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The Medium-Term Impact of Entrepreneurship Education on Labor Market Outcomes

Experimental Evidence from University Graduates in Tunisia

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Abstract

Despite the widespread popularity of entrepreneurship education, there is thin evidence on its effectiveness in improving employment outcomes over the medium to long term. A potential time lag between entrepreneurial intentions and actions is sometimes presented as a reason why employment impacts are rarely observed. Based on a randomized control trial among university students in Tunisia, this paper studies the medium-term impacts of entrepreneurship education four years after students' graduation.

The paper complements earlier evidence that documented small, short-term impacts on entry into self-employment and aspirations toward the future one year after graduation. The medium-term results show that the impacts of entrepreneurship education were short-lived. There are no sustained impacts on self-employment or employment outcomes four years after graduation. There are no lasting effects on latent entrepreneurship either, and the short-term increase in optimism also receded.

The Medium-Term Impact of Entrepreneurship Education on Labor Market Outcomes:

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1. Introduction

Entrepreneurship evokes individuals driven by ambition and opportunities who choose to take risks to start their own business, with positive externalities for the economy. In many countries, young firms create most jobs at their start-up period (Fölster, 2000; Haltiwanger et al., 2013; Sedláček and Sterk, 2017; Heyman et al., 2018). Yet many entrepreneurs also start businesses because they see no better employment options, particularly in developing countries where wage jobs are rare (Schoar, 2010). Given pressing underemployment challenges and the potential that entrepreneurship presents for the economy, policy makers around the world have been interested in stimulating and facilitating entrepreneurship. Since young people particularly suffer from long unemployment spells during their school-to-work transition, policy makers have considered fostering skills for entrepreneurship early in life. As a result, entrepreneurship education and training programs have rapidly expanded in developed and developing countries alike (Kuratko, 2005; Valerio et al., 2014).

Despite the popularity of entrepreneurship education, evidence of its effectiveness in improving employment outcomes over the medium to long-term is lacking. Existing evidence tends to focus on impacts on participants' intentions while in school, not on actual project creation or employment outcomes after students have graduated and joined the labor market (for meta-reviews, see Bae et al., 2014; Martin et al., 2013; Valerio et al., 2014; Grimm and Paffhausen, 2015; or Nabi et al., 2017). Observed impacts on entrepreneurial intentions vary substantially. For example, Peterman and Kennedy (2003) and Souitaris et al. (2007) find some impacts of entrepreneurship education on entrepreneurial intentions among secondary school and high-school students, respectively. Rosendahl Huber et al. (2014) perform a randomized experiment of an entrepreneurship program that aims to teach children aged 11-12 the basics of business and entrepreneurship and to promote teamwork and leadership in the classroom. They find a positive effect on non-cognitive entrepreneurial skills. In contrast, Oosterbeek et al. (2010) show that an entrepreneurship education program had no effect on university students' entrepreneurial skills and had a negative effect on the intention of becoming an entrepreneur. Elert et al. (2015) is a rare study looking at the long-term impact of entrepreneurship education on entrepreneurship. They find that high-school entrepreneurial education has an effect on the probability of starting a firm in Sweden, though they do not analyze broader employment outcomes.

When modeling entrepreneurship, researchers have distinguished between several stages such as latent, nascent and actual entrepreneurship (e.g. Blanchflower et al., 2001; Gries and Naudé, 2011). Latent entrepreneurship refers to an entrepreneurial spirit or the declared preference for self-employment over wage employment. Nascent entrepreneurs, on the other hand, are already trying to start a new business (Grilo and Thurik, 2005). Studies analyzing the effects of entrepreneurship education on entrepreneurial intentions have mostly focused on latent entrepreneurship. The lack of evidence on impacts on nascent or actual entrepreneurship upon graduation is at times justified by a potential "time lag" from intentions to actions (Souitaris et al., 2007). However, it is not clear how long the duration of that time lag may be. Beiler (2017) analyzes the effect of economic conditions on entrepreneurship among college graduates. He finds that patterns of entry into entrepreneurship are largely explained by effects occurring during the first year after students' graduation. Ultimately, it is an empirical question whether changes in short-term intentions are predictive of longer-term effects on nascent or actual entrepreneurship.

In addition to focusing mostly on entrepreneurial intentions or latent entrepreneurship, existing evidence on entrepreneurship education is often based on quasi-experimental methods. Yet meta-analyses have suggested that observational or quasi-experimental evaluations of entrepreneurship education programs tend to obtain larger estimates of program impacts than experimental studies (such as Martin et al., 2013; or Grimm and Paffhausen, 2015), possibly as they do not address all potential sources of bias or challenges to internal validity. While the study on the long-term impact of entrepreneurship education on firm creation by Elert et al. (2015) is based on a large sample and long time-frame, it also relies on quasi-experimental matching techniques.

The broader literature analyzing the impact of entrepreneurship-support interventions on labor market and firm outcomes has shown a wide variation in program effectiveness (for a review, see Cho and Honorati, 2014). Most studies on business training analyze whether the skills of existing entrepreneurs can be strengthened to improve their productivity (for a review, see McKenzie and Woodruff, 2014). Business training can affect enterprise owners' practices, although effects on employment or productivity are more limited in general and for women in particular (Bruhn and Zia, 2013; Cirera and Qasim, 2014; De Mel et al., 2014; Drexler et al., 2014; Karlan and Valdivia, 2011; Klinger and Schündeln, 2011). Business training focusing on psychological

dimensions such as personal initiative and problem-solving appears more effective than traditional business skill training (Campos et al., 2017). In contrast, fewer studies focus on whether business training can equip individuals with the skills required to enter into self-employment, and whether these impacts are sustained in the medium to long-term. The few studies that document impacts over time show important variations depending on the time frame being considered (see for instance Fiala, 2014). In addition, recent meta-analyses acknowledge the lack of evidence of active labor market programs for specific youth groups, such as young women, skilled youth, or growth-oriented entrepreneurs (Card et al., 2018; McKenzie, 2017a).

In this paper, we present new experimental evidence on the medium-term impacts of entrepreneurship education on labor-market outcomes. We analyze the timeline of impacts of an entrepreneurship education program for university students in Tunisia, including entry into self-employment and labor market outcomes up to four years after graduation. As such, we also study the duration of the potential time-lag between entrepreneurial intentions and actions, and whether changes in short-term intentions lead to later changes in latent, nascent or actual entrepreneurship.

The paper complements earlier evidence presented in Premand et al. (2016), which focuses on the short-term impact of entrepreneurship education one year after students' graduation. Short-term results showed that entrepreneurship education targeted to university students in Tunisia had small absolute impacts on entry into self-employment, with effects ranging from 1 to 4 percentage points. However, the employment rate among applicants remained unchanged, suggesting a substitution from wage employment into self-employment. Findings on intermediary outcomes were consistent with the limited employment results: the program improved business skills but had mixed impacts on personality and little effects on entrepreneurial traits. Yet results also showed that participation in the entrepreneurship track heightened graduates' aspirations towards the future. As such, short-term results raised the question of whether larger impacts were to come in the medium to long-term.

The medium-term experimental evidence we present in this paper shows that the impacts of entrepreneurship education were short-lived. We find no sustained impacts on self-employment or employment outcomes four years after graduation. An analysis of students' employment history and project realization process shows how the intervention temporarily affected nascent

entrepreneurship: while the treatment group was more likely to try setting up a project and succeed at some point as a result of trying more, most impacts are concentrated in the year after graduation and phase out after that. Overall, patterns of heterogeneity are also weak, and the lack of medium-term impact holds across sub-groups based on gender, family wealth, skills or social capital. Finally, among the changes in skills that were observed in the short-term, only a small impact on business knowledge remained four years later. No lasting impacts were found on other intermediary outcomes conducive to entrepreneurship. Overall, there are no effects on latent entrepreneurship either. Most students who had business ideas have abandoned them and participants of the entrepreneurship training do not have more business ideas than the control group. The increased optimism observed one year after graduation was also short lived.

The paper is organized as follows. Section 2 provides context and an overview of the intervention. Section 3 provides a description of the experimental design, study timeline and data.[1] Section 4 details the empirical identification strategy. Section 5 provides the main results of the intervention on self-employment in the short and medium runs. Section 6 presents results on the mechanisms and channels for impact on entrepreneurship. Section 7 presents results of the intervention on broader employment outcomes. Section 8 concludes.

2. Context and Intervention

Tunisia has been going through substantial political, social and economic transformations in recent years. Citizens' demands for quality jobs contributed to the onset of the so-called Arab Spring in 2011 and have not subsided since. More than half of the Tunisian working-age population is outside the labor force, the vast majority being women. A high share of workers are occupied in the informal sector.[2] Unemployment rates are particularly high among youth (aged 15-29) holding a tertiary degree (the majority of whom are female[3]), reaching 62 percent in 2012

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[1] Sections 2 and 3 build on Premand et al. (2016) and are provided to ensure the paper is self-standing.
[2] Angel-Urdinola et al. (2015) report that 64 percent of employed individuals in Tunisia are either informal wage earners or self-employed. Data from OECD (2015) show that a large proportion of youth is employed in informal jobs: share of youth who work: i) without a contract (24%); ii) in an unregistered firm (40%); iii) in a micro-business (five or fewer employees) (56%); and iv) without contributing to social security (53%).
[3] Out of the pool of those unemployed, aged 15-29 and with a tertiary degree, 68 percent are female and 32 percent are male.

(69 percent for women and 53 percent for men), up from 34 percent in 2005 and 56 percent in 2011.

