Online Appendix
Learning Management Through Matching: A Field Experiment Using Mechanism Design

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Contents

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A Appendix: The experiment

Recruitment of young professionals

We advertized using a combination of social media, college campus visits and postings on city 'job boards', using a headline message designed to attract aspiring managers and entrepreneurs: "*Do you want to be your own boss? See how successful firms work! Gain business and management skills first hand!*". Respondents were then able to apply either by submitting a paper application form or through an online portal (hosted by the University of Oxford's Centre for the Study of African Economies). Participants received a small stipend, equal to about the 25th percentile of wages of those in employment at baseline, and the 10th percentile of control group wages at follow-up. This was intended to cover their travel and subsistence costs while participating in the program, such that financial constraints would not be a factor in take-up decisions. The stipend was paid for by the program, not by firms, and conditional on a minimum number of days of attendance at the firm. We did not advertize the amount of the stipend.

Randomization and induction sessions

At each session, participants would begin by completing a face-to-face questionnaire with trained enumerators. After all participants had been interviewed, we stratified them in a way that we had pre-defined based on the information submitted at the time of application: in groups based on gender and whether they had a college degree, and within each group in order of age. We then formed matched pairs of the ordered participants, and — by having participants randomly draw numbered balls from a bag — we then assigned one of each pair to treatment. Control participants were thanked for their time and invited to leave; treated participants were then provided a summary explanation of what the management placement would involve. At the end of the session, treated respondents (whom we refer to as 'interns') filled in information that we used for the process of matching them to firms.

Overview of data collection

We collected baseline surveys with all young professionals just before randomisation. We followed up with an in-person survey six and twelve months after they completed their placement (and at equivalent moments for the control group, who were paired to treated individuals for the purpose of randomization). We also conducted monthly phone surveys for a year to learn about job search and employment trajectories. We surveyed firms when they declared availability for the program, and again shortly after the program had ended (and we paired control units, here for the sole purpose of balancing the time of the survey). Finally, we conducted an exit survey with treated individuals and collected administrative data on program completion.

Benchmarking of young professionals

Our sample is 75% male, which partly reflects the fact that one of our sources of applicants are job boards which are mostly frequented by young men. Three out of four were born outside of Addis Ababa, and only a third live with their parents at the time of the induction session; this likely reflects

both the high mobility of high-skilled workers and recent graduates in particular, and the fast rate of urbanisation that Ethiopia has been experiencing.[1]

How do our participants compare to residents of Addis Ababa or Ethiopians more broadly? Within the eligible age group, 26% of all Addis Ababa residents have the level of higher education that we required to participate in the program, according to data from the 2013 National Labour Force Survey (nationally, it is 20%). Individuals with university degrees are overrepresented amongst our participants: they constitute 75% of our experimental sample, whereas they represent only one third of Addis Ababa residents in the relevant age group. However, within each education category, participants are fairly representative of the overall labor force in Addis Ababa and also nationwide. In Appendix Table A.2 we compare the distribution of wages earned by the control group to the wages by education in the NLFS, and find that they are very similar.

Benchmarking of host firms

We can benchmark the host firms with the 2015 Large and Medium Manufacturing Industry Survey, where the median firm had 60 workers ($Q_1 = 28$, $Q_3 = 180$); hence our sample firm size distribution is close to the firm size distribution in the economy. Firms were free to choose the number of interns they wished to host, up to a maximum of five imposed for operational reasons. The median and modal firm hosted two interns.

Management practices are a key characteristic of host firms that will shape interns' placement experience. We can directly compare management practices in Ethiopian firms to the firms surveyed by Bloom, Schweiger, and Van Reenen (2012), since our questionnaire embeds the question that these authors use to measure management in their survey. Bloom, Schweiger, and Van Reenen (2012) surveyed firms in one highly industrialized country (Germany), as well as India and several Eastern European and Central Asian transition countries that share with Ethiopia a history of central planning or socialist rule and thus are arguably the best comparison. We show the cross-country distribution of management practices in Appendix Figure A.4. We find that management practices in Ethiopian firms are among the lowest within the group of comparison countries. At the median, Ethiopia has the second-lowest management practices, between Kazakhstan and Uzbekistan. The median Ethiopian firm is more than a standard deviation below the median German firm. This mirrors the pattern reported in Bloom, Lemos, Sadun, Scur, and Van Reenen (2014) who, with a different survey methodology, find that average management scores in Ethiopia are the second-lowest among the 33 countries surveyed.

