend, 2004 or Buera, Kaboski and Shin, 2011 more generally for examples of macro models of entrepreneurship with financial imperfections.)

[2] Quote from Yunus, M "*Banker to the Poor",* 1999.

randomly assigned to receive an eight-day business training course. Sessions were held from February to July 2007 and focused on business planning, marketing and financial management. From November 2007 to June 2008, clients from both the business training (BT) and no-BT groups were eligible for a loan lottery if they had successfully repaid one loan on time and had no overdue loans. Eligible clients could apply for a larger loan of up to 7 times the average loan size. These larger loan applications were screened using the same protocols as before, and successful applications were randomized to receive the approved amount. Clients that were approved for the larger loan but lost in the lottery could still borrow the regular loan amount, even if they had an outstanding loan.

To understand the theoretical implications from reduced constraints on human and physical capital, we develop a simple model of a technology-based poverty trap where agents differ in their business knowledge and ability, the latter of which is unknown. In the model, business training improves business knowledge and reveals ability, allowing individuals to tailor labor and credit decisions to their true ability level. In addition, access to a larger loan allows individuals to acquire the most productive technology.

Consistent with the model's predictions, we find that offering business training leads to higher business knowledge, better business practices and an increase in household expenditures of about USD 82 per year. These effects are mainly concentrated among male clients eligible for the loan lottery, however. Among men, business training also leads to a 6 percent reduction in business failure. For business sales and profits, we find no significant impacts from business training, either among males or females. Given the differences in (male) business failure rates due to treatment, a lack of impact here is not very informative. The survival of businesses in the treatment group that would otherwise have failed could mask improvements in sales and profits among businesses in the treatment group. Therefore, we account for the compositional change in surviving businesses and find that business training could have improved business sales and profits substantially, if lower quality businesses managed to survive among those offered business training.

We also note that we study a rural context where households are typically self-employed in farming or livestock rearing. For most households, self-employment income from agriculture represents a large share of total household income. In this way, the focus

on non-farm business income may be underestimating the true impacts since households with agricultural income could have also benefitted from business training. Indeed, we find that increases in income and assets from business training are concentrated among self-employed households defined as those working in farm or non-farm enterprises without any wage income.

Unlike men, women that were offered BT increased their business knowledge but showed no improvements in any other outcomes, particularly income and assets, business practices and business operations. We posit that lack of agency among women in this setting limits their ability to capitalize on the training received. While male clients are responsible for all managerial decisions regarding their businesses, some 40 percent of female entrepreneurs report that their male spouses make all of the business decisions. Related, women involved in businesses spend, on average, far less time in managerial decisions than their male counterparts.

This observed gender difference is consistent with recent microfinance literature examining differences among men and women in response to the relaxation of financial constraints. For example, Fiala (2018) finds no effects of capital injections, in the form of loans or cash grants, among female business owners in Uganda. Similarly, Fafchamps et al. (2014) find that small female businesses in Ghana do not benefit from capital injections. However, female owners of *large* businesses, who report full decision-making power, are able to generate profits in response to treatment. In sum, the ability of women to capitalize from increased access to financial capital seems to depend not only on the social context but also on their level of agency. Additional evidence from Sri Lanka suggests that female entrepreneurs overinvest in fixed assets relative to male entrepreneurs, potentially to protect resources that might otherwise be expropriated by men in the household (De Mel, 2009). The current study represents an important contribution to this literature, showing that significant increases in human capital through business training are similarly not captured by female business owners.

We also find that business training did not increase the probability of borrowing, but unsurprisingly, being assigned a lottery winner increased average loan size. Access to larger loans, however, had little effect on household welfare, suggesting perhaps that the limit on the current loan size already met the demands of most borrowers. Put differently,

we find little evidence of a technology-based poverty trap, at least among the sample of microfinance clients that we study.

Also consistent with the model, we find that business training improved financial decision-making and labor allocation. In particular, men offered business training with low entrepreneurial ability were less likely to borrow and devoted less time to the business, after the training. This novel insight–that business training may help individuals realize their true entrepreneurial ability (or lack thereof)–gives credence to the practice by many business training programs around the world of using training as a screening device for the provision of additional services, such as credit or mentoring.

Since we find neither an increase in default, nor an increase in the workload of credit officers handling larger loans, we conclude that these larger loans were profitable for the lender. In contrast, when we compare the benefits of offering business training to the estimated costs of its implementation, we find that the business training program was not cost-effective from the perspective of the microfinance institution despite being profitable for (male) clients. This may help explain why few lenders offer such business training programs voluntarily.

These results taken together contribute several new insights to the literature that highlights the importance of heterogeneity in the impacts of programs that aim to remove credit constraints and/or enhance business skills (De Mel, McKenzie and Woodruff, 2009; Karlan and Valdivia, 2010; Drexler, Fischer and Schoar, 2014; Calderon, Cunha and de Giorgi, Forthcoming; Berge, Bjorvatn and Tungodden, 2015; De Mel, McKenzie and Woodruff, 2012 and McKenzie and Woodruff, 2014 for a review).

Our paper differs from existing literature in several important respects. First, while most papers study a sample of business owners in urban areas, we use a large sample of male and female microfinance clients from rural areas with diverse occupations ranging from non-farm enterprises, to farming, livestock management and salaried work. In other words, households in our study are likely more diversified than those in urban areas. Second, we offer a large loan instead of a grant, which allows us to measure the prevalence of borrowing constraints and the impact of business training on actual take-up of credit. From a policy perspective, credit provision is more scalable than grants. Fiala (2018) also offers loans (along with cash grants) but they are perhaps too small to explore

whether a technology-based poverty trap exists. Finally, we use rich administrative and survey data that allow us to measure impacts on a range of business, household and individual outcomes.

The remainder of the paper is structured as follows. Section 2 describes the context and Section 3 describes the randomized experiment. Section 4 discusses the data collected. Section 5 presents the intuition behind a simple model of technology choice under credit constraints and unknown ability. The model and its predictions are more fully developed in Online Appendix C. Section 6 describes the empirical strategy for estimating impacts from the program, and Section 7 provides the results. Section 8 presents the cost-benefit analysis of offering business training. Section 9 concludes.

2. Context

The experiment was carried out in collaboration with the Pakistan Poverty Alleviation Fund (PPAF), the National Rural Support Program (NRSP), and the World Bank. Our sample of entrepreneurs are borrowers of NRSP, the microfinance institution that also implemented the business training program and loan lottery. ECI, a local firm that specializes in capacity building activities for micro entrepreneurs, designed the business training modules, trained NRSP staff, and was a key partner during all phases of field implementation. Baseline and follow up data were collected by Lahore-based survey firm Research Consultants (RCons). For further details on our project partners, please see Online Appendix A.

NRSP clients have access to uncollateralized microloans, but must be part of a community organization (CO) if they want to borrow. COs typically have between 5 and 30 members who meet regularly and contribute towards individual and group savings. In principle, all loans have a joint liability clause at the CO level, but it is seldom enforced. In practice, new loans are often issued to members who belong to a CO with overdue loans.[3]

The maximum amount that can be borrowed depends on the number of loans successfully repaid. A new borrower starts with a loan limit of Rs. 10,000 (USD 167)

[3] Borrowers are required to find two guarantors, who can be members of the same CO. NRSP appears to use guarantors as a means of exerting peer pressure, rather than enforcing repayment from them.

which can increase in intervals of up to Rs. 5,000 per loan cycle until a maximum of Rs. 30,000 (USD 500).[4] As a point of comparison, a cow cost around Rs. 60,000 at the time of the baseline. At baseline, 60 percent of borrowers in our sample were in their first cycle, 25 percent in their second cycle, and 15 percent in their third or higher cycle. Of the borrowers in their first cycle, about 88 percent are borrowing at the limit (Rs. 10,000 or USD 167), but the percentage borrowing at the limit declines to 35 and 24 for clients on their second and third cycle, respectively. By the fifth cycle, the percentage of borrowers with loan amounts at the limit is only 9.4.

The fact that many clients borrow less than the limit does not necessarily imply a lack of borrowing constraints. It is possible that the limit is too small to make investment in a more productive technology worthwhile. Figure 1 illustrates. Suppose that two technologies are available with either low (L) or high (H) productivity requiring, respectively, low or high capital inputs. Denote k_L and k_H as the capital required to produce output Y_L or Y_H with the respective technologies, and define $\hat{k}$ as the level of capital that achieves the same level of profits using either technology. If the borrowing limit falls between k_L and $\hat{k}$, the client will only borrow k_L, below the limit, and use the low productivity technology. If the loan limit is between $\hat{k}$ and k_H, the client will be constrained, borrowing up to the limit and using the high productivity technology. Only when the limit is larger than k_H will the client be unconstrained and borrow k_H. In our context, the limit of Rs. 30,000 imposed by NRSP could fall between k_L and $\hat{k}$ and therefore borrowers would appear to be unconstrained.

3. Experimental Design

3.1 Business training

Appendix Figure A1 shows the location of the three study districts, spanning different agro-climatic regions of Pakistan. We randomly selected 739 COs from 5 NRSP branches operating in the study districts based on CO membership between 5 and 20 members. In each of these COs, NRSP staff conducted a complete listing of the gender and occupation of its members and identified all members engaged in a non-farm enterprise. Given NRSP's focus on female inclusion, there are more female than male

[4] The exchange rate at the time of the baseline (November 2006) was roughly Rs.59=USD 1.

clients in our sample, and most participate in COs that are segregated by gender—there are 444 female COs (60 percent), 246 male COs (33 percent) and 49 mixed COs (7 percent). Using data from this listing exercise, COs were randomly assigned to BT and no BT.

The timeline of the experiment is reported in Appendix Figure A2. The baseline survey was conducted in November 2006. The original sampling framework included all male and female CO members that according to the listing exercise had a non-farm business and five other members selected at random from each CO. In practice, enumerators ended up interviewing everyone that attended a special CO meeting that was called to conduct the baseline survey. Individuals with businesses were encouraged to attend the meeting. The resulting sample consisted of a total of 4,161 members of which 2,532 had a business. The break-up by gender yields 2,144 men (and 1,325 businesses) and 2,017 women, of which 1,207 had a business.[5] The sample accounts for 61 percent of all members and roughly 90 percent of all businesses in the listing exercise. During the meeting, interest in a (hypothetical) business training program was elicited in a uniform manner across all COs.

Assignment to BT was randomized at the CO level (with 400 treatment COs) and stratified by NRSP branch. In January 2007, trained NRSP staff held orientation meetings in all BT COs to announce the business training and survey interest for the program. Interested members were asked to sign up and suggest the most convenient time and venue. About 50 percent of members at the orientation meeting signed up for the training. Sessions were organized by area, trying to accommodate time and venue constraints, especially for women. From February to May 2007, 47 business training sessions were held. Online Appendix A describes the content of the training sessions, which were based on the "Know About Business" modules designed by the International Labor Organization but adapted as a series of role-play and case-studies and thus more hands-on than the standard classroom-based training. Each session lasted 6 days and attendance was remarkably high. A second set of 2-day sessions were conducted in July 2007.

[5] Although there are more female than male CO members, we have similar sample sizes of male and female respondents because more men showed up at the BT orientation meetings due to the focus on recruiting business owners.

Around 93 percent of those that signed up during orientation attended for at least part of the course; among BT participants, nearly everyone completed all training sessions with full attendance.

While recent evaluations of business training programs differ significantly in their method of delivery, intensity, location and implementing organization, in part reflecting a different target population, it is nonetheless informative to compare the business training implemented in our experiment to others reviewed in McKenzie and Woodruff (2014). While most studies target exclusively urban entrepreneurs, this experiment covers a sample of rural microfinance clients engaged in diverse occupations. All training courses reviewed were classroom-based, delivered to groups of individuals with sessions of 15-25 participants per trainer. Ours was more hands-on, included a visit to a market and required participants to set up a business for a day. In addition, our training is relatively more intensive, containing a total of 46 hours of training compared to an average of 28.6 hours, and is taught by the staff of the microfinance institution in contrast to most programs that are taught by professional trainers.

Appendix Table A1 reports the household and individual correlates of interest in business training (columns 1 to 3) and actual uptake of business training (columns 4 to 6). Similar to Iacovone et al. (2018), we find that participants and non-participants, among those offered training, look different on a number of observable characteristics. Perhaps not surprisingly, interested individuals are more likely to be business owners, more educated and with more numeracy skills as well as officers in the CO. Among female members, the index of mobility is correlated with interest in training. Actual take-up of business training is strongly and positively correlated with interest (among other variables), though the size of the coefficient on BT interest is smaller for women.[6] Overall, the individual characteristics of female members are less predictive of actual attendance in business training consistent with women having less decision-making power. Appendix Table A1 reports an R-squared for BT update of 0.22 among males (column 5) against 0.10 among females (column 6). In contrast, interest in business

[6] While it is not surprising that members that express interest in training sign up for it when it is offered, NRSP staff could also have spent more time making sure they sign up. As a result, we interpret the point estimates of columns 4 to 6 of Appendix Table A1 as mere correlations.

training elicited from male clients (column 2) has a similar R-squared to that of female clients (column 3).

We also test the effectiveness of one-on-one follow-up sessions, which we call "Hand-Holding" sessions. About half of the BT participants were randomly selected to receive personalized coaching/mentoring from NRSP trainers that took place from October 2007 to January 2008. Participants and coaches would meet once or twice a month to review topics from the training, address specific questions, and develop solutions to business problems.[7] These mentoring sessions allowed members to ask their coaches about current problems and receive feedback in real-time.

3.2 Loan lottery

While the business training sessions were being conducted, NRSP identified all the study members (BT and no BT) that were eligible for the loan lottery. Eligible members had to be borrowers of NRSP in good standing, that is, they were required to have successfully repaid at least one loan on time and to have no overdue loans. Roughly 55 percent of CO members in our sample were eligible (58 percent among male members and 52 percent among women).[8] Appendix Table A1 also reports the correlates of eligibility for the loan lottery (columns 7 to 9). Older individuals with businesses are more likely to be eligible. Because first time borrowers are automatically non-eligible, eligible individuals tend to have been CO members for a longer time and are more likely to be officers (e.g., president, secretary or treasurer) in the CO. All eligible members were invited to another orientation session and were given a brochure that explained the loan lottery.[9]

Eligible members could apply for loans up to Rs. 100,000 (USD 1,695 at baseline). They had seven months spanning the planting period for the main growing seasons (from November 2007 to June 2008), to apply for the larger loan. All loan

[7] To the extent possible, men were visited by male trainers while women where visited by female trainers, but given that there were 15 male trainers and only 3 female trainers, some women had to be visited by male trainers. Another form of mentoring delivered by volunteer business owners is studied in Valdivia (2015).

