

The Impact of Consulting Services on Small and Medium Enterprises

Evidence from a Randomized Trial in Mexico

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Abstract

Using a randomized evaluation with 432 Mexican small and medium enterprises, this paper shows that access to management consulting led to better firm performance: one-year results show positive effects on return-on-assets and total factor productivity. Owners also had large increases in “entrepreneurial spirit” (an entrepreneurs’ managerial confidence index). Using Mexican social

security data, the analysis finds a large increase in the number of employees and total wage bill several years after the program. The paper documents large heterogeneity in the specific managerial practices that improved as a result of the consulting, but there is no singular mechanism as a panacea for all firms.

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The Impact of Consulting Services on Small and Medium Enterprises: Evidence from a Randomized Trial in Mexico ¹

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1. Introduction

A large literature in development economics and entrepreneurship aims to understand the impediments to firm growth, especially for small and medium sized enterprises. Most of the focus thus far has been on financial constraints as a central obstacle to firm growth. For example, empirical studies have examined these constraints at the micro level (Banerjee et al. 2009; de Mel et al. 2008; Karlan and Zinman 2011; Karlan et al. 2012) as well as at the macro level (King and Levine 1993; Rajan and Zingales 1998). However, capital alone cannot generate firm growth; one must also have the “managerial capital” to know how to use it. We argue that managerial capital can directly affect the firm by improving strategic and operational decisions, but it also affects the productivity of other factors, such as physical capital and labor, by helping to use them more efficiently. Bruhn et al. (2010) discusses at more length the role of “managerial capital” as a key component for enterprise development, distinct from human capital. The diffuse effect of managerial capital often makes it difficult to measure its impact empirically.

Recent work has shown enormous heterogeneity in management practices and CEO styles across firms, see for example Bertrand and Schoar (2003), Bloom and Van Reenen (2007 and 2010), and Bennedsen et al. (2007). But a central question remains: is this observed heterogeneity a reflection of an optimal match between the underlying fundamentals of different firms and the type of management that is needed given the firm’s state of development? Or is lack of managerial capital a first order impediment to firm growth and profitability? Managers in developing countries might be constrained in the acquisition of these skills, if such skills require either formal training or experience in other well-run enterprises, or both, see for example Gompers et al. (2005) or Caselli and Gennaioli (2005).

We test if alleviating the constraints on managerial capital has a first order effect on the performance and growth of small enterprises in emerging markets. We focus on micro, small, and medium enterprises since they are often seen as being the most affected by limitations in managerial capital and thus have the most potential for scale up if bottlenecks to their growth can be removed. In addition, for small businesses run by the owner-manager, it is simple to determine the appropriate target for a managerial capital intervention. Our intervention aims to expand the managerial skills of the owner-managers by giving them access to subsidized consulting and mentoring services. These services were provided by nine local consulting firms, which focus on SMEs, over a one-year period. We worked with the government of Puebla, an industrialized state close to Mexico City, to set up the experiment.

It is important to note that this intervention, like all skill building experiments which have been conducted thus far, is a joint test of two closely related hypotheses: On the one hand we aim to

establish if managerial capital is a limiting factor in the growth of enterprises. But at the same time, we can only find a positive answer if this knowledge can be conveyed via a consulting intervention in the first place. It could be that managerial capital is indeed a hindrance to growth, but it might not be possible to transfer this knowledge by simply providing consulting services. Therefore, failure to find a result here would not prove that managerial capital does not matter, but may simply mean that this program was not effective in the transmission of managerial skills (or that managerial skills are innate skills and simply not teachable). However, this exercise provides a lower bound on the potential impact of improvements in managerial capital, given the limitation of the efficacy of this particular intervention to actually improve managerial capital. We set up a randomized control trial in Puebla, Mexico, where 432 micro, small, and medium sized enterprises applied to receive subsidized consulting services, and 150 out of the 432 were randomly chosen to receive the treatment. The remaining 282 enterprises served as a control group that did not receive any subsidized consulting services. Treatment enterprises were matched with one of nine local consulting firms based on the specialized services they needed. Enterprises met with their consultants for four hours per week over a one year period. The enterprise owner and consulting firm decided jointly on the focus and scope of the consulting services based on a first daylong diagnostic consultation between the enterprise and the consulting firm.

We measure impacts on the firms and the owners/managers in two different ways: (1) we administer a self-reported baseline and a one-year follow-up survey, and (2) we obtain confidential government data on employment levels and total wages for the firms in our treatment and control groups using five years of annual data (two years prior to three years after the intervention) from the Mexican Social Security Institute (IMSS). We find that the consulting intervention had a positive short-run impact on the productivity of the enterprises in the treatment group in the one-year follow-up. Productivity and return on assets (ROA) both increased by one fifth of a standard deviation, compared to the control group. But we do not find an impact on sales, profits, or the number of workers employed within the first year. This is consistent with the idea that the impact of improved managerial skills is heterogeneous with respect to concrete channels through which the firms improved: for some, the impact may have been to increase revenues, for others to lower costs, for others to shed unproductive assets. No single channel dominated the sample to be statistically significant, but the comprehensive measures of productivity and ROA show positive short-run impacts within the first year.

In the longer run, the administrative data, collected from the Mexican Social Security Institute (IMSS), reveals important impacts on employment, with a 44% higher number of employees, and a 57% higher total wage bill. The point estimates of the positive treatment effects are quite large but we

believe that they are reasonable given the context of the intervention and the confidence interval: The enterprises in our sample were started by people who are not professional managers and many of them had not received any formal management training at all prior to our intervention; the majority of the firms were relatively small, so adding a single worker would have been a significant increase in employment. Furthermore, the confidence interval is quite large, although strictly above zero, i.e., the null result of zero is rejected.

When looking at the specific managerial improvements by which these changes were brought about, we find a variety of dimensions that are mentioned in the surveys but no one strong pattern. Out of 11 management practices that we asked about in the surveys, we find only two that are consistently mentioned and show statistically significant process changes after the intervention: (1) the likelihood to engage in marketing efforts, and (2) the likelihood to keep formal accounts about their firms. However, we show that as a whole these changes were important enough that they led to a significant improvement in the entrepreneurial spirit for the owners overall: We construct what we call an “entrepreneurial spirit” index from a number of questions we asked owners/managers about their confidence in their management skills and their ability to grow their firm and handle difficulties. These questions were inspired by the “nexus of control” literature in psychology.

We argue that it is not a great surprise that the intervention did not unearth one specific management dimension that all firms needed to improve given the complexity of managerial decisions. Instead, each firm seemed to be facing a number of different gaps in their managerial capital; the consultants were able to creatively problem solve with the entrepreneurs and find a way to supplement the knowledge they needed. To help us put more texture around the specific types of problems that were commonly addressed in the consultations, we turn to some qualitative evidence: We provide eight detailed narratives of the consulting advice provided to firms, and the perceptions by the owners and consultants of the impact of the advice on the businesses. These narratives tell a consistent story of complexity: SMEs needed support with a myriad of different problems. Overall, our results confirm that lack of managerial capital is a first order constraint for small and mid-sized enterprises. However, there is no one silver bullet, i.e., no one single mechanism, that when taught then unleashes growth for the enterprises.

Research and practice have recently seen a flurry of programs focused on developing managerial capital for microenterprises (i.e., enterprises typically with zero employees, or under five at the most). The interventions vary widely in the scope of the management skills that are transmitted and the type of enterprises that are targeted. The training is typically provided as in-class training, often

linked with a microcredit program. For example, Karlan and Valdivia (2011) and Cole and Zia (2011) evaluate what is best described as in-class programs. These papers show that traditional microenterprise training seems to affect the command of accounting practices for microenterprises, but has limited to no effects on actual firm outcomes and performance. More recently, Bruhn and Zia (2011) and Giné and Mansuri (2011) also find that in-class training for micro entrepreneurs leads to improvements in business practices but has only limited effects on business performance and sales. Drexler, Fischer, and Schoar (2011) show that training programs for SMEs increase in impact if they are targeted to the owner's level of sophistication: A simple Rule-of-Thumb training has significant impact on real outcomes for micro entrepreneurs who have low educational attainment and poor business practices prior to the intervention, but not on more advanced businesses.

Bloom et al. (2011) is more closely related to our study in that they evaluate the impact of intensive consulting services from an international management consulting firm on the business practices of large Indian textile firms. The average firm in their sample has about 270 employees, whereas the average number of employees in our study is 14. Bloom et al. find that even these larger firms were unaware of many modern management practices, and treated plants improved their management practices during the intervention. The approaches of Bloom et al. and this study are complementary in nature: Bloom et al. (2011) focuses on a small set of large firms in one industry, textile manufacturing, with a tightly defined intervention by a major international consulting firm. Such focus provides clear estimates, including mechanisms in terms of business practice changes, of a specific management intervention, but it does not allow the authors to test if lack of managerial capital is a widespread problem. Our current study includes a larger set of firms and industries (close to 400 firms compared to 20 experimental plants in Bloom et al.), and employs a heterogeneous set of local consulting firms. Therefore, we are able to establish that managerial capital constraints are important for a wider set of small businesses and affect business practices on many dimensions. We can provide proof of concept that general increases in managerial capital for small businesses significantly affect firm performance and growth. But the tradeoff is that we cannot estimate the returns to one specific management intervention, or specific changes in particular business practices.

The remainder of this paper is structured as follows: In Section 2, we describe the subsidized consulting program. Section 3 discusses the experimental setup, data collection, and characteristics of our sample. Section 4 gives the results, examining both business outcomes and business process variables. Section 5 asks why more enterprises do not use consulting services, i.e., given these results, what are the possible market failures in the consulting services industry? Section 6 concludes.

2. Consulting Program

The randomized control trial was conducted with the Puebla Institute for Competitive Productivity (known as IPPC, after its Spanish acronym), a training institute set up by the Ministry of Labor of the Mexican State of Puebla. IPPC implemented a business development program to provide participating enterprises with subsidized consulting services from one of a number of local consulting firms. The program, which started in March 2008 and ended in February 2009, aimed to include 100 micro, 40 small, and 10 medium-sized enterprises² and actually included 108 micro enterprises, 34 small enterprises and 8 medium-sized enterprises. The primary goal was to help enterprises reach the next size category by the end of the program and thus contribute to job creation and economic growth of the region.

Consultants were asked to (1) diagnose the problems that prevented the enterprises from growing, (2) suggest solutions that would help to solve these problems and (3) assist enterprises in implementing the solutions. The consultants dedicated four hours per week to each enterprise. The program was originally intended to last two years but ended prematurely after one year due to government funding issues (no results from the study had been released when the funding decision was made; the decision was not related to perceived performance of the program). Thus the implementation phase was shortened.

