Role models or individual consulting: The impact of personalizing micro-entrepreneurship training*

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Abstract

Using a randomized experiment in Chile we study the impact role models have in the context of a training program for micro-entrepreneurs. We show that being in a group randomly chosen to be visited by a successful alumnus of the program increases household income one year after, mostly due to increased business participation and business income. We also randomized the provision of personalized "consulting sessions" vis-à-vis group sessions, and observe similar effects on income, with the role model intervention being significantly more cost effective and better suited for less experienced businesses.

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1 Introduction

Microfirms are an important player developing countries, particularly for women. However, most of them perform poorly: they do not grow, rarely or never hire workers outside of family members, and have low productivity. Several explanations have been suggested for this poor performance, in particular, lack of access to credit and an overall lack of knowledge on how to run a business are among the most popular hypotheses. However, a number of program evaluations have shown limited results for interventions aimed at solving these problems, suggesting that these limits may not be strongly binding for entrepreneurs.[1] Meanwhile, one can also ascertain, from observational studies of microfirms in developing countries, that many of these firms are not a high priority for their owner, who often own more than one business, combine entrepreneurship with household chores or another job, etc. In this paper, we explore whether there may be other barriers, such as a lack of dedication or difficulties in applying knowledge in practice, that could be remediated with interventions that do not focus solely on in-class learning. We do so using a randomized control trial to evaluate the impact of including a role model in a training program for micro-entrepreneurs in Chile in line with academic research in the topic.[2] We work with Fundación Simón de Cirene, a Chilean non-profit organization whose aim is to improve the welfare of micro-entrepreneurs through financial and managerial training, within the context of one of their entrepreneurship training programs.

The main focus of our study is to study the impact of including role models in training courses. Role models, who are selected among successful micro-entrepreneurs who are alumnus of the program, attend one of the classes and share their testimony. This intervention follows the same idea that has been implemented in the education sector (Nguyen, 2008), but we are unaware of any similar program for the case of micro-entrepreneurs training.[3] If the impact of the training programs is diminished because the students feel the material is not useful for their situation, and have lim-

[1] See McKenzie and Woodruff (2017) for a review of results. However recent studies also show that more intense programs seem to generate some impacts.

[2] Experimental methods also are an adequate tool for evaluating and measuring programs like the one in this paper, see (Duflo et al., 2007).

[3] In a randomized trial in Kenya, Brooks et al. (2017) study the impact of pairing inexperienced micro-entrepreneurs with more experienced entrepreneurs. Their intervention is a one-to-one match and works more as mentorship rather than the role model aspect we study.

ited incentive to learn and implement the techniques, the role models may allow participants to see how useful the material being taught is and thus increase their interest in learning. However, the role model's eventual impact may come from other channels such as motivation, initiative, reassessing the likelihood of success or by learning about successful entrepreneurs' skills and personal traits. We find that the students who participate in a group that was randomly assigned a role model have higher household income one year later.

Our study considers a second intervention, namely the use of personalized technical assistance, which basically consists of a single consulting session where a teaching assistant provides help to translate the course material into concrete actions and practices. The training program delivered by our partner ONG includes only group-based assistance, thus the individual session had the potential to change the dynamic of the interaction, and increase the time each student received from the assistant. The choice for studying personalized technical assistance is twofold. First, it has been recognized in a number of papers (Bruhn et al., 2013; Karlan and Valdivia, 2011) as potentially increasing the value-added of training significantly. However, it is also one of the costliest forms of interventions implemented, in our case, it is almost ten times more expensive than offering technical assistance to a group.[4] Second, we use it because it provides a useful benchmark to compare the role models in terms of cost-effectiveness. We find that personalized technical assistance also increases household income one year after but it does so at a much higher cost.

The compliance of assignment treatments was relatively high and the pre-characteristics of participants were relatively balanced across treatment groups. We measure income and business health one year after the start of the program through a phone survey. To explore the channels through which these outcomes could be altered, we also collected business practices and techniques, knowledge, etc., through that phone survey, and exploited administrative data from the NGO.

Our endline survey suggested that these interventions had an effect one year after they were implemented. Both the visit of the role model and personalized technical assistance raised house-

[4]The costs related to personalized sessions at the business site or in a classroom are more similar because the former requires more travel time, while the latter requires the NGO to pay for more hours of classroom rental.

hold income by about US$30 to US$50 per capita, or by about 15 percent of the control group mean. This appears to be due to improvements in business ownership and profits, although more significantly so for the role model than for personalized assistance. The role model also appears to have increased the degree of formalization of firms. When looking at channels, there is some evidence that the technical assistance improved the management practices and participants' knowledge while the impacts are more limited for the role model. Feedback from students after the visit of the role model confirms that their attitude towards entrepreneurship and the class changed, in line with the message delivered by the speaker. We also find evidence that the personalized assistance may be more complementary to business experience and formal education compared to the role model treatment.

Our results contribute to the literature on micro-entrepreneurship training programs by presenting rigorous evidence about role models, a new idea that we borrow from the literature on high school enrollment (see Nguyen, 2008), as a tool to change the way students perceive and adopt the "abstract" in-class learning to their business. Our results highlight the potential benefits that can be obtained if we incorporate role models to otherwise standard micro-entrepreneurship training programs. Role models prove to generate similar impacts to more intensive technical assistance but do so a much lower cost.

The recent experimental evidence on training programs has shown both positive and zero effects. In spite of these less than conclusive results, some lessons have been extracted. First, it seems that training is effective when it is taught in simple ways, such as rules-of-thumb (Drexler et al., 2014). There is also some evidence that short programs have limited impact (as shown in Bruhn et al., 2014, for a financial training program in Mexico), while intensive programs seems to have some significant effects (Anderson et al., 2016; Calderon et al., 2013), thus indicating that the interventions must have enough content to really generate a change in micro entrepreneurs' behavior.[5] It is also observed in most studies from this literature, that complementing in-class sessions with follow-up visits and technical assistance has significant positive effects, thus sug-

[5] McKenzie and Woodruff (2017) analyzes five studies on training programs and conclude that the impacts on firm and sales growth are small because the programs achieve on business practices that are not large enough to translate into higher growth or sales.

gesting that extending the learning process outside the classroom is beneficial; however, it is also possible that the extra personalized help has little to do with learning but is offering a personalized support that improves the motivation. There is also some evidence that financial support, or monetary rewards might foster entrepreneurs and could have a larger impact, as shown by Cho and Honorati (2014).

In the case of female entrepreneurs, the evidence is even more nuanced. Some of the literature shows that males have a stronger response to training programs offered to both males and females (see Berge et al., 2014, for example). At the same time, female entrepreneurs also seem to benefit from personalized support and follow-up visits as evidenced by the results in Valdivia (2012) for a training program in Peru. This study also shows that the positive impacts are concentrated in the larger businesses, suggesting that either those managing larger businesses are better prepared to adopt the new tools that are being taught, or that these tools are more effective for businesses of a certain size. Interestingly, other results show that the effects are heterogeneous and that women in groups that face stronger social restrictions benefit the most from training (see Field et al., 2010), suggesting that fostering entrepreneurship could become a tool to empower women who are traditionally less likely to participate in business or labor markets.

Finally, the literature underlines the fact that there exists great heterogeneity in the programs offered and highlights the importance of identifying how the different components of these programs operate in order to achieve the expected results (Xu and Zia, 2012) (see also McKenzie, 2010; McKenzie and Woodruff, 2013; World Bank, 2012). Although we have some sense that technical assistance and follow-up visits are useful, there is not much evidence about which kind of support (individual or group assistance, for example), content and mechanisms for imparting those courses provide effectiveness. Moreover, the cost of the programs vary greatly (see Sonobe et al., 2012) therefore a better understanding of the components and mechanisms that explain some of the positive results could help agencies, both private and publicly funded, to increase their cost effectiveness.

Overall, we think that the results about the role model and the additional results on personalized technical assistance are useful inputs for the discussion on microfirms and micro-entrepreneurship

training. In the context of the current evidence we show that these two interventions seem to generate meaningful improvements in income, and that might be useful tools to incorporate into standard, or more intense, training programs.

This paper also relates to the literature that studies why role models positively impact micro-entrepreneurs. Exposure to a successful role model might provide new information about the upside of the distribution of returns to their activity (Wilson, 2012) or about what they can aspire to achieve if they have enough persistence in their endeavors, potentially pushing their business one step further up in the ladder (Ray, 2006). In this sense, a successful micro-entrepreneur, who started in the same program, change the perceived or potential returns of the students' efforts, leading to different investment and occupational decisions. Bursztyn et al. (2014) argue that learning is not the only potential way peers can influence important investment decisions but that social utility also plays an important role. Thus, role models could also modify the behavior of micro-entrepreneurs through either incentivizing them to act like them or giving them the encouragement necessary to take the difficult actions required for making their business successful.

In the psychology literature, the motivational aspect of role models is particularly emphasized. For example, Lockwood et al. (2002) argue that the increased motivation provided by a role model depends on the regulatory concerns of the participants; those who are promotion-focused will be more motivated by role models who show them where they can excel while risk-averse individuals will be more motivated by role models who show them how to avoid problems. Marx and Roman (2002) emphasize that having a woman present when women take difficult math exams can increase women's performance on that test.

Finally, there are many studies that emphasize the potential mentoring character of a role model. For example, teachers akin to their students may be able to mentor them in classroom (Fairlie et al., 2014; Hoffmann and Oreopoulos, 2009). Overall, there are many potential channels through which the presence of a role model could influence the behavior of micro-entrepreneurs. With a better understanding about the components that determine the success of training and the ability of it to have a real impact on micro-entrepreneurs, it becomes possible to guide the design of the training.

This rest of the paper is organized as it follows. In section 2, the training program and its components are described. Section 3 presents the methodology of the research and the data collection procedure. Section 4 shows the results of the study and the last section concludes the paper.