[8] Though 60 percent of clients were in their first cycle at baseline, many had repaid their initial loan and were thus eligible by the time NRSP set up the loan lottery.

[9] See Giné, Mansuri and Picón (2011) for a marketing experiment conducted during the loan orientation meetings using the brochure.

requests were screened using the standard protocols by NRSP credit officers. All approved loans with amounts greater than the standard limit, according to the client's loan cycle, were forwarded to headquarters, where the results of the lottery for all clients, irrespective of whether they had applied or not, were maintained. The randomization of lottery winners was stratified by gender, business ownership, and branch. Clients assigned to be lottery winners were then informed that they could borrow the approved amount, while lottery losers were informed that they could borrow up to the regular loan limit, based on their cycle. Although members were encouraged to borrow for productive purposes, in practice there were no restrictions on the use of the loan. In addition, qualifying members who already had an outstanding loan with NRSP were allowed to apply for the larger loan, with the condition that part of the new loan would be used to pay off the outstanding debt.

Of the 2,284 eligible CO members, 577 (25.3 percent) applied. NRSP approved 416 loans (72.1 percent), and some had their loan amounts reduced after appraisal. While the median amount requested was approved in full, the average amount approved over the amount requested was 81.6 percent. The average loan size approved was Rs. 45,095 (USD 764) among lottery winners (lower than the lottery limit) and Rs 21,654 among lottery losers. Of the customers approved, 202 were assigned to win the lottery (48.6 percent) and 178 lottery winners ended up borrowing (88.1 percent). Among the 214 loan applicants that lost the lottery, only 113 borrowed (52.8 percent). Among the reasons cited for changing their mind were time elapsed from request to approval (average time was 2 months), and for lottery losers, the fact that the new loan size was not too different from the loan they currently had. This low take-up of larger loans provides the first evidence that most clients did not face borrowing constraints given the existing loan limits.

4. Data

We use two main sources of data, administrative records from NRSP and survey data collected in November 2006 and in December 2008.

Administrative data

We use NRSP administrative records on every loan taken by borrowers in our sample from November 2006 to November 2009. The data include the disbursement date, loan amount, type of loan, and repayment performance.[10]

Survey data

Baseline data collected in November 2006, prior to the business training and loan lottery orientations, included questions about the CO member, the member's household, the business if they had one, and the CO. The follow-up survey was similar in structure to the baseline and was collected in December 2008—2 years after the baseline, 22 months after the trainings began, and about 13 months after the loan orientation meetings.[11] Summary statistics from the baseline survey are presented in Table 1, and variable definitions are provided in Online Appendix B.[12]

The average age among CO members at baseline is 38 years, with 3.9 years of education. Households have average landholdings of 3.9 acres and average monthly expenditures of Rs. 4,740 which amounts to daily per capita expenditure of roughly 3.30 dollars a day (PPP adjusted). About 61 percent of the households in the sample run at least one business. This percentage is significantly higher than the population average in the study areas because households with businesses are more likely to be microfinance clients.[13] Although most businesses have a fixed location and operate all year round, the average scale is small. About 90 percent of businesses do not have a paid employee, and monthly sales are about Rs. 8,760 (USD 146). These numbers are typical of micro-entrepreneurs in developing countries (see for example Banerjee and Duflo, 2011).

Columns 7 and 8 of Table 1 report mean baseline characteristics by gender along with the associated *p*-values of the difference in means t-test (column 9). It is clear that the type of businesses managed by male and female CO members is quite different. While women are primarily engaged in small home-based manufacturing (handicrafts or

[10] See Online Appendix A for a description of the loans types provided by NRSP.
[11] At the time of the follow-up, roughly half of the loans taken during the lottery period were still active.
[12] We note that in addition to visiting the house of the respondent, enumerators also visited the business if it was located away from home. As a result, household and business characteristics that can be verified upon inspection do not come from self-reports but rather independent verification by enumerators.
[13] According to the Demographic and Heath Survey conducted in 2006-07, 31 percent of households in rural areas reported having at least one household member engaged in non-agriculture self-employment. Among all the 6,837 microfinance clients in the study COs, roughly 40 percent have a business at the time of baseline.

tailoring), men are involved primarily in the agribusiness sector which requires much greater contact with markets outside the village. The scale and profitability of male and female businesses is also quite different (see also De Mel et al. 2009). Average sales for male businesses are Rs. 13,001 (USD 217) but only Rs. 4,104 (USD 68) among businesses run by female CO members. Women also tend to operate mainly from home and are less likely to employ paid employees.[14] More importantly, business women report far less decision-making autonomy than their male counterparts. Out of a total of 8 decisions on a range of household, individual and business outcomes, women report complete autonomy over roughly 1.76 decisions compared to 3.31 decisions among men.

There is also evidence that male and female CO members and their businesses are different. Female members tend to have less education, have lower digit span recall, and are also less risk tolerant on a 0 to 10 scale. Female members are also more likely to come from households that have less land wealth, as compared to households of male CO members. This result is consistent with more stringent female seclusion practices among landed rural households (Jacoby and Mansuri, 2015).[15]

Because the process by which women select to become CO members and into self-employment may be different from that of men, it will be important to take these characteristics into account when assessing treatment impacts by gender because they may be driven by these characteristics rather than gender per se.

Table 2 checks that the random assignment of COs to business training and members to win or lose the loan lottery was successful. Columns (1) and (2) compare mean baseline characteristics, at the member, household and business level, for members in COs that were assigned to business training against those that were not. Columns (3) and (5) report characteristics for eligible members assigned to BT or no BT, respectively. Similarly, Columns (4) and (6) compare non-eligible CO members in the BT and no BT groups. Columns (10) and (11) compare eligible individuals assigned to be lottery winners against those assigned to be lottery losers. Column (12) reports the

[14] There is also weak evidence suggesting that female businesses are more of a fall back option: among households of male CO members, businesses are concentrated among the richer households. In contrast, businesses are more prevalent among the poorer households of female CO members.
[15] See also Sathar and Kazi, 1997.

characteristics of non-eligible members. Columns (7)-(9) and (13) report the *p*-values of the t-test for each comparison.[16]

Overall, we find balance between the different experimental arms. For the business training comparison, the difference in means is significant at conventional levels for 3 out of 40 variables: being male, being an office bearer, and reporting having credit constraints (column 7) and for the lottery comparison, the difference in means is significant for 5 out of 40 variables, such as marital status, the index of stress and of knowledge of competition, whether there is household member that has held a hereditary or a political office and business sector (column 13). These differences, however, are small in magnitude, and while significant, there is no clear pattern that the treatment or control group have systematically higher values. For example, the group assigned to business training has more members that are office bearers but also more individuals that report credit constraints. We also run a regression of "offered Business Training" against all individual, household and business characteristics at baseline reported in Table 2 and find a *p*-value of 0.19, 0.36 and 0.78, respectively, of an F-test that all the covariates are not jointly different from zero. The analogous *p*-values for the regression using "assigned to be a Lottery Winner" as dependent variable using the sample of eligible members are 0.19, 0.07 and 0.31.

The overall attrition rate between the baseline and follow-up two years after is 16 percent. This is mostly concentrated among CO members in COs that disbanded (22.1 percent of all COs at baseline). In Appendix Table A2, we check that the attrition rate does not differ by treatment status. In Panels A and B (including interactions with gender), none of the coefficients are significant at conventional levels. In Panel C, only the coefficient on the dummy for not being eligible for the lottery (NE) is significant. This suggests that non-eligible individuals are more likely to attrite, but importantly, there is no differential attrition by lottery assignment (among eligible CO members). In Panel D, which includes interactions with gender, we find that males are more likely to attrite among non-eligible individuals. Again, there is no differential attrition by treatment status.

[16] Since gender and business ownership at baseline were stratification variables in the lottery randomization, their *p*-values are omitted in column (13) of Table 2.

5. Theoretical Framework

In order to understand the impacts of the business training and access to a larger loan, Online Appendix C develops a simple model of technology choice under borrowing constraints. Here we provide an intuitive discussion and state the main predictions.

In our context of rural Pakistan, we assume that prospective borrowers have no liquid assets and differ in their level of agency. In particular, males make all managerial decisions regarding their business activity and decide how much labor to devote to production or wage work. In contrast, females lack agency and rely on the managerial decisions made by their male spouses. In addition, females cannot engage in wage work due to the restrictive social norms and thus decide how much labor to devote to production or at home. All individuals can borrow to purchase capital, subject to a limit.[17] Borrowers differ in ability and business knowledge, both of which affect the probability that production is successful. If the entrepreneur is unsuccessful, the enterprise closes and he or she consumes nothing. While business knowledge is known to both the borrower and the lender and can be increased with training, ability levels are unknown but are revealed to both the borrower and lender through training—through contact with other participants during training and exposure to successful businesses during visits to nearby markets, BT participants and facilitators realize their own likelihood of success as an entrepreneur. During the training, facilitators working for the lender also learn about the ability of BT participants as entrepreneurs. Due to lack of agency among females, however, only the ability of their male spouses is relevant.

We assume that borrowers can produce using a subsistence technology that is unproductive and requires only labor, or they can employ one of the two technologies in Figure 1 that require capital. In the absence of the loan lottery, the only feasible technology is the one that requires low investment and has a low return, irrespective of the level of business knowledge. Once larger loans become available, the high-return/high-investment technology becomes feasible. We therefore model explicitly the

[17] While individuals may not simultaneously engage in self-employment and wage labor, the household head may allocate all family labor, and thus both self-employment and wage work are possible simultaneously.

existence of a technology-based poverty trap where individuals choose among technologies depending on borrowing limits, their ability, and their business knowledge.

With this setup, the model predicts that business training and access to the larger loan will have the following effects:

1) Business training increases business knowledge for all participants and improves business management practices for males only, as females are involved in businesses run by their male spouses that did not receive business training. Consequently, net income and business survival should also increase for male clients.
2) Business training improves financial and labor decision-making for males. In particular, male clients can adjust their labor supply and borrowing choices to their true ability revealed through training. Male clients of high ability will devote more time to the business and borrow larger amounts, while male clients of low ability may devote less time to production and may decide not to borrow altogether. In contrast, business training has no impact on decision-making for females or the performance of the businesses they are involved in.
3) Access to a larger loan (among eligible individuals) will increase the probability of borrowing and the loan size, as male clients and male spouses of female clients with large enough business knowledge adopt the high-return/high-investment technology.
4) Business training improves loan repayment.

While the model provides a useful framework to assess the results among male and female clients, it abstracts from two aspects of the context of the experiment. First, the model assumes perfect compliance—that everyone offered training will participate in it. Second, the model assumes that both eligible and non-eligible individuals draw their ability and business knowledge from the same distribution, but the distributions could be different. Finally, household dynamics are not modeled, and in particular it assumes that decision-makers have the power to decide their labor supply and credit demand. As we discuss in the next section, in our context of rural Pakistan the model is better suited for explaining decisions made by male clients, who exercise higher levels of agency compared to female clients.

6. Empirical Strategy

By virtue of the design, the average impacts of business training can be estimated by running the following OLS regression:

$$Y_{ijb1} = \beta_1 BT_{ijb} + \gamma X_{ijb} + \delta Y_{ijb0} + \varepsilon_{ijb} \quad (1)$$

in case both baseline and follow-up data were collected, or

$$Y_{ijb1} = \beta_1 BT_{ijb} + \gamma X_{ijb} + \varepsilon_{ijb} \quad (2)$$

when only follow-up data exist. In both specifications, Y_{ijbt} is a given outcome for individual i in CO j in branch b at time t ($t = 0$ for baseline; $t = 1$ for follow-up), and BT_{ijb} is a dummy that takes value 1 if business training was offered to individual i in CO j from branch b. The vector X_{ijb} contains the stratification variables (gender, business ownership, eligibility for loan lottery and branch dummies).[18] The term ε_{ijb} is a mean-zero error term. Because the unit of randomization for business training is the CO, standard errors are clustered at this level (Moulton, 1986). The coefficient β_1 measures the impact of being offered business training.