Tunisia is characterized by a highly educated workforce. The number of Tunisians with educational degrees and vocational qualifications has been increasing steadily over the years and tends to be higher than in other countries in the region.[4] Yet many university graduates face long spells of unemployment upon graduation.

In this context, an entrepreneurship track was established at tertiary education institutions in 2009/10. Up to then, during the last semester of the applied undergraduate curriculum (*licence appliquée*), students took an internship and wrote an academic thesis as graduation requirements. The newly established entrepreneurship track aimed primarily at increasing self-employment and fostering an entrepreneurship culture among university graduates, as well as more broadly at improving participants' employment outcomes. In late 2009, all 18,682 students enrolled in the third year of *licence appliquée* in all 12 Tunisian universities were invited to apply to the entrepreneurship track. (The next section provides additional details on the enrollment process.)

The entrepreneurship track offered support for developing a business plan through business training and personalized coaching. Specifically, it provided students with: (i) entrepreneurship courses organized by the public employment office; (ii) external private sector coaches, mainly entrepreneurs or professionals in an industry relevant to the student's business idea; and (iii) supervision from university professors in development and finalization of the business plan. For each student, the final product of the program was a comprehensive business plan that served as an undergraduate thesis. Participants were also given the option to submit their business plan to a competition, with a chance to win seed capital to fund their project.

The first cohort of students participated in the program between February and June 2010, starting with intensive business training to develop, modify, or refine an initial business idea. The content of the entrepreneurship track includes most of the components that are considered best-practice for entrepreneurship education (Valerio et al., 2014). Students took full-time intensive training at local employment offices (*Agence Nationale d'Emploi et de Travail Indépendent*, ANETI)

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[4] In 2013, the gross enrollment ratio for both genders reached 90 percent at the secondary level, exceeding the Middle East and North Africa's (MENA) average of 79 percent. As for the tertiary level, the ratio reached 34 percent, a level comparable to that of the MENA region average at 36 percent (World Development Indicators).

between February and March 2010. The training was called *Formation Création d'Entreprise et Formation des Entrepreneurs* (CEFE). It is based on a curriculum that is widely used around the world, and was already part of the active labor market menu offered by ANETI. The training was conducted in small groups and included practical research on the ground, aimed at fostering participants' behavioral skills, business skills and networking skills. The training lasted 20-21 days, with an average of 6 hours of training per day (approximately 120 hours of training total). Specifically, the training included 17 days of classroom training, with 6 hours of training per day. The training also included approximately 3 days of research work (field work, visits, interviews with bankers and other professionals).

The first part of the training consisted of four modules: (a) for the person, aimed at developing an entrepreneurship culture and behavioral skills; (b) for the project, aimed at developing business ideas through brainstorming and followed by SWOT (strength, weaknesses, opportunities, and threat) analysis to isolate the best project idea for each participant; (c) for management, aimed at general management principles (including leadership, partnership choice, organization, time management, and planning tools); and (d) for marketing, aimed at identification of the relevant market and market research (competition, clients, technology standards, etc.) as input into cost analysis.

Following this initial part of the training program, participants had the opportunity to present their ideas and get feedback from bankers and experts. After project ideas were refined to reflect this feedback, students participated in three additional modules on information research, business plan and networks: (a) information research-- participants had three days to research facts pertaining to implementation of their projects on the ground; (b) business plan training-- participants were taught how to estimate key parameters, such as investments (inception costs and financing), revenues, and business expenses (purchases, personnel costs, imports, financing expenses, amortization, etc.); and (c) building networks--at least five resource persons (business specialists) were invited to give talks.

Students were then assigned a personalized coach and received supervision from a university professor to develop the business plan. Coaches were private sector entrepreneurs or specialized coaches from ANETI or the Ministry of Industry's network of start-up offices (*Agence de Promotion de l'Industrie*, API). Students were expected to participate in eight coaching sessions

either individually or in small groups. Coaching took place from April to June 2010. In parallel, students also received supervision from one of their university professors.

In June 2010, the business plans were completed and defended by students at their university as part of the graduation requirements. After the defense, program participants were eligible to submit their business plan to a national business plan thesis competition (*concours des meilleurs plans d'affaires*). The jury selected 50 winners who were eligible to receive seed capital for establishing the business outlined in their business plans. The first five winners were eligible for seed capital of 15,000 dinars each (approximately US$10,000), the next 20 winners, 7,000 dinars; and the last 25 winners, 3,000 dinars. Prizes were only paid if students had been able to secure all the complementary funding needed to set up their project. Fewer than 15 winners fulfilled that requirement and actually cashed the prize.

3. Experimental Design, Timeline and Data

A randomized controlled trial was embedded into the first year of implementation of the entrepreneurship track.[5] In 2009/10, 18,682 students (68 percent female and 32 percent male) were enrolled in the third year of *licence appliquée* in Tunisian universities. All these students were invited to fill in an application form for the entrepreneurship track in November or December 2009. In total, 1,702 students (or 9.1 percent of all eligible students nationwide) applied to participate in the newly established entrepreneurship track. Of those, 1,310 students applied individually and 392 applied in pairs, so that in total, 1,506 projects were registered. In line with the majority of university students being female, this track had a relatively higher intake of women (67 percent female and 33 percent male).

The baseline data for the study were obtained from two sources. An application form was collected in November and December 2009. The application form contained information on students' socio-economic background and employment experience, as well as their parents'. Additional information was collected through a phone survey in January and February 2010.

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[5] The entrepreneurship track has kept running every academic year since then. Some adjustments were made along the way in terms of the overall scope of the entrepreneurship track, for instance in targeting a broader set of Master's and engineering students. However, the changes were relatively minor, and the impact evaluation results have direct relevance for the entrepreneurship track as it is currently implemented.

Given the program was oversubscribed, half of the applicants were randomly assigned to the entrepreneurship track ("treatment group") and the other half were assigned to continue with the standard curriculum ("control group"). Randomized assignment was conducted at the project level, stratified by gender and by the subject students were reading for (divided into 14 groups[6]). The study assigned 757 projects to the treatment group (658 individual projects, and 99 projects in pairs), and 742 projects to the comparison group (652 individual projects; 97 projects in pairs). Students participated in the entrepreneurship track between February and June 2010, and graduation took place in June 2010. Two-thirds of the beneficiaries of the entrepreneurship track who graduated are women.

A first round of follow-up data was collected through face-to-face interviews between April and June 2011, approximately nine to twelve months after the end of the academic year. Despite the high mobility of the population of graduates, thorough tracking procedures led to low non-response rates at follow-up: 92.8 percent of the 1,702 applicants were tracked. Attrition was balanced and uncorrelated with treatment status.

A second round of follow-up data was collected through face-to-face interviews between March and June 2014, approximately four years after graduation. The instrument included similar questions as the first follow-up survey. Additional modules were introduced, including on employment history since graduation, information on the process taken by individuals to set up projects, and on constraints faced by women.

The population of university graduates is highly mobile, and the endline survey took place three years after the midline survey, and nearly four years after students' graduation. Therefore, extensive efforts were undertaken to track individuals. The non-response rate at endline survey was 14.75 percent: 1,451 of the 1,702 applicants were tracked and interviewed. Attrition was balanced and uncorrelated with treatment status.[7]

The short-term study documented good balance between the full treatment and control group at baseline, as well as between the groups of treatment and control students effectively interviewed

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[6] The 14 groups of subjects were: Economics and Finance; Accounting; Business Administration; Marketing; Humanities; Languages; Science; Technical; Telecommunications; Civil Engineering; Informatics; Sports and Tourism; Food/Agriculture, and Other.

[7] Regressing attrition on treatment status yielded a coefficient of (-) 0.018 with a standard error of 0.017 (p-value=0.285, N=1699).

at midline (Premand et al., 2016). Table 1 in the annex presents the average baseline characteristics of the treatment and control groups, as well as differences between the two for the sample of individuals effectively surveyed at endline, i.e. excluding attritors in the 2014 follow-up survey. Overall, results indicate that the two groups remain well-balanced, suggesting that attrition did not affect the internal validity of the randomized design. There are few systematic differences between participants and non-participants and the differences are quantitatively small. The empirical analysis will control for the few characteristics in Table 1 that are found to be statistically different between the two groups at baseline.

The study relies on randomization among applicants to the entrepreneurship track. As such, results may not be generalizable to the entire population of university students. Employment outcomes in the control group at midline in 2011 can be compared to employment outcomes among young and recent university graduates of similar ages (22-24 years old) in the 2012 nationally representative labor force survey.[8] Compared to program applicants, the overall population of young graduates exhibit slightly higher unemployment and inactivity rate and a lower employment rate. The overall population of graduates is also slightly more concentrated in wage jobs, and less likely to be in self-employment. This suggests that applicants to the entrepreneurship track have stronger predisposition to self-employment than the national population, consistent with positive self-selection into the entrepreneurship track.