The consulting services were highly subsidized by the State of Puebla. Micro enterprises paid only 10 percent of the market cost of the consulting services, small enterprises 20 percent, and medium sized enterprises about 30 percent. The unsubsidized cost of the consulting services varied by firm size but was equivalent to about US\$57³ per hour on average, amounting to US\$11,856 per firm for one year (4 hours for 52 weeks).

Consulting firms were selected through a competitive bidding process. In response to a call for proposals put out by IPPC, eleven consulting firms submitted proposals to participate in the program. Two firms were eliminated based on inadequate references from former clients. The majority of the participating firms were private local consulting firms that usually work with micro, small, and medium sized enterprises. All consulting firms signed a contract with IPPC that required them to spend four hours per week with each enterprise. IPPC monitored consultants by requiring consultants and

² As defined by the Mexican Ministry of the Economy, micro enterprises have up to 10 full-time employees. Small enterprises have between 11 and 50 full-time employees in the manufacturing and services sectors and between 11 and 30 full-time employees in the commerce sector. Medium size enterprises have up to 100 full-time employees in the service and commerce sectors and up to 250 full-time employees in the manufacturing sector.

³ 700 Mexican Pesos (MXP)

enterprises to periodically submit documentation related to the program. Enterprise owners also came to IPPC's offices in person every quarter to pay their share of the program costs, which provided an opportunity to voice complaints. In addition, a local project supervisor from Innovations for Poverty Action (IPA), who was living in Puebla to manage the project evaluation, conducted monitoring visits to program enterprises.

At the beginning of the program, principal decision makers from all program enterprises, as well as most employees, completed a computerized test that determined their individual strengths and talents. This test was based on Gallup's StrengthFinder method and IPPC was licensed to conduct this test in Puebla. IPPC encouraged enterprises to use the results of this test to help assign employees to responsibilities based on their strengths as identified by the StrengthFinder method. The consultants were trained to help the enterprises interpret and apply the results to their labor decisions. For example, one talent was "communication" whereas another was "operations". Employees with the communication talent were particularly suited to interacting with clients, while employees with the operations talent would do well at record keeping and accounting.

Apart from the employee talent diagnostic, the content of the consulting varied across enterprises depending on their needs. In order to gain an understanding of the issues that enterprises worked on with their mentors, we conducted in-depth, qualitative case studies of eight treatment enterprises. Table 1 lists the areas that these eight enterprises covered with their consultants, along with the number of enterprises that worked on each topic. Almost all enterprises started by establishing mission and vision statements with their consultants, setting specific goals for what they wanted to achieve in the future and throughout the program. Most enterprises also worked on improving accounting and record keeping (through training and/or use of new software), clearly assigning staff responsibilities, and sales strategy and advertising. Apart from these common topics, the remaining topics covered are diverse, including optimizing the number and location of points of sale, quality control, access to credit or alternative financing solutions, pricing strategy, teamwork and leadership training. This reflects the fact that the consultants tailored their advice to each enterprise's individual challenges, leading them to work on different areas with each enterprise.

3. Experimental Setup and Data

IPPC advertised the program throughout the State of Puebla via business associations, at trade fairs, and various media outlets in order to attract an initial sample of interested micro, small, and

medium enterprises.⁴ The program was open to enterprises that were formally registered with the government and were paying taxes. In response to the advertising, 432 enterprises expressed interest in the program and signed a letter of interest.

Data comes from two sources: first, a baseline and follow-up survey of these interested enterprises was conducted between October and December 2007 (baseline) and between March 2009 and June 2009 (follow-up)⁵. These surveys collected information on enterprise characteristics and performance, as well as on business practices and characteristics of the enterprise's principal decision maker (typically the owner or manager). Second, from the Mexican Social Security Institute (IMSS), we secured wage and employment data for two pre-intervention years (2005 and 2006) and for three post-intervention years (2010, 2011, and 2012).

Using data from the baseline survey, 150 enterprises were randomly selected to participate in the program.⁶ The randomization was stratified by sector (manufacturing, services, and commerce) and enterprise size (micro, small, and medium-sized)⁷, and was conducted through a Stata program that was run on the premises of IPPC in the presence of government officials and a public notary, who certified that the assignment to the treatment group was random, i.e., not re-run depending on any particular assignment.

⁴ We do not have data on the channel through which enterprises learned of the program, and thus cannot test any theories of heterogeneity with respect to this.

⁵ The baseline survey was conducted by a local professional survey firm under the supervision of the Mexico country office of IPA. For the follow-up survey, IPA hired surveyors (graduate students and recent graduates) directly. IPA trained the surveyors and our local project staff managed and supervised the implementation of the follow-up survey.

⁶ We originally had 434 observations in the randomization and assigned 150 of them to treatment, but we later discovered that two firms had expressed interest in the program twice under separate names. For this reason, we had to drop two observations, giving us 432 unique firms. In one of the cases, both separate names were in the control group, and we dropped one of these. In the other case, one name was assigned to the treatment group and the other to the control group. Here, we had to keep the firm in the treatment group since they had already been notified that they had been randomly selected to participate in the program.

⁷ Within strata, we re-randomized as follows. We first allocated firms to the treatment and control group based on a randomly generated number. Using this allocation, we then calculated the maximum and the average t-statistics on the differences in averages across the treatment and control groups for the following variables: Within Puebla City dummy, business age, total asset value, profit margin, measured risk aversion, entrepreneurial spirit index, currently has a loan from a financial institution dummy, principal decision maker's hours worked, principal decision maker's age, principal decision maker's gender, principal decision maker's years of schooling, principal decision maker is of indigenous background dummy, as well as two dummies indicating whether the firm has participated in other IPPC programs. If the maximum t-statistic for these variables was higher than 1.25 or the average t-statistic was higher than 0.35, we drew a new random number and allocated firms to the treatment and control group based on this new number. We repeated this process until the maximum t-statistic was 1.25 or lower and the average t-statistic was 0.35 or lower. Research by Bruhn and McKenzie (2009) that was conducted after our randomization finds that this way of re-randomizing is no longer the preferred method. In our data analysis, we make the necessary adjustments for the randomization method suggested by Bruhn and McKenzie, i.e., in our regressions we control for all variables used in the re-randomization.

Out of the 150 enterprises in the treatment group, 80 then took up the consulting services.⁸ The remaining 70 treatment group enterprises declined to participate in the program although they had initially signed a letter of interest saying that they would participate if offered a spot. The take-up rate was higher among enterprises in the services and manufacturing sectors (56.6% and 53.5%, respectively), compared to enterprises in the commerce sector (48.7%). Most enterprises that chose not to participate said their financial situation had changed since they signed the letter of interest and they no longer had sufficient funds to pay the fee (albeit subsidized) for the consulting services. IPPC paired the 80 treatment group enterprises that took-up the program with consulting firms according to the consultants' sector and enterprise-size expertise, as well as geographic restrictions. Figure 1 includes a comprehensive project timeline, illustrating how the dates for data collection, randomization, and program implementation line up.

Table 2 provides summary statistics of baseline characteristics for enterprises and their principal decision makers in the treatment and control groups. About 30% of enterprises in each group operated in the manufacturing sector, 25% in the commerce sector, and 45% in the services sector. On average, the enterprises in the study had about 14 full-time paid employees and were slightly over 10 years old. The enterprises' principal decision makers were on average 43 years old, 72% of them were men, and on average completed 16 years of schooling.

Panel C of Table 2 displays our main measures of business performance, starting with sales (Appendix 1: Surveys and Data Definitions provides details of the survey questions and definitions). Our baseline measure of sales is the average of monthly sales in July, August, and September 2007.⁹ This variable varies widely in our sample. At baseline, average sales in the treatment group were US\$79,163 with a standard deviation of 288,679, and US\$55,258 in the control group, with a standard deviation of 140,493. To reduce the noise in this variable, we winsorize the top 1% of outliers (i.e., we replace the top one percent of sales with the 99th percentile of sales). The averages of winsorized sales are more similar across the treatment and control groups (US\$66,025 and US\$54,923, respectively) than for the

⁸ Due to an administrative error, there was also one control group firm that was invited to participate, and did, in the program. For analysis purposes, we adhere to the random assignment and this enterprise is included in the control group.

⁹ About 2.5 percent of enterprises report zero sales for all three months (this percentage is not statistically different across the treatment and control group). Since these enterprises report having employees, as well as assets, and report non-zero hours worked and costs, we assume that they did not want to report their sales and thus replaced their sales with missing (it is unlikely that they had zero sales in all three months and are still in business). We apply the same procedure to the follow-up data, where about 3.5 percent of both treatment and control enterprises report zero sales for all three months (December 2008, January 2009, and February 2009 in the follow-up survey). Our measure of sales is thus greater than zero for all enterprises.

un-winsorized variables, although no differences are statistically significant for either the winsorized or un-winsorized data.

Our baseline measure of profits is calculated as September 2007 sales minus September 2007 costs (unlike sales, we only collected costs for one month in the surveys).¹⁰

We calculate two separate measures of enterprise productivity. The first is the residual from a regression of log sales on log employees and log business assets. The second is return on assets (ROA), defined as profits (calculated as sales minus costs) divided by business assets.

Similarly to sales, the variances of profits, productivity, and ROA are large. For this reason, we include the averages of the 1% winsorized variables in Table 2. We winsorized the top and bottom 1% of outliers for profits, productivity, and ROA (unlike sales, profits, productivity, and ROA are not bounded below by zero and have negative values, which is why we also winsorized the bottom 1%). After winsorizing, average baseline profits are the same in the treatment and control group (about US\$10,000). Overall, we find no statistically significant differences in business performance variables at baseline.

Columns 4, 5, and 6 of Table 2 examine whether treatment group enterprises that took-up the program were significantly different at baseline from treatment group enterprises that did not take-up the program. We find that enterprises that took-up the program are more likely to be in manufacturing, have a larger number of employees, are more likely to have male decision makers, and are older. In addition, Panel C of Table 2 shows that enterprises that took-up the program were more productive at baseline than enterprises that did not take-up the program.

We conducted the follow-up survey between March and June 2009 (i.e., one to four months after the intervention ended, which is 12-16 months after the intervention began), re-interviewing 378 enterprises or 88% of the 432 enterprises interviewed at baseline, to measure the impact of the consulting services on business outcomes. Out of the 54 enterprises that could not be re-interviewed, eleven enterprises were confirmed closed¹¹, 31 declined to participate in the interview¹² and seven enterprises could not be tracked down despite repeated contact attempts. The remaining five

¹⁰ de Mel et al. (2009) suggests asking business owners what their profits are in one simple question as an alternative to calculating profits based on responses to specific components. We tried this approach but had a very high non-response rate to this question.

¹¹ We verified with the former principal decision maker and/or neighbors that these enterprises had indeed closed. The percentage of closed enterprises was lower in the treatment group (1.4%) than in the control group (3.3%). However, the difference is not statistically significant.