In order to study the separate and joint impact of both treatments (BT and LW) on various business, household and member outcomes, we run the following OLS regression equation:

$$Y_{ijb1} = \beta_1 BT \times E_{ijb} + \beta_2 BT \times NE_{ijb} + \beta_3 noBT \times LW_{ijb} + \beta_4 BT \times LW_{ijb} + \beta_5 noBT \times NE_{ijb} + \gamma X_{ijb} + \delta Y_{ijb0} + \varepsilon_{ijb} \quad (3)$$

in case both baseline and follow-up data were collected, or

$$Y_{ijb1} = \beta_1 BT \times E_{ijb} + \beta_2 BT \times NE_{ijb} + \beta_3 noBT \times LW_{ijb} + \beta_4 BT \times LW_{ijb} + \beta_5 noBT \times NE_{ijb} + \gamma X_{ijb} + \varepsilon_{ijb} \quad (4)$$

when only follow-up data exist. In these specifications, $BT \times E_{ijb}$ is a dummy that takes value 1 if business training was offered in CO j in branch b, and individual i was eligible for the loan lottery but he or she was not assigned to be a winner; $BT \times NE_{ijb}$ is a dummy that takes value 1 if business training was offered in CO j in branch b but individual i was non-eligible for the loan lottery, $noBT \times LW_{ijb}$ is a dummy that takes

[18] When we include strata dummies instead as suggested in Bruhn and McKenzie (2009), the results are very similar.

value 1 if individual i in CO j in branch b was assigned to be a lottery winner (and was hence eligible) but CO j was not offered business training, $BT \times LW_{ijb}$ is a dummy that takes value 1 if CO *j* in branch *b* was offered business training and individual *i* in CO *j* was assigned to be a lottery winner. Finally, $noBT \times NE_{ijb}$ is a dummy that takes value 1 if individual i in CO j in branch b was non-eligible for the loan lottery and CO j was not offered business training. The omitted category is $noBT \times E_{ijb}$, that is, when individual i was eligible for the loan lottery and he or she was not assigned to be a winner, and CO j was not offered business training. In specifications (3) and (4), the coefficient β_1 measures the impact of being offered business training alone among the sample of eligible members, the coefficient β_3 measures the impact of being assigned a winner of the loan lottery alone relative to being eligible, while the combined effect of being offered business training and winning the lottery is measured by β_4. Coefficients β_2 and β_5 are perhaps less interesting as they compare individuals that are non-eligible for the loan lottery and were either offered business training (β_2) or not (β_5) to the base category of individuals in COs where business training was not offered and that were eligible but did not win the loan lottery. Therefore, we report the *p*-values for the t-tests that $\beta_1 = \beta_3$, $\beta_1 = \beta_4$, $\beta_3 = \beta_4$, and that $\beta_2 = \beta_5$.[19]

We focus on intent-to-treat (ITT) estimates because, as mentioned before, not every CO member offered training chose to participate, nor did every member eligible for the loan lottery apply. We do not report average treatment on the treated estimates because non-participants may well have been influenced by participants in their own CO, given the frequent interaction between CO members, thereby violating the Stable Unit Treatment Value Assumption or SUTVA (Rubin, 1974). In addition, because business

[19] Notice that an alternative specification to (3) would be:
$Y_{ijb1} = \beta'_1 BT_{ijb} + \beta'_2 BT \times NE_{ijb} + \beta'_3 LW_{ijb} + \beta'_4 BT \times LW_{ijb} + \beta'_5 NE_{ijb} + \gamma X_{ijb} + \delta Y_{ijb0} + \varepsilon_{ijb}$
where the combined effect of the business training offer and winning the lottery would be the sum of $\beta'_1 + \beta'_3 + \beta'_4$. We prefer specification (3) because it is easier to interpret. The coefficients in specification (3) report the average effect in different treatment *cells* (compared to the base category cell of No BT + E + No LW). Alternatively, the specification here looks at the relative effects of the various treatment *arms* and their interactions, so to get the effect total effect for one treatment cell one must add up multiple coefficients.

training could have affected who applied for the lottery and the amount approved as it was implemented before the lottery, intent to treat estimates are the easiest to interpret.

Given that we examine a wide range of business, household and member outcomes we follow Kling, Liebman, and Katz (2007), Karlan and Valdivia (2010) and Drexler, Fischer and Schoar (2014) among others and construct summary measures of standardized treatment effects for several families of outcomes. Within each class or family, we rescale each outcome such that larger values indicate more desirable values and convert each measure to a z-score such that $z_{ijk} = (y_{ijk} - \mu_k)/\sigma_k$, where μ_k and σ_k are the mean and standard deviation of the variable y_{ijk} for eligible and non-eligible CO members, separately, that were not offered business training nor were assigned to be winners of the lottery. For each class, we then construct a summary measure $Z_{ij} = \sum_k z_{ijk}/k$.

While this summary measure is useful when assessing changes in relative terms, it is less useful if one is interested in the absolute size of the effect of individual outcomes. For this reason, Appendix Tables A4 and A5 report the results of specifications (3) or (4), where appropriate, for each individual outcome by family, with the unadjusted *p*-values as well as those adjusted to account for multiple hypothesis testing. We follow List, Shaikh and Xu (2019) and report their adjusted *p*-values which are an improvement on Bonferroni or Holm adjustments as they incorporate the joint dependence structure of the test statistics.[20]

7. Results

7.1 Business Outcomes

Table 3 reports the intent to treat effects on business related outcomes. The dependent variable in Column 1 is an aggregate index of business knowledge that includes questions on competition and basic business concepts, not necessarily taught during the training. As mentioned, Appendix Table A4 reports the intent to treat impacts for the individual items that are used to construct the aggregate index as well as the adjusted *p*-values to account for multiple hypothesis testing. The definition of the

[20] The p-values associated with coefficients β_2 and β_5 are not reported because they compare non-eligible individuals to eligible individuals in the control group.

aggregate variables is reported in Online Appendix B. Because these aggregates include some variables that are only observed at follow-up, the number of observations for the aggregate is 3,494 instead of 4,161 observations included in the baseline.[21] Results of specifications (1) or (2) are presented with and without gender interactions in Panel A and Panel B, respectively. Similarly, Panel C reports the results of specifications (3) or (4) without gender interactions and Panel D adds gender interactions to the regressions in Panel C. Consistent with the assumption of the model, Panel A shows that access to business training increases business knowledge on average by 8 percent of a standard deviation. This observed impact is remarkable because business knowledge was assessed 18 months after the business trainings were completed. Further, these ITT estimates provide a lower bound for those who actually participated in the training since many individuals in the BT group did not attend. Given that a substantial amount of time has elapsed from training to testing, this suggests that the acquired business knowledge is sustained over a long time horizon. The next two columns report business creation in the household with (Column 2) or without (Column 3) the CO member's involvement in the business. The sample includes again all study CO members. We find no effect of business training on business creation either with or without access to the larger loan. We next examine business failure among business owners at baseline and again find no effect. The point estimate on business training is negative. The model is silent on business entry as it assumes that all households are simultaneously involved in self-employment and wage work, but it does predict that business failure should be lower among clients offered business training (see Prediction 1 of the model in Online Appendix C).[22]

Columns 5 and 6 report ITT impacts on operations and business practices for the sample respondents who were business owners at baseline. We find that the offer of business training leads to improvements in business practices such as recording the sales on a piece of paper as well as separating business from household accounts by recording money taken for household needs. However, there are no improvements, on average, in business operations (Column 6) nor on business sales and profits (Column 7).

[21] Sample sizes are lower for Column (4) and Columns (5)–(7) since these outcomes are recorded for, respectively, respondents with businesses ($n = 2{,}137$) and respondents with surviving businesses ($n = 1{,}333$).

[22] Given our sample size, we find a minimum detectable effect size (MDES) of 0.10.

When we include gender interactions in Panel B of Table 3, we find, consistent with Prediction 1 of the model, that both male and female CO members increase business knowledge (by 7.7 percent and 8.3 percent of a standard deviation, respectively). We also find that among male business owners, business training led to a reduction in business failure of 5.6 percent compared to the control group, but there is no effect at all among women (*p*-value is 0.81). The overall business failure rate between baseline and follow-up (2 years) among business owners that were not offered training and were not assigned winners is 39 percent, which is somewhat higher than that of other countries (Mead and Liedholm, 1998). Among entrepreneurs whose businesses did not survive, more than three quarters reported at the follow-up survey that they were not actively employed. Further, failed business owners saw a decline in per capita household expenditures, relative to the owners of surviving businesses. Column 5 shows positive treatment effects on business practices among men, but again, no significant effects among women.

Columns 6 and 7 again show no effect on business operations or business sales and profits, among either male businesses or female businesses. However, since training led to less attrition of businesses, the lack of impact on operations, sales, and profits could be due to the compositional effects of treatment, e.g., the survival of low quality businesses in the treatment group that would have otherwise failed. Therefore, we follow Lee (2008) and construct non-parametric bounds on the same business outcomes.[23] The bounds, presented in Appendix Table A6, create intervals that are fairly tight, and for several aggregate categories, the impact of business training on male business is insignificant at the lower bound but positive and significant at the upper bound. Appendix Table A3 runs a regression with business failure as the dependent variable against baseline characteristics for businesses in the control group. Land wealth, interest in business training, and numeracy skills are all negatively correlated with business failure. Together, this evidence suggests that business failures are driven by lower quality

[23] The idea behind Lee (2008) bounds is as follows. Since attrition due to business failure is 5.7 percent larger in the control group compared to the treatment group, 32 observations from the treatment group are eliminated to make both groups comparable. The upper bound is computed as the difference between the treatment and control group when observations are removed from the bottom of the distribution. Similarly, the lower bound is computed by removing observations from the top of the distribution.

entrepreneurs operating at a smaller scale,[24] and lack of impacts on business profits and sales is likely driven by compositional effects from the treatment.[25]

Panel C of Table 3 reports the impacts of both business training and the loan lottery. In Columns 2 and 3 we find that those who are non-eligible for the lottery are less likely to start up new businesses. Column 4 shows no statistically significant effect on business failure.[26] Columns 5 and 6 show improvements in business practices and operations due to business training, especially among eligible business owners offered business training and those assigned as winners of the lottery. In particular, Appendix Table A4 shows that businesses of CO members assigned to be lottery winners are more likely to operate all year round (adjusted *p*-value is 0.15). As before, these improvements do not translate into higher sales and profits.

Panel D of Table 3 shows that these positive effects are concentrated among eligible men but not women.

7.2 Individual and Household Outcomes

Table 4 examines the impact of the two treatments on household outcomes. In Panel A, CO members offered business training show a significant increase of roughly 6 percent of a standard deviation in assets and expenditures. While CO cohesion was not emphasized in the training, it is interesting that business training fostered more cooperation (Column 2). In Column 3, CO members offered business training also report a better outlook on life by 8.5 percent of a standard deviation in the aggregate index. Finally, the index of decision-making power (Column 4) does not change as a result of the interventions.

In Table 3 we found no improvement in business sales or profits, yet Panel A of Table 4 shows significant increases in expenditures and assets. What might thus reconcile this apparent contradiction? First, we note that the Lee (2008) bounds reported in Appendix Table A6 are consistent with increases in sales and profits. In addition,

[24] We note that business knowledge is negatively correlated with business failure, as the model predicts, but it is not statistically significant. Business knowledge is however positively and significantly correlated with having a business, risk tolerance, stress and being a CO office bearer (results not reported).

[25] In Appendix Table A3 we do not find that individual characteristics are more predictive of actual business failure among males. The R-squared is 0.05 for both males (column 2) and females (column 3).

[26] The model predicts that business failure will be higher among lottery winners if the most productive technology H were riskier in the sense that $p_L^0(\mathrm{x}) > p_H^0(\mathrm{x})$. Since this is not supported by the data, we conclude that $p_L^0(\mathrm{x})$ and $p_H^0(\mathrm{x})$ must be similar. By assumption, $p_L^A(\mathrm{x}) > p_H^A(\mathrm{x})$.

households engaged in self-employment activities such as farming and livestock rearing may have benefited from business training even if they do not own a non-farm business. Likewise, there are business-owning households whose main income source may not come from self-employment activities.

We therefore define a household as self-employed if household income comes exclusively from self-employment (both farm and non-farm) activities. According to this definition, Table 1 reports that 27 percent of households can be classified as self-employed.[27] In Appendix Table A7, we check whether the gains by households offered business training are concentrated among the self-employed and we find that this is indeed the case. In Panel A, self-employed households that receive training increase business knowledge by 11 percent of a standard deviation (p-values of 0.01). In contrast, households not self-employed only increase business knowledge by 4.1 percent of a standard deviation, and this increase is not statistically significant. The same pattern arises with the expenditure and assets aggregate. Self-employed households offered business training experience increases of 16 percent of a standard deviation (p-value of 0.00) while households that are not self-employed only gain 2.3 percent of a standard deviation which is not significant at conventional levels.

We now turn to Panel B of Table 4 to examine the impacts of business training on individual and household outcomes by gender. By and large, the impacts on expenditure and assets (Column 1) and CO Cohesion (Column 2) are concentrated among male CO members. Assets and expenditures increase by 9.8 percent of a standard deviation and CO cohesion increases by 9.1 of a standard deviation among male members offered BT. In contrast, only women's outlook on life improves substantially, which is surprising given the lack of improvements in the other aggregates.

In Panels C and D we find that the largest impacts on expenditures and assets and CO cohesion come from business training rather than the loan lottery. According to Appendix Table A5, showing the individual components of the aggregated outcomes, both monthly expenditures and housing quality improved significantly for individuals

[27] Twenty eight percent of business owners and 15.5 percent of non-business owners are self-employed households. This indicates that even among business owners, income from business may not be large, relative to other sources of household income.

eligible for the loan lottery. Among individuals not offered business training, those assigned to be lottery winners also increased household expenditure and assets but only by about 4.3 percent of a standard deviation (the increase is not statistically significant).

To sum up, female CO members improve business knowledge but do not seem to put it into practice in their existing or new businesses. As a result, we see no improvements in expenditures and assets or CO cohesion. In contrast, and more consistent with the model's assumption of full agency, business training leads to lower business failure and likely improvements in business practices, operations and sales for men in addition to improvements in expenditure and assets and CO cohesion.

7.3 Exploring Gender Differences

Given the results just described, a question of interest is why women fail to capitalize on the training offered. There are several potential answers. First, given the substantial differences between male and female CO members and the process by which women select into CO membership and into self-employment, gender differences may simply reflect differences in other characteristics. These male-female differences may stem from biological factors or from "learned" social behavior, that is, may be the result of culture and the environment (Gneezy, Leonard, and List 2009, for example and World Bank, 2013). Similarly to De Mel et al. (2009), we address this possibility by including a range of controls and their interaction with the treatment dummies in the specifications of panels B and D of Table 4 and business knowledge of Table 3, Column 1.[28] Appendix Table A8 report the results. We find that the coefficients of the interactions of treatment dummies with genders are smaller in magnitude but qualitatively, the results are the same as those reported in Table 4. Therefore, our results are consistent with Hardy and Kagy (2018) who fail to explain the large gender gap in business profits, even after controlling for a number of observed characteristics.