In considering the external validity of the results, it is also important to underline that although the entrepreneurship track took place before the Tunisian revolution, the follow-up surveys took place after it. The Arab Spring instilled a sense of optimism and hope for many young people, but perceptions of economic opportunities did not seem to last. Data from the control group in

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[8] The comparison is only indicative as the employment indicators are measured slightly differently. Still, approximately 70 percent of graduates in the control group were unemployed or inactive (63 percent of males and 74 percent of females), with approximately 28 percent employed (37 percent of males and 27 percent of females). There is a slightly higher unemployment and inactivity rate (73 percent) and a lower employment rate (26 percent) in the overall population of young graduates in 2012. This is consistent with previous graduate tracer studies showing that graduates' labor-market insertion takes significant time. Another way to illustrate this is that, whereas 28 percent of the control group was employed in 2011, 49 percent was employed in 2014 at the time of the endline survey. Similarly, unemployment declined by 10 percentage points from 48 percent in 2011 to 37 percent in 2014. Looking at the composition of employment, the national population is slightly more concentrated in wage jobs compared to the control group, with 90 percent (83 percent of males and 96 percent of females) compared to 76 percent (68 percent of males and 83 percent of females) of employed individuals. In contrast, the national population is slightly less concentrated in self-employment: 5 percent (8 percent of males and 2 percent of females) compared to 16 percent (24 percent of males and 10 percent of females) among the control group in 2011.

the two follow-up surveys illustrate this. Midline data show that shortly after the revolution in 2011, many believed that the revolution improved their chances to access a wage job or realize their own project. However, this sense of optimism was not as strong at endline in 2014, with fewer people feeling optimistic about their future prospects with respect to labor market outcomes three years later.[9]

4. Empirical identification strategy

Intent-to-Treat estimates

Identification of the impacts of entrepreneurship education relies on the randomized assignment of applicants to the entrepreneurship track. We focus on intent-to-treat (ITT) estimates, measuring the impact of offering business training and coaching independently of actual take-up. We estimate the following individual-level intent-to-treat regression:

$$Y_i = \beta T_i + \gamma X_i + \pi_{is} + \varepsilon_i \qquad (1)$$

where Y_i is the outcome of interest for student i at follow-up (separately for midline and endline), T_i is a binary variable for being randomly assigned to the treatment group, X_i is a set of control variables, π_{is} are fixed effects for each randomization strata (by gender and study subject) and ε_i is a mean-zero error term.[10] We present results for a specification where X_i includes the few baseline variables in Table 1 that are imbalanced between the treatment and control groups.[11] The sample includes 1,452 individuals tracked at follow-up. We calculate robust standard errors clustered by gender and study subject.[12]

Heterogeneous treatment effects

To determine whether the entrepreneurship track has heterogenous effects between subgroups of applicants, we conduct heterogeneity analysis by estimating the following specification:

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[9] There are no differences between the treatment and control groups in perceptions of labor-market opportunities.

[10] We include a binary variable for each randomization strata to increase power (Bruhn and McKenzie, 2009).

[11] The footnote of Table 2 provides the full list of control variables. Given there was some attrition in the baseline phone survey, in this specification we impute the sample mean to missing observations and add a dummy variable for missing observations in order not to reduce the sample size due to missing controls.

[12] The standard-errors are clustered at the level of the randomization strata, i.e. gender and 14 study subject groups.

$$Y_i = \alpha T_i + \beta T_i * M_i + \gamma X_i + \pi_{is} + \varepsilon_i \qquad (2)$$

For this specification, M_i captures the dimension of heterogeneity, X_i is a set of control variables (also including M_i), π_{is} are fixed effects for each randomization strata (by gender and study subject) and ε_i is a mean-zero error term. We estimate this equation separately for several dimensions of heterogeneity: gender, social capital (as proxied by whether individuals work on a project in pairs), family socio-economic background, and skills (above or below average grades in second year at university). α captures the ITT estimates when M_i=0, $\alpha + \beta$ the ITT estimates when M_i=1, and β is the difference in program impacts between the two subgroups. Robust standard errors are again clustered by gender and study subjects.

Compliance and "local average treatment effects" (LATE) estimates

In addition to ITT estimates, we also present and briefly discuss "local average treatment effects" (LATE) estimates for each of the two specifications. Local average treatment effects account for noncompliance in the treatment group (drop-out from the entrepreneurship track), as well as in the control group (take-up of entrepreneurship training past graduation). In particular, the CEFE entrepreneurship training is offered by the employment offices, so that some students may have taken it after graduation. LATE estimates can be considered as a test of the robustness of the results to noncompliance, including to rule out that the estimated impacts are underestimated due to individuals in the control group taking the training.

Of the 856 students who applied and were randomly assigned to the entrepreneurship track, 67% completed the CEFE business training, and 59% completed both business training and coaching.[13] A few students from the treatment groups completed CEFE training between graduation and the midline survey. Therefore, the actual take-up of CEFE training among the treatment group included in the endline sample is 71 percent.

In the context of the medium-term analysis, some control group individuals may have taken the CEFE entrepreneurship training after graduation. Administrative data shows that take-up of CEFE training was low, with only approximately 3.4% of the control group completing it between graduation and the midline survey. Administrative data also show that only approximately 10 percent of the control group took CEFE training between midline and endline.

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[13] More details on drop-out patterns can be found in World Bank and MFPE (2012).

In total, 13 percent of the control group included in the endline sample took entrepreneurship training between graduation and the endline survey.

LATE estimates are local average treatment effects that capture the impact of the entrepreneurship track for the students who complied with their assignment to the treatment or the control group. LATE estimates are obtained by 2SLS by instrumenting actual completion of entrepreneurship training with randomized assignment to treatment. In a first step, we estimate the effect of randomized assignment on completion of entrepreneurship training:

$$U_i = \beta T_i + \gamma X_i + \pi_{is} + \varepsilon_i \tag{3}$$

Where (U_i) is a dummy variable that takes the value of 1 for individuals having completed entrepreneurship training, independently of their assignment in the control and treatment group.[14] As per the information provided above, this variable takes the value of 1 for 71 percent of individuals in the treatment group, and 13 percent of individuals in the control group. β captures the estimated effect of randomized assignment on effective completion of entrepreneurship training.

In a second step, we estimate the following equation to obtain the local average treatment effects of entrepreneurship education that account for non-compliance:

$$Y_i = \theta \hat{U}_i + \xi X_i + \pi_{is} + \varepsilon_i \tag{4}$$

Where $\hat{U}_i$ is the predicted entrepreneurship training completion from equation (4). θ provides the estimates of the local average treatment effect, i.e. the estimated impact of effectively completing entrepreneurship training.

As we will further discuss below, and as would be expected, the results are highly consistent between the ITT and LATE estimates. As such, we mainly focus on discussing the ITT estimates since they are more directly policy-relevant in showing what is the overall effect of offering entrepreneurship education on the average applicant. Still, the LATE estimates are useful in checking that non-compliance does not affect the results, and in particular in checking that

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[14] For the treatment group, we define "completion of entrepreneurship training" or compliance as completing the business training and receiving coaching. For the control group, we define "completion of entrepreneurship training" as having taken any type of entrepreneurship training since graduation.

participation of the training in the control group does not lead to an underestimation of program impacts.

5. Main Results: Impacts on Self-Employment in the short and medium-term

Table 2 provides the main findings on impacts on self-employment in the short and medium run. The main outcomes include self-employment during the last 7 days (Panel A) and self-employment history between graduation and endline (Panel B). Based on an employment history module included in the medium-term follow-up survey, a binary variable is constructed to capture whether respondents were self-employed at any time during 6-months spells between 2011 and 2013 (Table 2, panel B).

Estimates in Panel A show that entrepreneurship education led to a small increase in self-employment among program participants approximately one year after graduation (in 2011). The ITT estimate for self-employment during the last 7 days shows a 3 percentage point increase in the probability of being self-employed. For those students who completed the entrepreneurship track (education and coaching), the LATE estimate reveals a 4 percentage point increase in the likelihood of being self-employed in any activity in the last week. Since the rate of self-employment is low in the control group, these small absolute effects lead to relatively large effect sizes. In fact, a 3 percentage point increase in self-employment is equivalent to a 68 percent increase over the self-employment rate in the control group. These effects on self-employment are slightly weaker when excluding self-employment activities that do not operate year-round (column (2)).

The small positive effects observed in the short-term are not sustained in the longer term. When considering similar outcomes from the endline survey collected for years after graduation (in 2014), ITT and LATE estimates show that there are no lasting impacts from the entrepreneurship track on self-employment among graduates.[15]

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[15] When testing equality of the 2011 and 2014 treatment effects with respect to self-employment, we cannot reject that the impacts are equal for both years. Still, the only significant results are for 2011. In addition, most of the intermediary outcomes are not significant any more in 2014, providing a consistent set of results pointing to no lasting impacts, as further described below.

Data from the employment history module in Panel B are consistent with the findings on self-employment during the midline and endline surveys.[16] Results suggest that small positive impacts on self-employment activities lasted at most up to 2011. The only statistically significant effect is that the treatment group was more likely to be engaged in self-employment compared to the control group in the second semester of 2010. However, the effect is only marginally significant for the LATE estimates (p-value=0.108 for the ITT estimate), and of small magnitude. No statistically significant difference is observed starting with the first semester of 2011. We conclude that participation in the entrepreneurship training did not lead to sustained gains on participation in self-employment beyond the year after the end of the program.

6. Mechanisms for impacts on entrepreneurship

We now turn to analyze mechanisms that can contribute to explain the lack of medium-term impacts on self-employment. We start with nascent and latent entrepreneurship (Section a). We analyze nascent entrepreneurship by studying the process through which individuals attempted to set-up projects. We study latent entrepreneurship based on whether individuals have new project ideas at the time of the endline survey. We then proceed to analyze intermediary outcomes such as skills, networks or access to credit (Section b). Finally, we test for heterogeneity in the impacts of entrepreneurship education across sub-groups (Section c).

(a) Nascent and latent entrepreneurship

To analyze how the intervention affected nascent entrepreneurship, we assess whether the treatment group was more likely to try and fail in setting up projects. Table 3 (Panel A) shows that in 2011, i.e. one year after graduation, program participants were more successful in setting up their own projects and having an active project compared to the control group. These results are in

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[16] The levels of the employment indicators are measured slightly differently in the module on current employment and on employment history. Thus, they are not exactly equal. The results remain consistent.

line with the significant impacts found on self-employment in the short-term as discussed in the previous section.