¹² The percentage of enterprises that refused the interview was slightly higher in the control group (8.7%) than in the treatment group (5.6%), but the difference is not statistically significant.

enterprises had merged with another enterprise—one of them with an enterprise outside our sample and two with two other enterprises in the sample. For these five enterprises, we were not able to obtain separate data for the unit corresponding to the original enterprise, and thus they are not included in the analysis. We provide an analysis of attrition rates and correlates with baseline information in Appendix Table 1. This analysis shows that there are no differential attrition rates in the follow-up survey across treatment and control groups; neither do we see compositional shifts (Column 3)¹³.

Next, since all enterprises were formally registered with the tax authority, we secured administrative employment data (number of employees and total wage bill) from the Mexican Social Security Institute (IMSS), the equivalent of the US Social Security Administration. We collected each firm's taxpayer number (RFC) during our baseline and follow-up surveys. Using these RFC numbers, we were able to obtain the mean and standard deviation in the treatment and control groups (but not individual firm level data) for two years prior to the intervention and three years following.

In Mexico, all enterprises are required to register their paid employees with IMSS, but in practice, not all enterprises register their workers, even if the enterprise itself is registered with the tax authority. Some enterprises also register only a fraction of their paid workers with IMSS. Close to 57% of the enterprises in our sample were matched with IMSS records. In addition to under-registration, two other potential reasons why enterprises are not found in the IMSS data are that (1) some firms in our sample do not have paid employees and (2) some RFC numbers may contain typos, although we tried to clean them up as much as possible. The percentage of matched enterprises is not statistically, significantly different in the treatment and the control group (58.7% and 56.7%, respectively).

We obtained IMSS data for two pre-intervention time periods (June 30, 2005 and June 30, 2006), as well as three post-intervention time periods (June 30, 2010, June 30, 2011, and June 30, 2012), on (1) number of full-time employees, and (2) total daily wage bill paid to these employees. For confidentiality reasons, IMSS staff could not share enterprise level data. Instead, they provided averages and standard deviations for the treatment and control group. IMSS also provided a list of the firms that had successfully been matched with their database. Appendix Table 2 reports attrition analysis for IMSS data; we find neither differential attrition for treatment on average (Columns 1 and 2) nor compositional changes (Column 3, aggregate p-value of 0.122 for the F-test of joint significance all interaction terms). The analysis does suggest though that firms with a higher number of baseline employees are somewhat

¹³ Not all enterprises that answered the follow-up survey responded to each question. For this reason, our business outcome variables are missing for part of the sample. We tested whether the likelihood of having missing business outcomes variables due to either attrition or non-response differed significantly across the treatment and control group and do not find this to be the case.

more likely to be found in the IMSS data in the control group compared to the treatment group. For this reason, average employment in the IMSS data before the intervention, i.e., both in 2005 and 2006, is higher in the control group (about 8 full-time employees) than in the treatment group (6.2 full-time employees).

4. Results and Discussion

Table 3 reports the main specification, using OLS to compare treatment to control in the cross-section. All regressions include controls for the variables used for stratification (both the strata dummies as well as the re-randomization variables¹⁴ as suggested in Bruhn and McKenzie (2009), and a control for the timing of the survey¹⁵). In Column 1 we estimate the average intent to treat effect without controlling for the baseline value of the outcome variable, and in Column 2 we report the average intent to treat effect with controlling for the baseline value of the outcome variable. For observations where the baseline value of the outcome is missing, we replace this value with zero and include a dummy variable indicating that the value is missing, in order to keep the observation in the sample.

4.1 Business Performance, Short Run and Long Run

Table 3 Columns 1 and 2 both show no short-term significant treatment effect on employment, sales, or profits. However, the results suggest that the consulting improved enterprise productivity as measured by the residual from a productivity regression and also as measured by return on assets (ROA), by about one fifth of a standard deviation for both measures (s.e. = 0.11 standard deviations and 0.13 standard deviations, respectively). We performed three robustness checks of the results, which are reported in Appendix Tables 4, 5, and 6. First, we winsorized the outcome variables at the 1% and 5% levels to check whether the results are driven by outliers (Appendix Table 4). Second, we run all regressions only on the sample of 221 enterprises that report all outcomes variables at follow-up (Appendix Table 5). Third, we estimate a difference-in-difference specification, rather than a cross-sectional specification (Appendix Table 6). The robustness checks show very similar results to the ones

¹⁴ Due to baseline data entry typos that were discovered and corrected after the randomization took place, a few values of the variables included in the randomization procedure do not correspond to the true baseline values. The strata dummies and re-randomization controls included in the regressions contain the values originally used in the randomization procedure. All other baseline data used in the summary statistics and regressions contains the correct baseline values.

¹⁵ Appendix Table 3 shows that 70.4% of treatment group enterprises and 62.6% of control group enterprises were interviewed in March ($p=0.12$). Almost all of remaining enterprises were interviewed in April 2009 or May 2009, with only four enterprises being interviewed in June 2009. Treatment and control enterprises are equally likely to have been interviewed either in March or April (percentage point difference of 1.3 and p -value of 0.66).

reported in Table 3¹⁶. In results not shown, we also found the results are not heterogeneous with respect to size of firm, however, statistical power is limited for this test.

One concern with the outcome data from the follow-up survey is that since the information is self-reported, treatment enterprises could have reported more positive outcomes to please the surveyors (for transparency reasons, enterprises were informed that the survey was linked to the consulting program). To address this concern, we test whether (1) treatment enterprises were more likely to provide alternative contact persons on the survey¹⁷, and (2) treatment enterprises were less likely to not report sales on the follow-up survey, which should be the case if they wanted to please the interviewer. Appendix Table 8 displays the results for these tests. We find no significant differences in both measures across the treatment and control group, although we recognize that these are not dispositive tests.

Table 4 reports the long run impact on employment. As discussed above, for privacy reasons we do not have individual firm data, but rather just average number of employees and average wage bill for five years, separately for our treatment and control groups. Having administrative records rather than self-reported firm data we consider to be a major advantage and reconfirmation of our results. Given the five years of data, we use a difference-in-difference specification, with the treatment effect being identified by the interaction of treatment and post. We find an increase of 4.4 employees (s.e. = 1.7), which corresponds to 44% (average number of employees in the control group is 10.1 in the three post years), and an increase of US\$99 in the daily wage bill (s.e. = \$44), which is 57% (average daily wage bill in the control group is \$172 in the three post years).

Figures 2 and 3 illustrate these results graphically. They show that both the average number of employees and the daily wage bill were similar across the treatment and control groups before the consulting program was implemented (in 2005 and 2006). Two to three years after the program (in 2011 and 2012), the average number of employees and the average daily wage bill were about 45 and 55 percent higher in the treatment group than in the control group, respectively.

¹⁶ As an additional check, Appendix Table 7 displays average business outcomes from the follow-up survey in the treatment and control group, as well as in the group of treatment enterprises that took up the program. A simple comparison of follow-up survey means in the treatment and control group shows a positive effect of the consulting services on productivity. Comparing only enterprises that took up the program to control group enterprises shows even larger differences in both productivity and return on assets (this comparison is not causal, and in particular note that at baseline the enterprises that took-up the program already had higher productivity and return on assets than enterprises that did not take-up the program, as shown in Table 2).

¹⁷ We asked for alternative contact persons in case we needed to get in touch with the enterprises at a later stage for clarifications or additional questions and could not reach the enterprise through our contact information on record.

A caveat here is that when we compare number of full-time employees from the IMSS data to our follow-up survey data, the IMSS numbers are lower, suggesting that the enterprises in our sample did not register all their employees with IMSS (the follow-up survey suggests that our enterprises had about 15 full-time paid employees in 2009, and 2010 IMSS data shows about 10 employees). The increase in number of employees in the IMSS data could thus reflect more employees being registered instead of more employees being hired (this still is a desirable outcome though from a societal perspective). However, given that the increase in employees recorded in the IMSS data is long term, not merely a short-term increase after the training, it appears to be a genuine increase in actual employment at these firms.

Not all of the firms in our sample were found in IMSS records, so that the results in Table 4 are based on about 57 percent of our sample. To assess whether there are important compositional changes that influence our key results, Appendix Table 9 reports the main specifications for impact as measured by the follow-up survey, but restricted to the sample of firms for which we have IMSS data. The results are similar.

4.2 Process Variables

In order to investigate the channels that drive the observed treatment effects, we now study how the consulting program changed processes within the enterprise. We measure these processes as follows. First, the surveys asked enterprise owners whether or not they implemented certain changes during the past year, such as developing new products, attracting new investors, and launching a new marketing campaign. Note that if treatment enterprises believed they should please the program by reporting process changes that did not actually occur, these estimates will be upwardly biased.

Table 5 displays the treatment effects on business process variables. We start with an all-encompassing standardized index, calculated as per Kling et al. (2007), and are not able to reject the null hypothesis of no change (0.072 standard deviation, s.e. = 0.104). We only find statistically significant improvements in two processes: made a new marketing effort (13 percentage points increase, s.e. = 5.5 percentage points) and the percent of enterprises that keep formal accounts (7 percentage points increase, s.e. = 3 percentage points, where “formal” is defined as using either an accountant or a computerized system as opposed to keeping handwritten records or no notes at all). The finding that the program increased marketing efforts and the use of formal accounting practices is consistent with the case study evidence mentioned above, which suggests that many enterprises worked with their mentors on accounting and record keeping, as well as sales strategy and advertising.

Other processes examined, such as registering a patent, developing new products, or attracting new investors, do not appear to be changed significantly. These could be more difficult to detect since they are more heterogeneous across enterprises, or require a longer time to change than is observable in the treatment period. To measure human resource management practices, we created an index using Principle Component Analysis (PCA) based on the six questions listed in Appendix 1¹⁸. We are not able to reject the null hypothesis of no effect on this index (-0.062, s.e. = 0.152). In summary, since the content of the consulting was tailored to each firm's needs it is perhaps not surprising that we do not see improvements in most individual processes, nor the collection on average.

4.3 Entrepreneurial Spirit

We constructed an entrepreneurial spirit index, developed in collaboration with IPPC. This index is based on the answers to the eight questions listed in Appendix 1, which intend to capture entrepreneurial attitudes of the principal decision maker, and is generated using PCA, and then a standardized index using the Kling et al. (2007) method. Thus the indices are a combined measure of answers to a set of questions on the enterprise owner's beliefs about their ability to control the success of their business (or whether they are merely subject to external forces outside of their control) and on the owner's drive for success.

Table 6 reports the results. We find a positive and statistically significant impact using the PCA method (0.237, s.e. = 0.140) and positive but not statistically significant impact using the Kling et al. method (0.130 standard deviation increase, s.e. = 0.103). The increase in this index might reflect the fact that enterprise owners set new goals as part of the program and that consultants helped to provide motivation and strategy for how to achieve these goals. In addition, enterprise owners' increased confidence in their ability to control the success of their business could be driven by having better command of management tools such as marketing and bookkeeping.