Implementation of the matching algorithm

We implemented the matching with a Gale and Shapley (1962) Deferred Acceptance (DA) algorithm. In the language of mechanism design, the firms 'propose' in our algorithm. That is, the algorithm starts

[1] Related to the rapid urbanisation, structural change, and rate of development in Ethiopia, very few have parents who went to university. In fact, one third of fathers had no schooling at all, and another third had only up to primary school. A similar proportion (30%) of fathers owned a business, which includes farms. Mothers have even less schooling.

by letting each firm pick their most preferred and not-yet-matched intern, in a random order. This creates a provisional allocation $\boldsymbol{m}'$. Then the algorithm cycles through profitable pairwise deviations from $\boldsymbol{m}'$, matches where both a firm and an intern would be better off matched to each other, than in their provisional match.[2] These deviations are found by firms in turn making offers to an intern with whom they were not yet provisionally matched. If both firm and intern are better off from such an alternative match, then both sides release their current provisional matches. The algorithm stops once there is no further profitable deviation, and hence all matches in the final allocation $\boldsymbol{m}$ are stable. We implement the same algorithm separately for each batch.

Debriefing survey

Once the placement was terminated, we conducted a short debriefing survey with the young professionals who were placed as interns in firms, as well as with the host firms. Both sources paint a very similar picture of the placement experience. In general, it seems that the program largely worked as intended: the median time spent in close collaboration with management was 60%, and only 12% of interns are reported to have spent no time at all with management. Not all of this time was spent working the tasks of managers. While experiences are heterogeneous, we can get some idea by looking at averages across interns. On average 40% of interns' time in the firm was spent on various planning and supervision tasks typically associated with management. The most common tasks were dealing with accounts, supervising workers, or managing inventories. Only rarely did firms assign interns to deal with suppliers or finance. Interns spent the rest of their time idle (around 20%), performing tasks similar to those of production workers (around 25%), or dealing with customers (around 10%).

B Appendix: Bayesian classification model

Model

We begin by specifying the following flexible utility function for intern i's preferences towards being hosted by firm f (where, as above, $\boldsymbol{x}_f$ represents firm characteristics):

$$\begin{aligned} u_{if}(\boldsymbol{x}_f;\boldsymbol{\phi}_{g_i}) &= \boldsymbol{\phi}_{g_i}\cdot\boldsymbol{x}_f+\eta_{if}; \\ \eta_{if} &\sim \text{Gumbel}(0,1); \\ g_i &\sim \text{Multinomial Logit}(\boldsymbol{\alpha}_g\cdot\boldsymbol{v}_i). \end{aligned} \tag{1}$$

Note that, under this structure, the preference parameter ϕ_i is a random coefficient, indexed by a finite support of types $g_i \in \{1,...,G\}$, where intern i's membership of a given type g is allowed to correlate with intern characteristics $\boldsymbol{v}_i$ through a Multinomial Logit smoother. We note that the characteristics $\boldsymbol{v}_i$ that enter this preference model can be more general than the characteristics $\boldsymbol{w}_i$ that we showed to the firms. In short, we have a Plackett-Luce rank-ordered logit model (Luce, 1959; Plackett, 1959) nested

[2] To find the set of stable matches, it is enough to look for deviations of coalitions of pairs. A matching is group stable if and only it is pairwise stable (Roth and Sotomayor (1990), Lemma 5.5).

in a discrete finite mixture model.[3] We estimate this model in a Bayesian way using a standard Markov Chain Monte Carlo (MCMC) method. Symmetrically, we then estimate the same model structure for firms' preferences over interns (where we replace $\boldsymbol{x}_f$ with characteristics of interns, and replace $\boldsymbol{w}_i$ with characteristics of firms).