2 Program description

We measure the impact of using role models and the different kinds of technical assistance in a set of training courses delivered by a non-governmental organization, Simón de Cirene. This organization conducts training courses aimed at supporting and strengthening micro-entrepreneurs' capacity to manage their businesses. The classes are financed by subsidies from the Training and Employment National Service (SENCE), as part of a program for informal micro-entrepreneurs of the first and second income quintiles. Even though the program is targeted to both genders, the participants are mostly women (92 percent in our sample).

The program used for the purpose of this study was delivered in the Region Metropolitana of Santiago during the years 2013 and 2014.[6] The call for participants was sent through municipalities, who invite micro-entrepreneurs to apply for the training program. Although the majority of the invited individuals have a micro-business, the courses are also open to participants who have a business idea and want to develop it. There are two types of courses: a first basic course named "Assessment Workshop" and a second more advanced course named "Coaching I" for students that already have a business and have completed the equivalent to the previous course. Both courses share several topics and elements. Selection into classes depends on self-reported characteristics of the business and available slots: there are mature businesses in the basic course and younger businesses in the advanced one. We use three cohorts of the basic course and one cohort of the advanced class in this paper. Each class has a maximum of 26 participants. Both courses (basic or advanced) have 12 to 14 weekly sessions, each lasting 4 hours.

Course participation is free and (partial) funding for out-of-pocket expenses including transportation (Ch$ 3,000 or US$ 4.5 per session) is provided. The program is given by a professional

[6]The program is also delivered two other cities outside Santiago.

with a business degree, who has experience working with small companies, and accompanies the participants through the whole process. There is also a teaching assistant, usually a business school senior student, who is responsible for the technical assistance.

The evaluation measures two components that were added to the original program. The first one consists of the participation of a role model as a testimony to the class peers. The role model is a former student who has succeeded in her or his business. The visit is a one hour talk during a class and takes place between classes number 5 and 7. In this visit, the micro-entrepreneur shares his/her experience with the participants and explains how the knowledge acquired during the course contributed to the success of his/her business project. More so, in many cases, the former student gives out practical information (for example, on how to apply for seed capital funds for micro-entrepreneurs). Before his/her session with the class, the role model is coached by the teacher, who also selected her or him, on how to give a significant testimony that is directed to the subject of interest. The exposure to success stories from peers from similar backgrounds has the potential of making an impact on the participants, who could be inspired and stimulated in their challenges as micro-entrepreneurs and students. It could also stimulate the adoption of proper management practices by improving the perception of the returns on investment of their businesses and projects.

One may be concerned that the role models are unique individuals and as such, each "treatment" may differ from one class to another. In total, we had 22 different individuals serving as role models. Table 1 presents the characteristics of the role models in our experiment, weighted by the size of the classes to which they presented. On average role models are similar to participants in terms of age and gender but they are more successful as demonstrated by their business income of about US$4,000 per month and they tend to be more involved in the manufacturing of goods rather than in commerce or services.[7] Overall, participants share the same gender as the role model in 88 percent of the cases. They are within 5 years of age of the role model in 30 percent of the cases and have businesses in the same broadly defined sector in 40 percent of the cases.

The second additional component evaluated is the delivery of technical assistance to the par-

[7]Summary statistics for the participants are in Appendix Table A.1.

ticipants. In these technical assistance sessions the participants conduct the following analysis for their business or project: (i) costs, margins and break-even point analysis, (ii) SWOT Analysis (Strengths, Weaknesses, Opportunities y Threats), and (iii) commercial strategy, considering the case and context of their business. We contrast 3 alternative ways to deliver this part of the program, which have relevant implications for its cost: individual assistance in the place where the micro-entrepreneur develops her business; individual assistance before or after classes in the class location; and group assistance before or after classes. It is important to highlight that technical assistance is delivered to all course participants, including those that do not have a business at the time of the course. In these cases, the people designated to receive assistance in their business place receive it at their homes. The assistant teacher gives the technical assistance between classes number 10 and 14. The schedule and date of the technical assistance is agreed upon between the teacher and the participant, to whom alternative dates and hours are offered for the session. To prevent participants missing the technical assistance session, when a participant does not show to an agreed meeting, the teaching assistance will reach out to the participant 2 more times in order to set a new time and date for the session. Although the provision of a more personalized support, individual technical assistance, and more specifically, assistance delivered at the entrepreneur's location, have the potential to be more effective, these methodologies are more costly to implement so it is fundamental to know if receiving the technical assistance at the business site or individually is more effective or not and in which magnitude. It also provides an interesting contrast to the role model since this is much more personalized to one's business but also provided by someone with whom the micro-entrepreneurs may not closely relate with.

3 Methodology

3.1 Empirical strategy

To evaluate these two different components of training, we use a double randomized assignment of participants to the different components of the program that are being evaluated: sessions with the role model and different ways of delivering technical assistance. Overall, the study will

include the randomization of 66 different courses with 1,712 participants. We had one cohort (13 courses) from the advanced class and the remainder (53 courses) from the basic class. We first randomly assign half of the courses (34 groups) to receive a session with a role model, and the other half (32 groups) as control groups. The randomization was stratified according to their cohort, county and region. Our initial power calculations suggested that we would be able to detect something larger than 0.2 standard deviations, something smaller than our ex-post calculations, although for some variables we can identify something as small as 0.214 standard deviations.[8] The randomized assignment of the courses to role models was made between classes 3 and 4, before applying our first baseline survey. It is important to point out that the participants were never informed of this, so their answers were not affected by the role model yet.

Within each class, we then randomly allocated one third of the participants to group assistance, the other third to individual assistance and the last third to individual assistance on location. This was done stratifying by class, ownership of an actual business and provision of an informed consent (as long as the information was available). For the technical assistance analysis, the study includes randomization of 53 courses and 1,347 participants divided in three equal groups who received the different modalities. This is a smaller sample because the 13 advanced classes never received technical assistance since their program does not include that provision, given that their businesses are more mature. Our initial power calculations suggested that we would be able to detect any effects larger than 0.193 standard deviations.[9] Our updated calculations suggest that our power may be smaller than this, closer to 0.32.

We used four cohorts of participants to achieve our desired sample size. They were in classes starting from March 2013 to March 2014 and surveyed by phone between April 2014 and May 2015. We include fixed effects for the cohorts (through our strata) to avoid any problems related to seasonality or business cycle fluctuations.

We then identify the impact of these two interventions on outcomes of interest through an OLS regression which includes controls for the baseline indicator and for the stratums used for

[8] Assuming a power of 80 percent, an ICC of 0.05, an attrition rate of 10 percent, a compliance rate of 90 pecent and a correlation between baseline and follow-up of 0.5.

[9] Assuming a power of 80 percent, an attrition rate of 10 percent and a compliance rate with the treatment assigned of 90 percent.

this assignment. The specification of the regression is as follows:

$$Y_{it} = \alpha + \beta_{ITT} T_{it} + \delta Y_{it-1} + \gamma X_{it-1} + \varepsilon_{it} \quad (1)$$

where $Y_i t$ is the outcome variable of individual i in the midline or endline survey (t), $T_i t$ is a vector of dichotomic variables that are equal to 1 if the participant was assigned to the treatment and 0 if not, Y_{it-1} is the value of the outcome variable at baseline, X_{it-1} is a vector of control variables including strata dummies, age, gender, education and business sales and ε_{it} is the error term. The impact of the training course component over the reference category is given by the parameter β. This corresponds to the Intention To Treat effects or the impact of being assigned to a relevant treatment. In an imperfect compliance context as ours, the estimation of impact of the program over those individuals who comply with the treatment assigned can be obtained using Instrumental Variables, where the instrument is the assignment of the program and the instrumented variable is the effective reception of the treatment. However, for the purpose of this study we will present only the ITT estimates since we are worried about violations of the exclusion restriction at least in the case of the role model. It is possible that the visit of the role model would affect all students and not only those who were present at the role model session.

Note that we do not have a perfect response rate in our baseline and that this response rate varies from question to question. Thus, when we control for baseline response Y_{it-1}, we include all observations for which the end-line survey was answered but include a dummy if the individual did not respond to the question in the baseline. Using only individuals who provided an answer to all questions would be very costly in terms of sample size, which is why we do not pursue that alternative.

3.2 Data

The data collection of this experiment included the implementation of three survey instruments in different moments in time. Together with the application form, a short survey on analytic abilities and financial knowledge was included (this is referred to as LB0). This survey included

four mathematical questions to capture the analytic abilities of the participants before the training and an additional question that measures the level of financial alphabetization. In the fourth class, before the role model session or the technical assistance were provided, a second baseline survey was conducted (LB1). The objective was to characterize the participants in terms of their economic situation, labor supply, entrepreneurship, access to credit and banking and adoption of financial and management techniques. Once the training was concluded, a follow-up survey was applied (SEG0) to obtain information about the participants in terms of their adoption of financial and management techniques, evaluation of the technical assistance received and evaluation of the role model, if applicable. This survey was collected in three different instances. First, the participants who were present in the last class answered the survey there. Second, those who were not present in the last class but who did successfully graduate from the program were asked to answer the survey in their "graduation ceremony" which shortly followed the end of the class. Finally, the rest of the participants were surveyed by phone. Finally, a year after the beginning of the class, a phone survey was conducted (SEG1) where we measured the participants' socioeconomic conditions, business situation and techniques. Figure 1 provides a summary of the timing of the program implementation and data collection process.

All the surveys collected during the course were answered by the students in class and supervised by the teachers and assistants of each class. In order to make sure the survey was correctly carried out and answered, we prepared detailed instructions with steps that the teachers should follow and protocols of delivering of the survey, which had to be read in advance by the instructors. For the follow-up survey, this was complemented with the supervision of a member of the JPAL-LAC team in order to improve the quality of the data.