We cannot distinguish whether the training had a direct effect on entrepreneurial spirit (e.g., enterprise owners set new goals as part of the program and that consultants helped to provide motivation and strategy for how to achieve these goals), or whether the improvements in the business that led to higher productivity then improved the spirit of the entrepreneurs. Two of the questions used

¹⁸ All PCA indices in this paper were created in Stata using the "pca" command. This command computes the leading eigenvectors from the eigen decomposition of the covariance matrix of the variables used to create the index. We choose the first eigenvector as our PCA index. In other words, the PCA index is a weighted linear combination of the underlying variables, where the weights are optimal in the sense that they give the index the largest possible variance.

to construct the index we believe are particularly subject to this second interpretation (Questions d and e in Appendix 1). As a robustness check, we construct the index without these two questions, and the results do not change.

4.4 Response to Economic Shocks

The program could have also improved enterprise performance by helping enterprises to better cope with the 2008 economic crisis. In the follow-up survey, about 89% of enterprises—both in the treatment and control group—reported that they had been affected by the crisis. We asked these enterprises what changes they made in response to the crisis. Table 7 reports the answers to these questions and examines whether the responses differed across the treatment and control groups. The results show that treatment enterprises are eight percentage points (s.e. = 4 percentage points) less likely than control enterprises to report that they had to cut production in response to the crisis. The ability to weather shocks more effectively could be a result of being able to more proactively engage in marketing activities and better control finances, as shown in the previous section. Enterprises that are less well trained in these skills might experience economic shocks more passively and do not have tools to counteract a shortfall in demand.

Other changes in response to the crisis were not statistically significant across the treatment and control groups, but one of magnitude (but not statistical significance) to note is a positive impact on seeking government assistance (a 5.6 percentage points increase, s.e. = 4.4 percentage points, relative to an average of 12.8% in the control group). For enterprises that reported seeking government assistance, we asked which program or agency they contacted and most answers indicated state or federal programs that provide funding or subsidies to micro, small, and medium sized enterprises.

5. Cost-Effectiveness: Why Don't More Enterprises Use Consulting Services?

Given the large increases in productivity, and eventual growth in employees, we ask why more firms do not use consulting services. In particular, a cost-effectiveness calculation suggests that the returns to hiring a consultant may be well worth the cost. The measured effect of the program on the daily wage bill of U\$99 implies an increase in the annual wage bill of $US\$99 \times 365 = US\$36,135$. The annual cost of the consulting services was US\$11,856. Since the program was highly subsidized, participating enterprises only had to pay between 10% and 30% of this cost (depending on firm size). Among the enterprises in the treatment group, only 53% chose to participate in the subsidized consulting program once offered a spot. Although we do not attempt to translate the job growth to firm

profits, given the relative magnitude, we note that the annual return on labor to the firm need not be very high in order to justify the one-time consulting expenditure.

Several issues may hinder the market for consulting services. First, there may be no failure at all: those who opt-in may be the ones who can benefit, and those who do not opt-in would not benefit. Naturally we do not observe what the impact would have been on those who do not opt-in, but given the large increase in productivity and long term employment on simply the intent-to-treat, there seems to remain a failure for those who did opt-in, in that they had not taken-up the services before, even at the unsubsidized rate. It is important to emphasize that all enterprises in our study had initially expressed interest in the subsidized consulting program, and that their views are thus not representative of enterprises that do not have a pre-existing interest in consulting services. It could be that firms expressed an interest, learned more about the service, and then decided that this was unlikely to yield profitable results for them, and thus failure to take-up remains a rational and correct decision.

Second, there may be a credit market failure. In fact, most of the enterprises in the treatment group that declined participation in the program once offered a spot gave liquidity constraints as the reason. However, this does not fully satisfy the question: Why do we not observe consulting firms accepting delayed payment or working with financial services firms to provide credit to cover their services? Either way, it suggests a credit market failure is the source of the problem for some enterprises. This may be particularly relevant given the timing of the impacts, i.e., in the short run we do not observe higher profits but rather increased productivity. It is not until the long run that we see evidence of likely increase in firm size that could be useful for generating liquidity to pay for consulting services.

Third, entrepreneurs may be risk- or ambiguity-averse with respect to the potential returns from hiring a consultant. This could be perpetuated by lack of information in the market on the returns to consulting advice (and which consulting firms have difficulty credibly signaling).

To examine this issue, in the follow-up survey we included some qualitative questions for the control group on whether they were using any consulting or mentoring services, and if not, why not. About 21% of control group enterprises said that they were indeed using some services and provided the name of the consulting firm they were using. Examining these names reveals that only about half of these firms offer management consulting services similar to the consulting firms that worked with the treatment group enterprises. The other firms mentioned by the control group provide specialized services, such as accounting or technical assistance. Overall, the incidence of using management consulting services in the control group appears to be around 10%. Table 8 lists the self-reported

reasons why control group enterprises do not use consulting services. By far, the most frequently mentioned reason is lack of funds (46.3% of enterprises mention this reason), followed by uncertainty about the benefits of consulting services (22.2%), and simply not having considered hiring a consultant (18.5%). The response could be genuine disinterest in consulting services or ambiguity about a service whose quality is not assured. Our findings indicate that management consulting services can have high returns for micro, small, and medium enterprises, and we consider funding constraints and uncertainty about the benefits to be the most likely explanations for the lack of market transactions in consulting services.

6. Discussion and Conclusion

Our results suggest that lack of managerial skills constitutes a significant constraint to firm growth and the ability of micro, small, and medium enterprises to withstand economic shocks. The documented effects of the experiment on productivity and return on assets in the short run, and employment in the long run, are large. However, the short run impact on productivity and return on assets, albeit significant at standard 10% levels, is similar to smaller point estimates from other studies. Thus, while we believe the magnitude of the impact is not unreasonable given that many enterprises in the sample had not received any formal management training prior to our intervention, we note that the confidence intervals exclude zero but also include fairly small but positive treatment effects.

The improvements seem to be most focused around improvements in marketing and financial controls. Consultants also appear to have helped enterprises to set clear goals and define a strategy for how to achieve these goals. We see that the overall “entrepreneurial spirit” or confidence of the owners increases significantly as a result of the intervention. However, the evidence on any one specific mechanism is weak, with most individual dimensions of management practices not showing any significant impact. Although it would be desirable to identify specific mechanisms, we conjecture that such a one size fits all solution is not realistic.¹⁹

Overall, our results confirm that managerial inputs have a large and important impact on firm performance and even hiring decisions in the intermediate run. However, there is still much to learn about the way this information affects firm performance as a whole, and more specifically, how it interacts with the marginal productivity of inputs such as labor and capital. In addition, while there may

¹⁹ A study that separately taught or tackled one type of problem at a time is likely an unrealistic method for conducting randomized trials, as it would require massive sample sizes to tease out each mechanism separately. Even then, the external validity of any one discovered magic mechanism would be at risk of being context specific (e.g., to that particular regulatory, industry, macroeconomic, political, or natural resource environment).

be a lot of heterogeneity in effects, our sample is not large enough to allow us to look at all the firm level interactions that might be of interest, such as the competitive nature of the industry and sector; the age and gender of the owner; and the owner's ambition level, risk taking ability, or general skill levels. We believe this is a critical area for further research.

References

- Banerjee, Abhijit, Esther Duflo, Rachel Glennerster, and Cynthia Kinnan. 2009. "The Miracle of Microfinance? Evidence from a Randomized Evaluation". Working paper.
- Bennedsen, Morten, Kasper Meisner Nielsen, Francisco Perez-Gonzalez, and Daniel Wolfenzon. 2007. "Inside the Family Firm: The Role of Families in Succession Decisions and Performance." *Quarterly Journal of Economics* 122 (2): 647–691.
- Bertrand, Marianne, and Antoinette Schoar. 2003. "Managing with Style: The Effect of Managers on Firm Policies." *Quarterly Journal of Economics* 118 (4): 1169–1208.
- Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie, and John Roberts. 2011. "Does Management Matter? Evidence From India." *World Bank Policy Research Working Paper No. 5573*.
- Bloom, Nicholas, and John Van Reenen. 2007. "Measuring and Explaining Management Practices Across Firms and Countries." *Quarterly Journal of Economics* 122 (4): 1341–1408.
- . 2010. "Why Do Management Practices Differ Across Firms and Countries?" *Journal of Economic Perspectives* 24 (1): 203–224.
- Bruhn, Miriam, Dean Karlan, and Antoinette Schoar. 2010. "What Capital Is Missing in Developing Countries?" *American Economic Review* 100 (2) (May): 629–633. doi:10.1257/aer.100.2.629.
- 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, and Bilal Zia. 2011. "Stimulating Managerial Capital in Emerging Markets: The Impact of Business and Financial Literacy for Young Entrepreneurs." *World Bank Policy Research Working Paper No. 5642*.
- Caselli, Francesco, and Nicola Gennaioli. 2005. "Dynastic Management." *Economic Inquiry, Forthcoming*.
- Cole, Shawn, Thomas Sampson, and Bilal Zia. 2011. "Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets?" *Journal of Finance* 66 (6): 1933–1967.
- Gine, Xavier, and Ghazala Mansuri. 2011. "Money or Ideas? A Field Experiment on Constraints to Entrepreneurship in Rural Pakistan."
- Gompers, Paul, Josh Lerner, and David Scharfstein. 2005. "Entrepreneurial Spawning: Public Corporations and the Genesis of New Ventures, 1986 to 1999." *Journal of Finance* 60 (2): 577–614.
- Karlan, Dean, Isaac Osei-Akoto, Robert Darko Osei, and Christopher R. Udry. 2012. "Agricultural Decisions After Relaxing Credit and Risk Constraints." *Yale University Economic Growth Center Working Paper*. doi:10.2139/ssrn.2169548. <http://www.ssrn.com/abstract=2169548>.
- Karlan, Dean, and Martin Valdivia. 2011. "Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions." *Review of Economics and Statistics* 93 (2): 510–527.

- Karlan, Dean, and Jonathan Zinman. 2011. "Microcredit in Theory and Practice: Using Randomized Credit Scoring for Impact Evaluation." *Science* 332 (6035) (June 10): 1278–1284.
- King, R. G., and R. Levine. 1993. "Finance and Growth: Schumpeter Might Be Right." *The Quarterly Journal of Economics* 108 (3) (August 1): 717–737. doi:10.2307/2118406.
- Kling, Jeffrey, Jeffrey Liebman, and Lawrence Katz. 2007. "Experimental Analysis of Neighborhood Effects." *Econometrica* 75 (1) (January): 83–120.
- de Mel, Suresh, David J. McKenzie, and Christopher Woodruff. 2009. "Measuring Microenterprise Profits: Must We Ask How the Sausage Is Made?" *Journal of Development Economics* 88 (1) (January): 19–31. doi:10.1016/j.jdeveco.2008.01.007.
- de Mel, Suresh, David McKenzie, and Christopher Woodruff. 2008. "Returns to Capital in Microenterprises: Evidence from a Field Experiment." *Quarterly Journal of Economics* 123 (4): 1329–1372.
- Rajan, Raghuram, and Luigi Zingales. 1998. "Financial Dependence and Growth." *American Economic Review* 88 (3): 559–586.