Model estimates

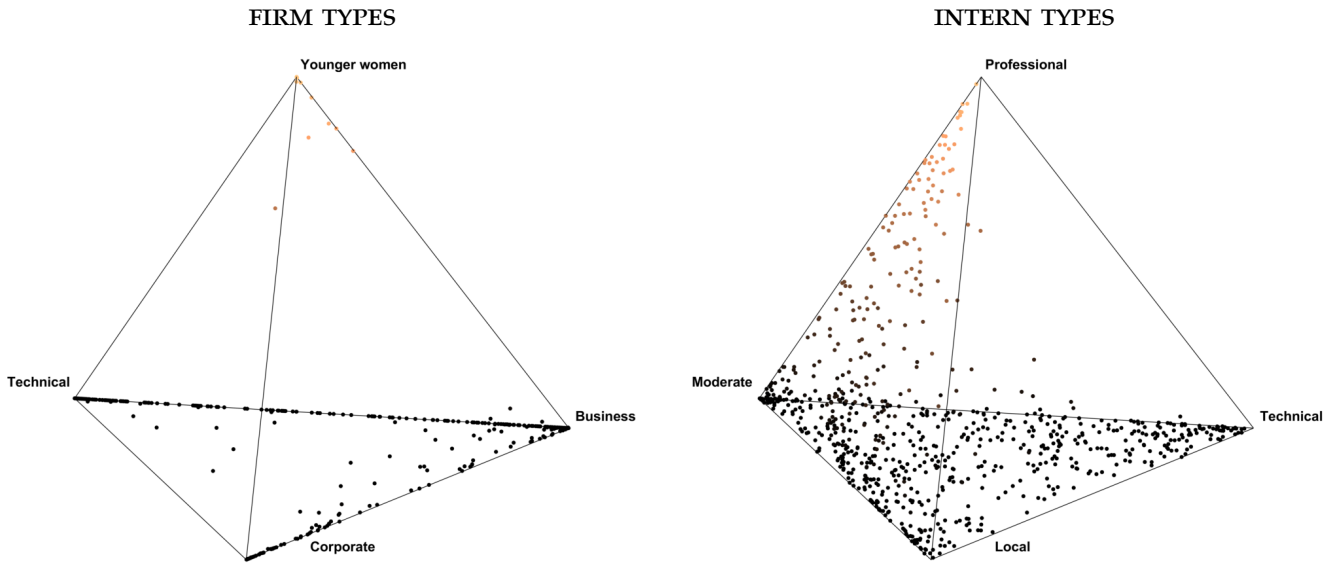
We report model estimates graphically, in Figure A.2 (for interns) and Figure A.3 (for firms). Both for firms and for interns, we estimate using $G=4$ types. In each figure, we show two panels: the top panel ('Panel A') shows the estimated preferences for each type, and the bottom panel ('Panel B') shows the odds ratio implied by each assessor characteristic. Note that the top panel in each figure is scaled so that the error term in the Plackett-Luce model has a standard deviation of 1 (that is, we normalise by $\pi/\sqrt{6}$).

Consider first the preferences of interns over firms. The most common type (which, we estimate, comprises 39% of interns) holds relatively small positive preferences over all firm characteristics: a mild preference for firms having 21-50 employees (relative to a base category of firms with up to 20 employees), a slightly stronger preference for firms having more than 50 employees, and a slight preference for firms in manufacturing and hospitality (relative to services). We term this type 'moderate'. The second most common type (34% of interns) is characterised by strong negative preferences for manufacturing and hospitality — that is, this type prefers placement in a professional/services firm — and has a mild preference for being in larger firms and for being placed in the same part of the city. We term this type as 'professional'. The third most common type (16% of interns) has a strong preference for being placed in a firm in the same part of the city; we term this type as 'local'. Finally, we estimate that 12% of interns have very strong preferences for working in manufacturing; it is worth noting (in Panel B) that this type is noticeably more likely to be male, to have a degree, and to have a STEM education (indeed, almost nobody with a business education exhibits these preferences). We term this type as 'technical'.

In Figure A.3, we show the equivalent estimates for firm preferences over interns. The most common type of firm, we estimate, represents 50% of the sample — and is characterised by a relatively strong preference for interns having a business education; additionally, they show some preference for interns with a degree, and for women. We term such preference type as 'corporate'. About 30% of the sample are estimated to prefer interns with STEM education, and having already had some experience in the sector; we term these firms as 'technical'. The third firm type — which we estimate represents 18% of firms — is characterised by a very strong preference for interns having business education; we term these preferences as 'business'. Finally, we find a final type — having a negligible mass (about 2%) — who preferences are characterised by an extremely strong desire to host younger women.