In addition to the surveys, this project used administrative data about the participants and the classes, all collected by Simón de Cirene as part of their internal procedures for attendance tracking. This data included the results of two tests given during the course, attendance and application forms, which included information about each participant's employment and educational history, business performance of their microenterprise and basic demographic information. Finally, the teachers completed a form with process indicators as well, with information about the quality of

the role model session, personal characteristics of the teacher giving the technical assistance and compliance of the treatments assigned. All this information was used in the analysis for a better understanding of the mechanisms of impact of the project. The response rates were 78 percent in SEG0 and 70 percent in all other surveys.

In our sample women represent 92 percent of the participants and average age is 45 years.[10] Around 20 percent of participants had not completed high school, 50 percent had a high school degree and the remaining 30 percent had some tertiary (mostly technical) education. Average household income in the last month was CLP$390,000 (US$750). This income level was similar to the per capita income of the first quintile of autonomous income according to the CASEN 2011 poll, which corresponds to the quintile where 58 percent of participants classify themselves.[11] About four fifth of them have a business, most have a bank account, and about half have formal credit.

Profits reported by the participants are in general low and lower than their incomes suggesting that the participants complement their profits with other sources of earning. Most devote less than full time hours to their business, only a third declare paying VAT taxes and few have workers. They have pretty bad managerial and financial skills; they infrequently do book-keeping, their financial knowledge is about 2 questions answered correctly out of 4, only half know how to compute revenue and half obtain 5/7 in the first exam they take during their class. Most of the businesses are financed out of proper savings, from bank loans or from family loans. Microcredit is not important in this group.

We then present in Table 2 the outcomes of interest we will measure. Given the short period between the intervention and our first follow-up, we focus only on elements that could be modified in a short period of time such as management practices and financing decisions. In our survey a year after the beginning of the class, we measure income, business health and credit outcomes. Specifically, we questioned individuals about their total income whether they had a business. We also asked whether they had a bank account, whether they had asked a bank for

[10] In Appendix Table A.1 we present the characteristics of the participants before the class begins.

[11] The CASEN survey is a national survey, conducted every two or three years, aimed at characterizing the socioeconomic situation of households in Chile.

credit and whether they had obtained credit. We measure the health of the business by measuring their amount of sales, costs and profits last month. We also know the number of employees they had last month and the wagebill they paid. We know the number of hours they spent in their business and also whether they are registered with the Servicio de Impuestos Internos (SII), the tax authority equivalent to the IRS. We measure whether the individual has changed sectors or locations. We also measure the variance in sales of last year by asking the micro-entrepreneur to rank each trimester as bad, good or very good, which we then translate into a 1, 2 or 3, respectively. We then calculate the standard deviation of the measure over the last 12 months (4 trimesters).

We also measure the quality of their management practices using several indicators. The number of marketing actions taken, which is simply the sum of the number of marketing actions that they actually undertook. These indicators include: visiting competitors to check prices and products, asking clients if they would like new products, asking suppliers if there are any new products selling well on the market, asking ex-customers to understand why they stopped buying, making special offers and making publicity efforts. This variable takes a value between 0 and 7. Then we measure the number of financial analyses they performed. This includes: have you revised your business profitability in the last 3 months, do you have an ordered accounting register, do you keep a written inventory, do you keep a record of all sales and purchases, do you have a register of all bills and do you keep a record of all credit sales. Finally, book-keeping methods are the sum of business documents the micro-entrepreneur prepares from the following list: profit/loss balance, cash flow, balance sheet, receipt and disbursements and other general book-keeping documents. We measured how much petty cash they keep at hand for their business to measure their liquidity.

We also asked them to answer 2 questions measuring their economic knowledge: in one case they had to compute opportunity cost while in the other, revenues from income and costs. We also use the administrative records of Simon de Cirene to obtain their performance in the last exam given in class.[12] Finally, we also measure investment behavior using which sources they

[12]Such exams are taken during the class, we use the first grade as baseline as it occurs before the visit of the role model. The second is between the visit of the role model and the personalized assistance while the last one is after both activities.

use as financing (bank, family loan, government, micro-credit or others), whether they applied for a seed fund, what is the number of purchased assets they made in the last 3 months and their desired growth sales (measured as percentage of their initial sales). While we have tried to reduce the number of outcomes to the smallest possible set, we are conscious that we still have quite a few and that we must be careful about interpreting marginally statistically significant results given this.

We must recognize that all of our outcomes are self-reported. While this is not ideal, we were unable to obtain administrative data regarding these businesses since a large number of them are informal. Nevertheless, we made our survey as neutral as possible with respect to the treatment received, always reminding them of the fact that the results were confidential and that the survey was conducted by JPAL, not by the NGO.

3.3 Balance and compliance

We find limited differences between the treatments and the controls, as one would expect given our randomization.[13] While some of them are statistically significant, over all there are no more numbers there that are significant than what would be expected given the number of outcomes presented. We performed a joint test of significance at the bottom of the table and show that we cannot reject that assignment to treatment has no jointly statistically significant difference on all baseline characteristics for personalized assistance while the test is marginally significant for role models when using asymptotic methods. When we test for the joint equality using randomization inference, we find a p-value of 0.64, suggesting that we are indeed balanced. Furthermore, we include a number of controls in the regression to diminish the concerns regarding the role of initial imbalance in our results.

Even if the experimental groups are comparable, the possibility of identifying impacts depends on the level of compliance of the random assignment, meaning that those assigned to treatment effectively received the treatment. In this case, there are two reasons why this may not hold: the participant may have abandoned abandon the course before the role model session or the technical

[13] Appendix Table A.1 also presents tests of balance for the baseline.

assistance occurs, or the corresponding technical assistance was not received by the participant.

Appendix Table A.2 shows the level of compliance of the random assignment for the role model group and for the technical assistance group. On average, 80.5 percent of the participants assigned to a role model received the treatment. None of the controls received it. On the other hand, only about 70 percent of the participants received the technical assistance they were assigned to. The highest rate of compliance was registered for the technical assistance in the business location (77 percent), followed by the individual technical assistance in class (71 percent) and finally, the group technical assistance in class (66 percent).

It is important to mention that, contrary to the case of the role model, an important amount of the incompliance with the assigned treatment in technical assistances is due to the fact that the assistance was not given or that they received a different technical assistance than the one they were assigned to. This is particularly true for group assistance when the absence of other classmates transformed the session from a group one to an individual session for some of the groups.

Our randomized design could also be endangered by attrition. Attrition is a problem for our surveys where we only capture about 85 percent of our original sample in the mid-line and less than 70 percent in the end-line. As shown in Appendix Table A.3, individuals who did not answer the end-line survey were, on some characteristics, different than those who did. In particular, our sample includes individuals who are older, slightly more educated, with a higher probability of having a bank account, and with better initial knowledge. This is relevant for the interpretation of our results since our final sample will be slightly different than the one we initially started with.

We find no correlation, however, between the treatment assignment of the personalized assistance or the role model and the probability of attriting, as shown in Appendix Table A.4, which would lead us to bias. Not only are the effects not statistically significant but also relatively small, explaining between 1 to 3 percentage point of the attrition probability. Furthermore, as we show in Appendix Table A.5, we find that the control and treatment group differed in the characteristics of individuals who attrited in only a few of them. The role model group includes individuals with worse employment records and worse initial business characteristics among those who answered

than those who did not. We thus find that these differences, for which we control, are unlikely to explain the results we later present.

Nevertheless, as we discussed previously, we have response rates that differ according to outcomes as well. Thus, we check for selective attrition by outcome in Appendix Table A.6. We find some evidence that for some outcomes, our treatment groups may have had a higher response rate than those who were in the control group, albeit relatively small in magnitudes. We think that in general, the marginal respondent is a weaker business than average, implying that this selective attrition may bias our results downward. However, we will also explore some bounding exercises in the results section to check whether our results could be driven by the differential response rate.

4 Results

Having shown that our randomization was performed adequately and that balance was overall achieved, we now turn to the impact that each type of intervention had on outcomes of interest.

4.1 Main impacts

We first present the impact these two programs had one year after the beginning of the classes, around 9 months after the end of training. Table 3 shows that income per capita (and also total income, although not shown) is, 1 year after the beginning of the classes, larger for individuals who were allocated to the role model group or who were allocated to receive personalized assistance instead of group assistance. The magnitudes are relatively comparable (around 30 to 40 US dollars) between all columns and correspond to about 15 percent of the control group mean. This is not due to substitution within the household as the respondent is not more likely to be the main income source of the household under any treatments. However, it does seem to correspond in a large fraction to a better business performance as having a business was 3-5 percent larger in the treatments than in the control groups, although this is only significantly different than zero for the role model group. This appears to be driven entirely by a higher business survival rate for those who experienced the visit from a role model as the rate of new business creation for those who did

not have a business in the baseline is actually slightly higher for those who did not interact with an ex-student.

The fact that this increase in household income seems to stem from better businesses is supported by the business outcomes that are presented in the next section of Table 3. For individuals who received individualized assistance in the business, there was a 10 percent higher chance of them having switched business sectors compared to those who received their assistance in a group format. Similarly, individuals assigned to the role model group were 6 percent more likely to be operating from a different location than before which could be a sign that they are still selecting the location for their business. Being assigned to a role model also increased significantly one's probability of being registered with the tax authority one year later by 6 percent. We find no effect on the hiring front, but we do find evidence that sales increased (significantly so for the role model group and the personalized assistance at the business location) and that profits also improved (although only significantly for the role model group). When comparing the two locations for the delivery of the personalized assistance, we find both treatments to be similar statistically except for their impact on sales and costs that are more positive and larger in the case of the assistance in the participant's business. The differences are only marginally significant with p-values between 10 and 15 percent.[14] Nevertheless, given the difference in magnitudes between the two types of assistance in business outcomes and the similarities in the impact on household income, we may think that part of the increase in income we observe for those who received in-class personalized assistance may stem from non-business sources.