Figure 1: Timeline

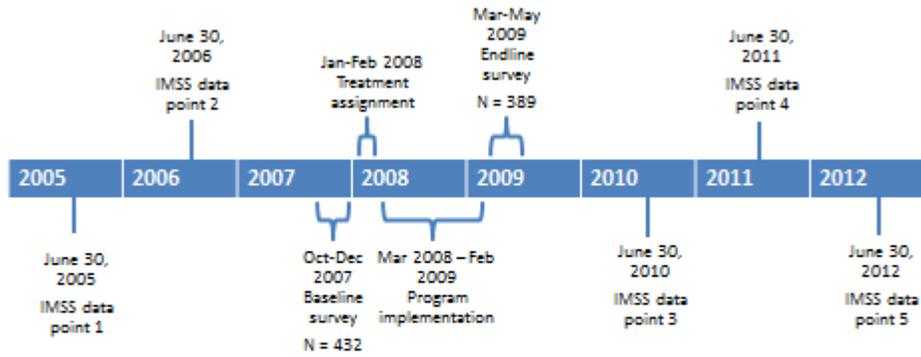
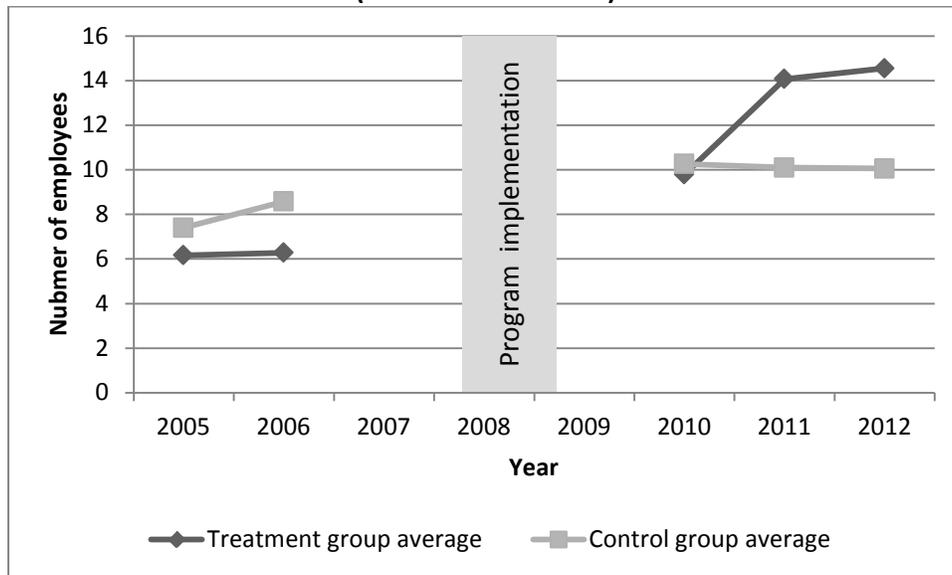
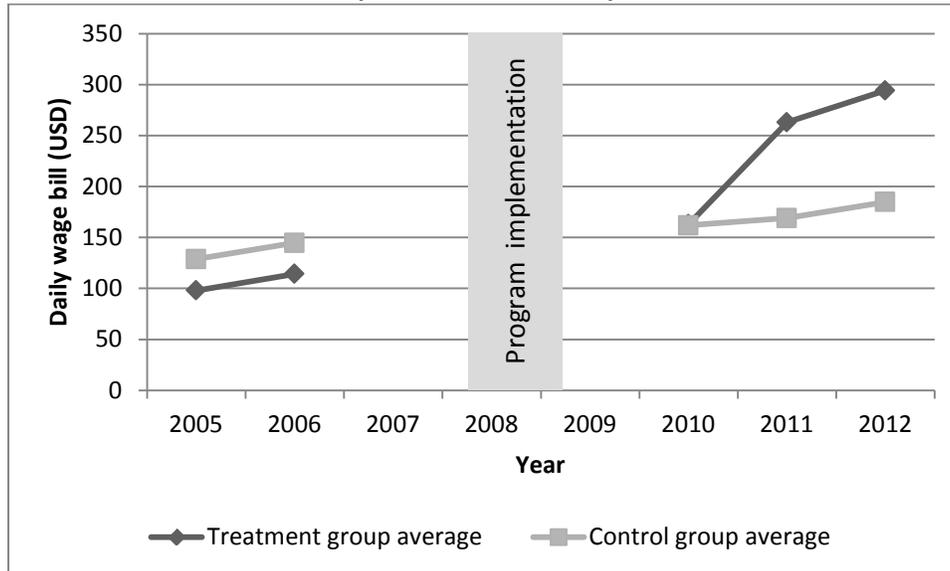


Figure 2: Average Number of Employees in the Treatment and Control Group over Time (Administrative Data)



Source: Administrative data on from the Mexican Social Security Institute (IMSS). Includes only the 253 firms in our sample that were found in IMSS records (89 treatment group firms and 164 control group firms).

Figure 3: Average Daily Wage Bill (USD) in the Treatment and Control Group over Time (Administrative Data)



Source: Administrative data on from the Mexican Social Security Institute (IMSS). Includes only the 253 firms in our sample that were found in IMSS records (89 treatment group firms and 164 control group firms).

**Table 1: Topics that Firms Worked on with Their Consultant
Based on Eight Qualitative Case Studies of Treated Firms**

Topic	# of firms that covered this topic
Define mission and vision statements	6
Accounting and record keeping (training and/or new software)	5
Clarify organizational structure, clearly assign responsibilities	5
Sales strategy and advertising (marketing)	4
Strategically select location and number of sales points	2
Quality control	2
Access to credit or alternative financing solutions	2
Human resources management and hiring practices	2
Mediate family problems in family firms	1
Pricing strategy	1
Reduce costs (negotiate with suppliers, find alternative suppliers)	1
Figure out which products are most profitable and focus on these	1
Team work and communications training for employees	1
Leadership training for firm owners	1

Table 2: Baseline Summary Statistics and Take-Up Analysis
Mean and Standard Deviations

	Treatment	Control	Orthogonality Verification (1)-(2) Difference (p-value)	Took-up	Did Not Take-up	(4)-(5) Difference (std. err.)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Stratification variables						
Manufacturing sector dummy	0.300 (0.460)	0.323 (0.468)	-0.023 (0.630)	0.363 (0.484)	0.229 (0.423)	0.134* (0.075)
Commerce sector dummy	0.253 (0.436)	0.230 (0.422)	0.023 (0.597)	0.225 (0.420)	0.286 (0.455)	-0.061 (0.397)
Services sector dummy	0.447 (0.499)	0.447 (0.498)	0.000 (0.998)	0.413 (0.495)	0.486 (0.503)	-0.073 (0.372)
Full-time paid employees	14.400 (30.887)	13.684 (31.479)	0.716 (0.821)	18.825 (36.288)	9.343 (22.444)	9.482* (0.060)
Panel B: Re-randomization variables						
Principal decision maker's age (years)	42.561 (10.212)	42.876 (9.878)	-0.315 (0.756)	42.443 (9.540)	42.696 (10.999)	-0.253 (0.881)
Male principal decision maker dummy	0.727 (0.447)	0.720 (0.450)	0.007 (0.881)	0.800 (0.403)	0.643 (0.483)	0.157** (0.031)
Principal decision maker's yrs of schooling	15.630 (4.919)	15.932 (5.196)	-0.302 (0.559)	16.138 (4.472)	15.050 (5.358)	1.088 (0.177)
Business age (years)	11.053 (10.330)	13.652 (28.120)	-2.599 (0.275)	12.825 (11.501)	9.029 (8.437)	3.796** (0.024)
N	150	282	432	80	70	150

Note: Columns 1, 2, 4 and 5 present means and standard deviations (in parentheses). Column 3 shows the difference in means across the treatment and control group with the corresponding p-value in parentheses. Column 6 shows the difference in means across treatment enterprises that did and did not take-up the program with the corresponding p-value in parentheses. Significance levels: *10 percent, **5 percent, ***1 percent.

Table 2: Baseline Summary Statistics and Take-Up Analysis (continued)
Mean and Standard Deviations

Panel C: Other variables	Treatment	Control	Orthogonality	Took-up	Did Not	(4)-(5)
			Verification			
- Business outcomes	(1)	(2)	(1)-(2)	Treatment	Take-up	Difference
	(1)	(2)	(p-value)	(4)	(5)	(std. err.)
Avg. sales Jul, Aug, and Sep 2007 (1000s USD)	79.163 (288.679)	55.258 (140.493)	23.905 (0.286)	105.916 (349.912)	48.260 (194.184)	57.656 (0.267)
Avg. sales Jul, Aug, and Sep 2007 (1000s USD), 1% winsorized	66.025 (188.367)	54.923 (137.581)	11.102 (0.520)	84.114 (200.838)	45.129 (172.209)	38.985 (0.250)
Sep 2007 costs (1000s USD)	44.565 (120.341)	56.216 (263.955)	-11.651 (0.633)	58.736 (145.907)	26.974 (75.425)	31.762 (0.135)
Sep 2007 costs (1000s USD), 1% winsorized	44.275 (118.714)	40.049 (95.965)	4.226 (0.709)	58.212 (143.516)	26.974 (75.425)	31.238 (0.136)
Profits (Sep 2007 sales minus costs, 1000s USD)	13.281 (112.277)	-3.797 (204.743)	17.078 (0.411)	8.375 (87.198)	19.365 (137.923)	-10.991 (0.609)
Profits (Sep 2007 sales minus costs, 1000s USD), 1% winsorized	10.220 (74.720)	10.156 (75.010)	0.064 (0.994)	11.144 (72.355)	9.075 (78.279)	2.069 (0.885)
Business assets (1000s USD), 1% winsorized	296.964 (767.969)	945.842 (7822.005)	-648.879 (0.376)	341.570 (779.399)	246.574 (758.949)	94.996 (0.510)
Business assets (1000s USD), 1% winsorized	295.337 (756.984)	331.749 (770.078)	-36.412 (0.685)	338.505 (758.886)	246.574 (758.949)	91.931 (0.518)
Productivity residual	0.028 (1.349)	-0.016 (1.253)	0.045 (0.787)	0.439 (1.477)	-0.437 (1.017)	0.876*** (0.001)
Productivity residual, 1% winsorized	0.031 (1.317)	-0.015 (1.239)	0.046 (0.776)	0.444 (1.419)	-0.437 (1.017)	0.881*** (0.001)
Return on assets (ROA)	-0.026 (0.956)	0.152 (0.817)	-0.178 (0.120)	0.160 (0.366)	-0.254 (1.342)	0.414** (0.042)
Return on assets (ROA), 1% winsorized	0.033 (0.596)	0.118 (0.640)	-0.085 (0.305)	0.160 (0.366)	-0.121 (0.770)	0.281** (0.026)
N	150	282	432	80	70	150

Note: Columns 1, 2, 4 and 5 present means and standard deviations (in parentheses). Column 3 shows the difference in means across the treatment and control group with the corresponding p-value in parentheses. Column 6 shows the difference in means across treatment enterprises that did and did not take-up the program with the corresponding p-value in parentheses. For the 1% winsorized variables, sales, costs, and assets are only winsorized at the top 1% since they are bounded below by zero. All other variables are winsorized at the top and bottom 1%. Significance levels: *10 percent, **5 percent, ***1 percent.