Estimates in Panels B-D (Table 3) show that the treatment group tried and realized more projects than the control group up until 4 years after graduation, although ultimately they did not have more projects at the time of the endline survey. Panel B shows that the entrepreneurship track led to more project ideas and more attempts to realize these ideas overall. At the time of the endline survey, 67 percent of the treatment group reported having had a project idea in the past, significantly more than in the control group (58 percent). Overall, 28 percent of the treatment group tried to realize their past project idea, again significantly more than in the control group (19 percent). The higher share of attempts to realize a project in the treatment group led to more projects set-up; with 7 percent of the treatment group reporting having set-up a project, compared to 4 percent of the control group. On the other hand, the additional attempts also resulted in more failures in setting up projects in the treatment group (14 percent) compared to the control group (10 percent).

Panel C shows that the treatment group is not more likely to have an active project at endline, however. As mentioned above, a slightly larger share of program participants has realized a project at some point (7 percent versus 4 percent). However, program participants are no more likely to still have an active project in 2014 compared with the control group (4 percent versus 2 percent), or a project temporarily closed (2 percent versus 1 percent).[17]

Finally, Panel D shows that while the program increased the likelihood that individuals had a project idea and tried to realize it, their success rates conditional on having an idea and trying to realize it did not increase. Conditional on having had an idea, significantly more program participants than non-participants (42 percent versus 33 percent) reported having tried to realize their project. Of those who tried to realize their project, about half failed (49 percent in the treatment group and 51 percent in the control group), a quarter realized their project (25 percent in the control group and 19 percent in the treatment group), and another quarter has an idea still under preparation (24 percent in the control and 30 percent in the treatment group). Importantly,

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[17] The absolute numbers also remain small. Of the 340 people who tried to realize their ideas, 77 successfully realized the project at some point (43 projects are still active, 17 are temporarily closed, and 17 are permanently closed), 90 are still preparing their projects, and 169 failed to realize their projects. Out of those who failed, only 59 have a second idea.

conditional on having an idea and trying to realize it, the success and failure rates are not statistically different between the treatment and control groups.[18] As such, the increase in the probability of having set up a project at some point is driven by additional attempts, not a higher success rate conditional on attempting to launch a new project.

Table 4 in part explains why the projects were not more successful. Respondents who attempted to set up projects or were in the process of doing so by the time they took the medium-term follow-up survey were asked about the steps they had taken to realize their project. This helps assessing whether participation in the entrepreneurship track led to better-prepared and ultimately better-quality projects. It also helps understanding at what point in the process of trying to set up projects participants faced obstacles. Results indicate that individuals in the treatment group were more likely to prepare a business plan for their projects. However, they were not more likely to have undertaken other actions, such as doing extra studies, working to gain experience, requesting loans to fund the project, enrolling in training, talking to parents, friends, and relatives, asking help from university/ANETI, or using their savings. As such, the entrepreneurship track only affected a relatively narrow set of preparatory actions and did not trigger broader pro-activity in setting up projects.

Some indicators also shed light on whether the program led to an increase in 'entrepreneurial culture', entrepreneurial intentions, or 'latent entrepreneurship', which we proxy by having more ideas or anticipating to attempt to create projects beyond the medium-term follow-up survey. Impacts on latent entrepreneurship could indicate that impacts on final outcomes may take even more time than 4 years. As indicated above, the increase in active projects among program participants seemed to be driven by a one-off increase in project ideas and attempts to set-up projects. However, there was not a sustained effect on the generation of new ideas or attempts to set up projects. Overall, it does not seem that beneficiaries are more likely to have project ideas at the time of the follow-up survey than non-beneficiaries. Indeed, those who failed a project are not more likely to have a new idea (Table 5). A slightly larger share of individuals in the treatment group has not fully given up and is still trying to realize past ideas, but the effects are limited.

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[18] Program participants are slightly less likely to still have an idea under preparation (conditional on having tried to realize their projects), although the difference is not statistically significant.

Overall, results therefore show that the treatment group experienced a short-term increase in self-employment: they were more likely to try to set up a project shortly after graduation but ultimately did not succeed at a higher rate than the control group. However, no lasting impacts on nascent or latent entrepreneurship are found. A large share of the treatment group either never tried to set up their projects or failed in setting them up. The program did not strongly affect the quality of projects prepared by students. Given the high failure rate in the process of setting up projects, the small increase in attempt to set up projects did not lead to sustained impacts 4 years after graduation.

It is also worth noting that there appears to be a small increase in the share of individuals who are self-employed over time in the control group. This could reflect changes in employment rates as individuals take time to complete the university-to-work transition in Tunisia. However, the share of individuals who are self-employed in the control group remains in the same confidence interval over time, so there is no strong evidence that the effects are simply due to the control group catching up over time. In addition, the LATE estimates are consistent and indicate that the results are not due to the control group being able to take up training on their own means after graduation.

(b) Channels of labor market impacts

We now turn to intermediary outcomes that could contribute to explain the results on self-employment, focusing on skills, networks, access to credit, and aspirations.

The immediate objective of the entrepreneurship track was to equip students with the practical skills needed to develop a business plan and create a project. In line with expectations, midline results revealed strong impacts on participants' self-reported business skills (Table 6, Panel A). At endline, some of these impacts are sustained, but at a lower intensity than in 2011. The standardized ITT impacts on business plan knowledge was 0.69 at midline and decreased by approximately 1/6 at endline to reach 0.57. To give another example, about 60 percent of participants reported knowing how to produce a business plan in 2014, down from 77 percent in 2011. This decrease in impacts on self-reported business skills is consistent with the lack of sustainability of impacts on self-employment.

Results in 2011 showed some short-term impacts of the intervention on personality dimensions measured by the "Big Five".[19] No changes in personality dimensions are observed in the medium-term, however. Similarly, there are no differences in entrepreneurial traits, (such as impulsiveness, reflection before acting, or centrality of work) either (Table 6, Panel B). Personality dimensions have been shown to be malleable and evolve among young adults such as the ones in the study sample. These results suggest that changes in these indicators observed at midline were short-lived and not affected in a robust fashion.

With regard to networks, program participants had slightly expanded networks at midline, although these networks were rather passive. By endline, professional networks were not significantly different between the two groups (see Table 7, panel A).

The entrepreneurship track did not directly aim to alleviate credit constraints, but some aspects of the business training involved providing information to students about credit applications, as well as connecting them to bankers. Table 7, panel B shows that the treatment group was slightly more confident to know how to apply for credit than the control group and marginally more likely to have obtained credit at some point when setting up projects. Similar to 2011, at endline program participants are not any less skeptical than the control group in their ability to currently obtain credit.

Finally, some of the strongest midline results related to attitudes towards the future. Shortly after the Tunisian revolution, and compared to the control group, entrepreneurship track applicants reported having relatively more faith in the future, being much more optimistic, more likely to feel like they were moving forward in life, or thinking about how to move forward in life. Nearly four years after graduation, these differences have largely disappeared. Some students assigned to the entrepreneurship track still report a slightly higher likelihood of feeling like they are moving forward in life (Table 8), but this is confined to a single indicator, with other subscales not statistically different between the two groups.

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[19] The entrepreneurship track led to a significant increase in extraversion as well as a decrease in agreeableness, conscientiousness and emotional stability. These patterns are discussed in greater details in the paper on short-term results (see Premand et al., 2016).

(c) Heterogeneity dimensions

We perform heterogeneity analysis along the dimensions of gender, social capital, family socio-economic background and skill level at baseline to understand whether program impacts vary between subgroups of beneficiaries. Overall, we find little robust evidence of heterogeneity. There are no dimensions of heterogeneity that consistently or strongly show a specific sub-group benefitting more in the short-term and in the medium-term. A handful of coefficients suggest significant effects for some sub-groups in the medium-term, but they do not consistently highlight significant heterogeneity.

One of the most robust heterogeneity results based on the short-term 2011 survey indicates that students with a stronger set of skills at baseline (proxied by higher grade in the previous year at university) were more likely to succeed in becoming self-employed and in setting up active projects at midline (Table 9, Panel A). However, by the endline, these differences in program impacts are not significant anymore between the two groups, indicating that academically stronger students at baseline were not more likely than their less skilled peers to be self-employed and have active projects by endline.

On the other hand, there is some indication of a positive medium-term impacts on project ownership for students from families of better socio-economic background (Table 9, Panel B). This effect only comes through in the medium-term, with no significant heterogeneity by family wealth in the short-term. One explanation could be that graduates from wealthier backgrounds have more resources allowing them to stay without a job and taking the time to prepare a more sustainable project. Still, these patterns of heterogeneity remain weak so that they should not be overinterpreted.

We do not find robust heterogeneity by gender and results on gender are not entirely conclusive. In the short-term, impacts on entry into self-employment (independent or seasonal activity during the last 7 days) are mostly observed among men, but with no significant heterogeneity between men and women (Table 9, panel C). On the other hand, positive effects are found for women for self-employment in the 12 months prior to the 2011 survey, but again with no

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significant heterogeneity.[20] Similarly, results also show statistically significant estimates for females on "having an active project" both in 2011 and in 2014, but still without significant heterogeneity. The two sets of results are not entirely consistent and may be due to lower statistical power when performing heterogeneity analysis.

Lastly, there is no robust evidence with regard to differences in impacts by social capital (proxied by students who signed up individually or in pairs).