Given that our number of clusters is 66 for the role model, asymptotic standard errors were computed since concerns have normally been raised about smaller number of clusters. However, given that the number is not that large, we also computed permutation tests to check the robustness of our results. To perform these tests, we randomly assigned 34 of our 66 clusters to being in the treatment group and estimated 500 times the t-statistic that we would have obtained in this case. We then compared the absolute value of the t-test of the estimate in the real data to the distribution of these simulations to calculate the randomization inference p-values. We find that our

[14]See results in Appendix Table A.7.

p-values are only slightly increased by this process, as shown in Appendix Table A.8. Profits continue to show an increase significant at the 1 percent, registration with tax authorities and income per capita at 5 percent, and having a business, at 10 percent. The probability of operating from a different location has a p-value that is now 10.6 percent. Overall, we thus consider that our results are not driven by the fact that we use asymptotic standard errors.

One could be worried that our results could be driven by selective attrition given the fact that some of our outcomes where we observe significant impact in Table 3 were also the ones where we observed a difference in the attrition rate (see Appendix Table A.6). The larger number of responses we observe for questions regarding profits, sales and costs, is linked to the fact that these questions were conditional on having a business and we found a substantial impact of the treatment on business survival. We may believe that by surveying more marginal businesses, our treatment impact is actually biased downward since we observe some businesses under these treatments that would have disappeared without the help they received. Nevertheless, to assuage these concerns, we tried bounding our estimates by assuming that the additional fraction of individuals we observe in the treatment group was eliminated from either the top or the bottom of the distribution of the outcomes. We find, we show in Appendix Table A.9 that our results are in general robust to these bounds. Even by assuming that the additional individuals came from the top of the distribution, our treatment would still allow us to estimate statistically significant impact of the interventions on having a business and the degree of formalization. Our lower bound estimate is still positive for income per capita and the probability of changing location. The outcomes where the bounding exercise is weaker is profits where our lower bound would include negative values, but it is not statistically different from 0. It is relevant to remember that this outcome is conditional on having a business and since the role model had a positive impact on business ownership, the lower bound here assumes that the marginal business is from the top of the distribution of profits, which would be unlikely.

When we look at distributions of profits or sales, we see an overall shift to the right in both variables when comparing the role model group to the control group, as can be seen in Figure 2 in the case of profits. This suggests that the role model group did not simply increase the business

performance for a few individuals but that it appears to have had a broader impact. However, comparing the two distribution through a Kolmogorov-Smirnov test, we do not have sufficient statistical power to reject the hypothesis that the two distributions are the same.[15] We also found that when focusing only on the sample that had a business and that reported profits in the baseline, our interventions appear to have increased the probability of an increase in profits by 5 to 10 percentage points.

What could have generated these changes in business success? We find no evidence that credit and banking were strongly altered by our interventions, as shown in the bottom of Table 3. If anything, those who received personalized assistance were less likely to have received credit. We then explore if these long-term improvements reflect better business practices. This is presented in Table 4 where we measure business practices and sources of financing at the same time as income and profits were measured and knowledge and investment decisions at the end of the class. We find no evidence that the role model significantly impacted business practices a year after the class. Not only are none of the coefficients significant but they are also relatively small. This would suggest that the benefits that the role model gave to the participants did not have an impact on learning in class, at least for the elements that we were able to measure. The personalized assistance, however, appears to have improved the number of business analyses done and improved the ability of micro-entrepreneurs to properly calculate revenues (when provided in the classroom). There is also some evidence that this type of personalized assistance changed the financing of the inputs compared to the group provision. We find in general the results to be more positive for the assistance in class but the difference is only statistically significant for the capacity to compute revenues.[16] Thus, the role model clearly seems to have had a lesser impact than personalized assistance.

The next panels of the table verify whether this difference also arose at the end of the training in our short-run survey. One has to remember that the intervention of the role model occurs earlier than that of the personalized assistance, making it more likely to identify differences in the short run within our role-model intervention than the personalized assistance intervention. Given the

[15] The p-value for the combined test is 0.241.
[16] See results in Appendix Table A.7.

limited time that lapsed between the intervention and the data collection, we focus on knowledge and short-term investment decisions as these may be more easily altered.

We find no strong evidence that the role model promoted an increase in knowledge. Groups visited by a role model actually answered our question regarding opportunity cost incorrectly by an additional 10 percent. We then look at investment behavior and find significant changes for those assigned to receive a visit from a role model compared to those who were not. The number of business assets purchased in the last 3 months significantly decreased for those assigned to a role model. These individuals also seemed to have been more positive about their business since the fraction which applied to government seed funds was 7 percent larger and the desired sales growth was 4,000 percent larger.[17] All this suggests that the role model appeared to have impacted more strongly expectations and some investment decisions more than knowledge.

Personalized assistance, on the other hand, seems to have had a limited impact at the end of the class. We find evidence that it increases the score of individuals on the exit exam although, only significantly for the assistance provided in class. We find limited impact of the personalized assistance on any of our measures of behaviors. We also find no evidence that the impact of the personalized assistance differed between in-class and in-business format.[18] It could be, however, that the personalized assistance, while not demonstrating changes in the short-run, could change the perception of the service provided. We test this using self-reported measures of satisfaction comparing the two delivery types of personalized assistance compared to the one given in a group. Results are presented in Appendix Table A.10 where we find no evidence that offering technical assistance in a personalized format improved the perception of benefits from the micro-entrepreneurs point of view.

Overall, we find some evidence that the role model increased motivation and altered investment decisions in the short-run and more limited impact for the personalized assistance. However, the differences appear to have been smaller in magnitude and sign between the two types of

[17] The size of the desired sales growth reflects that some respondents have extremely illogical dreams. We also asked individuals about the probability that they would achieve this goal and we find no statistically significant difference there. Interestingly though, this results is not driven by the students without a business, but rather those that have a business but are relatively small in terms of sales.

[18] Results available upon request.

intervention at this point than in our long-run survey.

The fact that knowledge, as measured by our proxies, does not appear to increase in response to the role model is related to the fact that the role model did not make participants more enthusiastic about attending classes as we had hypothetized. As can be seen from Figure 3, we find weak evidence at best that individuals who were in role model group decreased their attendance to class less as time went by than those without such a visit. This is particularly true for classes after class 7, where a role model should have visited all "treated" groups. Nevertheless, only on one such date is the effect statistically significantly different from 0 and only at 10 percent. Thus, it is very unlikely that the role model promoted higher attendance and higher in-class learning. No pattern was found for the personalized assistance groups.

Finally, we asked the participants in the role model sessions to evaluate the performance of the role model and their answers can also help us understand how the role model may have operated and interacted with the participants. We show the detail of their responses in Appendix Table A.11. According to the reports from the participants, the role model motivated them to be persistent and communicated the value of being an entrepreneur. On the other hand, respondents seemed to think that the role model was not so effective at providing useful information and did not get particularly "close" to participants.

4.2 Interactions

The previous section clearly showed that being randomly selected for a given treatment appears to have had a significant impact on average, even just one year after the beginning of the program. We now explore whether individuals with certain characteristics responded more or less to the interventions. Given that the personalized assistance in class and in the business did not show a large difference in the main results, from now on we merge both treatments and compare them jointly to group-level assistance. We will also only focus on a limited number of outcomes. We include income per capita since it is our main result variable. Given that the income result appears to stem from business retention/creation, we also include an indicator of whether the person has or no a business. Finally, we include one of our measures of business formalization,

registration with tax authorities which suffered less from non-response than other measures.

It is important to note that we found no evidence of differential compliance by the characteristics we use for these interactions. This implies that a larger ITT for a given group should be because offering the treatment to this particular group had a larger impact and not because this group eventually obtained the service at a higher rate. For that reason, we continue to present reduced form estimates but show the IV results in Appendix Table A.12. Our interaction variables were also balanced at baseline, as shown in Table A.1.

In Table 5 we show whether the impact of the alternative treatments varied by the degree of experience in business the entrepreneur had at the beginning of the program. To do this we first contrast the differential impact of the intervention between individuals who had a business with those that did not at the baseline (Panel A). We also divide the participants by the age of their businesses, those whose business was older than 12 months with those with business less that a year old at the beginning of the intervention (Panels B). We do not use one single regression comparing those without business, those with a young business and those with a more established business since we have missing values in the age of the business. Finally, we also use formal education of the participants to measure another form of "preparation" of the participants in Panel C using high school as the dividing level.

In the first panel, we see that the positive impact of being offered the role model and personalized assistance on income per capita is concentrated amongst those individuals who had a business at the beginning of the program. For those who did not have a business the impact of either intervention was around 40 thousands pesos less than for those who had a business at baseline, making the overall effect on average negative. We find that the impact of both interventions on having a business at endline was not statistically significantly different between those who held a business at baseline and those who did not although the role model appears to have been less useful at business creation than the personalized assistance. Finally, the positive impact of the role model on business formalization appears to have been more about formalizing existing businesses than helping those without a business at baseline formalize it.

In the next panel, we contrast the impact of both interventions depending on whether the

participant had a firm that was more than 12 months old or not. We observe no statistically significantly different impact of either intervention on income per capita or business formalization. However, we observe that the role had a less positive impact on business survival for older businesses than younger one while the personalized assistance appears to have helped older businesses survive more. This suggests that the two interventions may have been interacting differently with the level of experience of the participant.

Finally, we separate the sample by the level of formal education of the participants in Panel C in 5), splitting the sample into those with completed high school or higher, and those with less than that. We find that the role model did not affect any of the outcomes differently for individuals in the two education groups although in general the interactions are small or negative. These results appear to indicate that the role model is not particularly complementary with formal education levels. However, individuals with more formal education appear to have benefited more from receiving personalized assistance. For individuals with higher education levels, the personalized assistance had a stronger positive impact on the probability of having a business and having it registered with the tax authority.