Table 3: ITT Treatment Effect Estimates, Short-Run Business Outcomes

OLS

Outcome variable	ITT treatment effect estimates		Control group mean (std. dev.)
	(1)	(2)	(3)
Full-time paid employees	1.475 (1.421)	0.516 (1.260)	12.428 (22.281)
	378	378	243
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD)	-5.108 (15.452)	-11.886 (10.876)	63.384 (163.643)
	307	307	200
Log (Avg. sales Dec 2008, Jan and Feb 2009 in 1000s USD)	0.006 (0.175)	0.050 (0.144)	2.391 (2.023)
	307	307	200
Feb 2009 costs (1000s USD)	5.525 (14.694)	5.657 (14.551)	43.157 (113.758)
	304	304	204
Profits (Feb 2009 sales minus costs, 1000s USD)	5.802 (5.831)	5.330 (5.705)	11.460 (97.044)
	265	265	176
Log (business assets)	-0.055 (0.176)	-0.106 (0.157)	4.307 (1.699)
	319	319	203
Productivity residual	0.270*	0.250*	-0.095
Residual from regression of log Feb 2009 sales on log employees and log business assets	(0.141)	(0.130)	(1.272)
	250	250	174
Return on assets (ROA)	0.105*	0.098	0.012
Feb 2009 sales minus costs divided by assets	(0.060)	(0.064)	(0.471)
	236	236	154
Controls for baseline value of outcome	No	Yes	-

Note: Each row in Columns 1 and 2 contains the treatment effect point estimate, robust standard error, and number of observations, for a separate OLS estimation. For the regressions that control for the outcome variable measured at baseline (Column 2), when the baseline outcome variable is missing, the missing value is filled-in with zero and a dummy variable indicating that the baseline observation is missing is added to the model. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Column 3 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Table 4: ITT Treatment Effect Estimates, Long-Run Business Outcomes
Difference-in-Difference OLS

Panel A: ITT Regression results	Outcome Variable					
	Number of employees			Daily wage bill (USD)		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment*Post			4.429** (1.686)			98.74* (43.594)
Treatment (=1 if mean is for treatment group)			-1.766** (0.540)			-30.602** (10.379)
Post (=1 for years 2010, 2011, and 2012)			2.148*** (0.541)			35.191** (10.182)
Constant			7.991*** (0.537)			136.76*** (7.251)
Number of observations			10			10
Panel B: Raw data	Treatment Mean (Std Dev)	Control Mean (Std Dev)	Difference (P-value)	Treatment Mean (Std Dev)	Control Mean (Std Dev)	Difference (P-value)
2005	6.169 (13.226)	7.402 (16.490)	-1.234 (0.544)	98.02 (154.126)	128.81 (248.604)	-30.79 (0.289)
2006	6.281 (11.865)	8.579 (18.853)	-2.298 (0.298)	114.29 (159.164)	144.70 (293.049)	-30.41 (0.365)
2010	9.787 (35.958)	10.262 (21.181)	-0.476 (0.895)	162.98 (353.039)	161.89 (311.735)	1.09 (0.980)
2011	14.067 (66.707)	10.098 (19.916)	3.970 (0.480)	263.02 (717.155)	169.10 (321.992)	93.92 (0.153)
2012	14.551 (67.984)	10.055 (20.668)	4.496 (0.434)	294.252 (798.781)	184.856 (343.924)	109.40 (0.131)
Number of enterprises	89	164	253	89	164	253

Note: Administrative data from Mexico's Social Security Institute (IMSS) for years 2005, 2006, 2010, 2011, and 2012. All enterprises are required by law to register their workers with IMSS (although compliance is not universal). 57% of the enterprises in our sample were found in IMSS records. Both number of employees and daily wage bill refer to permanent employees with pay. Column 3 in Panel A displays the results from a regression of mean number of employees on a dummy for the mean being for the treatment group, a dummy for the post-consulting intervention period, and the interaction of these two dummies. Column 6 in Panel A shows results for the corresponding regression with the mean daily wage bill as the outcome variable. Panel B displays the raw data, where the means in Columns 1, 2, 4, and 5 are the observations used in the regressions in Panel A.

Table 5: ITT Treatment Effect Estimates, Business Processes

OLS				
Outcome variable	ITT Treatment Effect Estimates		Observations	Control group mean (std. dev.)
	(1)	(2)		
Index of all process measures listed below	0.072 (0.104)	0.035 (0.098)	378	-0.036 (0.975)
<u>Index components</u>				
Developed new products during last year dummy	-0.048 (0.055)	-0.046 (0.053)	378	0.531 (0.500)
Attracted new clients during last year dummy	-0.020 (0.046)	-0.033 (0.045)	376	0.789 (0.409)
Implemented new process during last year dummy	-0.062 (0.053)	-0.070 (0.052)	378	0.617 (0.487)
Attracted new investors during last year dummy	0.027 (0.032)	0.024 (0.031)	378	0.074 (0.262)
Began process to register a patent during last year dummy	0.045 (0.034)		376	0.079 (0.270)
Began certification process for an international standard (e.g. ISO)	-0.024 (0.035)		378	0.156 (0.364)
Made new marketing effort during last year dummy	0.129** (0.055)		378	0.440 (0.497)
Expanded installations during last year dummy	-0.030 (0.045)		377	0.240 (0.428)
Remodeled installations during last year dummy	0.022 (0.054)		377	0.459 (0.499)
Human resources management index	-0.062 (0.152)	-0.061 (0.146)	363	0.022 (1.450)
Keeps formal accounts dummy	0.076** (0.030)	0.069** (0.029)	378	0.852 (0.356)
Controls for baseline value of outcome	No	Yes		-

Note: The index follows the methodology in Kling, Liebman, and Katz (2007) and is the normalized average of z-scores for all non-missing process measures, using mean and standard deviation in the control group to calculate the z-scores. Each row in Columns 1 and 2 contains the treatment effect point estimates and robust standard errors for separate OLS estimations. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Some variables are not available at baseline, which is why the corresponding cells in Column 2 are empty. Column 4 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Table 6: ITT Treatment Effect Estimates, Entrepreneurial Spirit

OLS

Outcome variable	ITT Treatment Effect Estimates		Observations	Control group mean (std. dev.)
	(1)	(2)		
PCA entrepreneurial spirit index	0.237* (0.140)	0.223 (0.139)	373	-0.094 (1.371)
PCA entrepreneurial spirit index w/o components d and e	0.240* (0.140)	0.208 (0.138)	373	-0.095 (1.343)
KLK entrepreneurial spirit index	0.130 (0.103)	0.128 (0.102)	378	-0.055 (0.964)
KLK entrepreneurial spirit index w/o components d and e	0.153 (0.107)	0.140 (0.105)	378	-0.064 (0.961)
Index components				
a. I have professional goals.	0.114* (0.060)	0.112* (0.060)	378	4.531 (0.651)
b. I revise my goals periodically.	0.128 (0.085)	0.115 (0.082)	378	4.029 (0.840)
c. If I don't reach a goal in the way I wanted to I try again.	-0.033 (0.077)	-0.035 (0.077)	378	4.374 (0.683)
d. I can't motivate my business partners. [^]	0.064 (0.121)	0.055 (0.121)	376	2.277 (1.086)
e. Everything I need for success lies in myself.	0.074 (0.112)	0.090 (0.108)	378	3.938 (1.025)
f. I prefer to do routine tasks instead of doing something new in my work. [^]	-0.013 (0.104)	-0.017 (0.103)	376	2.000 (0.964)
g. I think the government should give me opportunities. [^]	-0.061 (0.139)	-0.075 (0.132)	377	3.545 (1.215)
h. I have to reach some goals every day to feel satisfied.	0.126 (0.109)	0.114 (0.107)	378	3.897 (1.076)
Controls for baseline value of outcome	No	Yes		-

Note: Components marked with [^] are reverse coded in the indices. The PCA index is generated using Principal Components Analysis. The KLK index follows the methodology in Kling, Liebman, and Katz (2007) and is the normalized average of z-scores for all non-missing process measures, using mean and standard deviation in the control group to calculate the z-scores. Each row in Columns 1 and 2 contains the treatment effect point estimates and robust standard errors for separate OLS estimations. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Column 4 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Table 7: ITT Treatment Effect Estimates, Changes in Response to Crisis

OLS			
Outcome variable	ITT Treatment Effect Estimates	Observations	Control group mean (std. dev.)
	(1)	(2)	(3)
Laid off staff or cut down on hiring	0.047 (0.051)	340	0.257 (0.438)
Lowered employee salaries	-0.026 (0.032)	340	0.092 (0.289)
Cut production	-0.080** (0.040)	340	0.206 (0.406)
Diversified business activities	-0.015 (0.057)	340	0.431 (0.496)
Sought government assistance	0.056 (0.044)	340	0.128 (0.335)
None	-0.006 (0.037)	340	0.115 (0.319)
Other	0.043 (0.050)	340	0.216 (0.412)
Number of changes made	0.025 (0.092)	340	1.330 (0.810)

Note: Column 1 contains the treatment effect point estimates and robust standard errors for separate OLS estimations. All outcome variables, except for "number of changes made", are binary variables for the responses to the question "Which changes has your firm made in response to the current economic situation?" (multiple answers were allowed). This question was asked at follow-up in reference to the recent economic crisis. "Number of changes made" is a count of the number of changes reported in response to the question above. These questions were not asked at baseline, which is why we do not control for the baseline outcome variable in this table. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Column 3 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Table 8: Self-Reported Reasons for Not Using Consulting Services in Control Group Firms

Reasons for not using consulting services	% of enterprises mentioning this reason (multiple mention)
Would be a good investment, but don't have funds	46.3
Don't know what the benefits would be	22.2
Simply hadn't considered it	18.5
Didn't need the services	13.9
Other	11.1
Didn't know these services existed	7.4
Not worth the cost	5.6
N	108

Note: This table includes all control group firms that, at the time of the follow-up survey, reported never having used consulting services.