7. Impacts on broader employment outcomes

Finally, we turn to analyzing impacts of the entrepreneurship track on broader employment outcomes beyond self-employment. Results show that there are no significant differences in overall employment status between individuals assigned to the entrepreneurship track and the control group (Table 10). While the estimates suggest a reduction in unemployment among men and women assigned to the entrepreneurship track, this reduction of unemployment is not counterbalanced by an increase in employment. Instead, it is in part explained by an increase in inactivity or studying (though it is not always statistically significant across different specifications), and in part by an increase in the probability of being a family helper. These results can be interpreted as consistent with the short-term increase in optimism and aspirations towards the future having receded by the time of the endline survey, and possibly with some graduates becoming discouraged.

Table 11 presents the impacts of the entrepreneurship track on employment characteristics such as hours worked, earnings, having a contract, being covered by social security, working in a large firm, and reservation wages. In line with short-term results one year after graduation (in 2011), the entrepreneurship track did not promote entry into higher quality jobs among participants. The only significant difference is the likelihood of employment at a large company. In MENA, smaller firms attach greater value to personal references and contacts and therefore "trust" when recruiting, while larger firms attach greater value to credential signaling. Smaller

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[20] The midline survey contains an indicator that is not presented in table 5 on whether respondents were self-employed 12 months and not 7 days prior to the survey. Estimates were statistically significant for women at the 5% level, with a coefficient of 0.03.

firms therefore tend to favor personal contacts in recruitment whereas larger firms are more likely to use formal channels in addition to informal ones (World Bank, 2013). Participants of the control group who followed the standard curriculum completed an internship prior to graduation and are therefore more likely to have gained personal contracts in the private sector. Graduates of the entrepreneurship track likely lacked these contacts and might have been more likely to seek recruitment in larger companies.

8. Conclusion

This paper provides new experimental evidence on the medium-term impacts of entrepreneurship education on self-employment and labor market outcomes up to four years after university students graduate. The study sheds light on whether entrepreneurship education can successfully foster actual, nascent or latent entrepreneurship. It also analyzes whether a time lag between intentions and actions explains why the impacts of entrepreneurship education on employment outcomes is rarely documented. Based on short-term and medium-term follow-up surveys, as well as data on employment history and individuals' attempts to set up projects going back to graduation, the study provides rare information on the time-paths of potential impacts of entrepreneurship education on self-employment and labor market outcomes.

The results show that small program impacts on self-employment were mostly concentrated in the year after graduation but were not sustained in the medium-term. Results show that participants were more likely to try to realize a project at some point. As a result of these additional attempts, they were more likely to set up a project and thus more likely to have had an active project at some point as well. However, they were not more likely to have an active project at the time of the endline survey, nor were they more likely to succeed in their attempts. Overall, patterns of heterogeneity are weak and the lack of medium-term impact on self-employment holds across groups. Results on intermediary outcomes are also consistent. Nearly 4 years after graduation, program participants still have better knowledge on the content of a business plan, but less so than at midline. In contrast, changes in personality dimensions, aspirations and entrepreneurial traits that were observed one year after graduation did not persist. Ultimately, medium-term impacts on intermediary outcomes are narrowly concentrated on

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business knowledge. Overall, we conclude that the entrepreneurship track did not have a lasting impact on latent or nascent entrepreneurship.

These findings have a number of policy implications. Most importantly, they highlight the limited effectiveness of entrepreneurship education and training offered to university students with relatively little screening. The CEFE training offered by ANETI is a widely used curriculum that was already well established in Tunisia and beyond prior to the evaluation. It is likely that the overall program, especially the coaching sessions, could have benefitted from further improvements in implementation. In particular, coaching and follow-up support was concentrated during an academic semester and did not continue after students' graduation. The program was not accompanied with widespread facilitation of access to financing either. Still, the study results provide strong indications that the type of skills imparted by the training may not be the main constraint to entrepreneurship for highly educated young men and women. As such, the results should at least temper policy makers' enthusiasm in considering entrepreneurship education as a potential broad-based solution to the employment challenge. Additional long-term evaluations would be welcome to justify large investments in traditional entrepreneurship education.

Policies to promote entrepreneurship among high-skilled youths would likely need to tackle other constraints than those addressed by the Tunisian entrepreneurship track. This may include de-emphasizing traditional business skills and focusing more on psychological mechanisms that enhance personal initiative, as Campos et al. (2017) have suggested. Most importantly, it is likely that capital constraints would also need to be addressed as they constitute the main binding constraint to entrepreneurship that graduates self-reported during the medium-term follow-up survey. McKenzie (2017b) documents positive impacts from a large-scale national business plan thesis competition among aspiring high-skill entrepreneurs in Nigeria. Winners were provided large grants averaging $50,000, and the capital injection led to the set-up of firms that created more jobs and with higher sales and profits. As such, reforms that improve access to capital and banking for high-skilled youths may be needed as a complement to traditional skills training.

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Table 1. Baseline balance for effective sample in medium-term (2014) follow-up survey

	(1) N	(2) Control	(3) Treatment	(4) Difference (T-C)	(5) St. Err. for difference
Panel A: Variables from baseline application form					
Study Subject: Food Science	1,452	0.02	0.03	0	0.01
Study Subject: Humanities	1,452	0.17	0.17	0	0.02
Study Subject: Sciences	1,452	0.09	0.09	0	0.01
Study Subject: Accounting	1,452	0.09	0.09	0	0.01
Study Subject: Economics and Finance	1,452	0.08	0.09	0	0.01
Study Subject: Civil Engineering	1,452	0.02	0.02	0	0.01
Study Subject: IT	1,452	0.10	0.10	0	0.02
Study Subject: Telecommunication	1,452	0.05	0.04	(-)0.01	0.01
Study Subject: Languages	1,452	0.10	0.10	0	0.02
Study Subject: Business Administration	1,452	0.03	0.04	0.01	0.01
Study Subject: Marketing	1,452	0.03	0.04	0	0.01
Study Subject: Sports and Tourism	1,452	0.03	0.03	0	0.01
Study Subject: Other technical subjects	1,452	0.15	0.14	0	0.02
Study Subject: Others	1,452	0.03	0.03	0	0.01
University Ez-Zitouna	1,452	0	0.01	0	0
University of Tunis	1,452	0.03	0.03	0	0.01
University of Sousse	1,452	0.07	0.07	0	0.01
University of Monastir	1,452	0.19	0.19	0	0.02
University of Kairouan	1,452	0.06	0.07	0	0.01
University of Sfax	1,452	0.18	0.17	(-)0.01	0.02
University of Gafsa	1,452	0.18	0.19	0.01	0.02
University of Gabes	1,452	0.07	0.06	(-)0.01	0.01
University of Manouba	1,452	0.01	0	0	0
University of Tunis El Manar	1,452	0.01	0.01	(-)0.01	0.01
University of Carthage	1,452	0.06	0.06	0	0.01
University of Jendouba	1,452	0.13	0.14	0.01	0.02
Male	1,452	0.32	0.32	0	0.02
Single	1,452	0.99	0.98	(-)0.01	0.01
Had a project idea when applying	1,452	0.84	0.86	0.02	0.02
Ever worked	1,452	0.69	0.71	0.02	0.02
Age at first job	1,002	17.58	17.11	(-)0.47**	0.19
Duration of first job (months)	995	5.63	6.78	1.14	1
Has experience related to a project	1,452	0.60	0.63	0.03	0.03
Knows an entrepreneur	1,452	0.58	0.63	0.05**	0.03

Has helped an entrepreneur	1,452	0.26	0.31	0.04*	0.02
Is willing to take risk	1,452	0.95	0.93	(-)0.02*	0.01
Family can provide financial support	1,452	0.63	0.62	(-)0.01	0.03
Knowledge of Arabic (1-3)	1,452	3.71	3.68	(-)0.02	0.05
Knowledge of French (1-3)	1,452	3.51	3.49	(-)0.02	0.04
Knowledge of English (1-3)	1,452	3.07	3.07	0	0.05
Age	1,451	23.00	23.11	0.11	0.09
First job: wage worker	1,452	0.20	0.18	(-)0.02	0.02
First job: seasonal worker	1,452	0.34	0.35	0	0.01
First job: family helper	1,452	0.06	0.06	0	0.01
First job: self-employed	1,452	0.07	0.11	0.04***	0.02
Father has primary education	1,452	0.43	0.45	0.03	0.03
Father has secondary education	1,452	0.42	0.4	(-)0.01	0.03
Father has tertiary education	1,452	0.16	0.14	(-)0.01	0.02
Mother has primary education	1,452	0.66	0.68	0.03	0.02
Mother has secondary education	1,452	0.28	0.27	(-)0.01	0.02
Mother has tertiary education	1,452	0.06	0.04	(-)0.02*	0.01
Father is salaried worker	1,452	0.37	0.33	(-)0.03	0.02
Father is self-employed	1,452	0.29	0.28	(-)0.01	0.02
Father is retired	1,452	0.24	0.27	0.03	0.02
Father is unemployed	1,452	0.02	0.03	0.01	0.01
Mother is self employed	1,452	0.07	0.08	0.01	0.01
Mother is salaried worker	1,452	0.09	0.08	(-)0.01	0.01
Mother is retired	1,452	0.02	0.03	0.01	0.01
Mother is unemployed	1,452	0.03	0.04	0.01	0.01
HH earnings between 0 and 300 TND	1,452	0.26	0.26	0.01	0.02
HH earnings between 301 and 500 TND	1,452	0.30	0.31	0.01	0.02
HH earnings between 501 and 800 TND	1,452	0.20	0.19	(-)0.01	0.02
HH earnings above 801 TND	1,452	0.24	0.24	0	0.02
Grade at entrepreneurship course	1,080	13.55	13.58	0.03	0.16
Average grade in 2nd year of university (0-20)	1,437	11.44	11.51	0.06	0.06
Highest grade in 2nd year of university (0/20)	1,418	17.07	17.07	0	0.09
Lowest grade in 2nd year of university (0/20)	1,328	6.14	6.22	0.08	0.14
Prefers 1000 TND for sure to a salary between 500 TND and 1500 TND based on performance	1,452	0.27	0.26	(-)0.01	0.02
Household size	1,451	6.55	6.54	(-)0.01	0.10
Applied in pair	1,452	0.23	0.24	0.01	0.02
Panel B: Variables from baseline phone survey					
Baccalaureate Subject: Humanities	1,312	0.24	0.24	0.01	0.02
Baccalaureate Subject: Economics	1,312	0.20	0.18	(-)0.01	0.02
Baccalaureate Subject: Sciences	1,312	0.24	0.26	0.02	0.02