Taken together these results point in the direction of alternative channels for the influence of the interventions. While both interventions increased income more strongly for those who had an existent business, we find some evidence that the probability of having a business and making it formal were influenced by the two interventions differently depending on participants' characteristics. The technical assistance was particularly effective for older businesses and from high formal education participants while the opposite appears to be true for the role model. The challenges of more mature firms are sometimes quite different from those of embryonic or potential businesses, and personalized technical assistance may be an effective way to help micro-entrepreneurs survive these challenges. Younger firms and those with less education appear thus to be more in need of a different type of intervention than the traditional "consulting" services.

5 Conclusions

In this paper we document the impact of assigning a role model to an otherwise relatively standard but intensive micro entrepreneurship training program. We find that being assigned to receive a motivational speech from an ex-student, the role model, generates statistically and economically significantly increases in income nine months to one year after the intervention. This effects appears to come from higher business survival, business formalization and better business results. As a comparison, we find that receiving a personalized (versus group) technical assistance session has quantitatively similar impacts. While the two interventions have similar impacts, the visit of the role model was a tenth of the cost of the other, making it much more cost effective. We also find evidence that the personalized assistance may be more complementary to business experience and formal education compared to the role model treatment.

The fact that our role models were similar in many respects to participants and very diverse between themselves suggest that this type of intervention may be replicable in other highly-intensive business training for micro-entrepreneurs and is not necessarily driven by one or two highly successful motivational speakers in our sample.

We find these results are indicative that micro entrepreneurs face significant barriers other than credit access and knowledge, which have been the focus of much of the policy interventions in the last years. Individuals may simply lack the confidence to make their business successful and instead aim mostly for subsistence. Our results suggest that whatever intervention played by the role model, they can foster more growth from the micro-entrepreneurs. However, our results also suggest that this type of intervention is mostly useful for individuals with limited experience. Consulting services may be more useful for more established and educated micro entrepreneurs, further suggesting that one size may not fit all.

It is thus interesting to think whether or not we should be thinking of tailoring micro entrepreneurship training to different types of students. Our results suggest that this may be an avenue to help make the training more effective or at least target specific interventions to a subgroup of the participants, potentially as add-on to more standard programs. Further research is

needed on this.

References

Anderson, S. J., R. Chandy, and B. Zia, "Pathways to profits: identifying separate channels of small firm growth through business training," Policy Research Working Paper Series 7774, The World Bank July 2016.

Berge, L. I. O., K. Bjorvatn, and B. Tungodden, "Human and financial capital for microenterprise development: Evidence from a field and lab experiment," *Management Science*, 2014, *61* (4), 707–722.

Brooks, W., K. Donovan, and T. Johnson, "Mentors or Teachers? Microenterprise Training in Kenya," October 2017. working paper, University of Notre Dame.

Bruhn, M., D. S. Karlan, and A. Schoar, "The impact of consulting services on small and medium enterprises: Evidence from a randomized trial in Mexico," Policy Research Working Paper 6508, World Bank 2013.

_ , G. Ibarra, and D. McKenzie, "The minimal impact of a large-scale financial education program in Mexico City," *Journal of Development Economics*, 2014, *108*, 184–189.

Bursztyn, L., F. Ederer, B. Ferman, and N. Yuchtman, "Understanding mechanisms underlying peer effects: Evidence from a field experiment on financial decisions," *Econometrica*, 2014, *82* (4), 1273–1301.

Calderon, G., J. M. Cunha, and G. De Giorgi, "Business literacy and development: Evidence from a randomized controlled trial in rural mexico," Working Paper 19740, NBER 2013.

Cho, Y. and M. Honorati, "Entrepreneurship programs in developing countries: A meta regression analysis," *Labour Economics*, 2014, *28*, 110–130.

Drexler, A., G. Fischer, and A. Schoar, "Keeping it simple: Financial literacy and rules of thumb," *American Economic Journal: Applied Economics*, 2014, *6* (2), 1–31.

Duflo, E., R. Glennerster, and M. Kremer, "Using randomization in development economics research: A toolkit," in "Handbook of Development Economics," Vol. 4, Elsevier, 2007, pp. 3895–3962.

Fairlie, R. W., F. Hoffmann, and P. Oreopoulos, "A Community College Instructor Like Me: Race and Ethnicity Interactions in the Classroom," *American Economic Review*, 2014, *104* (8), 2567–91.

Field, E., S. Jayachandran, and R. Pande, "Do traditional institutions constrain female entrepreneurship? A field experiment on business training in India," *American Economic Review*, 2010, pp. 125–129.

Hoffmann, F. and P. Oreopoulos, "A professor like me the influence of instructor gender on college achievement," *Journal of Human Resources*, 2009, *44* (2), 479–494.

Karlan, D. and M. Valdivia, "Teaching entrepreneurship: Impact of business training on microfinance clients and institutions," *Review of Economics and Statistics*, 2011, *93* (2), 510–527.

Lockwood, P., C. H. Jordan, and Z. Kunda, "Motivation by positive or negative role models: regulatory focus determines who will best inspire us.," *Journal of Personality and Social Psychology*, 2002, *83* (4), 854.

Marx, D. M. and J. S. Roman, "Female Role Models: Protecting Women's Math Test Performance," *Personality and Social Psychology Bulletin*, 2002, *28* (9), 1183–1193.

McKenzie, D., "Impact Assessments in Finance and Private Sector Development: What Have We Learned and What Should We Learn?," *World Bank Research Observer*, 2010, *25* (2), 209–233.

_ **and C. Woodruff**, "What are we learning from business training and entrepreneurship evaluations around the developing world?," *World Bank Research Observer*, 2013, *29* (1), 48–82.

_ **and** _ , "Business Practices in Small Firms in Developing Countries," *Management Science*, 2017, *63* (9), 2967–2981.

Nguyen, T., "Information, role models and perceived returns to education: Experimental evidence from Madagascar," June 2008. Unpublished manuscript.

Ray, D., "Aspirations, poverty, and economic change," *Understanding poverty*, 2006, pp. 409–421.

Sonobe, T., Y. Higuchi, and K. Otsuka, "Productivity growth and job creation in the development process of industrial clusters," Policy Research Working Paper 6280, World Bank 2012.

Valdivia, M., "Training or technical assistance for female entrepreneurship? Evidence from a field experiment in Peru," Technical Report, GRADE working paper 2012.

Wilson, W. J., *The truly disadvantaged: The inner city, the underclass, and public policy*, University of Chicago Press, 2012.

World Bank, *World Development Report 2012: Gender Equality and Development*, World Bank, 2012.

Xu, L. and B. Zia, "Financial literacy around the world: an overview of the evidence with practical suggestions for the way forward," Policy Research Working Paper 6107, World Bank 2012.