Second, one might also argue that given the low levels of literacy among women, they were unable to understand the training, or that women attended training sessions delivered by trainers of poorer quality. The same team of trainers, however, taught both male and female sessions, so that is not an issue in the current study. In addition, as noted

[28] We include risk aversion, education, landholdings, digit span recall and interactions of these variables with treatment dummies.

in Panel B of Table 3, business training led to an increase in business knowledge among women comparable to that of men, so lack of understanding is not the issue either.[29]

Related, as discussed in Section 2, we note that a random sub-sample of business training participants were selected for follow-up visits ("Hand-Holding"). The goal of these visits was to provide entrepreneurs an opportunity to discuss the concepts learned during business training and to ask specific questions about how to run their business. Appendix Table A9 reports the impact of Hand Holding on the same aggregates as Table 4. The sample includes the 1,140 clients that were offered business training, out of the 1,252 individuals that were successfully interviewed during follow-up. We find that Hand Holding had no effect on any aggregate variable and that this lack of impact does not vary by gender in Panels A to C.[30] In Panel D we find that eligible females that received handholding increased significantly their business knowledge. This increase in knowledge does not translate, however, in impacts on other aggregates. This is consistent with the view that the barriers that women face as entrepreneurs may not be overcome by more intense visits.[31]

A perhaps more convincing explanation of why impacts differ by gender comes from the fact that in Pakistan, as in other South Asian and Middle Eastern countries, labor markets are segregated by gender (see Samina and Gooher, 2003). According to the ILO (2010), female labor force participation in Pakistan was only 22 percent in 2009, compared to 52 percent worldwide. In our data, while most male CO members who lack a non-farm business at baseline are involved in other self-employment activities (mainly agriculture) or wage work, 71 percent of females that are not involved in a business report staying at home without a primary occupation. Of course, stay-home women can still be microfinance clients as the proceeds are typically used by their spouses.[32]

[29] Campos et al. (2018) find that entrepreneurial training for women in Togo was equally effective across the distribution of schooling levels.
[30] Hand Holding did not have any impact either on aggregates other than those in Table 4 (results not reported).
[31] In conversations with trainers, some mentioned that they dropped one of the two scheduled business visits, after realizing that entrepreneurs in the sample did not want them. While male entrepreneurs reported not needing the mentoring, some female entrepreneurs were reluctant to be visited by a male.
[32] A recent report by the World Bank (2012) conducted extensive focus groups with clients of several microfinance institutions and reports that women in Pakistan are not the final users of loans but rather the conduits of their husbands. Hussein and Hussein (2003) also argue that women were required to obtain

One of the reasons for the limited female labor supply may be the prevalence of social norms about the role of women as caregivers. We explore this hypothesis by examining self-reported time allocation for the 24 hours preceding the follow-up survey. Women do spend a lot more time in household chores than men (6.6 hours for women compared to 2.3 for men) and about half as much time in the business than their male counterparts (2.9 versus 5.4 hours, among business owners). The spouses of CO members behave along similar gender lines—that is, the female spouses of male CO members spend a similar amount of time on household chores and the business as female CO members and vice versa.[33]

Finally, the same social and cultural norms that restrict female labor supply also affect women's mobility outside the home (Field, Jayachandran, and Pande, 2010). This might explain why women that report an occupation are primarily engaged in home-based manufacture. In a study of female entrepreneurs in Pakistan, Roomi (2005) finds that the social unacceptability of females interacting with unrelated males is responsible for the low number of female borrowers (less than 40 percent in Pakistan in 2009) compared to more than 85 percent in India or Bangladesh. The lack of mobility also affects women's involvement in the business. Since women cannot sell products or purchase inputs in the market, their decision-making power is limited. In our data, 40 percent of female CO members involved in a business report that all business decisions are made by their husband. Indeed, not only do women spend less time in the business, the share of time devoted to managerial activities is also lower (16 percent for women compared to 27 percent for men). Therefore, even if one argued that business training could have improved business performance because better decisions about production

written permission from their husbands to borrow. Most microfinance institutions in the country have since removed such restrictions on female borrowers.

[33] If women are excluded from the labor market, then businesses run by women should be of lower quality because the marginal female entrepreneur will be indifferent between running a business and earning a low wage (See Lucas, 1978 or more recently Emran, Morshed and Stiglitz, 2007).

and marketing, etc. may not require additional time, the fact is that women show no improvement because they have little control over the businesses they are involved in.[34,35]

7.4 Labor Supply

We have argued that female labor supply is restricted, and indeed Panel B of Table 5 shows that female labor supply in the business does not respond to business training, either for female CO members or their male spouses. Male CO members in the *BT* group, however, devote significantly more time to business activities. These results may, however, mask an important heterogeneity in labor supply responses if business training reveals an individual's ability level and thereby affects their willingness to engage in entrepreneurial activity (Prediction 2 of the model in Online Appendix C).

Since entrepreneurial ability is not observed, we use two proxies that correlate well with ability, namely loan repayment and growth in business expenditure. We presume that loan default is a signal of poor entrepreneurial ability, and conversely, that business growth is a signal of high ability. Although individuals may have some (private) knowledge about their ability to repay a loan or the future growth of their business, these variables are uncertain. We note that loan repayment and business growth may be directly affected by the business training and loan lottery treatments. We therefore take the sample of CO members not offered business training nor assigned to be lottery winners and estimate regressions of: (1) an indicator variable for whether the individual has at least one loan in default at maturity (among borrowers), and (2) the difference between follow-up and baseline in log expenditures, against individual characteristics measured at baseline. The results are in Table A10. We then use the estimated coefficients to predict these ability proxies for every CO member in the sample. Table 6 reports the regression

[34] Giné, Mansuri and Picón (2011) conduct a marketing experiment using role models during the loan lottery that highlights this point. Two versions of a brochure providing information about the loan was randomly distributed to clients, so that some men and women got one version and the rest the other. The two versions were identical except for the cover page, which featured the same businesses with either female or male entrepreneurs. The brochure with female run businesses was intended to motivate women, through positive role models. Among clients with businesses, the paper finds that exposure to the female brochure substantially decreased demand for the larger loan among women clients and this negative impact was concentrated among women with low decision-making power within the home.

[35] One could argue that households could capitalize on the training that a woman receives by letting her take on more business decisions. However, husbands may be reluctant to share control of the business if this leads to a longer-term shift in the wife's decision-making power. Udry (1996) finds evidence of this rejection of efficiency in the intra-household allocation of resources.

results that control for the ability proxy and its interaction with business training. The coefficients of interest reveal the extent to which the labor supply response of individuals offered business training varies by ability. Standard errors are bootstrapped with 20,000 repetitions preserving the CO structure because the ex-ante probability of default is a generated regressor.[36]

Male CO members offered business training adjust their labor supply according to their (revealed) ability, compared to those not offered training. In particular, according to Panel B, male CO members with a probability of default corresponding to the 25th percentile devote 0.15 more hours to the business relative to those not offered business training in the same percentile of default, while individuals with a probability of default in the 75th percentile devote around 3.7 fewer hours.[37] We note that these results do not have a direct causal interpretation since ability is not randomly assigned and thus should be viewed as heterogeneous treatment effects. However, the fact that we lack an alternative interpretation of why individuals with lower ex-ante likelihood of default should respond differently to BT compared to individuals with high default risk lends support to the idea that training may reveal entrepreneurial ability.

A similar pattern is observed in Column 2 when ability is measured by the growth in expenditures (normalized). An increase of one standard deviation in ability results in an increase of 0.26 hours spent in the business among those that were offered training, although the result is not significant at conventional levels. Columns 3 and 4 report hours of paid work as the dependent variable and, as expected, they exhibit the reverse pattern, though results are again not significant.[38] As before, female labor supply does not vary by ability or treatment.

7.5 Loan Uptake and Repayment

We now turn to the impacts on loan demand and repayment. We use administrative data on 542 loans disbursed after November 2006 that matured from February 2007 to November 2007, the period before the loan lottery and on 1,815 loans

[36] In each replication, we re-sample COs from our original data (which preserves the original CO-level clustering), compute predicted repayment based on the new sample, and re-run the regression in question using the new value of predicted repayment for that replication. See Efron and Tibshirani (1993) for details.
[37] These are the reported marginal effects of the truncated expected value of hours worked.
[38] Hours spent in agricultural activities show a similar pattern to that of columns 1 and 2 but the results are not statistically significant (not shown).

disbursed from November 2007 to November 2008, the period during which the lottery was available until 5 months after the lottery. We have repayment data from February 2007 to November 2009, at which point all loans had matured.

Table 7 presents the results on loan uptake (Column 1), loan size (Column 2) and default (Columns 3-4) before the lottery. We measure default as the percentage of the due amount that had not been repaid by the 20th of the month (Column 2) and at maturity (Column 3).[39] The model predicts a higher likelihood of borrowing if business training makes technology S (which does not require capital) less attractive to participants, shifting them towards technologies that require some capital and hence a loan.[40] Since only lottery winners have an incentive to borrow when they already have an existing loan, the model predicts that the probability of borrowing should also be higher among lottery winners (Prediction 3 of the model in Online Appendix C). When we look at the pooled sample (Panels A and C of Table 7), neither business training, nor being a lottery winner, increases the odds of borrowing. [41] However, there is an increase in loan size among lottery winners, in the period after the lottery is announced, though the effect size is small. The ITT estimate is an increase of Rs. 1,653 or USD 28.

The model also predicts that repayment should be higher among clients offered business training, as increased business knowledge increases the probability of business success and thus repayment (Prediction 4). This prediction cannot be tested because the default rate among controls, both at the 20th of the month and at maturity, is very low (less than 6 and 1 percent, respectively). In other words, the current enforcement of repayment through a combination of joint liability, peer pressure and escalating loan sizes is already quite effective and thus the marginal contribution of business training is

[39] NRSP uses the repayment of loans by the 20th of each month when an installment is due as an early warning signal. Repayment by the 20th of the month is used to trigger the bonus scheme of credit officers (see Giné, Mansuri and Shrestha, 2019 for details on a field experiment testing two incentive schemes in NRSP).

[40] More formally, according to the model the probability of borrowing among individuals offered business training will be higher (lower) if $F(\underline{x}^e) > (<)\ \lambda F'(\underline{x}^A) + (1-\lambda)F'(\underline{x}^0)$.

[41] The increase in loan uptake among lottery winners is given by $(1-\theta)\left(1-F(\overline{x}^e)\right)$. If most individuals have loans that mature during the lottery period (θ is high) or if the expected business knowledge required to make technology H profitable is also high ($\overline{x}^e$ close to $\overline{x}$), then this probability may be small, explaining the results.

insignificant. Related, lottery winners, despite their larger loan sizes (Prediction 3) do not have a higher default rate either.[42]

When we allow for gender disaggregated effects, (Panels B and D of Table 7) we find, once again, that the effects are concentrated among male CO members, especially in Panel D. Male lottery winners increase loan amounts, but the differences remain small (Rs. 1,940 or USD 32). Perhaps unsurprisingly, non-eligible individuals are significantly less likely to borrow (because some are in arrears) and when they borrow, the loan sizes are significantly lower because all first-time borrowers (with lower loan sizes) are also non-eligible for the lottery. As for repayment, non-eligible individuals have, in all panels, higher default rates by the 20th of the month but not at maturity.[43]

Returning to Table 6, the lack of average impacts of business training on the probability of loan uptake could again mask important heterogeneity by revealed ability. Business training could increase the probability of borrowing for individuals that realize they have high ability while reducing the probability for those that realize they have low ability. In short, business training could lead to more informed financial decisions and thus less scope for mistakes (e.g., default rates in columns 7 and 8 of Table 7). Consistent again with the model's Prediction 2, male CO members with a lower ex-ante probability of default are more likely to borrow during the lottery, but only if they were offered business training. Similarly, those with higher growth in expenditures are more likely to borrow. Taken together, the results of Table 6 are remarkable because they suggest that training leads to increased knowledge about one's entrepreneurial ability thus contributing to better labor and financial decisions. The lack of impact among women is consistent with the fact that they are restricted in their labor supply and lack agency to decide whether and how much to borrow, as these decisions are taken by their husbands.

We emphasize that this novel "learning" mechanism is distinguishable from a story where training simply increases the probability of success in business and thus of repayment. With learning, ex-ante worse borrowers have a *lower* probability of borrowing and devote *fewer* hours in the business compared to the control group. If

[42] In the context of the model, the lack of impact on repayment suggests that the high investment-high return technology has about the same risk as the low investment-low return one.
[43] In terms of the model, non-eligible individuals may have on average different business knowledge.

training had only increased the probability of success for more able clients, then ex-ante worse clients would borrow the same as individuals in the control group.

8. Cost-Benefit Analysis

Since we find neither an increase in default nor an increase in the workload of credit officers handling larger loans, we conclude that the larger loans are profitable for the lender.

We also examine the gains from providing business training from both the perspective of the lender and the borrower.[44] We find no increase in loan disbursement nor declines in default due to business training and thus no combined increase in profits (Table 7). While the average client will benefit from business training, in terms of increased expenditures, these gains do not benefit the lender directly. On average, individuals see an increase in household expenditures of about Rs. 4,851 (USD 82) per year or Rs. 25,854 (USD 438.20) over the duration of their client relationship with NRSP.[45] We can also use the results of the first row in Appendix Table A5 to compute the increase in household expenditures for eligible and non-eligible individuals. The increase is about USD 155 per year for eligible individuals but negligible for non-eligible individuals.

The provision of training involves two main costs. First, the one-time costs of developing the materials for trainers and trainees as well as the transport, lodging and salaries for the training of trainers (NRSP staff). Second, the recurring costs of training clients including the actual training sessions as well as the travel allowances and salaries of the staff involved. The cost per trainee is USD 20.44 if we include just the recurring costs, or USD 126.32 if we also account for the up-front costs to set up the training. Since the one-time fixed cost can be amortized over many trainees (not just the ones trained in the study), we only include the recurring costs in the benefit-cost calculation. The average net benefit per individual offered training is around USD 417.75 to the client. In

[44] Here, we examine costs and benefits for the 8 days business training treatment; i.e., we do not consider the "hand-holding" treatment in this analysis.

[45] We use the average duration of 6 years and a 5 percent interest rate to compute the present value. One could argue for a longer duration when computing the private benefits to the client from increased expenditure. Thus, we view these estimates as conservative.

other words, the lender loses money by offering training, while a client eligible for microfinance loans would have benefited even if he or she paid for it; for non-eligible clients, the benefits from training would not outweigh the costs if they needed to pay for it themselves.

9. Conclusions

In this paper we take borrowing and management constraints as the two main barriers to firm growth in developing countries, and we examine the relative importance of these two factors. The experimental design alleviates each potential barrier in turn by randomizing borrowers to receive an 8-day business training course and to participate in a loan lottery where they are eligible to receive loans 7 times larger than the average loan size. We find that offering business training leads to significant increases in business knowledge for both men and women, but only men experience improved business and household outcomes from the training. Female business owners report much lower control over business decisions, and we suspect that this lack of agency limits their returns to human capital. The observed gender differences are consistent with recent literature finding lower returns to financial capital among female entrepreneurs in Uganda (Fiala, 2018) and Ghana especially among women with less managerial control (Fafchamps et al., 2014).