Baccalaureate Subject: Math	1,312	0.19	0.19	0	0.02
Baccalaureate Subject: Technical	1,312	0.14	0.12	(-)0.02	0.02
Years since baccalaureate	1,312	3.37	3.38	0.01	0.05
Grade at Baccalaureate (0-20)	1,312	10.58	10.59	0.01	0.05
Prefers 1000 TND for sure in 6 months to 800 TND now	1,312	0.51	0.56	0.05*	0.03
Willingness to take risks (1-10)	1,312	7.38	7.43	0.05	0.08
Certainty equivalent for a lottery with a 50 percent chance of winning 2000 TND and a 50 percent chance of winning 0 TND	1,307	996.23	1074.03	77.80***	24.53
Impulsiveness (normalized score)	1,312	0	0.09	(-)0.09	0.05
Passion (normalized score)	1,312	0	0.03	0.03	0.05
Tenacity (normalized score)	1,312	0	0.12	0.12**	0.05
Polychronicity (normalized score)	1,312	0	(-)0.01	(-)0.01	0.06
Locus of control (normalized score)	1,312	0	0.06	0.06	0.05
Achievement (normalized score)	1,312	0	0.20	0.20***	0.06
Power motivation (normalized score)	1,312	0	0	0	0.05
Centrality of work (normalized score)	1,312	0	(-)0.07	(-)0.07	0.05
Personal organization (normalized score)	1,312	0	0.04	0.04	0.05
Optimism (normalized score)	1,312	0	0.07	0.07	0.05

Notes: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents results of balance tests for variables collected in the baseline application form (panel A) and in the baseline phone survey (panel B) among applicants to the entrepreneurship track who could be interviewed in the 4-year follow-up survey (i.e. excluding attritors from the 2014 survey). The columns provide, for each variable, (1) the number of observations, (2) the mean in the control group, (3) the mean in the treatment group, (4) the difference in means between the treatment and control groups (with significance level), and (5) the standard error for the difference in means between treatment and control groups. Premand et al. (2016) documents balance in the full experimental sample, and in the sample effectively interviewed during the short-term (2011) follow-up survey.

Table 2: Impacts on self-employment outcomes (2011 and 2014)

	Panel A. Self-employment			Panel B. Independent activity (worked at any point in the six-month period)						
	(1) Independent or seasonal activity during the last 7 days	(2) Independent activity (excluding seasonal activity) during the last 7 days	(3) Independent or seasonal activity during the last 12 months	(4) Second six months of 2010	(5) First six months of 2011	(6) Second six months of 2011	(7) First six months of 2012	(8) Second six months of 2012	(9) First six months of 2013	(10) Second six months of 2013
1-year impacts (2011)										
ITT	0.03**	0.01*	0.04***							
	(0.01)	(0.01)	(0.01)							
LATE	0.04**	0.02*	0.06***							
	(0.02)	(0.01)	(0.01)							
Mean in Control	0.04	0.03	0.05							
Mean in Treatment	0.08	0.04	0.09							
Observations	1,580	1,580	1,580							
4-year impacts (2014)										
ITT	0.02	0.01		0.01	0.01	0.01	0.01	0.01	0.00	0.00
	(0.01)	(0.01)		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
LATE	0.04	0.02		0.02*	0.02	0.02	0.01	0.02	0.00	0.01
	(0.02)	(0.02)		(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Mean in Control	0.05	0.04		0.01	0.03	0.03	0.03	0.04	0.04	0.05
Mean in Treatment	0.07	0.05		0.02	0.04	0.04	0.04	0.05	0.05	0.05
Observations	1,450	1,450		1,353	1,353	1,353	1,353	1,353	1,353	1,353

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impact estimates on self-employment outcomes measured in each follow-up survey (panel A), or in a retrospective calendar of activities collected in the 2014 follow-up survey (panel B).

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

Specification for 2014 include strata fixed effects (by gender and 14 study subjects), as well as a set of control variables from the baseline application form and baseline phone survey that were unbalanced between treatment and control in the 2014 sample (see Table 1). Controls include knowing an entrepreneur, previous experience in self-employment, mother's education, age at first job, has helped an entrepreneur, willing to task risk, tenacity, achievement, patience, and certainty equivalent for a lottery with a 50 percent chance of winning 2000 TND and a 50 percent chance of winning 0 TND.

Specification for 2011 include strata fixed effects (by gender and 14 study subjects), as well as a set of control variables from the baseline application form that were unbalanced between treatment and control in the 2011 sample (see balance table in Premand et al., 2016). Controls include age at the end of the registration period, previous experience in self-employment, has experience related to a project, has helped an entrepreneur, mother's employment status, impulsiveness, tenacity, achievement, patience, personal organization, preferring 1000 TND for sure in 6 months to 800 TND now, certainty equivalent for a lottery with a 50 percent chance of winning 2000 TND and a 50 percent chance of winning 0 TND.

Table 3: Impacts on nascent entrepreneurship and project creation process (2011 and 2014)

	Panel A: Status of present and future projects, 2011			Panel B. Status of past project ideas, 2014					Panel C: Status of current projects, 2014				Panel D. Success and failure rates, 2014			
	(1) During the last 12 months, had an independent project or worked in a seasonal activity	(2) The project is currently active	(3) Has a new idea for a future project	(4) Had a project idea in the past	(5) Had an idea and tried to realize it	(6) Tried and had realized a project (regardless of its status now)	(7) Tried but failed to realize	(8) Tried and has an idea under preparation	(9) Tried and had realized project (regardless of status now)	(10) Successfully realized the project. It's currently active	(11) Realized the project. It is closed temporarily	(12) Realized the project. It is closed permanently	(13) Tried to realize an idea [conditional on having an idea]	(14) Failed to realize [conditional on having tried]	(16) Had realized a project (regardless of status now) [conditional on having tried]	(17) Has a current idea under preparation [conditional on having tried]
ITT	0.04*** (0.01)	0.03*** (0.01)	0.01 (0.02)	0.07*** (0.03)	0.09*** (0.02)	0.04** (0.01)	0.04* (0.02)	0.01 (0.01)	0.04** (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.10*** (0.03)	-0.01 (0.07)	0.07 (0.05)	-0.08 (0.05)
LATE	0.06*** (0.01)	0.04*** (0.01)	0.02 (0.03)	0.13*** (0.05)	0.15*** (0.03)	0.06*** (0.02)	0.06** (0.03)	0.02 (0.02)	0.06*** (0.02)	0.03 (0.02)	0.02 (0.01)	0.02 (0.01)	0.17*** (0.05)	-0.01 (0.12)	0.12 (0.10)	-0.15* (0.08)
Mean in Control	0.05	0.03	0.42	0.58	0.19	0.04	0.10	0.06	0.04	0.02	0.01	0.01	0.33	0.51	0.19	0.30
Mean in Treatment	0.09	0.05	0.44	0.67	0.28	0.07	0.14	0.07	0.07	0.04	0.02	0.02	0.42	0.49	0.25	0.24
Obs	1,575	1,575	1,575	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	900	342	342	342

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents estimated impacts on the project creation process, based on status of present and future project at 1-year (2011) follow-up survey (panel A), status of project ideas at 4-year (2014) follow-up survey (panel B), status of current projects at 4-year (2014) follow-up survey (panel C), and success and failure rates estimated from 4-year (2014) survey (panel D).

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for short-term (2011) and medium-term (2014) estimates.

Table 4: Impacts on quality of project preparation (2014)

	(1) Talked to friends, parents, relatives	(2) Prepared a business plan	(3) Did extra studies	(4) Worked to gain experience	(5) Requested loan or looked for other ways to fund the project	(6) Enrolled in training	(7) Asked help from ANETI	(8) Used savings	(9) Asked help from university
ITT	0.00	0.07***	0.01	0	0.01	0.01	0.02	0	0
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
LATE	0.01	0.11***	0.01	0	0.02	0.02	0.03	0	-0.01
	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Mean in Control	0.18	0.12	0.14	0.10	0.11	0.05	0.05	0.05	0.01
Mean in Treatment	0.19	0.19	0.14	0.11	0.11	0.06	0.06	0.05	0.01
Observations	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents estimated impacts on the quality of project preparation based on variables collected during the 4-year (2014) follow-up survey. The variables are unconditional (coded as 0 if none of the step was undertaken).

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for medium-term (2014) estimates.

Table 5: Impacts on latent entrepreneurship in the medium-term follow-up survey (2014)

	(1) Had an idea at some point	(2) Tried to realize the idea at some point	(3) Failed to realize old project but has a new idea	(4) Has not given up
ITT	0.07**	0.07***	0.00	0.04**
	(0.03)	(0.02)	(0.01)	(0.02)
LATE	0.11**	0.12***	0.00	0.07**
	(0.04)	(0.04)	(0.01)	(0.03)
Mean in Control	0.61	0.39	0.04	0.13
Mean in Treatment	0.69	0.46	0.04	0.17
Observations	1,440	1,440	1,440	1,440

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents estimated impacts on entrepreneurial intentions observed during the 4-year (2014) follow-up survey.