Figure 1. Timeline of implementation and data collection for a given cohort

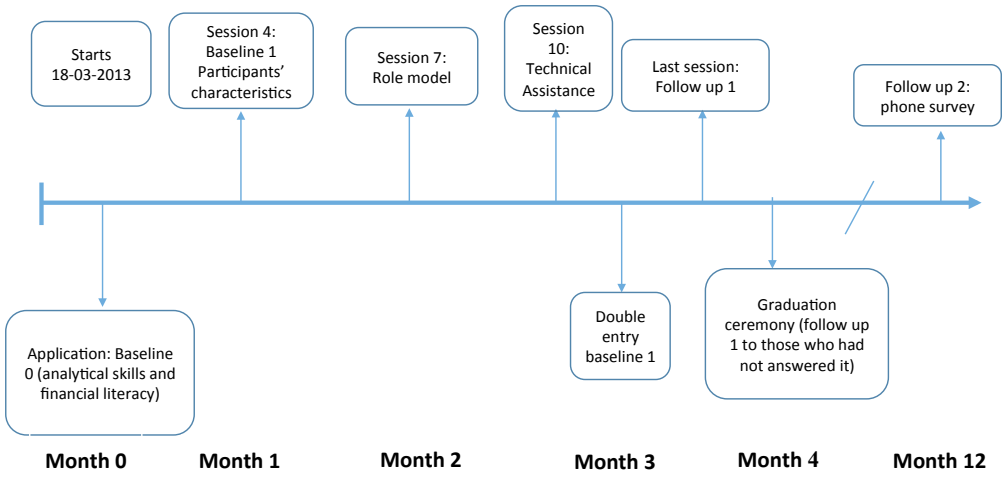

Figure 2. Distribution of profits by assignment to the role model treatment

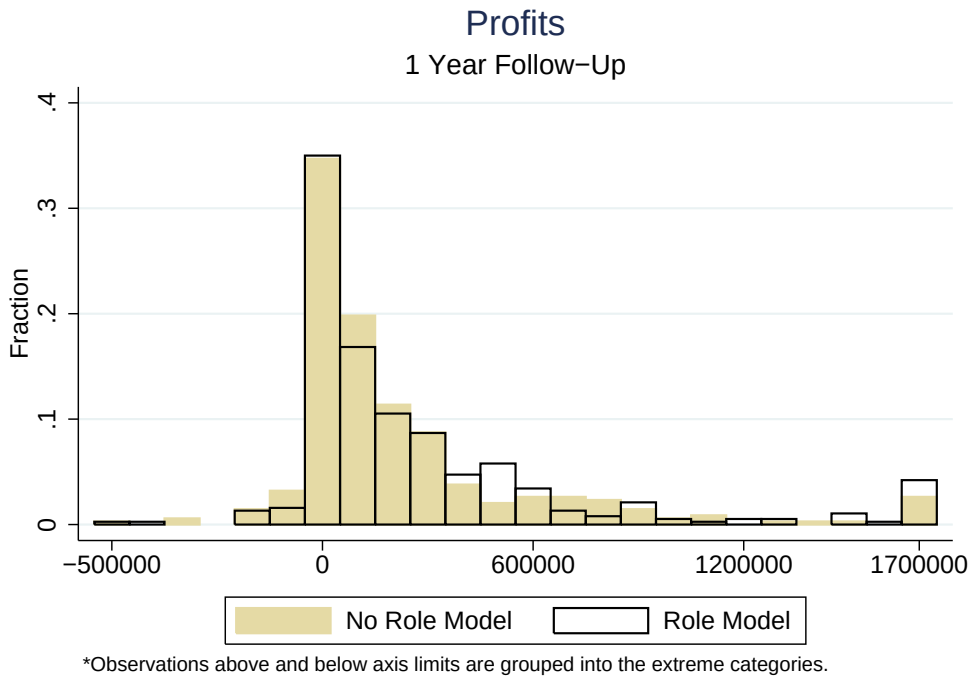

Figure 3. Difference in class attendance in groups with and without role models

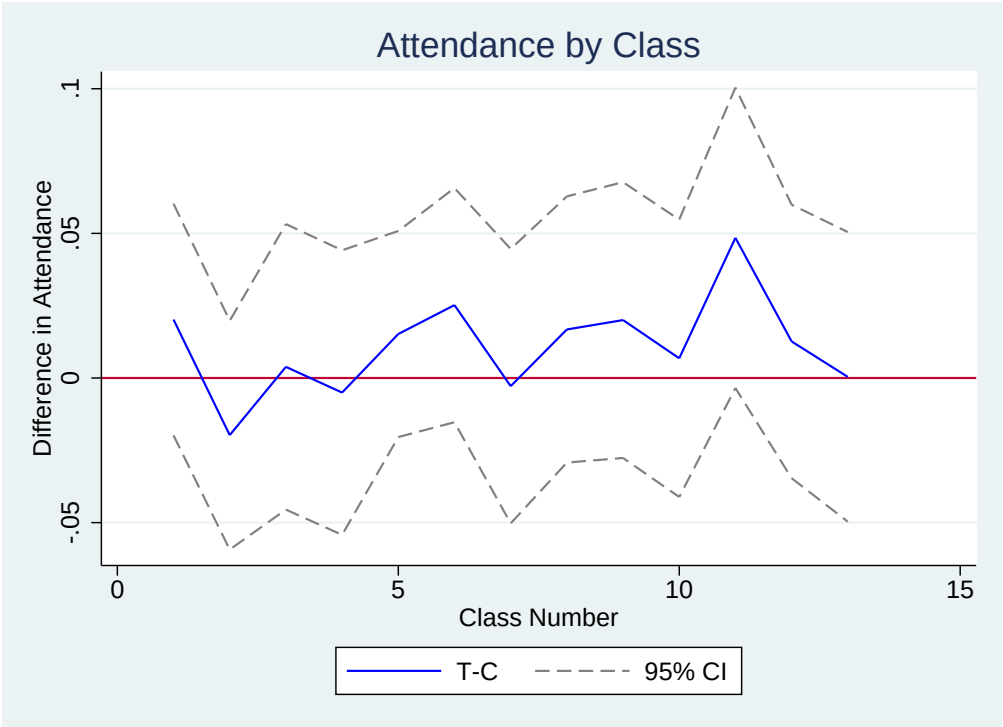

Table 1. Role Model Characteristics

Variable	N	Mean	Std. Dev.
General:			
Women	707	0.93	0.25
Age	631	48	9.93
Income	528	1,998,439	3,370,560
Presentation length (minutes)	707	43	12.41
Sector:			
Manufacturing	710	0.64	0.48
Services	710	0.28	0.45
Stores	710	0.04	0.19
Other	710	0.04	0.19

Statistics are weighted by class size for each role model.
There are 22 different role models.

Table 2. Summary statistics: outcome variables

Variable	N	Mean	St. Dev.
Socioeconomic:			
Income per capita (M$)	981	126	116
Main household income source	1,113	0.46	0.50
Has business	1,131	0.79	0.41
Entrepreneurship:			
Is in a different sector	659	0.46	0.50
Operates from a different location	677	0.40	0.49
Weekly hours worked at business	1,109	29.11	25.16
Registered with tax authority	1,112	0.38	0.49
Number of employees last month	1,058	0.43	1.11
Wage bill (M$) last month	1,006	49.24	190
Sales (M$) last month	805	554	968
Costs (M$) last month	738	248	759
Profits (M$)	729	309	576
Variance in sales in last year	829	0.63	0.30
Desired sales growth (%)*	910	2,695	49,019
Credit and banking:			
Has a bank account	886	0.81	0.39
Has asked bank for credit	887	0.24	0.43
Has obtained credit	716	0.05	0.21
Investment behavior and financing:			
N purchased assets (0-11)*	1,171	2.82	2.12
Savings	872	0.89	0.32
Bank loan	871	0.18	0.39
Family loan	872	0.31	0.46
Government funds	872	0.37	0.48
Micro-credit funds	872	0.29	0.45
Applied for seed fund *	1,285	0.30	0.46
Management practices:			
Marketing actions (0-7)	897	3.88	1.72
Business analysis (0-6)	894	4.08	1.49
Petty cash (M$)	802	42.63	112
Knows how to compute opp. cost	1,065	0.74	0.44
Knows how to compute revenue	1,065	0.66	0.47
Score in exit exam (0-7)*	943	6.08	1.34

*: Measured at the end of classes.

Table 3. Impact on Socioeconomic and Business Variables

	Role Model		Technical Assistance		
Variables	N	Effect	N	Effect in class	Effect in bus.
Socioeconomic:					
Income per capita (M$)	978	17.09**	773	28.25**	20.43**
		(7.32)		(11.61)	(8.84)
Main household income source	1,110	0.01	878	0.01	-0.04
		(0.03)		(0.04)	(0.04)
Has a business	1,128	0.03*	892	0.05	0.03
		(0.02)		(0.03)	(0.03)
Entrepreneurship:					
Is in a different sector	657	0.03	529	0.04	0.10**
		(0.03)		(0.05)	(0.05)
Operates from a different location	675	0.06*	542	0.00	-0.03
		(0.03)		(0.05)	(0.05)
Hours per week	1,106	1.65	873	-0.66	-1.47
		(0.99)		(1.95)	(2.04)
Registered with tax authority	1,109	0.06**	877	0.02	0.02
		(0.02)		(0.03)	(0.04)
Number of workers last month	1,056	-0.00	853	0.05	0.12
		(0.05)		(0.08)	(0.10)
Wage bill (M$) last month	1,004	-10.21	814	-0.21	12.43
		(7.75)		(14.22)	(16.40)
Sales (M$) last month	802	92.71*	622	58.21	185*
		(50.59)		(70.80)	(95.76)
Costs (M$) last month	735	7.11	575	-67.92	55.60
		(34.77)		(84.38)	(74.95)
Profits (M$) last month	726	96.17***	567	47.24	96.52
		(29.18)		(49.62)	(64.45)
Variance in sales in last year	827	0.02	638	-0.05	-0.01
		(0.02)		(0.03)	(0.03)
Credit and banking:					
Has a bank account	883	0.01	680	0.04	0.00
		(0.02)		(0.04)	(0.04)
Has credit	884	0.01	682	-0.07	-0.09**
		(0.03)		(0.05)	(0.04)
Obtained bank credit (last 6 months)	713	-0.02	564	0.01	-0.01
		(0.01)		(0.03)	(0.03)

Notes: Table presents the coefficient on assignment to treatment variables in regression equation (1). The first two columns represent one regression while the last three columns represent another. Regressions control for strata, baseline (when available) and general individual and business characteristics. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table 4. Impact on Firm Management, Knowledge and Motivation

	Role Model		Technical Assistance		
Variables	N	Effect	N	Effect in class	Effect in bus.
Management practices:					
Marketing actions (0-7)	894	0.05	688	0.02	0.19
		(0.09)		(0.17)	(0.16)
Business analysis (0-6)	891	-0.00	685	0.14	0.28**
		(0.08)		(0.15)	(0.14)
Petty cash (M$)	799	2.98	613	2.90	-2.93
		(6.02)		(9.01)	(10.66)
Knows how to compute opp. cost	1,062	0.01	841	0.03	0.04
		(0.02)		(0.04)	(0.04)
Knows how to compute revenue	1,062	0.01	841	0.09**	-0.01
		(0.03)		(0.04)	(0.04)
Financing of inputs:					
Savings	869	0.02	670	0.01	0.04
		(0.02)		(0.04)	(0.03)
Bank loan	868	-0.03	669	-0.01	-0.02
		(0.02)		(0.04)	(0.04)
Family loan	869	-0.01	670	-0.08*	-0.08*
		(0.03)		(0.05)	(0.05)
Government funds	869	-0.04	670	-0.12**	-0.07
		(0.03)		(0.05)	(0.05)
Micro-credit funds	869	0.04	670	-0.01	-0.02
		(0.05)		(0.04)	(0.04)
Knowledge at the end of the class:					
Knows how to compute opp. cost	1,092	-0.10***	904	-0.01	0.01
		(0.04)		(0.04)	(0.04)
Knows how to compute revenue	1,092	0.03	904	0.01	0.04
		(0.03)		(0.03)	(0.03)
Score in exit exam (0-7)	937	0.16	745	0.21**	0.16
		(0.17)		(0.11)	(0.10)
Behaviors at the end of the class:					
N purchased assets (0-11)	1,166	-0.31***	930	0.05	0.14
		(0.08)		(0.12)	(0.12)
Desired sales growth (%)	906	4,022*	723	4,022	-1,717
		(2,223)		(2,718)	(1,934)
Applied for seed fund	1,280	0.07**	1,034	0.06	0.04
		(0.03)		(0.04)	(0.04)

Notes: Table presents the coefficient on assignment to treatment variables in regression equation (1). The first two columns represent one regression while the last three columns represent another. Regressions control for strata, baseline (when available) and general individual and business characteristics. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table 5. Interactions