We also find positive returns to offering larger loans for the lender insofar as the offer of larger loans led to increased lending without a rise in default. The benefits from relaxing borrower constraints were more modest for clients, however. Perhaps because the prevailing loan limits were adequate for most clients in the context we study. In contrast, while clients do benefit from the offer of business training, the lender realizes negative returns from providing this service for free. This may explain why only a third of the reporting institutions in the MIX Market data claim to offer enterprise skill development training (see also McKenzie and Woodruff, 2014).

Despite these encouraging results, we note that ninety percent of businesses in our sample have no hired employees and most business owners have low levels of literacy. They are therefore “subsistence” entrepreneurs, that is, individuals that engage in self-employment activities to survive and perhaps provide employment to family members

(Schoar, 2010; Woodruff, 2007). However, even if the impact of these businesses on the aggregate economy is small, they do account for a large share of the population and as a result, business training could serve both as an effective poverty alleviation strategy, as well as a screening device for the provision of microcredit.

References

Banerjee, Abhijit and Esther Duflo. 2008. "What is Middle Class About the Middle Classes Around the World?" *Journal of Economic Perspectives* 24(3): 61-80.

Banerjee, Abhijit and Esther Duflo. 2011. *Poor Economics*. Public Affairs.

Banerjee, Abhijit V, Esther Duflo, Rachel Glennerster, and Cynthia Kinnan. 2015. "The Miracle of Microfinance? Evidence from a Randomized Evaluation." *American Economic Journal: Applied Economics 7(1): 22-53.*

Banerjee, Abhijit and Andrew Newman. 1993. "Occupational choice and the process of development." *Journal of Political Economy* 101 (2): 274– 298.

Berge, Lars Ivar Oppedal, Kjetil Bjorvatn and Bertil Tungodden. 2015. "On the role of human and financial capital for microenterprise development: Evidence from a field experiment in Tanzania." *Management Science* 61(4): 707-722.

Blanchflower, David G. and Andrew J. Oswald. 1998. "What Makes an Entrepreneur?" *Journal of Labor Economics* 16(1): 26-60.

Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie and John Roberts. 2013. "Does Management Matter? Evidence from India" *Quarterly Journal of Economics* 128(1): 1-51.

Bloom, Nicholas, and John Van Reenen. 2010. "Why do management practices differ across firms and countries?" *Journal of Economic Perspectives* 24(1): 203-224.

Bruhn, Miriam and David McKenzie. 2009. "In Pursuit of Balance: Randomization in Practice in Development Field Experiments." *American Economic Journal: Applied Economics* 1(4): 200-232.

Bruhn, Miriam, Dean Karlan, and Antoinette Schoar. 2011. "What Capital is Missing in Developing Countries?" *American Economic Review Papers and Proceedings.*

Buera, Francisco J. Joseph P. Kaboski, and Yongseok Shin. 2011. "Finance and Development: A Tale of Two Sectors." *American Economic Review* 101(5): 1964-2002.

Calderón, Gabriela, Jesse M. Cunha and Giacomo De Giorgi. Forthcoming. "Business Literacy and Development: Evidence From an RCT in Rural Mexico." *Economic Development and Cultural Change*.

Campos, Francisco, Michael Frese, Markus Goldstein, Leonardo Iacovone, Hillary C. Johnson, David McKenzie, and Mona Mensmann. 2018. "Is Personal Initiative Training a Substitute or Complement to the Existing Human Capital of Women? Results from a Randomized Trial in Togo." *AEA Papers and Proceedings* 108: 256-261.

De Mel, Suresh, David McKenzie and Christopher Woodruff. 2009. "Are Women More Credit Constrained? Experimental Evidence on Gender and Microentreprise Returns" *American Economic Journal: Applied Economics*, 1(3):1-32.

De Mel, Suresh, David McKenzie and Christopher Woodruff. 2008. "Returns to Capital: Results from a Randomized Experiment." *Quarterly Journal of Economics* 123(4): 1329-72.

De Mel, Suresh, David McKenzie and Christopher Woodruff. 2014. "Business training and female enterprise start-up, growth, and dynamics: Experimental evidence from Sri Lanka." *Journal of Development Economics* 106: 199-210.

Drexler, Alejandro, Greg Fischer and Antoinette Schoar. 2014. "Keeping it Simple: Financial Literacy and Rules of Thumb" *American Economic Journal: Applied Economics* 6(2): 1-31.

Efron, Bradley and Robert Tibshirani. 1993. *An Introduction to the Bootstrap (Monographs on Statistics and Applied Probability)*. New York: Chapman & Hall.

Emran, M. Sahe, AKM Mahbub Morshed and Joseph Stiglitz. 2007. "Microfinance and Missing Markets." Working paper.

Fafchamps, Marcel, David Mckenzie, Simon Quinn and Christopher Woodruff. 2014. "Microenterprise Growth and the Fly-paper Effect: Evidence from a Randomized Experiment in Ghana." J*ournal of Development Economics* 106: 211-226.

Fiala, Nathan. 2018. "Returns to microcredit, cash grants and training for male and female microentrepreneurs in Uganda." *World Development* 105: 189-200.

Field, Erica, Seema Jayachandran, and Rohini Pande. 2010. "Do Traditional Institutions Constrain Female Entrepreneurship? A Field Experiment on Business Training in India". *American Economic Review* 100(2): 125-29.

Galor, Oded and Joseph Zeira. 1993. "Income Distribution and Macroeconomics."*Review of Economic Studies* 60 (1): 35-52.

Gindling, T.H. and David Newhouse. 2014. “Self-Employment in the Developing World.” *World Development* 56: 313-331.

Giné, Xavier and Robert M. Townsend. 2004. “Evaluation of Financial Liberalization: A General Equilibrium Model with Constrained Occupation Choice.” *Journal of Development Economics* 74: 269-307.

Giné, Xavier, Ghazala Mansuri and Mario Picón. 2011. “Does a Picture Paint a Thousand Words? Evidence from a Microcredit Marketing Experiment.” *World Bank Economic Review* 25(3): 508-542.

Giné, Xavier, Ghazala Mansuri and Slesh Shrestha. 2018. “Mission and the Bottom Line: Performance Incentives in a Multigoal Organization.” Working paper.

Gneezy, Uri, Kenneth L. Leonard, and John A. List. 2009. “Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society.” *Econometrica* 77(5): 1637–64.

Goheer, Nabeel A. 2003. *Women Entrepreneurs in Pakistan: How to Improve Their Bargaining Power.* Geneva: International Labor Organization.

Jacoby, Hanan and Ghazala Mansuri. 2015. “Crossing Boundaries: How Social Hierarchy Impedes Mobility.” *Journal of Economic Behavior and Organization* 117: 135-154.

Hardy, Morgan, and Gisella Kagy. 2018. “Mind the (Profit) Gap: Why Are Female Enterprise Owners Earning Less Than Men?” *AEA Papers and Proceedings* 108: 252-255.

Holtz-Eakin, D., D. Joulfaian and H. S. Rosen. 1994a. “Sticking it Out: Entrepreneurial Survival and Liquidity Constraints.” *Journal of Political Economy* 102(1): 53-75.

Holtz-Eakin, D., D. Joulfaian and H. S. Rosen. 1994b. “Entrepreneurial Decisions and Liquidity Constraints.” *Rand Journal of Economics,* 23 (2): 334-347.

Hussein, Maliha and Shazreh Hussein. 2003. “The Impact of Micro Finance on Poverty and Gender Equity: Approaches and Evidence from Pakistan.” Pakistan Micro Finance Network working paper.

Iacovone, Leonardo, Gabriela Calderón, and Cristina MacGregor. 2018. “Participating or Not? Characteristics of Female Entrepreneurs Participating in and Completing an Entrepreneurial Training Program.” *AEA Papers and Proceedings* 108: 246-251.

International Labor Organization. 2010. *Women in Labor Markets: Measuring Progress and Identifying Challenges*. Geneva: ILO.

Kamal, Samina. 1997. *Women, empowerment and poverty alleviation in South Asia: The dual benefits of Microcredit.* South Asia Poverty Alleviation Program UNDP.

Karlan, Dean S, and Martin Valdivia. 2010. "Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions." *Review of Economics and Statistics* 93(2): 510-527.

King, Robert G. and Ross Levine. 1993. "Finance and Growth: Schumpeter Might be Right." *Quarterly Journal of Economics,* 108(3): 717-737.

Kling, Jeffrey R, Jeffrey B Liebman, and Lawrence F Katz. 2007. "Experimental Analysis of Neighborhood Effects." *Econometrica* 75:83-119.

Kraay, Aart and David McKenzie. 2014. "Do Poverty Traps Exist? Assessing the Evidence." *Journal of Economic Perspectives* 28(3): 127-148.

Lee, David S. 2008. "Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects." *Review of Economic Studies,* 76(3): 1071-1102.

List, John, Azeem Shaikh and Yang Xu. 2019. "Multiple Hypothesis Testing in Experimental Economics." *Experimental Economics*.

Lucas, Robert E. 1978. "On the size distribution of business firms." *Bell Journal of Economics* 9(2): 508-523.

McKenzie, David and Christopher Woodruff. 2014. "What are we learning from business training and entrepreneurship evaluations around the developing world?" *World Bank Research Observer* 29(1): 48-82.

Mead, Donald and Carl Liedholm. 1998. "The Dynamics of Micro and Small Enterprises in Developing Countries." *World Development* 26 (1): 61-74.

Moulton, Brent. 1986. "Random Group Effects and the Precision of Regression Estimates." *Journal of Econometrics* 32(3): 385-397.

Paulson, A. R. Townsend and A. Karaivanov. 2006. "Distinguishing Limited Liability from Moral Hazard in a Model of Entrepreneurship." *Journal of Political Economy* 144(1): 100-144.

Pearlin L.I., M.A. Lieberman, E.G. Menaghan, and J.T. Mullan. 1981. "The stress process." *Journal of Health Social Behavior* 22: 337-356.

Roomi, Muhammad Azam. 2005. "Women Entrepreneurs in Pakistan: Profile, Challenges and Practical Recommendations." Doctoral research paper, University of London School of Management.

Rubin, D.B. 1974. “Estimating causal effects of treatments in randomized and nonrandomized studies.” *Journal of Educational Psychology* 66: 688–701.

Sathar, Z. A. and S. Kazi. 1997. *Women's Autonomy, Livelihood and Fertility: A Study of Rural Punjab.* Islamabad: Pakistan Institute of Development Studies.

Schneider, Friedrich, Buehn, Andreas and Claudio E. Montenegro. 2010. “New Estimates for the Shadow Economies all over the World.” *International Economic Journal* 24(4): 443-461.

Schoar, Antoinette. 2010. “The Divide between Subsistence and Transformational Entrepreneurship” from *Innovation Policy and the Economy vol. 10*. Chicago: National Bureau of Economic Research, pp. 57-81.

Udry, Christopher. 1996. “Gender, Agricultural Production, and the Theory of the Household.” *Journal of Political Economy* 104(5): 1010-1046.

UNDP. 1998. *Human Development Report 1998: Consumption for Human Development.* New York: Oxford University Press.

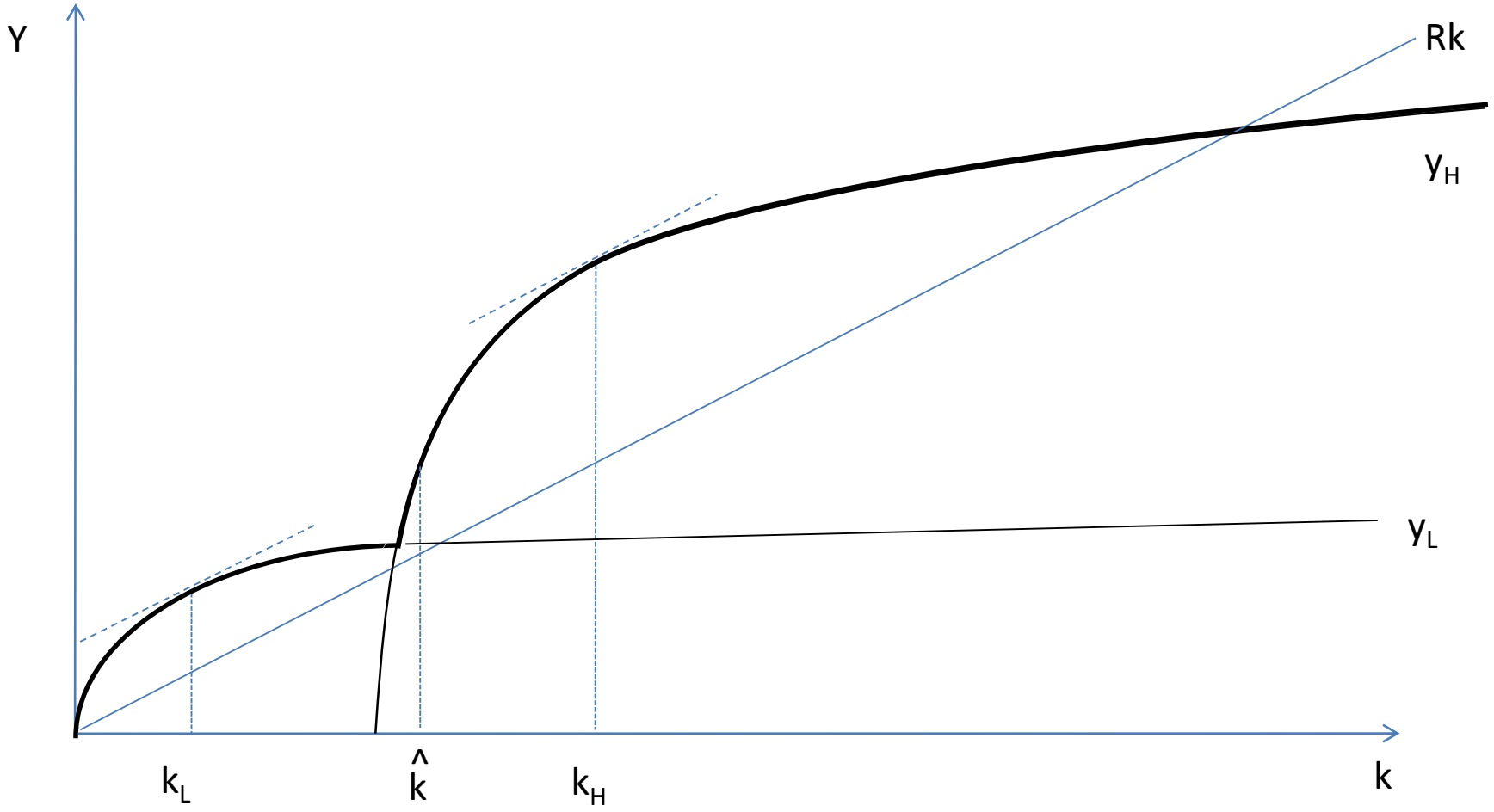
Valdivia, Martin. 2015. “Business Training Plus for Female Entrepreneurship? Short and medium-term experimental evidence from Peru.” *Journal of Development Economics* 113: 33-51.