Appendix Table 1: Analysis of Attrition in Follow-Up Survey

OLS

	Dependent variable:		
	Binary=1 if enterprise was not interviewed or not confirmed closed at follow-up		
	(1)	(2)	(3)
Treatment	-0.020 (0.029)	-0.017 (0.030)	0.141 (0.157)
Commerce sector dummy		0.021 (0.039)	0.047 (0.049)
Services sector dummy		0.041 (0.033)	0.072* (0.042)
Full-time paid employees		0.001 (0.001)	0.001 (0.001)
Age of principal decision maker (years)		0.001 (0.001)	0.001 (0.002)
Male principal decision maker dummy		-0.043 (0.036)	-0.020 (0.045)
Business age (years)		0.000 (0.000)	0.000 (0.000)
Log (Avg. sales Jul, Aug and Sep 2007 in 1000s USD)		0.002 (0.008)	0.000 (0.011)
Profits (Sep 2007 sales minus costs, 1000s USD)		-0.000 (0.000)	-0.000 (0.000)
Return on assets (ROA)		0.002 (0.025)	-0.021 (0.038)
Commerce sector dummy*Treatment			-0.071 (0.080)
Services sector dummy*Treatment			-0.094 (0.073)
Full-time paid employees*Treatment			0.000 (0.002)
Age of principal decision maker (years)*Treatment			-0.001 (0.003)
Male principal decision maker dummy*Treatment			-0.078 (0.074)
Business age (years)*Treatment			-0.000 (0.003)
Log (Avg. sales)*Treatment			0.006 (0.017)
Profits*Treatment			-0.000

Return on assets (ROA)*Treatment			(0.000)
			0.057
			(0.045)
Constant	0.106***	0.056	0.003
	(0.018)	(0.076)	(0.102)
R-squared	0.001	0.039	0.053
N	432	432	432
F-test p-value: joint significance of interaction terms			0.850
Mean of dependent variable	0.100	0.101	0.101

Note: All explanatory variables are measured at baseline. Binary control variables included for when covariate is missing, and then missing covariate coded as zero. Variables with *Treatment at the end are interacted with a treatment group dummy. Robust standard errors in parentheses. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 2: Analysis of Matching with IMSS Data

OLS

	Dependent variable:		
	Binary=1 if enterprise was matched with IMSS data		
	(1)	(2)	(3)
Treatment	0.019 (0.050)	0.014 (0.049)	-0.011 (0.258)
Commerce sector dummy		-0.018 (0.062)	0.016 (0.076)
Services sector dummy		0.042 (0.055)	0.087 (0.069)
Full-time paid employees		0.000 (0.001)	0.002*** (0.001)
Age of principal decision maker (years)		-0.001 (0.002)	-0.002 (0.003)
Male principal decision maker dummy		0.102* (0.053)	0.036 (0.064)
Business age (years)		-0.000 (0.001)	-0.001 (0.001)
Log (Avg. sales Jul, Aug and Sep 2007 in 1000s USD)		0.083*** (0.014)	0.084*** (0.017)
Profits (Sep 2007 sales minus costs, 1000s USD)		0.000 (0.000)	0.000* (0.000)
Return on assets (ROA)		-0.004	-0.020

		(0.030)	(0.043)
Commerce sector dummy*Treatment			-0.073 (0.133)
Services sector dummy*Treatment			-0.075 (0.120)
Full-time paid employees*Treatment			-0.006** (0.002)
Age of principal decision maker (years)*Treatment			0.001 (0.005)
Male principal decision maker dummy*Treatment			0.146 (0.110)
Business age (years)*Treatment			0.005 (0.004)
Log (Avg. sales)*Treatment			0.008 (0.035)
Profits*Treatment			-0.000 (0.000)
Return on assets (ROA)*Treatment			0.010 (0.057)
Constant	0.567***	0.329***	0.332** (0.149)
R-squared	0.000	0.113	0.144
N	432	427	427
F-test p-value: joint significance of interaction terms			0.122
Average of dependent variable	0.574	0.569	0.569

Note: All explanatory variables are measured at baseline. Binary control variables included for when covariate is missing, and then missing covariate coded as zero. Variables with *Treatment at the end are interacted with a treatment group dummy. Robust standard errors in parentheses. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 3: Number of Enterprises Surveyed Each Month (Follow-Up Survey)

Survey month	# treatment	% treatment	# control	% control
Mar-09	95	70.37	152	62.55
Apr-09	29	21.48	68	27.98
May-09	10	7.41	20	8.23
Jun-09	1	0.74	3	1.23

Appendix Table 4: ITT Treatment Effect Estimates, Short-Run Business Outcomes, Winsorized

OLS

Outcome variable	1%	1%	5%	5%	Non-winsorized
	winsorized	winsorized	winsorized	winsorized	control group mean (std. dev.)
	(1)	(2)	(3)	(4)	(5)
Full-time paid employees	1.310 (1.339) 378	0.552 (1.156) 378	0.025 (0.835) 378	-0.187 (0.811) 378	12.428 (22.281) 243
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD)	-7.380 (10.235) 307	-11.616 (8.353) 307	-3.758 (6.454) 307	-5.770 (5.956) 307	63.384 (163.643) 200
Log (Avg. sales Dec 2008, Jan and Feb 2009 in 1000s USD)	0.004 (0.174) 307	0.047 (0.143) 307	0.013 (0.171) 307	0.055 (0.141) 307	2.391 (2.023) 200
Feb 2009 costs (1000s USD)	-1.918 (8.319) 304	-2.242 (8.010) 304	-2.341 (4.061) 304	-2.410 (3.938) 304	43.157 (113.758) 204
Profits (Feb 2009 sales minus costs, 1000s USD)	5.743 (5.061) 265	5.718 (5.008) 265	3.924 (2.620) 265	4.027 (2.576) 265	11.460 (97.044) 176
Log (business assets)	-0.049 (0.175) 319	-0.100 (0.157) 319	-0.064 (0.172) 319	-0.115 (0.154) 319	4.307 (1.699) 203
Productivity residual	0.262* (0.137)	0.243* (0.127)	0.244** (0.118)	0.230** (0.111)	-0.095 (1.272)
Residual from regression of log Feb 2009 sales on log employees and log business assets	250	250	250	250	174
Return on assets (ROA)	0.084* (0.050)	0.079 (0.054)	0.067** (0.034)	0.064* (0.036)	0.012 (0.471)
Feb 2009 sales minus costs divided by assets	236	236	236	236	154
Controls for baseline value of outcome	No	Yes	No	Yes	-

Note: Each cell in Columns 1 through 4 contains the treatment effect point estimate, robust standard error, and number of observations, for a separate OLS estimation. For the regressions that control for the outcome variable measured at baseline (Columns 2 and 4), when the baseline outcome variable is missing, the missing value is filled-in with zero and a dummy variable indicating that the baseline observation is missing is added to the model. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Full-time paid employees, sales, costs, and assets, are only winsorized at the top x% since they are bounded below by zero. All other variables are winsorized at the top and bottom x%. Column 5 contains non-winsorized means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 5: ITT Treatment Effect Estimates, Short-Run Business Outcomes, Restricted Sample
OLS

Outcome variable	ITT treatment effect estimates		Control group mean (std. dev.)
	(1)	(2)	(3)
Full-time paid employees	-1.771 (1.389) 221	-1.341 (1.103) 221	13.182 (19.925) 143
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD)	-14.720 (14.976) 221	-11.426 (12.218) 221	69.450 (181.105) 143
Log (Avg. sales Dec 2008, Jan and Feb 2009 in 1000s USD)	-0.016 (0.211) 221	-0.019 (0.176) 221	2.520 (1.985) 143
Feb 2009 costs (1000s USD)	-12.367 (11.412) 221	-13.203 (10.956) 221	46.598 (111.674) 143
Profits (Feb 2009 sales minus costs, 1000s USD)	3.793 (6.628) 221	3.788 (6.332) 221	13.161 (102.459) 143
Log (business assets)	-0.078 (0.192) 221	-0.118 (0.169) 221	4.432 (1.738) 143
Productivity residual	0.261*	0.249*	-0.073
Residual from regression of log Feb 2009 sales on log employees and log business assets	(0.158) 221	(0.146) 221	(1.302) 143
Return on assets (ROA)	0.118*	0.112	0.018
Feb 2009 sales minus costs divided by assets	(0.065) 221	(0.068) 221	(0.487) 143
Controls for baseline value of outcome	No	Yes	-

Note: This tables included only enterprises that report all outcome variables. Each cell in Columns 1 and 2 contains the treatment effect point estimate, robust standard error, and number of observations, for a separate OLS estimation. For the regressions that control for the outcome variable measured at baseline (Column 2), when the baseline outcome variable is missing, the missing value is filled-in with zero and a dummy variable indicating that the baseline observation is missing is added to the model. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Column 3 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 6: ITT Treatment Effect Estimates, Short-Run Business Outcomes, Difference-in-Difference

OLS		
Outcome variable	ITT treatment effect estimates	Control group mean (std. dev.)
	(1)	(2)
Full-time paid employees	0.578 (2.351) 810	12.428 (22.281) 243
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD)	-14.464 (23.358) 675	63.384 (163.643) 200
Log (Avg. sales Dec 2008, Jan and Feb 2009 in 1000s USD)	0.017 (0.237) 675	2.391 (2.023) 200
Feb 2009 costs (1000s USD)	27.333 (25.419) 681	43.157 (113.758) 204
Profits (Feb 2009 sales minus costs, 1000s USD)	-15.357 (20.485) 602	11.460 (97.044) 176
Log (business assets)	-0.098 (0.227) 627	4.307 (1.699) 203
Productivity residual	0.306 (0.217)	-0.095 (1.272)
Residual from regression of log Feb 2009 sales on log employees and log business assets	515	174
Return on assets (ROA)	0.272** (0.133)	0.012 (0.471)
Feb 2009 sales minus costs divided by assets	488	154

Note: Each cell in Column 1 contains the treatment effect point estimate, robust standard error, and number of observations, for a separate OLS difference-in-difference estimation. Each regressions uses the full sample of enterprises at baseline and follow-up and includes a dummy for being in the treatment group, a dummy for the follow-up period, an interaction term between the treatment and follow-up dummies, as well as controls for strata dummies, re-randomization variables, and a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. The point estimates displayed in Column 1 are coefficients on the interaction term between treatment and follow-up. Column 2 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 7: Follow-Up Summary Statistics - Short-Run Business Outcomes
Mean and Standard Deviations