	Income per capita (M$)	Has business	Registered with tax authority
		Panel A: By Having a Business	
Role Model*No Business	-41.008**	-0.015	-0.121*
	(17.356)	(0.068)	(0.061)
Person. Assist.*No Business	-46.055*	0.106	-0.006
	(25.791)	(0.097)	(0.077)
		Panel B: By Business Age	
Role Model*Old Business	-25.840	-0.129*	-0.127
	(23.588)	(0.067)	(0.084)
Person. Assist.*Old Business	-27.164	0.224**	-0.045
	(29.451)	(0.105)	(0.116)
		Panel C: By Education	
Role Model*High School or more	0.965	-0.072	-0.050
	(13.209)	(0.059)	(0.070)
Person. Assist.*High School or more	8.255	0.148**	0.174*
	(19.304)	(0.067)	(0.098)

Notes: Table presents the coefficient on assignment to treatment variables interacted with a given characteristic. Each cell represents one regression where the outcome variable is the title of the column. Regressions control for main intervention effect, strata, baseline (when available) and general individual and business characteristics (including the one used for the interaction). Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

A Additional tables and figures

Table A.1. Balance

	Role Model			Technical Assistance			
		Mean	Diff (T-C)		Mean	Diff	
Variable	N	Control	T-C	N	Control	T_{Class}-C	$T_{Bus.}$-C
General characteristics:							
Women	1,405	0.91	0.02	1,136	0.93	0.03	0.00
Age	1,374	45	0.42	1,112	45	-0.97	-0.61
Less than HSD	1,521	0.21	-0.03	1,235	0.19	0.01	0.04
High school diploma	1,521	0.50	-0.01	1,235	0.51	-0.02	-0.04
Technical or University	1,521	0.29	0.03	1,235	0.30	0.01	0.00
Socioeconomic:							
Income (M$) last month	1,093	374	31	903	352	40	30
Has business	1,212	0.81	0.01	1,004	0.78	-0.01	0.01
Banking:							
Has bank account	1,237	0.63	0.06**	1,020	0.63	0.02	0.01
Has asked bank for credit	1,225	0.39	0.03	1,011	0.41	0.00	-0.03
Has obtained credit	1,243	0.43	0.06**	1,023	0.45	0.02	0.00
Business:							
Sales (M$) last month	921	471	-36	744	451	24	-147
Costs (M$) last month	792	328	-17	642	360	-44	-144
Profits (M$)	761	180	-17	614	131	74	13
Weekly hours worked at business	1,024	34	1.13	834	32	0.70	2.06
Number of employees last month	576	0.61	0.05	484	0.72	-0.03	-0.31
Wagebill (M$) last month	522	93	16	440	132	-13	-99
Registered with tax authority	1,108	0.34	-0.04*	905	0.33	-0.09**	-0.05
Techniques:							
Marketing actions (0-7)	1,069	2.96	0.14	875	2.92	0.11	0.19
Business analysis (0-6)	1,128	2.72	0.15	922	2.69	0.10	0.04
Book-keeping methods (0-6)	966	0.74	0.10	777	0.83	-0.11	-0.12
Petty cash (M$)	813	160	-42	664	119	30	52
Knows how to compute opp. cost	1,281	2.36	0.00	980	2.35	-0.01	0.11
Knows how to compute revenue	1,246	0.55	0.04	958	0.58	0.01	-0.05
Score on entrance exam (0-7)	1,065	5.17	0.03	836	5.32	-0.19	-0.02
Purchases and financing							
N assets (0-11)	1,582	2.32	0.04	1,132	2.65	-0.03	0.12
Savings	1,017	0.66	0.04	828	0.67	0.01	-0.02
Bank loan	1,017	0.22	0.02	828	0.23	-0.04	-0.01
Family loan	1,017	0.24	0.01	828	0.18	0.09**	0.11***
Government funds	1,017	0.10	-0.02	828	0.12	-0.03	-0.05*
Micro-credit funds	1,017	0.01	0.01*	828	0.00	0.01*	0.01*
Other sources	1,017	0.08	0.03	828	0.13	-0.06**	-0.04
Joint F-test			1.36*		1.29		0.63

Notes: The difference between treatment and control is obtained through a regression which controls for strata. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.2. Compliance with Random Assignment

	Role model		Technical Assistance					
			In group	In Class		In business		
	N	Compliance	*N*	Compliance	*N*	Compliance	*N*	Compliance
Cohort I (Beca I)	204	0.79	128	0.56	138	0.64	138	0.68
Cohort II (Bono)	124	0.66	.	.	.	.	.	.
Cohort III (Beca II)	181	0.84	120	0.73	129	0.76	132	0.81
Cohort IV (Beca III)	378	0.84	176	0.70	192	0.74	193	0.80
Total	887	0.81	424	0.66	459	0.71	461	0.77

Note: The table reports the number of assigned participants to each group and the level of compliance with the assignment. Cohort II (Bono) is an advanced level so did not receive technical assistance.

Table A.3. Difference in Baseline Characteristics of Those Answering Endline Survey and Those Attriting

Variable	N	Difference
General characteristics:		
Women	1,406	0.01
Age	1,375	2.35***
Secondary incomplete or less	1,523	-0.05***
Secondary	1,523	0.06**
Technical or University	1,523	-0.01
Socioeconomic:		
Income (M$) last month	1,094	14
Has business	1,212	0.00
Banking:		
Has bank account	1,237	0.10***
Has asked bank for credit	1,225	0.01
Has obtained credit	1,243	0.02
Business:		
Sales (M$) last month	923	-32
Costs (M$) last month	793	-13
Profits (M$)	762	31
Weekly hours worked at business	1,025	-1.04
Number of employees last month	575	-0.29
Wagebill (M$) last month	523	-95
Registered with tax authority	1,109	0.00
Techniques:		
Marketing actions (0-7)	1,070	0.05
Business analysis (0-6)	1,129	0.11
Book-keeping methods (0-6)	966	0.02
Petty cash (M$)	814	43*
Knows how to compute opp. cost	1,287	0.01
Knows how to compute revenue	1,252	0.06*
Score on entrance exam (0-7)	1,069	0.31**
Purchases and financing		
N assets (0-11)	1,598	1.02***
Savings	1,018	-0.03
Bank loan	1,018	0.04
Family loan	1,018	0.01
Government funds	1,018	0.01
Micro-credit funds	1,018	-0.00
Other sources	1,018	-0.01

Notes: This table reports the coefficient on a dummy identifying whether or not the individual was found in the endline, in a regression where the outcome variable are baseline characteristics. Regressions control for strata and general individual and business characteristics (except for that group of variables). Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.4. Attrition

	SEG0	SEG1	SEG0	SEG1
Role Model	0.012	0.022		
	(0.032)	(0.023)		
Person. Assist. in class			0.016	0.050
			(0.023)	(0.031)
Person. Assist. in business			0.023	0.022
			(0.023)	(0.031)
Constant	0.790***	0.638***	0.828***	0.665***
	(0.026)	(0.017)	(0.016)	(0.022)
N	1,810	1,810	1,343	1,343

Notes: This table reports the coefficient in a regression of whether or not the individual was found in each of the follow-up interviews against the treatments. Each column is a different regression, which controls for strata. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.5. Difference in Baseline Characteristics of Those Answering Endline Survey and Those Attriting, by Assignment to Treatment

	Role Model		Technical Assistance		
				Diff (T-C)	
Variable	N	Diff (T-C)	N	In class	In bus.
General characteristics:					
Women	1,403	-0.00	1,136	0.09**	0.01
Age	1,372	-1.91	1,112	1.39	1.83
Secondary incomplete or less	1,518	0.09**	1,235	0.06	0.02
Secondary	1,518	-0.13***	1,235	-0.03	0.00
Technical or University	1,518	0.04	1,235	-0.03	-0.02
Socioeconomic:					
Income (M$) last month	1,090	-21	903	-5.05	-120*
Has business	1,208	-0.10*	1,004	-0.00	-0.04
Banking:					
Has bank account	1,233	0.02	1,020	-0.01	-0.07
Has asked bank for credit	1,221	-0.07	1,011	-0.06	-0.06
Has obtained credit	1,239	-0.09	1,023	0.08	0.13
Business:					
Sales (M$) last month	919	-193	744	91	-241
Costs (M$) last month	790	-261	642	392	79
Profits (M$)	759	-7.74	614	-88	-315***
Weekly hours worked at business	1,021	1.23	834	-0.51	-11**
Number of employees last month	573	-0.23	484	0.38	0.45
Wagebill (M$) last month	521	-102	440	122	63
Registered with tax authority	1,105	-0.03	905	-0.29***	-0.30***
Techniques:					
Marketing actions (0-7)	1,066	0.56**	875	-0.39	-0.24
Business analysis (0-6)	1,125	-0.27	922	-0.04	-0.28
Book-keeping methods (0-6)	963	-0.20	777	-0.45*	-0.36*
Petty cash (M$)	810	-64	664	-39	18
Knows how to compute opp. cost	1,281	0.23**	980	-0.02	-0.30
Knows how to compute revenue	1,246	0.08	958	-0.04	0.10
Score on entrance exam (0-7)	1,062	0.15	836	-0.60**	-0.32
Purchases and financing					
N assets (0-11)	1,579	-0.00	1,131	-0.19	-0.42
Savings	1,014	0.11	828	0.06	0.03
Bank loan	1,014	-0.04	828	-0.07	-0.06
Family loan	1,014	-0.11	828	0.06	-0.07
Government funds	1,014	0.01	828	0.13**	0.07
Micro-credit funds	1,014	0.00	828	0.01	-0.00
Other sources	1,014	0.00	828	0.06	-0.00

Notes: This table reports the coefficient in a regression of baseline characteristics against the treatments interacted with an indicator variable which indicates that the individual was found in the follow-up survey. Each cell is a different regression, which controls for strata. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.6. Differential attrition by treatment, depending on outcome