Yunus, Muhammad. 1999. *Banker to the Poor*. London: Aurum Press Ltd.

Woodruff, Christopher. 2007. “Self-employment: Engine of Growth or Self-help Safety Net?” from *Employment and Shared Growth: Rethinking the Role of Labor Mobility for Development*, eds. Pierella Paci and Pieter Serneels. Washington, DC: The World Bank.

World Bank. 2013. *Are Pakistan’s Women Entrepreneurs being Served by the Microfinance Sector?* Washington, DC: The World Bank.

Figure 1. Dual Production Technology



Notes: Two technologies using capital as single input are available to produce output Y: low productivity (L) and high productivity (H). Capital levels k_L and k_H are optimal given interest rate R, respectively . Capital level $\hat{k}$ achieves the same level of profits using either technology.

Table 1. Summary Statistics

	N. Obs	Mean	Std. Dev.	10th Pct.	Median	90th Pct.	Mean		P-val of t-test
			All members				Male	Female	(7)=(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Member									
Age	4161	37.6	12.0	23.0	35.0	55.0	37.8	37.3	0.14
Years of Education	4161	3.92	4.49	0.00	2.00	10.0	5.24	2.51	0.00
Male (1=yes)	4161	0.52	0.50	0.00	1.00	1.00	-	-	-
Married (1=yes)	4161	0.89	0.31	0.00	1.00	1.00	0.84	0.94	0.00
Digit Span Recall	4161	3.22	2.27	0.00	4.00	6.00	3.81	2.60	0.00
Index of Stress	4161	0.00	1.43	-1.76	0.04	1.94	0.16	-0.17	0.00
Index of Knowledge of Competition	4161	0.00	1.03	-1.38	0.05	1.49	-0.14	0.15	0.00
Index of Female Mobility	2017	0.00	1.34	-1.10	-1.10	2.64	-	-	-
Index of No Purdah	2017	0.00	1.70	-2.82	0.86	1.58	-	-	-
Risk Tolerance (0-10)	4161	3.53	3.00	0.00	4.00	8.00	3.76	3.29	0.00
Months as CO member	4161	25.2	23.4	5.00	19.0	52.0	27.4	22.9	0.00
Interested in Training (1=Yes)	4161	0.58	0.49	0.00	1.00	1.00	0.65	0.50	0.00
Holds office in CO (1=Yes)	4161	0.21	0.41	0.00	0.00	1.00	0.22	0.20	0.10
Business at baseline (1=Yes)	4161	0.61	0.49	0.00	1.00	1.00	0.62	0.60	0.20
Eligibility for Loan Lottery (1=Yes)	4161	0.55	0.50	0.00	1.00	1.00	0.58	0.52	0.00
Household									
Household Size	4161	7.52	3.42	4.00	7.00	12.0	7.88	7.14	0.00
Fraction of CO Members of same Zaat (caste)	4161	0.34	0.34	0.00	0.21	0.94	0.44	0.24	0.00
Ever in Business (1=Yes)	4161	0.61	0.49	0.00	1.00	1.00	0.62	0.60	0.38
Household member has held hereditary or political office (1=Yes)	4161	0.12	0.33	0.00	0.00	1.00	0.15	0.09	0.00
Land (acres)	4161	3.91	17.13	0.00	0.13	8.88	5.51	2.22	0.00
Distance to CO meeting place	4161	7.95	7.12	2.50	10.0	23.0	7.42	8.51	0.00
Credit Constraints (1=Yes)	4161	0.49	0.50	0.00	0.00	1.00	0.49	0.50	0.34
Log Household Expenditures	4161	8.27	0.62	7.31	8.01	9.10	8.28	8.26	0.26
Decision-making power (0-8)	4161	2.56	3.08	0.00	1.00	8.00	3.31	1.76	0.00
Member has a Bank Account (1=Yes)	4161	0.10	0.30	0.00	0.00	1.00	0.14	0.07	0.00
Self-employment (1=Yes)	4161	0.27	0.44	0.00	0.00	1.00	0.32	0.21	0.00
Business									
Agribusiness, Dairy, Livestock (1=Yes)	2532	0.36	0.48	0.00	0.00	1.00	0.50	0.20	0.00
Retail and Food Services (shopkeeping) (1=Yes)	2532	0.19	0.39	0.00	0.00	1.00	0.23	0.15	0.00
Handicraft, Tailoring, Vocational Trade (1=Yes)	2532	0.31	0.46	0.00	0.00	1.00	0.09	0.56	0.00
Other (1=Yes)	2532	0.14	0.34	0.00	0.00	1.00	0.18	0.09	0.00
Business has fixed location (1=Yes)	2532	0.94	0.24	1.00	1.00	1.00	0.90	0.97	0.00
Operates all months (1=Yes)	2532	0.80	0.40	0.00	1.00	1.00	0.81	0.78	0.08
Purchase credit (1=Yes)	2532	0.70	0.46	0.00	1.00	1.00	0.67	0.72	0.00
Records sales (1=Yes)	2532	0.17	0.37	0.00	0.00	1.00	0.22	0.11	0.00
Records Money taken from business (1=Yes)	2532	0.16	0.36	0.00	0.00	1.00	0.20	0.11	0.00
Number of Workers	2532	2.43	1.98	1.00	2.00	4.00	2.51	2.34	0.03
Paid Workers (1=Yes)	2532	0.10	0.29	0.00	0.00	0.00	0.14	0.05	0.00
Log Good Month Sales	2532	8.76	1.31	7.09	8.70	10.60	9.34	8.13	0.00
Log Average Month Sales	2532	8.28	1.26	6.68	8.29	9.95	8.83	7.68	0.00
Log Bad Month Sales	2532	7.75	1.32	6.21	7.60	9.51	8.32	7.13	0.00

Note: Data come from baseline survey of November 2006. See Online Appendix B for definiton of variables. Column 1 reports the number of observations. Index of female mobility and Index of Purdah have 2,017 observations because only females answer the question. Similarly, there are 2,532 businesses in the sample. Column 9 reports the p-value of the t-test of the difference between columns 7 and 8.

Table 2. Randomization Check

	BT	No BT	BT		No BT		P-val of t-test (1)=(2)	P-val of t-test (3)=(5)	P-val of t-test (4)=(6)	Means			P-val of t-test (10)=(11)
										Winner	Loser		
			E	NE	E	NE					E	NE	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Member													
Age	37.3	37.9	37.8	36.6	38.3	37.5	0.48	1.00	0.46	38.2	37.8	37.1	0.40
Years of Education	3.93	3.90	4.18	3.63	3.8	4.02	0.71	0.57	0.82	4.05	3.96	3.81	0.51
Male (1=yes)	0.49	0.54	0.54	0.43	0.54	0.54	0.00	0.11	0.33	0.54	0.55	0.48	-
Married (1=yes)	0.89	0.89	0.91	0.87	0.93	0.84	0.49	0.41	0.15	0.93	0.90	0.86	0.04
Digit Span Recall	3.16	3.29	3.32	2.96	3.24	3.36	0.56	0.66	0.18	3.31	3.26	3.15	0.48
Index of Stress	-0.06	0.07	-0.06	-0.06	0.03	0.11	0.41	0.49	0.53	-0.07	0.03	0.02	0.09
Index of Knowledge of Competition	0.04	-0.05	0.02	0.06	-0.03	-0.06	0.85	0.99	0.67	-0.04	0.03	0.01	0.07
Index of Female Mobility	0.02	-0.03	0.10	-0.05	-0.05	-0.01	0.44	0.98	0.13	0.03	0.03	-0.04	0.86
Index of No Purdah	-0.09	0.12	-0.13	-0.05	0.17	0.06	0.38	0.23	0.92	-0.06	0.08	-0.01	0.17
Risk Tolerance	3.45	3.63	3.42	3.49	3.73	3.5	0.86	0.10	0.11	3.57	3.56	3.50	0.84
Months as CO member	23.9	26.7	24.9	22.7	27.7	25.6	0.48	0.28	0.92	26.6	25.7	24.0	0.21
Interested in Training	0.63	0.52	0.64	0.60	0.51	0.53	0.23	0.14	0.85	0.58	0.58	0.57	0.68
Holds office in CO	0.22	0.19	0.23	0.21	0.20	0.18	0.01	0.08	0.18	0.21	0.22	0.20	0.74
Business at Baseline (1=Yes)	0.62	0.59	0.68	0.56	0.64	0.53	0.28	0.38	0.57	0.66	0.66	0.55	-
Eligibility	0.55	0.55	-	-	-	-	0.10	-	-	-	-	-	-
Household													
Household Size	7.62	7.41	7.53	7.73	7.36	7.46	0.32	0.53	0.36	7.44	7.47	7.60	0.80
Fraction of CO Members of same Zaat (caste)	0.36	0.31	0.35	0.38	0.30	0.32	0.70	0.90	0.69	0.33	0.32	0.35	0.39
Ever in Business (1=Yes)	0.62	0.60	0.64	0.59	0.62	0.58	0.55	0.66	0.73	0.62	0.64	0.59	0.59
Household member has held hereditary or political office (1=Yes)	0.11	0.13	0.13	0.09	0.14	0.12	0.42	0.74	0.37	0.12	0.15	0.11	0.07
Land (acres)	4.01	3.79	3.51	4.62	3.36	4.31	0.32	0.84	0.09	3.01	3.88	4.48	0.21
Distance to CO meeting place	7.90	8.00	8.33	7.38	7.94	8.08	0.20	0.12	0.87	8.15	8.15	7.70	0.96
Credit Constraints (1=Yes)	0.52	0.46	0.53	0.52	0.49	0.43	0.02	0.24	0.04	0.53	0.50	0.47	0.13
Log of Household Expenditures	8.27	8.27	8.25	8.29	8.24	8.30	0.86	0.29	0.45	8.23	8.26	8.29	0.17
Decision-making power (0-8)	2.61	2.51	2.72	2.47	2.62	2.37	0.28	0.99	0.12	2.76	2.59	2.42	0.10
Member has a bank account	0.10	0.10	0.11	0.09	0.09	0.12	0.65	0.16	0.35	0.10	0.11	0.10	0.66
Self-employment (1=Yes)	0.25	0.29	0.27	0.23	0.30	0.27	0.82	0.79	0.94	0.30	0.27	0.25	0.16
Business													
Sector													
Agribusiness, Dairy, Livestock (1=Yes)	0.36	0.35	0.38	0.34	0.39	0.30	0.17	0.39	0.08	0.38	0.39	0.32	0.91
Retail and Food Services (shopkeeping) (1=Yes)	0.19	0.19	0.22	0.15	0.19	0.19	0.33	0.53	0.20	0.23	0.19	0.17	0.04
Handicraft, Tailoring, Vocational Trade (1=Yes)	0.31	0.31	0.26	0.38	0.27	0.38	0.75	0.21	0.29	0.25	0.28	0.38	0.02
Other (1=Yes)	0.13	0.14	0.13	0.13	0.15	0.12	0.15	0.05	0.89	0.15	0.14	0.13	0.78
Business Operation													
Business has fixed location (1=Yes)	0.94	0.93	0.93	0.94	0.94	0.93	0.82	0.91	0.83	0.93	0.94	0.93	0.33
Operates all months (1=Yes)	0.79	0.80	0.80	0.78	0.82	0.77	0.22	0.42	0.44	0.80	0.81	0.78	0.68
Business Practices													
Purchase on credit allowed (1=Yes)	0.70	0.70	0.70	0.69	0.65	0.77	0.46	0.32	0.01	0.68	0.67	0.73	0.58
Records sales (1=Yes)	0.18	0.16	0.20	0.15	0.15	0.16	0.96	0.59	0.60	0.17	0.18	0.15	0.51
Records Money taken from business (1=Yes)	0.18	0.16	0.19	0.16	0.17	0.13	0.37	0.13	0.58	0.18	0.18	0.15	0.96
Employment and sales													
Number of Workers	2.50	2.35	2.57	2.39	2.36	2.33	0.73	0.61	0.93	2.50	2.46	2.36	0.74
Paid Workers (1=Yes)	0.10	0.09	0.11	0.09	0.09	0.09	0.67	0.49	0.87	0.09	0.10	0.09	0.53
Log Good Month Sales	8.76	8.77	8.90	8.55	8.79	8.74	0.18	0.53	0.15	8.83	8.87	8.64	0.60
Log Average Month Sales	8.27	8.30	8.38	8.11	8.33	8.25	0.12	0.21	0.26	8.34	8.38	8.17	0.60
Log Bad Month Sales	7.72	7.78	7.81	7.59	7.83	7.70	0.10	0.08	0.42	7.79	7.85	7.64	0.46

Note: Data come from baseline survey of November 2006. See Online Appendix B for definition of variables. Columns 7, 8, 9 and 13 report the p-value of the t-test of the difference computed after controling for the stratification variables.