Column (4) "has not given up" is coded as 1 if idea currently active OR under preparation OR temporarily closed OR permanently closed but with a new idea OR failed but with new idea. See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for medium-term (2014) estimates.

Table 6: Intermediate outcomes: skills (2011 and 2014)

	Panel A. Business Knowledge			Panel B. Personality Dimensions				
	(1) Has practical experience in projects	(2) Knows how to produce a business plan	(3) Business plan knowledge (normalized score)	(4) Big 5: Extraversion (normalized score)	(5) Big 5: Agreeable (normalized score)	(6) Big 5: Conscientious (normalized score)	(7) Big 5: Emotional stability (normalized score)	(8) Big 5: Openness (normalized score)
	1-year impacts (2011)							
ITT	0.10***	0.31***	0.69***	0.10*	-0.22***	-0.12**	-0.10**	-0.04
	(0.02)	(0.03)	(0.07)	(0.05)	(0.05)	(0.05)	(0.04)	(0.03)
LATE	0.15***	0.47***	1.06***	0.15**	-0.34***	-0.19**	-0.16**	-0.07
	(0.03)	(0.04)	(0.09)	(0.07)	(0.08)	(0.08)	(0.06)	(0.05)
Mean in Control	0.37	0.45	0.00	0.00	0.00	0.00	0.00	0.00
Mean in Treatment	0.48	0.77	0.71	0.11	-0.23	-0.14	-0.11	-0.02
Observations	1,577	1,579	1,579	1,580	1,578	1,577	1,579	1,577
	4-year impacts (2014)							
ITT	0.09***	0.24***	0.57***	0.07	-0.03	-0.02	0.04	-0.02
	(0.02)	(0.02)	(0.07)	(0.06)	(0.07)	(0.05)	(0.04)	(0.06)
LATE	0.15***	0.42***	0.99***	0.12	-0.05	-0.03	0.08	-0.03
	(0.04)	(0.03)	(0.12)	(0.12)	(0.12)	(0.09)	(0.07)	(0.09)
Mean in Control	0.35	0.33	0	0	0	0	0	0
Mean in Treatment	0.45	0.59	0.58	0.04	-0.01	0	0.06	-0.01
Observations	1,437	1,437	1,437	1,424	1,424	1,424	1,424	1,423

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	(9) Impulsiveness (normalized score)	(10) Passion (normalized score)	(11) Tenacity (normalized score)	(12) Polychronicity (normalized score)	(13) Locus of control (normalized score)	(14) Achievement (normalized score)	(15) Power motivation (normalized score)	(16) Centrality of work (normalized score)	(17) Personal organization (normalized score)	(18) Willingness to take risk (0-10)	(19) Certainty equivalent for lottery with a 50% chance of winning 0 and 50% chance of winning 2000DT	(20) Individuals who are risk-takers	(21) Patience
	Panel C. Entrepreneurial traits									**Panel D. Preference parameters**			
	1-year impacts (2011)												
ITT	-0.10*	0.01	0.02	-0.05	0.01	0	-0.07	0.08	0.06	-0.05	3.48	-0.01	0.02
	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)	(0.14)	(18.34)	(0.02)	(0.02)
LATE	-0.15*	0.02	0.04	-0.07	0.02	-0.01	-0.11	0.12	0.09	-0.07	5.36	-0.02	0.03
	(0.08)	(0.09)	(0.07)	(0.08)	(0.09)	(0.09)	(0.08)	(0.08)	(0.09)	(0.21)	(27.32)	(0.03)	(0.03)
Mean in Control	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.06	674.44	0.18	0.27
Mean in Treatment	-0.12	0.03	0.03	-0.05	0.02	0.02	-0.05	0.09	0.08	6.10	694.33	0.18	0.29
Observations	1,573	1,579	1,576	1,577	1,579	1,576	1,574	1,578	1,580	1,575	1,556	1,556	1,577
	4-year impacts (2014)												
ITT	-0.03	0.09	0.02	0.05	0.03	-0.02	-0.09	-0.04	0.01	0.03	-13.00	-0.02	0.00
	(0.06)	(0.07)	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)	(0.04)	(0.05)	(0.13)	(17.43)	(0.02)	(0.02)
LATE	-0.06	0.15	0.04	0.09	0.05	-0.04	-0.16*	-0.08	0.02	0.06	-22.65	-0.04	-0.01
	(0.10)	(0.11)	(0.10)	(0.08)	(0.09)	(0.10)	(0.10)	(0.07)	(0.08)	(0.22)	(29.57)	(0.03)	(0.04)
Mean in Control	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.08	690.04	0.16	0.22
Mean in Treatment	-0.02	0.06	-0.01	0.04	0.03	-0.02	-0.09	-0.07	0.01	6.19	688.67	0.15	0.22
Observations	1,424	1,424	1,424	1,424	1,424	1,422	1,423	1,423	1,423	1,426	1,408	1,408	1,414

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impact on intermediate outcomes related to skills, including business knowledge (panel A), personality dimensions (panel B), entrepreneurial traits (panel C), and preference parameters (panel D).

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for short-term (2011) and medium-term (2014) estimates.

Table 7: Intermediate outcomes: networks and credit (2011 and 2014)

	(1) Registered at employment offices during the past month	(2) knows a representative at ANETI	(3) Number of days talked to the representative of ANETI during the last month	(4) Knows an entrepreneur	(5) Number of days talked to the entrepreneur during the last month	(6) Knows a banker	(7) Number of days talked to the banker during the last month	(8) Asked a professor for advice in developing a project idea	(9) Asked a representative of ANETI for advice	(10) Asked an entrepreneur for advice
				Panel A. Professional Networks						
				1-year impacts (2011)						
ITT	0.05**	0.13***	-0.19	0.04	0.07	0.06***	1.13**			
	(0.02)	(0.02)	(0.33)	(0.02)	(0.66)	(0.02)	(0.54)			
LATE	0.07***	0.20***	-0.26	0.06	0.10	0.09***	1.82**			
	(0.03)	(0.03)	(0.41)	(0.04)	(0.93)	(0.03)	(0.78)			
Mean in Control	0.78	0.14	2.26	0.44	5.05	0.25	2.44			
Mean in Treatment	0.82	0.28	1.83	0.49	5.11	0.31	3.67			
Observations	1,335	1,580	329	1,580	726	1,580	440			
				4-year impacts (2014)						
ITT	-0.03	0.03	0.07	0.01	0.04	0.03	-0.21	0.03*	-0.03	-0.05**
	(0.02)	(0.02)	(0.06)	(0.03)	(0.28)	(0.03)	(0.19)	(0.02)	(0.02)	(0.02)
LATE	-0.05	0.06	0.12	0.01	0.07	0.05	-0.37	0.06**	-0.05	-0.09**
	(0.04)	(0.04)	(0.11)	(0.05)	(0.47)	(0.05)	(0.32)	(0.03)	(0.04)	(0.04)
Mean in Control	0.57	0.17	0.24	0.34	1.31	0.25	0.91	0.14	0.51	0.69
Mean in Treatment	0.55	0.20	0.31	0.37	1.48	0.29	0.71	0.17	0.49	0.64
Observations	1,443	1,433	1,433	1,433	1,433	1,433	1,433	1,452	1,452	1,452

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	(11) Knows how to apply for credit from a bank	(12) Thinks that a 5000 dinar request for credit would be approved by a bank	(13) Thinks that a 10000 dinar request for credit would be approved by a bank	(14) Thinks that a 20000 dinar request for credit would be approved by a bank	(15) Applied for credit at some point	(16) Accessed credit at some point
Panel B. Access to Credit						
1-year impacts (2011)						
ITT	0.09**	0.02			0.02**	0.00
	(0.04)	(0.02)			(0.01)	(0.00)
LATE	0.13**	0.03			0.03***	0.00
	(0.06)	(0.03)			(0.01)	(0.00)
Mean in Control	0.30	0.20			0.02	0.003
Mean in Treatment	0.39	0.22			0.03	0.004
Observations	1,568	1,580			1,580	1,580
4-year impacts (2014)						
ITT	0.05*	0.03	-0.01	0.00	0.02	0.01**
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
LATE	0.08**	0.05	-0.01	-0.01	0.04*	0.02**
	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.01)
Mean in Control	0.33	0.17	0.07	0.04	0.05	0.01
Mean in Treatment	0.38	0.20	0.07	0.04	0.07	0.02
Observations	1,435	1,436	1,436	1,262	1,452	1,452

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impact on intermediate outcomes related to network and credit, including professional network (panel A) and access to credit (panel B).

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4). See footnote of table 2 for control variables used for short-term (2011) and medium-term (2014) estimates.

Table 8: Aspirations for the future (2011 and 2014)

	(1) Optimism (normalized score)	(2) Days feels moving forward	(3) Days thinking about how to move forward	(4) Has more faith in future now than last year	(5) Future orientation (normalized score)	(6) Present Fatalistic (normalized score)
1-year impacts (2011)						
ITT	0.11**	0.28**	0.24**	0.04*		
	(0.05)	(0.11)	(0.11)	(0.02)		
LATE	0.17**	0.44***	0.37**	0.07**		
	(0.07)	(0.16)	(0.16)	(0.03)		
Mean in Control	0.00	3.79	5.62	0.52		
Mean in Treatment	0.12	4.09	5.87	0.57		
Observations	1,578	1,578	1,578	1,574		
4-year impacts (2014)						
ITT	0.01	0.29**	-0.03	0.00	-0.02	0.04
	(0.05)	(0.11)	(0.09)	(0.02)	(0.05)	(0.06)
LATE	-0.01	0.50***	-0.05	0.00	-0.03	0.06
	(0.09)	(0.18)	(0.16)	(0.04)	(0.08)	(0.10)
Mean in Control	0.00	3.44	5.67	0.47	0.00	0.00
Mean in Treatment	-0.01	3.72	5.68	0.47	-0.02	0.03
Observations	1,422	1,427	1,427	1,428	1,419	1,420

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impact on aspirations

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for short-term (2011) and medium-term (2014) estimates.