Variables	Role Model	Technical Assistance	
		In class	In bus.
Socioeconomic:			
Income per capita (M$)	0.039*	0.052	0.049
	(0.021)	(0.033)	(0.033)
Main household income source	0.030	0.059*	0.042
	(0.023)	(0.032)	(0.032)
Has a business	0.023	0.050	0.037
	(0.022)	(0.032)	(0.032)
Entrepreneurship:			
Is in a different sector	0.010	0.074**	0.046
	(0.022)	(0.031)	(0.031)
Operates from a different location	0.014	0.061**	0.032
	(0.022)	(0.031)	(0.031)
Hours per week	0.019	0.041	0.033
	(0.021)	(0.032)	(0.032)
Registered with tax authority	0.026	0.049	0.030
	(0.023)	(0.032)	(0.032)
Number of workers last month	0.030	0.042	0.015
	(0.023)	(0.032)	(0.032)
Wage bill (M$) last month	0.027	0.055*	0.015
	(0.023)	(0.033)	(0.033)
Sales (M$) last month	0.043*	0.062*	0.045
	(0.025)	(0.033)	(0.033)
Costs (M$) last month	0.045**	0.049	0.042
	(0.022)	(0.033)	(0.033)
Profits (M$) last month	0.043*	0.061*	0.048
	(0.022)	(0.033)	(0.033)
Variance in sales in last year	0.030	0.038	0.038
	(0.025)	(0.032)	(0.032)
Credit and banking:			
Has a bank account	0.034	0.060*	0.043
	(0.025)	(0.033)	(0.032)
Has credit	0.032	0.057*	0.044
	(0.025)	(0.033)	(0.032)
Obtained bank credit (last 6 months)	0.017	0.077**	0.069**
	(0.022)	(0.033)	(0.033)
Management practices:			
Marketing actions (0-7)	0.032	0.056*	0.038
	(0.025)	(0.033)	(0.032)
Business analysis (0-6)	0.033	0.059*	0.048
	(0.026)	(0.033)	(0.032)
Petty cash (M$)	0.016	0.070**	0.042
	(0.024)	(0.033)	(0.032)
Knows how to compute opp. cost	0.027	0.053	0.028
	(0.023)	(0.033)	(0.032)
Knows how to compute revenue	0.027	0.053	0.028
	(0.023)	(0.033)	(0.032)
Financing of inputs:			
Savings	0.030	0.044	0.038
	(0.025)	(0.033)	(0.032)
Bank loan	0.031	0.053	0.038
	(0.025)	(0.033)	(0.032)
Family loan	0.030	0.050	0.038
	(0.025)	(0.033)	(0.032)
Government funds	0.030	0.053	0.038
	(0.025)	(0.033)	(0.032)
Micro-credit funds	0.030	0.053	0.038
	(0.025)	(0.033)	(0.032)

Notes: This table reports the coefficient in a regression of whether or not the individual provided an answer to each follow-up outcomes against the treatments. Each cell is a different regression, which controls for strata. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.7. Difference between location of technical assistance

Variables	N	F-test
Socioeconomic:		
Income per capita (M$)	773	0.53
Main household income source	878	1.66
Has business	892	0.11
Entrepreneurship:		
Is in a different sector	529	1.56
Operates from a different location	542	0.34
Hours per week	873	0.19
Registered with tax authority	877	0.00
Number of workers (last month)	853	0.43
Wagebill (M$) last month	814	0.69
Sales (M$) last month	622	1.88
Costs (M$) last month	575	2.44
Profits (M$) last month	567	0.73
Variance in sales in last year	638	1.45
Credit and banking:		
Has a bank account	680	1.20
Has credit	682	0.33
Obtained bank credit (last 6 months)	564	0.85
Management practices:		
Marketing actions (0-7)	688	1.14
Business analysis (0-6)	685	1.01
Petty cash (M$)	613	0.21
Knows how to compute opp. cost	841	0.00
Knows how to compute revenue	841	5.14**
Financing of inputs:		
Savings	670	0.66
Bank loan	669	0.03
Family loan	670	0.00
Government funds	670	1.19
Micro-credit funds	670	0.09
Knowledge at the end of the class:		
Knows how to compute opp. cost	904	0.29
Knows how to compute revenue	904	0.93
Score in exit exam (0-7)	745	0.37
Behaviors at the end of the class:		
Applied for seed fund	1,034	0.34
N assets (0-11)	930	0.56
Desired sales growth (%)	723	1.92

Notes: Table presents the F-test of the equality of the coefficients on technical assistance in class and in business. Regressions control for strata, baseline (when available) and general individual and business characteristics. Standard errors robust to heteroscedasticity for technical assistance. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.8. Randomization inference p-values

Socioeconomic:	
Income per capita (M$)	0.050**
Main household income source	0.758
Has business	0.074*
Entrepreneurship:	
Is in a different sector	0.411
Operates from a different location	0.106
Hours per week	0.116
Registered with tax authority	0.038**
Number of workers (last month)	0.998
Wagebill (M$) last month	0.998
Sales (M$) last month	0.164
Costs (M$) last month	0.880
Profits (M$) last month	0.004***
Variance in sales in last year	0.355
Credit and banking:	
Has a bank account	0.752
Has credit	0.836
Obtained bank credit (last 6 months)	0.998
Management practices:	
Marketing actions (0-7)	0.625
Business analysis (0-6)	0.998
Petty cash (M$)	0.719
Knows how to compute opp. cost	0.808
Knows how to compute revenue	0.840
Financing of inputs:	
Savings	0.329
Bank loan	0.998
Family loan	0.998
Government funds	0.998
Micro-credit funds	0.519

Notes: This table reports the two-sided p-values of the t-test for the null hypothesis that being assigned to the role model had no impact based on the empirical distribution of t-tests from 500 estimations where we randomly assigned treatment to 34 clusters of our 66 classes. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.9. Bounds of impact of role-model

Variable	Estimate	Lower bound	Upper bound
Socioeconomic:			
Income per capita (M$)	17.09**	3.10	21.12***
Main household income source	0.01	-0.00	0.03
Has business	0.03*	0.03*	0.05***
Entrepreneurship:			
Change Sector	0.03	0.02	0.04
Operates from a different location	0.06*	0.04	0.07**
Hours per week	1.65	0.20	2.32**
Registered with tax authority	0.06**	0.04*	0.07***
Number of workers (last month)	-0.00	-0.12***	0.01
Wagebill (M$) last month	-10.21	-24.17***	-9.74
Sales (M$) last month	92.71*	-50.99	107.24**
Costs (M$) last month	7.11	-81.31**	11.50
Profits	96.17***	-4.34	114.16***
Variance in sales in last year	0.02	0.00	0.04**
Credit and banking:			
Has a bank account	0.01	0.00	0.03
Has credit	0.01	-0.02	0.01
Obtained bank credit (last 6 months)	-0.02	-0.03**	-0.02

Notes: This table reports the coefficient in a regression of each outcome against the random assignment to a role model. The first column reports the estimated coefficient in the full sample. The second column shows the coefficient in a regression where the differential attrition between those assigned to the treatment and those not assigned is removed from the top of the distribution of the outcome. The third column shows the coefficient in a regression where the differential attrition between those assigned to the treatment and those not assigned is removed from the bottom of the distribution of the outcome. Each cell is a different regression, which controls for strata, baseline (when available) and general individual and business characteristics. Standard errors clustered at course level for role model. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.10. Impact on Evaluation of Technical Assistance

Variables	N	In class	In bus.
Helped me to identify strengths and weaknesses	1,004	0.11	0.05
		(0.07)	(0.07)
Helped me to identify possible solutions	1,009	0.05	0.02
		(0.06)	(0.06)
Helped me to introduce changes in business management	985	0.02	-0.02
		(0.07)	(0.07)
Was useful	1,007	0.07	-0.00
		(0.07)	(0.07)
Length was insufficient	1,010	-0.00	0.03
		(0.02)	(0.02)
Length was adequate	1,010	-0.02	-0.05*
		(0.03)	(0.03)
Length was excessive	1,010	0.02	0.02
		(0.02)	(0.02)

Notes: Table presents the coefficient on treatment variables in regression equation (1). Each row represents one regression. Regressions control for strata and general individual and business characteristics. Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table A.11. Evaluation of Role Model by participants

The Role Model...	N	Not At All	Little	Enough	A Lot
Motivated to be persistent	563	0.02	0.03	0.36	0.58
Communicated the value of being an entrepreneur	560	0.03	0.05	0.42	0.51
Motivated to apply things learnt on the course	571	0.03	0.05	0.43	0.49
Was close to people	565	0.02	0.05	0.53	0.40
Gave useful information	549	0.07	0.12	0.47	0.34

Notes: This table reports the frequency of answers of participants in Role Model groups to survey questions.

Table A.12. IV results: Interactions

Variables	Income per capita (M$)	Has business	Registered with tax authority
		Panel A: By Having a Business	
Role Model*No Business	-47.492**	-0.009	-0.137*
	(20.188)	(0.078)	(0.071)
Person. Assist.*No Business	-56.235*	0.173	-0.016
	(30.491)	(0.123)	(0.103)
		Panel B: By Business Age	
Role Model*Old Business	-32.999	-0.126*	-0.172*
	(27.716)	(0.074)	(0.093)
Person. Assist.*Old Business	-36.266	0.325**	-0.068
	(44.345)	(0.137)	(0.153)
		Panel C: By Education	
Role Model*High School or More	5.466	-0.105	-0.046
	(15.871)	(0.070)	(0.084)
Person. Assist.*High School or More	19.342	0.178**	0.203*
	(25.548)	(0.081)	(0.119)

Notes: Table presents the coefficient on treatment variables interacted with a given characteristic instrumented for the interaction of the random assignment with the same given characteristic. Each cell represents one regression where the outcome variable is the title of the column. Regressions control for main intervention effect, strata, baseline (when available) and general individual and business characteristics (including the one used for the interaction). Standard errors robust to heteroscedasticity for technical assistance and clustered at course level for role model in parentheses. $*p < 0.1, **p < 0.05, ***p < 0.01$.