Table 3. Business Outcomes

OLS

	Business Knowledge	New Business CO member involved (1=Yes)	New Business CO member not involved (1=Yes)	Main Business Failed (1=Yes)	Aggregate Business Practices	Aggregate Business Operations	Aggregate Sales and Profits
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Intent to Treat Effect							
Business Training (BT)	0.080***	-0.002	0.004	-0.027	0.097**	0.011	-0.044
	(0.026)	(0.007)	(0.011)	(0.024)	(0.047)	(0.024)	(0.049)
R-Squared	0.08	0.01	0.01	0.03	0.05	0.08	0.32
Mean of dependent variable among No BT	-0.02	0.05	0.10	0.39	-0.04	0.00	0.06
Panel B: Intent to Treat Effects with Gender Interactions							
Business Training (BT)	0.077**	-0.007	-0.009	-0.056*	0.120**	0.032	-0.004
	(0.035)	(0.011)	(0.014)	(0.030)	(0.062)	(0.031)	(0.064)
BT * Female	0.006	0.012	0.029	0.064	-0.062	-0.055	-0.104
	(0.053)	(0.015)	(0.023)	(0.047)	(0.088)	(0.046)	(0.090)
R-Squared	0.08	0.01	0.01	0.03	0.05	0.08	0.33
P-value of t - test of ...							
BT + BT * Female = 0	0.04	0.60	0.27	0.81	0.38	0.5	0.12
Mean of dependent variable among No BT Males	0.00	0.05	0.09	0.34	0.08	-0.04	0.42
N. Observations	3494	3494	3494	2137	1333	1333	1333

Note: The dependent variables are aggregates of standardized z-scores. See Online Appendix B for a definition of the aggregates. All regressions are estimated using OLS methods and include as covariates the stratification variables (business ownership at baseline, eligibility for loan lottery, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 3. Business Outcomes (contd.)

OLS

	Business Knowledge	New Business CO member involved (1=Yes)	New Business CO member not involved (1=Yes)	Main Business Failed (1=Yes)	Aggregate Business Practices	Aggregate Business Operations	Aggregate Sales and Profits
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel C: Intent to Treat Effect							
Business Training (BT) and Eligible for Lottery (E)	0.029	-0.018	-0.003	-0.048	0.194***	0.069**	-0.022
	(0.042)	(0.013)	(0.020)	(0.037)	(0.074)	(0.034)	(0.072)
BT and NE	0.088**	-0.027**	-0.039**	0.008	0.247***	0.023	0.07
	(0.042)	(0.012)	(0.018)	(0.038)	(0.080)	(0.037)	(0.077)
Lottery Winner (LW)	-0.031	-0.019	-0.008	-0.010	0.133*	0.095***	0.051
	(0.043)	(0.015)	(0.020)	(0.038)	(0.076)	(0.036)	(0.076)
BT and LW	0.086**	-0.011	0.009	-0.021	0.192**	0.053	-0.082
	(0.042)	(0.014)	(0.020)	(0.039)	(0.076)	(0.037)	(0.072)
NE	-0.003	-0.030**	-0.039**	0.031	0.201***	0.019	0.06
	(0.042)	(0.013)	(0.018)	(0.038)	(0.067)	(0.040)	(0.075)
R-Squared	0.08	0.01	0.01	0.03	0.06	0.08	0.33
P-value of t - test of ...							
BT and E = LW	0.17	0.95	0.81	0.31	0.39	0.47	0.37
BT and E = BT and LW	0.14	0.54	0.51	0.45	0.97	0.58	0.31
LW = BT and LW	0.01	0.53	0.42	0.77	0.43	0.29	0.10
BT and NE = NE	0.03	0.77	0.98	0.55	0.54	0.92	0.89
Mean of Dependent Variable among No BT, No LW and E	0.00	0.06	0.12	0.39	-0.14	-0.05	0.05
Panel D: Intent to Treat Effects with Gender Interactions							
Business Training (BT) and Eligible for Lottery (E)	0.054	-0.011	0.005	-0.069	0.214**	0.090**	0.075
	(0.056)	(0.019)	(0.026)	(0.047)	(0.095)	(0.044)	(0.094)
BT and E * Female	-0.056	-0.015	-0.017	0.055	-0.056	-0.061	-0.281**
	(0.086)	(0.026)	(0.040)	(0.075)	(0.148)	(0.069)	(0.135)
BT and NE	0.072	-0.045**	-0.056***	-0.013	0.187	0.049	0.161
	(0.063)	(0.018)	(0.021)	(0.056)	(0.115)	(0.049)	(0.101)
BT and NE * Female	0.024	0.034	0.031	0.043	0.116	-0.066	-0.214
	(0.087)	(0.025)	(0.035)	(0.079)	(0.162)	(0.072)	(0.146)
Lottery Winner (1=Yes)	-0.013	-0.026	-0.010	-0.006	0.098	0.108**	0.087
	(0.056)	(0.020)	(0.026)	(0.049)	(0.099)	(0.047)	(0.100)
LW x Female	-0.043	0.017	0.005	-0.010	0.096	-0.034	-0.101
	(0.089)	(0.029)	(0.040)	(0.079)	(0.154)	(0.072)	(0.149)
BT and LW	0.081	-0.023	-0.013	-0.048	0.260***	0.088*	-0.06
	(0.056)	(0.018)	(0.023)	(0.050)	(0.100)	(0.047)	(0.091)
BT and LW x Female	0.011	0.030	0.050	0.067	-0.182	-0.097	-0.068
	(0.085)	(0.028)	(0.042)	(0.079)	(0.146)	(0.076)	(0.139)
NE	-0.009	-0.032*	-0.030	0.040	0.204**	0.028	0.11
	(0.056)	(0.018)	(0.023)	(0.049)	(0.090)	(0.055)	(0.096)
NE * Female	0.009	0.004	-0.019	-0.018	-0.006	-0.023	-0.127
	(0.084)	(0.025)	(0.036)	(0.078)	(0.138)	(0.079)	(0.155)
R-Squared	0.08	0.02	0.01	0.03	0.06	0.09	0.33
P-value of t - test of ...							
BT and E = LW	0.22	0.41	0.60	0.18	0.21	0.72	0.90
BT and E = BT and LW	0.60	0.46	0.43	0.66	0.55	0.96	0.08
LW = BT and LW	0.08	0.87	0.92	0.40	0.10	0.71	0.16
BT and NE = NE	0.19	0.44	0.18	0.34	0.88	0.68	0.63
BT and E + BT and E * Female = 0	0.97	0.15	0.70	0.81	0.16	0.59	0.04
BT and NE + BT and NE * Female = 0	0.10	0.52	0.37	0.58	0.01	0.76	0.63
LW + LW * Female = 0	0.42	0.66	0.87	0.80	0.10	0.18	0.90
BT and LW + BT and LW * Female = 0	0.15	0.78	0.28	0.76	0.47	0.88	0.24
NE + NE * Female = 0	0.99	0.11	0.07	0.71	0.05	0.94	0.89
Mean of dependent variable among No BT, No LW and E males	0.05	0.07	0.11	0.34	-0.03	-0.09	0.33
N. Observations	3494	3494	3494	2137	1333	1333	1333

Note: The dependent variables are aggregates of standardized z-scores. See Online Appendix B for a definition of the aggregates. All regressions are estimated using OLS methods and include as covariates the stratification variables (business ownership at baseline, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 4. Individual and Household Outcomes

OLS

	Expenditures and Assets (1)	CO Cohesion (2)	Outlook on Life (3)	Decision-Making (4)
Panel A: Intent to Treat Effect				
Business Training (BT)	0.062***	0.074***	0.085***	0.067
	(0.021)	(0.025)	(0.026)	(0.084)
R-Squared	0.33	0.02	0.08	0.03
Mean of dependent variable among No BT	0.05	-0.04	0.00	-0.04
Panel B: Intent to Treat Effects with Gender Interactions				
Business Training (BT)	0.098***	0.091**	0.052	0.061
	-0.029	(0.036)	(0.036)	(0.128)
BT * Female	-0.082**	-0.034	0.071	0.013
	(0.042)	(0.049)	(0.052)	(0.166)
R-Squared	0.33	0.02	0.08	0.03
P-value of t - test of ...				
BT + BT * Female = 0	0.52	0.11	0.00	0.48
Mean of dependent variable among No BT males	0.22	-0.02	0.11	0.48
N. Observations	3494	3494	3494	3494

Note: The dependent variables are aggregates of standardized z-scores. See Online Appendix B for a definition of the aggregates. All regressions are estimated using OLS methods and include as covariates the stratification variables (business ownership at baseline, eligibility for loan lottery, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 4. Individual and Household Outcomes (contd.)

OLS

	Expenditures and Assets (1)	CO Cohesion (2)	Outlook on Life (3)	Decision-Making (4)
Panel C: Intent to Treat Effect				
Business Training (BT) and Eligible for Lottery (E)	0.079**	0.067*	0.081*	0.051
	(0.032)	(0.039)	(0.044)	(0.156)
BT and NE	0.028	0.062	0.113***	-0.003
	(0.032)	(0.038)	(0.040)	(0.140)
Lottery Winner (LW)	0.043	0.036	0.084**	-0.048
	(0.031)	(0.035)	(0.040)	(0.145)
BT and LW	0.061*	0.070*	0.130***	-0.054
	(0.033)	(0.041)	(0.045)	(0.155)
NE	-0.050	-0.043	0.000	-0.129
	(0.032)	(0.035)	(0.039)	(0.146)
R-Squared	0.33	0.02	0.08	0.03
P-value of t - test of ...				
BT and E = LW	0.29	0.45	0.93	0.51
BT and E = BT and LW	0.58	0.95	0.20	0.44
LW = BT and LW	0.65	0.45	0.28	0.97
BT and NE = NE	0.01	0.00	0.00	0.28
Mean of Dependent Variable among No BT, No LW and E	0.05	-0.03	0.03	-0.03
Panel D: Intent to Treat Effects with Gender Interactions				
Business Training (BT) and Eligible for Lottery (E)	0.120***	0.076	0.016	-0.072
	(0.042)	(0.055)	(0.060)	(0.229)
BT and E * Female	-0.096	-0.022	0.149*	0.29
	(0.064)	(0.077)	(0.086)	(0.304)
BT and NE	0.048	0.095*	0.056	0.008
	(0.044)	(0.057)	(0.057)	(0.220)
BT and NE * Female	-0.055	-0.071	0.115	0.037
	(0.063)	(0.077)	(0.083)	(0.282)
Lottery Winner (1=Yes)	0.077*	0.055	0.055	-0.076
	(0.042)	(0.046)	(0.053)	(0.217)
LW x Female	-0.078	-0.044	0.067	0.067
	(0.062)	(0.071)	(0.080)	(0.283)
BT and LW	0.144***	0.132**	0.121**	-0.21
	(0.045)	(0.063)	(0.060)	(0.227)
BT and LW x Female	-0.188***	-0.143*	0.025	0.358
	(0.064)	(0.080)	(0.088)	(0.301)
NE	-0.05	-0.02	-0.014	-0.313
	(0.044)	(0.054)	(0.053)	(0.220)
NE * Female	-0.007	-0.052	0.031	0.406
	(0.063)	(0.069)	(0.080)	(0.285)
R-Squared	0.33	0.02	0.08	0.03
P-value of t - test of ...				
BT and E = LW	0.34	0.71	0.48	0.99
BT and E = BT and LW	0.58	0.30	0.05	0.49
LW = BT and LW	0.17	0.22	0.24	0.55
BT and NE = NE	0.03	0.02	0.18	0.08
BT and E + BT and E * Female = 0	0.62	0.33	0.01	0.28
BT and NE + BT and NE * Female = 0	0.89	0.65	0.00	0.80
LW + LW * Female = 0	0.99	0.84	0.04	0.96
BT and LW + BT and LW * Female = 0	0.34	0.82	0.03	0.45
NE + NE * Female = 0	0.20	0.09	0.77	0.61
Mean of dependent variable among No BT, No LW and E males	0.21	-0.04	0.10	0.47
N. Observations	3494	3494	3494	3494

Note: The dependent variables are aggregates of standardized z-scores. See Online Appendix B for a definition of the aggregates. All regressions are estimated using OLS methods and include as covariates the stratification variables (business ownership at baseline, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 5. Time Allocation

Tobit

	CO member			Spouse of CO member		
	Business	Paid Work	Agriculture	Business	Paid Work	Agriculture
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Intent to Treat Effect						
Business Training (BT)	1.487*	1.238	0.225	-0.041	-0.704	-2.768**
	(0.890)	(1.851)	(1.165)	(0.553)	(1.805)	(1.279)
R-Squared	0.07	0.04	0.04	0.03	0.01	0.03
Mean of dependent variable among No BT	1.75	1.78	1.05	0.17	1.85	0.79
Panel B: Intent to Treat Effects with Gender Interactions						
Business Training (BT)	2.234*	1.402	1.282	0.542	1.985	-1.814
	(1.158)	(2.254)	(1.368)	(0.843)	(2.714)	(1.536)
BT * Female	-1.758	-0.477	-2.794	-1.246	-5.017	-2.596
	(1.791)	(3.867)	(2.462)	(1.078)	(3.506)	(2.648)
R-Squared	0.07	0.04	0.04	0.03	0.01	0.03
P-value of t - test of ...						
BT + BT * Female = 0	0.73	0.77	0.46	0.30	0.19	0.04
Mean of dependent variable among NO BT Males	1.86	1.86	1.18	0.21	1.83	0.82
N. Observations	3494	3494	3494	3494	3494	3494

Note: The dependent variables in columns 1-3 are log of hours spent by the CO member in various activities the day prior to the survey. The dependent variable in columns 4-6 are log of hours spent by the spouse of CO member in various activities the day prior to the survey. All regressions are estimated using Tobit and include as covariates the stratification variables (business ownership at baseline, eligibility for loan lottery, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 5. Time Allocation (contd.)