	Treatment	Control	(1)-(2) Difference (p-value)	Treatment & Took-up	(4)-(2) Difference (p-value)
	(1)	(2)	(3)	(4)	(5)
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD)	53.889 (160.545)	63.384 (163.643)	-9.495 (0.626)	61.075 (103.216)	-2.309 (0.919)
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD), 1% winsorized	45.905 (99.329)	56.203 (116.830)	-10.298 (0.439)	61.075 (103.216)	4.872 (0.775)
Feb 2009 costs (1000s USD)	42.353 (167.711)	43.157 (113.758)	-0.804 (0.961)	42.882 (85.825)	-0.275 (0.987)
Feb 2009 costs (1000s USD) , 1% winsorized	31.887 (81.698)	38.951 (83.323)	-7.064 (0.485)	42.882 (85.825)	3.931 (0.765)
Profits (Feb 2009 sales minus costs, 1000s USD)	10.964 (45.858)	11.460 (97.044)	-0.496 (0.964)	15.804 (57.117)	4.344 (0.767)
Profits (Feb 2009 sales minus costs, 1000s USD), 1% winsorized	10.964 (45.858)	6.918 (47.129)	4.046 (0.506)	15.804 (57.117)	8.886 (0.271)
Business assets (1000s USD)	258.923 (508.865)	331.416 (1236.195)	-72.493 (0.547)	313.187 (560.688)	-18.229 (0.912)
Business assets (1000s USD), 1% winsorized	258.923 (508.865)	242.534 (446.492)	16.389 (0.765)	313.187 (560.688)	70.653 (0.312)
Productivity residual	0.163 (0.967)	-0.095 (1.272)	0.257* (0.095)	0.429 (0.854)	0.524*** (0.008)
Productivity residual, 1% winsorized	0.157 (0.951)	-0.090 (1.226)	0.247* (0.097)	0.419 (0.820)	0.509*** (0.008)
Return on assets (ROA)	0.091 (0.402)	0.012 (0.471)	0.080 (0.195)	0.174 (0.429)	0.162** (0.043)
Return on assets (ROA), 1% winsorized	0.088 (0.388)	0.030 (0.292)	0.058 (0.198)	0.174 (0.429)	0.144** (0.011)

Note: Columns 1, 2, and 4 present means and standard deviations (in parentheses). Column 3 shows the difference in means across the treatment and control group with the corresponding p-value in parentheses. Column 5 shows the non-experimental difference between those who took-up in treatment minus those in control, and the corresponding p-value in parentheses. For the 1% winsorized variables, sales, costs, and assets are only winsorized at the top 1% since they are bounded below by zero. All other variables are winsorized at the top and bottom 1%. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 8: Non-Response on Follow-up Survey

	Treatment	Control	(1)-(2) Difference (p-value)
	(1)	(2)	(3)
% That Did not provide alternative contact person	16.296	18.519	-2.222 (0.589)
% That Did not report Dec 2008, Jan and Feb 2009 sales	20.741	17.695	3.045 (0.469)
N	135	243	378

Note: Columns 1 and 2 show the percentage of enterprises in the treatment and control group, respectively, that did not provide an alternative contact person or sales on the follow-up survey, conditional on participating in the survey. Column 3 shows the difference in percentages between the treatment and control group with the corresponding p-value in parentheses. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix Table 9: ITT Treatment Effect Estimates, Short-Run Business Outcomes, IMSS Sample

OLS

Outcome variable	ITT treatment effect estimates		Control group mean (std. dev.)
	(1)	(2)	(3)
Full-time paid employees	0.764 (1.841) 229	0.380 (1.405) 229	15.932 (25.703) 148
Avg. sales Dec 2008, Jan and Feb 2009 (1000s USD)	-17.701 (23.164) 187	-16.381 (14.531) 187	77.325 (161.353) 125
Log (Avg. sales Dec 2008, Jan and Feb 2009 in 1000s USD)	-0.182 (0.204) 187	-0.104 (0.168) 187	3.045 (1.713) 125
Feb 2009 costs (1000s USD)	-1.529 (23.042) 176	-3.804 (19.729) 176	63.156 (141.134) 120
Profits (Feb 2009 sales minus costs, 1000s USD)	5.566 (8.197) 160	5.904 (8.102) 160	2.321 (43.806) 109
Log (business assets)	-0.012 (0.208) 187	-0.008 (0.202) 187	4.655 (1.624) 121
Productivity residual	0.080 (0.181) 152	0.088 (0.170) 152	0.116 (1.154) 99
Residual from regression of log Feb 2009 sales on log employees and log business assets			
Return on assets (ROA)	0.173* (0.098) 140	0.197* (0.113) 140	-0.001 (0.574) 95
Feb 2009 sales minus costs divided by assets			
Controls for baseline value of outcome	No	Yes	-

Note: This tables included only enterprises that were successfully matched with IMSS data. Each cell in Columns 1 and 2 contains the treatment effect point estimate, robust standard error, and number of observations, for a separate OLS estimation. For the regressions that control for the outcome variable measured at baseline (Column 2), when the baseline outcome variable is missing, the missing value is filled-in with zero and a dummy variable indicating that the baseline observation is missing is added to the model. All regressions include controls for strata dummies and re-randomization variables, as well as a dummy for having been surveyed in March 2009 (vs. April, May or June) at follow-up. Column 3 contains means and standard deviations for the control group at follow-up. Significance levels: *10 percent, **5 percent, ***1 percent.

Appendix 1: Surveys and Data Definitions

Survey Questions for Entrepreneurial Spirit Index

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a.	I have professional goals.	1	2	3	4	5
b.	I revise my goals periodically.	1	2	3	4	5
c.	If I don't reach a goal in the way I wanted to I try again.	1	2	3	4	5
d.	I can't motivate my business partners.*	1	2	3	4	5
e.	Everything I need for success lies in myself.	1	2	3	4	5
f.	I prefer to do routine tasks instead of doing something new in my work.*	1	2	3	4	5
g.	I think the government should give me opportunities.*	1	2	3	4	5
h.	I have to reach some goals every day to feel satisfied.	1	2	3	4	5

*Reverse coded

Survey Questions for Human Resources Management Index

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a.	The employees identify with the objectives of the company.	1	2	3	4	5
b.	The firm lets its employees know if they have done something wrong.	1	2	3	4	5
c.	All responsibilities are clearly assigned for each of the members of the firm.	1	2	3	4	5
d.	All decisions are made by the same person.	1	2	3	4	5
e.	The firm gives positive recognition to its employees.	1	2	3	4	5
f.	There is low turnover of employees in the firm.	1	2	3	4	5

Definitions of Financial Variables

Variable	Definition
Sales	Average of non-missing observation for December 2008, January 2009, and February 2009 sales (from survey question 29)
Costs	February 2009 costs (from survey question 22)
Profits	February 2009 sales minus February 2009 costs (from survey questions 22 and 29c)
Productivity residual	Residual from a regression of log(February 2009 sales) on log(total employees) and log(assets), where “February 2009 sales” comes from survey question 29c, “total employees” comes from question 17, and “assets” is the sum of questions 21.a.2 through 21.f.2
ROA – return on assets	February 2009 sales minus February 2009 costs (from survey questions 22 and 29c) divided assets (sum of questions 21.a.2 through 21.f.2)

Note: Definitions are the same for the baseline survey, with the reference months being July 2007, August 2007, and September 2007 instead of December 2008, January 2009, and February 2009.

Survey Questions Used to Calculate Financial Variables

Employees

17. ¿Cuántos empleados tiene la empresa en total (incluyéndolo a usted y personal en todos los establecimientos)? Incluye todos los tipos de empleados. *Escriba el número en el espacio dado.*

How many employees does the business have (including yourself and staff in all establishments)? Include all types of employees. Write the number in the space below.

_____ empleados employees

Sales

29. ¿Cuáles fueron las ventas/ingresos totales aproximadas de su negocio en diciembre 2008, enero 2009, y febrero 2009, por mes? *Escriba los números en el espacio dado.*

Approximately how much were your firm’s total monthly sales/income in December, January and February? Write the numbers in the space below.

a) Diciembre 2008 December	pesos	<input type="checkbox"/> 997 No sabe Don’t know	<input type="checkbox"/> 998 No quiere contestar Refuse to answer
b) Enero 2009 January	pesos	<input type="checkbox"/> 997 No sabe Don’t know	<input type="checkbox"/> 998 No quiere contestar Refuse to answer
c) Febrero 2009 February	pesos	<input type="checkbox"/> 997 No sabe Don’t know	<input type="checkbox"/> 998 No quiere contestar Refuse to answer

Costs

22. ¿Cuánto fueron los costos/gastos aproximados totales del negocio en febrero 2009? *Escriba el número. What were the total approximate costs of your business in February 2009? Write the number.*

_____ pesos 997 No sabe **Don’t know** 998 No quiere contestar **Refuse to answer**

Assets

21. Lea la pregunta (a) para cada fila. Verifique que se trata solamente de bienes del negocio y no del hogar. Si el empresario no tiene estos activos, puede pasar a la siguiente fila sin preguntar (b). Read question (a) for every row. Verify that we are talking about assets of the business only and not the home. If the business person does not have these assets, you can go on to the next row without asking (b).

		1. ¿En este momento, tiene esta empresa...? At the moment, does the business have...? 1 = Sí → Pase a (2) 1= Yes → Go to (2) 2 = No → Pase a (b)-(f) 2= No → Go to (b)-(f)		2. Si tuviera que reponer todo su..., ¿cuánto le costaría, aproximadamente, comprarlo en condiciones similares? If you had to replace all of your ..., how much would it cost to buy it in a similar condition?
a.	Maquinaria Machinery		<input type="checkbox"/> 997 No sabe Don't know	<input type="checkbox"/> 997 No sabe Don't know <input type="checkbox"/> 998 No quiere contestar Refuse to answer
b.	Herramientas o utensilios de trabajo Tools		<input type="checkbox"/> 997 No sabe Don't know	<input type="checkbox"/> 997 No sabe Don't know <input type="checkbox"/> 998 No quiere contestar Refuse to answer
c.	Mobiliario y equipo (ejemplo: computadoras) Furniture and equipment (example: computers)		<input type="checkbox"/> 997 No sabe Don't know	<input type="checkbox"/> 997 No sabe Don't know <input type="checkbox"/> 998 No quiere contestar Refuse to answer
d.	Vehículos del negocio Business vehicles		<input type="checkbox"/> 997 No sabe Don't know	<input type="checkbox"/> 997 No sabe Don't know <input type="checkbox"/> 998 No quiere contestar Refuse to answer
e.	Local propio (edificio y terreno) Property (buildings and land)		<input type="checkbox"/> 997 No sabe Don't know	<input type="checkbox"/> 997 No sabe Don't know <input type="checkbox"/> 998 No quiere contestar Refuse to answer
f.	Otros activos no inventarios (<i>especifique</i>): Other non-inventory goods (specify):		<input type="checkbox"/> 997 No sabe Don't know	<input type="checkbox"/> 997 No sabe Don't know <input type="checkbox"/> 998 No quiere contestar Refuse to answer