[3] Recent economic applications of the Plackett-Luce model for modelling preferences include Banerjee and Chiplunkar (2018).

Figure A.1: **Bayesian classification estimates: Posterior estimates of intern and firm types**



Note: These two simplexes each show the posterior probabilities of belonging to the four estimated types. The simplex on the left shows the posterior probabilities of firms belonging to the preference types earlier labelled as 'technical', 'corporate', 'business' and 'younger women'. The simplex on the right shows the posterior probabilities of interns belonging to the preference types 'moderate', 'local', 'technical' and 'professional'.

Posterior distribution of types

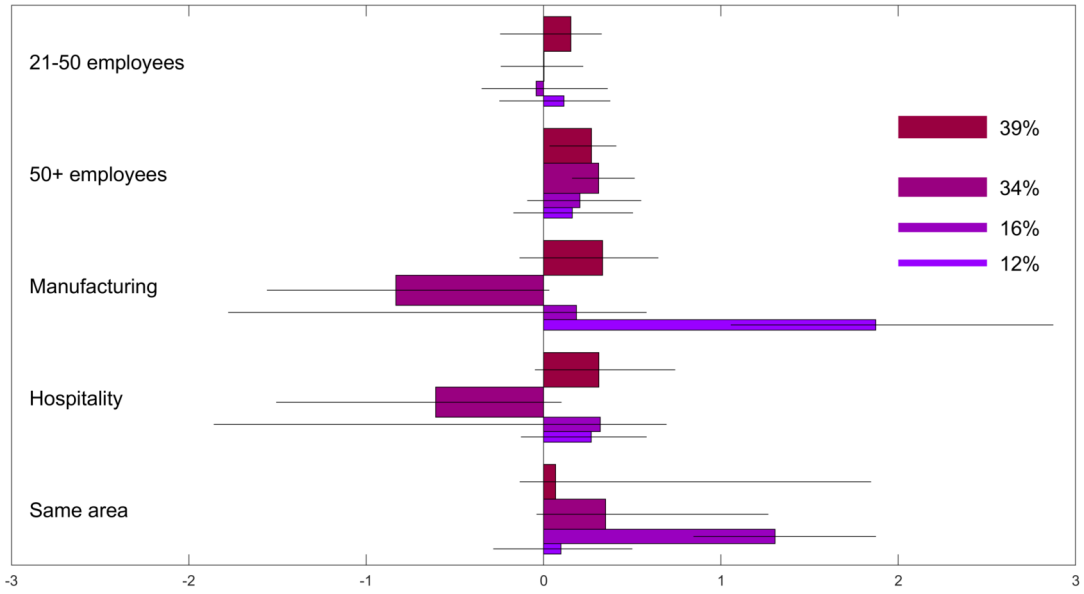
In Figure A.1, we calculate the posterior probability — given both respondent characteristics and observed rankings — that each of our firms and each of our interns belongs to each of the estimated types; the resulting probabilities are then graphed in a tetrahedron (3-simplex). We find that most firms lie on the axis between 'technical' preferences and 'business' preferences, or on the axis between 'business' preferences and 'corporate'. Intern preferences tend to lie close to the 'moderate-local-professional' plane, or to the 'moderate-local-technical' plane.