Tobit

	CO member			Spouse of CO member		
	Business	Paid Work	Agriculture	Business	Paid Work	Agriculture
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Intent to Treat Effect						
Business Training (BT) and Eligible for Lottery (E)	0.702	1.506	-0.570	-0.555	-0.057	-4.479**
	(1.434)	(3.196)	(1.773)	(0.973)	(2.996)	(1.894)
BT and NE	-0.550	2.613	2.53	0.721	2.730	1.364
	(1.485)	(3.030)	(1.781)	(0.882)	(2.902)	(1.971)
Lottery Winner (LW)	-0.499	-1.800	-0.901	-0.654	0.183	-0.005
	(1.477)	(2.830)	(1.504)	(0.874)	(3.269)	(1.717)
BT and LW	0.766	3.939	-1.667	0.878	-1.439	-6.132***
	(1.441)	(3.062)	(1.783)	(0.952)	(3.159)	(1.995)
NE	-2.798*	4.287	1.083	1.449*	3.296	0.721
	(1.478)	(2.743)	(1.711)	(0.797)	(2.981)	(1.774)
R-Squared	0.07	0.04	0.04	0.03	0.01	0.03
P-value of t - test of ...						
BT and E = LW	0.41	0.30	0.85	0.92	0.94	0.02
BT and E = BT and LW	0.96	0.37	0.45	0.09	0.63	0.33
LW = BT and LW	0.39	0.06	0.66	0.11	0.63	0.00
BT and NE = NE	0.12	0.50	0.42	0.32	0.83	0.73
Mean of Dependent Variable among No BT, No LW and E	1.68	1.79	1.12	0.23	1.92	0.75
Panel D: Intent to Treat Effects with Gender Interactions						
Business Training (BT) and Eligible for Lottery (E)	1.770	2.219	-0.171	-0.934	3.693	-4.554**
	(1.774)	(3.798)	(2.111)	(1.388)	(4.307)	(2.175)
BT and E * Female	-2.711	-2.345	-1.086	0.786	-7.423	0.396
	(2.900)	(6.656)	(3.784)	(1.917)	(6.056)	(4.407)
BT and NE	-1.074	7.404**	1.197	2.591*	9.436**	-1.405
	(2.095)	(3.650)	(2.298)	(1.324)	(4.479)	(2.507)
BT and NE * Female	0.831	-11.861*	2.168	-3.175*	-11.336*	6.553
	(2.934)	(6.207)	(3.586)	(1.742)	(5.864)	(4.175)
Lottery Winner (1=Yes)	-1.198	-0.611	0.503	-1.014	0.456	-1.066
	(1.759)	(3.358)	(1.789)	(1.193)	(4.963)	(1.964)
LW x Female	1.710	-3.580	-4.211	0.814	-0.556	3.324
	(3.097)	(6.046)	(3.254)	(1.745)	(6.611)	(3.952)
BT and LW	1.445	3.447	1.258	0.635	-1.752	-5.144**
	(1.808)	(3.655)	(2.081)	(1.350)	(4.884)	(2.212)
BT and LW x Female	-1.676	0.788	-8.542**	0.462	0.089	-2.952
	(2.934)	(6.306)	(3.941)	(1.882)	(6.360)	(4.732)
NE	-3.230*	7.736**	-1.240	1.536	5.567	-3.240
	(1.878)	(3.247)	(1.976)	(1.169)	(4.551)	(2.097)
NE * Female	0.942	-9.618*	5.366	-0.013	-3.940	10.357***
	(3.010)	(5.649)	(3.538)	(1.587)	(6.005)	(3.880)
R-Squared	0.07	0.04	0.04	0.03	0.01	0.04
P-value of t - test of ...						
BT and E = LW	0.10	0.46	0.74	0.96	0.51	0.13
BT and E = BT and LW	0.83	0.72	0.40	0.20	0.21	0.76
LW = BT and LW	0.15	0.27	0.71	0.25	0.68	0.08
BT and NE = NE	0.27	0.91	0.24	0.36	0.33	0.44
BT and E + BT and E * Female = 0	0.69	0.98	0.69	0.91	0.38	0.28
BT and NE + BT and NE * Female = 0	0.91	0.38	0.23	0.61	0.62	0.13
LW + LW * Female = 0	0.84	0.40	0.17	0.88	0.98	0.51
BT and LW + BT and LW * Female = 0	0.92	0.41	0.03	0.40	0.69	0.05
NE + NE * Female = 0	0.33	0.69	0.16	0.16	0.68	0.03
Mean of Dependent Variable among No BT, No LW and E Mal	1.78	1.81	1.28	0.27	1.88	0.81
N. Observations	3494	3494	3494	3494	3494	3494

Note: The dependent variables in columns 1-3 are log of hours spent by the CO member in various activities the day prior to the survey. The dependent variable in columns 4-6 are log of hours spent by the spouse of CO member in various activities the day prior to the survey. All regressions are estimated using Tobit and include as covariates the stratification variables (business ownership at baseline, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 6. Heterogeneous effects by proxy for ability

	Labor supply				Loan Uptake	
	Business		Paid Work			
Proxy for Ability:	Prob. of Default	Growth in Expenditures	Prob. of Default	Growth in Expenditures	Prob. of Default	Growth in Expenditures
	(1)	(2)	(3)	(4)	(5)	(6)
	Tobit	Tobit	Tobit	Tobit	OLS	OLS
Panel A: Intent to Treat Effects						
Business Training (1=Yes)	2.624**	1.473	-2.624	1.374	0.010	0.001
	(1.278)	(0.899)	(2.560)	(1.902)	(0.029)	(0.021)
BT x Proxy	-9.056	0.142	30.842*	-2.155	-0.081	-0.002
	(7.146)	(0.857)	(16.135)	(1.920)	(0.159)	(0.018)
Proxy	2.714	-0.456	-86.541***	4.171**	-0.073	0.014
	(8.067)	(0.779)	(18.106)	(1.785)	(0.153)	(0.015)
R-Squared	0.07	0.07	0.05	0.04	0.24	0.24
Panel B: Intent to Treat Effects with Gender Interactions						
Business Training (1=Yes)	4.530***	2.896**	-1.153	1.107	0.062*	0.029
	(1.570)	(1.294)	(2.906)	(2.282)	(0.037)	(0.030)
BT x Proxy	-18.835**	1.804	27.109	-3.046	-0.460**	0.040*
	(8.918)	(1.125)	(19.236)	(2.417)	(0.212)	(0.024)
BT x Female	-4.511*	-1.444	-2.762	-2.782	-0.139**	-0.023
	(2.657)	(2.045)	(5.531)	(4.395)	(0.057)	(0.043)
Proxy x Female	-16.526	2.614	47.002	-10.137***	-1.066***	0.051*
	(12.196)	(1.667)	(28.940)	(3.555)	(0.241)	(0.030)
BT x Proxy x Female	23.197	-4.167**	-0.082	5.234	0.987***	-0.095**
	(14.489)	(1.982)	(33.224)	(4.449)	(0.304)	(0.040)
Proxy	9.080	-1.420	-99.395***	6.620***	0.359**	-0.008
	(8.442)	(0.979)	(19.504)	(2.168)	(0.181)	(0.018)
R-Squared	0.07	0.07	0.05	0.05	0.25	0.24
P-value of t - test of ...						
BT= BT x Female	0.02	0.15	0.83	0.51	0.02	0.44
BT x Ability = BTx Ability x Female	0.05	0.03	0.46	0.17	0.00	0.02
Mean of dependent variable among controls	1.79	1.79	1.80	1.80	0.48	0.48
Percentages with 0 hours	54.78%	54.78%	77.42%	77.42%	-	-
N. Observations	3494	3494	3494	3494	4161	4161

Note: The reported mean of the dependent variable is computed using CO members not offered business training nor chosen as winners of the lottery. However, for column 1-4, the mean of positive business and paid work hours is reported. The dependent variable in column 1-4 is the number of log hours. In column 5-6 is a dummy that takes value 1 if individual applied for a loan. In odd-numbered columns the proxy for ability is the probability of default while in even-numbered columns the proxy is the normalized change in log expenditures.See Online Appendix B for more details on the definition of variables. Column 1-4 is estimated using Tobit and 5-6 is using OLS methods and include as covariates the stratification variables (eligibility for loan lottery, business ownership at baseline, gender and branch dummies). Standard errors reported in parentheses are bootstrapped with 20,000 samples. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 7. Repayment Outcomes

	Before Loan Lottery				During and After Loan Lottery			
		Loan	Amount due as			Loan	Amount due as	
	Took Loan	Amount (Logs)	At 20 days	At Maturity	Took Loan	Amount (Logs)	At 20 days	At Maturity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Intent to Treat Effect								
Business Training (BT)	0.006	-0.023	-0.011	-0.004	0.008	0.010	0.002	-0.002
	(0.011)	(0.043)	(0.020)	(0.003)	(0.020)	(0.031)	(0.018)	(0.007)
R-Squared	0.02	0.38	0.10	0.02	0.19	0.15	0.05	0.01
Mean of dependent variable among No BT	0.06	9.71	0.04	0.00	0.33	9.85	0.06	0.01
Panel B: Intent to Treat Effects with Gender Interactions								
Business Training (BT)	0.009	0.015	0.014	-0.001	0.026	0.012	0.009	0.000
	(0.015)	(0.083)	(0.043)	(0.001)	(0.028)	(0.042)	(0.027)	(0.010)
BT * Female	-0.005	-0.070	-0.045	-0.005	-0.038	-0.004	-0.021	-0.006
	(0.022)	(0.087)	(0.046)	(0.004)	(0.039)	(0.056)	(0.029)	(0.011)
R-Squared	0.02	0.38	0.11	0.02	0.19	0.15	0.05	0.01
P-value of t - test of ...								
BT + BT * Female = 0	0.82	0.10	0.01	0.21	0.65	0.85	0.07	0.05
Mean of dependent variable among No BT Males	0.05	9.80	0.06	0.00	0.35	9.94	0.08	0.02
N. Observations	4161	542	542	542	4161	1815	1815	1815

Note: The dependent variables come from administrative records from the lender. See Online Appendix B for a definition of the variables. All regressions are run using OLS methods and include as covariates the stratification variables (business ownership at baseline, eligibility for loan lottery, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.

Table 7. Repayment Outcomes (contd.)

	Before Loan Lottery				During and After Loan Lottery			
			Amount due as % of principal				Amount due as % of principal	
	Took Loan	Loan Amount (Logs)	At 20 days	At Maturity	Took Loan	Loan Amount (Logs)	At 20 days	At Maturity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C: Intent to Treat Effects								
Business Training (BT) and Eligible for Lottery (E)	0.016	-0.042	-0.013	-0.004	0.036	0.031	0.010	-0.002
	(0.017)	(0.047)	(0.025)	(0.003)	(0.033)	(0.035)	(0.023)	(0.011)
BT and NE	-0.052***	-0.068	-0.024	-0.008	-0.236***	-0.106***	0.023	-0.005
	(0.015)	(0.047)	(0.020)	(0.006)	(0.030)	(0.040)	(0.025)	(0.009)
Lottery Winner (LW)					0.011	0.076***	-0.013	-0.008
					(0.025)	(0.025)	(0.014)	(0.009)
BT and LW					0.007	0.086**	-0.003	-0.001
					(0.035)	(0.042)	(0.022)	(0.011)
NE	-0.047***	-0.116**	-0.022	-0.008	-0.234***	-0.084**	0.057***	0.015
	(0.015)	(0.054)	(0.020)	(0.006)	(0.030)	(0.037)	(0.022)	(0.010)
R-Squared	0.02	0.38	0.10	0.02	0.19	0.16	0.05	0.02
P-value of t - test of ...								
BT and E = LW					0.45	0.24	0.23	0.37
BT and E = BT and LW					0.23	0.05	0.24	0.92
LW = BT and LW					0.92	0.83	0.59	0.25
BT and NE = NE					0.92	0.62	0.24	0.08
Mean of Dependent Variable among No BT, No LW and E	0.08	9.78	0.04	0.01	0.47	9.87	0.06	0.01
Panel D: Intent to Treat Effects with Gender Interactions								
Business Training (BT) and Eligible for Lottery (E)	0.015	-0.009	0.016	0.000	0.038	0.024	0.021	0.000
	(0.024)	(0.084)	(0.050)	(0.000)	(0.045)	(0.045)	(0.031)	(0.016)
BT and E * Female	0.003	-0.065	-0.059	-0.009	-0.001	0.025	-0.037	-0.005
	(0.033)	(0.088)	(0.055)	(0.007)	(0.065)	(0.064)	(0.033)	(0.016)
BT and NE	-0.063***	-0.149	-0.040	0.000	-0.281***	-0.085	0.043	0.000
	(0.019)	(0.099)	(0.035)	(0.000)	(0.042)	(0.056)	(0.049)	(0.016)
BT and NE * Female	0.020	0.106	0.013	-0.013	0.084	-0.041	-0.052	-0.010
	(0.029)	(0.106)	(0.039)	(0.010)	(0.059)	(0.078)	(0.050)	(0.016)
NE	-0.062***	-0.245**	-0.021	0.003	-0.323***	-0.109**	0.121**	0.033
	(0.019)	(0.113)	(0.039)	(0.002)	(0.041)	(0.054)	(0.048)	(0.021)
NE * Female	0.030	0.195	-0.004	-0.016	0.183***	0.039	-0.127***	-0.034
	(0.030)	(0.122)	(0.044)	(0.011)	(0.061)	(0.073)	(0.048)	(0.021)
Lottery Winner (1=Yes)					0.02	0.091***	-0.018	-0.012
					(0.034)	(0.029)	(0.020)	(0.013)
LW x Female					-0.021	-0.05	0.015	0.013
					(0.051)	(0.055)	(0.021)	(0.013)
BT and LW					-0.004	0.093*	0.004	-0.001
					(0.050)	(0.053)	(0.030)	(0.015)
BT and LW x Female					0.027	-0.022	-0.027	0.000
					(0.070)	(0.078)	(0.032)	(0.015)
R-Squared	0.02	0.39	0.11	0.03	0.19	0.16	0.06	0.02
P-value of t - test of ...								
BT and E = LW					0.71	0.15	0.15	0.22
BT and E = BT and LW					0.19	0.04	0.30	0.89
LW = BT and LW					0.64	0.98	0.39	0.18
BT and NE = NE					0.13	0.73	0.25	0.19
BT and E + BT and E * Female = 0	0.47	0.04	0.02	0.20	0.44	0.28	0.07	0.07
BT and NE + BT and NE * Female = 0	0.06	0.31	0.16	0.21	0.00	0.02	0.09	0.00
NE + NE * Female = 0	0.16	0.30	0.23	0.20	0.00	0.15	0.27	0.79
LW + LW * Female = 0					0.99	0.38	0.46	0.71
BT and LW + BT and LW * Female = 0					0.64	0.22	0.03	0.79
Mean of Dependent Variable among No BT, No LW and E Males	0.07	9.86	0.05	0.00	0.53	9.91	0.07	0.02
N. Observations	4161	542	542	542	4161	1815	1815	1815

Note: The dependent variables come from administrative records from the lender. See Online Appendix B for a definition of the variables. All regressions are run using OLS methods and include as covariates the stratification variables (business ownership at baseline, gender and branch dummies). Standard errors reported in parentheses are clustered at the CO level. The following symbols *, * * and ** * denote significance at the 10 , 5, and 1 percent level, respectively.