Table 9: Heterogeneity of impacts on self-employment (2011 and 2014)

	(1) Independent or seasonal activity during the last 7 days	(2) Independent activity (excluding seasonal activity) during the last 7 days	(3) Active project
Panel A. Skills			
1-year impacts (2011)			
ITT estimates for those with grades in 2nd year of university below the average at baseline (α)	0.00 (0.01)	-0.01 (0.01)	0.01 (0.02)
ITT estimates for those with grades above the average (α+ β)	0.06*** (0.02)	0.03* (0.02)	0.05*** (0.02)
Estimated differences in ITT estimates between those with grades above the average and those with grades below the average at baseline (β)	0.06*** (0.02)	0.04* (0.02)	0.03 (0.03)
4-year impacts (2014)			
ITT estimates for those with grades in 2nd year of university below the average at baseline (α)	0.02 (0.02)	0.00 (0.02)	0.01 (0.01)
ITT estimates for those with grades above the average (α+ β)	0.04* (0.02)	0.03** (0.01)	0.02 (0.02)
Estimated differences in ITT estimates between those with grades above the average and those with grades below the average at baseline (β)	0.01 (0.02)	0.03 (0.03)	0.00 (0.02)
Panel B. Family Wealth			
1-year impacts (2011)			
ITT estimates for those with wealth 0 - 500 TND at baseline (α)	0.03** (0.01)	0.01 (0.01)	0.03*** (0.01)
ITT estimates for those with wealth >500 TND (α+ β)	0.02 (0.02)	0.02 (0.01)	0.02 (0.02)
Estimated differences in ITT estimates between those with wealth >500 TND and those with 0-500 TND at baseline (β)	-0.02 (0.03)	0.00 (0.02)	-0.01 (0.02)
4-year impacts (2014)			
ITT estimates for those with wealth 0 - 500 TND at baseline (α)	0.02 (0.02)	0.00 (0.01)	-0.01 (0.01)
ITT estimates for those with wealth >500 TND (α+ β)	0.02 (0.02)	0.02 (0.02)	0.05*** (0.02)
Estimated differences in ITT estimates between those with wealth >500 TND and those with 0-500 TND at baseline (β)	0.00 (0.02)	0.03 (0.02)	0.05** (0.02)

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Panel C. Gender			
1-year impacts (2011)			
ITT estimates for females (α)	0.01	0.01	0.03***
	(0.01)	(0.01)	(0.01)
ITT estimates for males	0.06*	0.02	0.02
(α+ β)	(0.03)	(0.02)	(0.03)
Estimated differences in ITT estimates	0.05	0.02	0.00
between male and female participants (β)	(0.03)	(0.02)	(0.03)
4-year impacts (2014)			
ITT estimates for females (α)	0.01	0	0.01
	(0.02)	(0.01)	(0.01)
ITT estimates for males	0.06**	0.03	0.03
(α+ β)	(0.03)	(0.03)	(0.02)
Estimated differences in ITT estimates	0.05	0.02	0.02
between male and female participants (β)	(0.03)	(0.03)	(0.03)
Panel D. Social Capital			
1-year impacts (2011)			
ITT estimates for those who did not apply	0.03**	0.02*	0.03***
in pairs (α)	(0.01)	(0.01)	(0.01)
ITT estimates for those applied in pairs (α+	0.02	0.00	0.02
β)	(0.04)	(0.03)	(0.02)
Estimated differences in ITT estimates	-0.02	-0.03	0.00
between those with who applied and those	(0.04)	(0.03)	(0.02)
who did not apply in pairs			
(β)			
4-year impacts (2014)			
ITT estimates for those who did not apply	0.03	0.01	0.02
in pairs (α)	(0.01)	(0.01)	(0.01)
ITT estimates for those applied in pairs (α+	0.01	0.00	0.01
β)	(0.02)	(0.03)	(0.02)
Estimated differences in ITT estimates	-0.02	-0.02	0.00
between those with who applied and those	(0.03)	(0.03)	(0.02)
who did not apply in pairs			
(β)			

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents heterogeneity analysis for short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impacts on self-employment outcomes.

See Section 4 for specifications. Estimates for (α), (α+ β) and interaction term (β) are obtained from equation (2).

The heterogeneity dimensions (M) include baseline variables related to skills (dummy taking a value of 1 if university grade above average in 2nd year, panel A), family wealth (dummy taking a value of 1 if family income above 0 - 500 TND at baseline, panel B), gender (dummy taking a value of 1 if male, panel C), and social capital (dummy taking a value of 1 if student applied for a project in pair, panel D).

See footnote of table 2 for control variables other than heterogeneity dimensions used for short-term (2011) and medium-term (2014) estimates.

The full sample includes 1,580 students in 2011 and 1452 students in 2014.

Table 10: Impacts on employment outcomes (2011 and 2014)

	(1) Employed in the last 7 days	(2) Salaried worker in the last 7 days	(3) Family helper in the last 7 days	(4) Intern (apprentice) in the last 7 days	(5) Self-employed in the last 7 days	(6) Unemployed in the last 7 days	(7) Inactive OR studying in the last 7 days
1-year impacts (2011)							
ITT	-0.01	-0.03	0.01	0.00	0.03**	0.01	0.00
	(0.03)	(0.02)	(0.01)	(0.00)	(0.01)	(0.03)	(0.02)
LATE	-0.01	-0.05	0.01	0.00	0.04**	0.01	0.01
	(0.04)	(0.03)	(0.01)	(0.00)	(0.02)	(0.05)	(0.03)
Mean in Control	0.28	0.21	0.06	0.00	0.04	0.48	0.22
Mean in Treatment	0.29	0.18	0.07	0.01	0.08	0.49	0.22
Observations	1,580	1,580	1,580	1,580	1,580	1,580	1,580
4-year impacts (2014)							
ITT	0.04	0.00	0.01	0.01	0.02	-0.06***	0.03**
	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
LATE	0.06	0.00	0.02*	0.01	0.04	-0.11***	0.06**
	(0.04)	(0.04)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)
Mean in Control	0.49	0.37	0.01	0.06	0.05	0.40	0.10
Mean in Treatment	0.53	0.37	0.02	0.07	0.07	0.34	0.13
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impact on employment outcomes.

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for short-term (2011) and medium-term (2014) estimates.

Table 11: Impacts on employment characteristics (2011 and 2014)

	(1) Has a contract	(2) Covered by social security	(3) Employee in a large company	(4) Number of hours actually worked last week	(5) Total labor earnings (monthly)	(6) Total labor earnings (monthly, log)	(7) Reservation wage for the private sector (monthly)	(8) Reservation wage for the private sector (log monthly)	(9) Reservation wage for the public sector (monthly)	(10) Reservation wage for the public sector (log monthly)
				1-year impacts (2011)						
ITT	-0.02	0.01	0.00	0.42	15.24	-0.09	18.65**	0.04**	4.83	0.01
	(0.02)	(0.01)	(0.01)	(1.01)	(29.77)	(0.13)	(8.75)	(0.02)	(7.45)	(0.02)
LATE	-0.03	0.01	0.00	0.65	23.50	-0.13	28.58**	0.05**	7.40	0.02
	(0.03)	(0.02)	(0.02)	(1.53)	(44.85)	(0.20)	(13.34)	(0.03)	(11.12)	(0.02)
Mean in Control	0.12	0.05	0.07	8.55	74.79	1.22	473.50	6.10	487.86	6.14
Mean in Treatment	0.10	0.06	0.07	9.35	88.97	1.14	491.20	6.13	491.45	6.15
Observations	1,580	1,580	1,485	1,570	1,502	1,502	1,579	1,579	1,577	1,577
				4-year impacts (2014)						
ITT	0.02	0.01	0.06***	0.65	21.38	0.14	19.07	0.02	21.00	0.01
	(0.02)	(0.02)	(0.02)	(1.17)	(26.09)	(0.15)	(15.11)	(0.02)	(13.92)	(0.02)
LATE	0.03	0.02	0.11***	1.13	37.23	0.24	33.32	0.03	36.61	0.01
	(0.03)	(0.03)	(0.03)	(1.94)	(44.28)	(0.24)	(25.54)	(0.03)	(23.39)	(0.04)
Mean in Control	0.2	0.18	0.15	18.97	219.33	2.75	519.14	6.17	607.48	6.35
Mean in Treatment	0.22	0.19	0.22	19.85	242.86	2.92	530.71	6.18	622.03	6.35
Observations	1,450	1,450	1,452	1,435	1,430	1,430	1,430	1,430	1,429	1,429

Note: *significant at 10%. ** significant at 5%. *** significant at 1%.

This table presents short-term (1-year, based on 2011 follow-up survey) and medium-term (4-year, based on 2014 follow-up survey) impact on employment outcomes.

See Section 4 for specifications. ITT estimates are obtained from equation (1). LATE estimates are obtained from equation (4).

See footnote of table 2 for control variables used for short-term (2011) and medium-term (2014) estimates.