Convergence

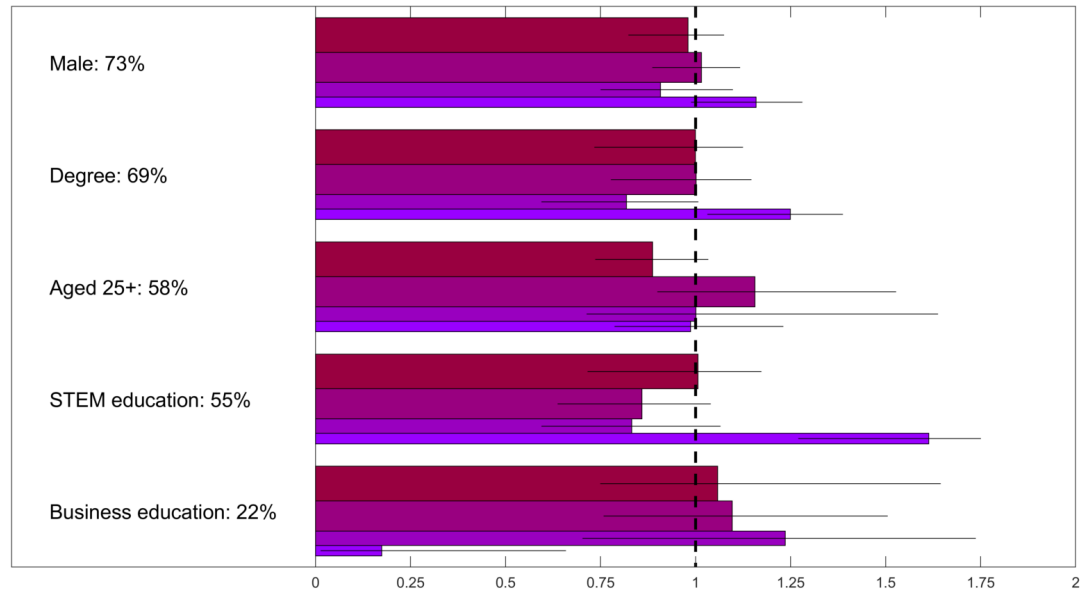
We assess convergence using the standard statistic of Gelman and Rubin (1992), after applying a random permutation sampler to deal with the possibility of label-switching (Frühwirth-Schnatter, 2001). We find good convergence diagnostics (that is, statistics close to 1) for all parameters, for both the model of firm preferences in assessing interns and the model of intern preferences in assessing firms.

Figure A.2: **Bayesian classification estimates: Young professionals' preferences over firms**

PANEL A: COEFFICIENTS ON OBSERVED FIRM CHARACTERISTICS BY INTERN PREFERENCE TYPE



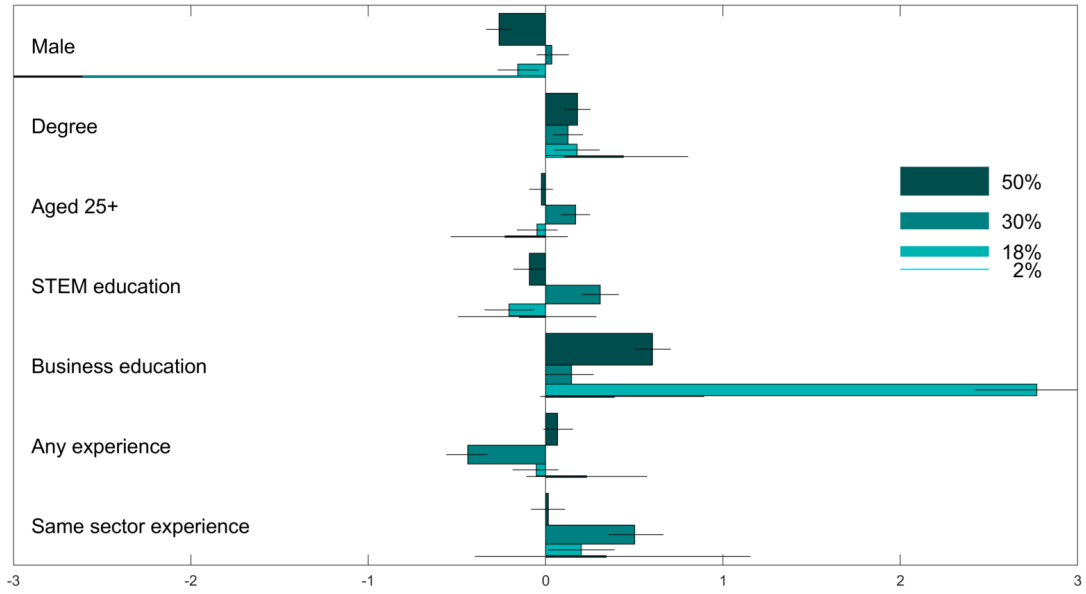
PANEL B: ODDS RATIOS OF INTERN CHARACTERISTICS BY PREFERENCE TYPE



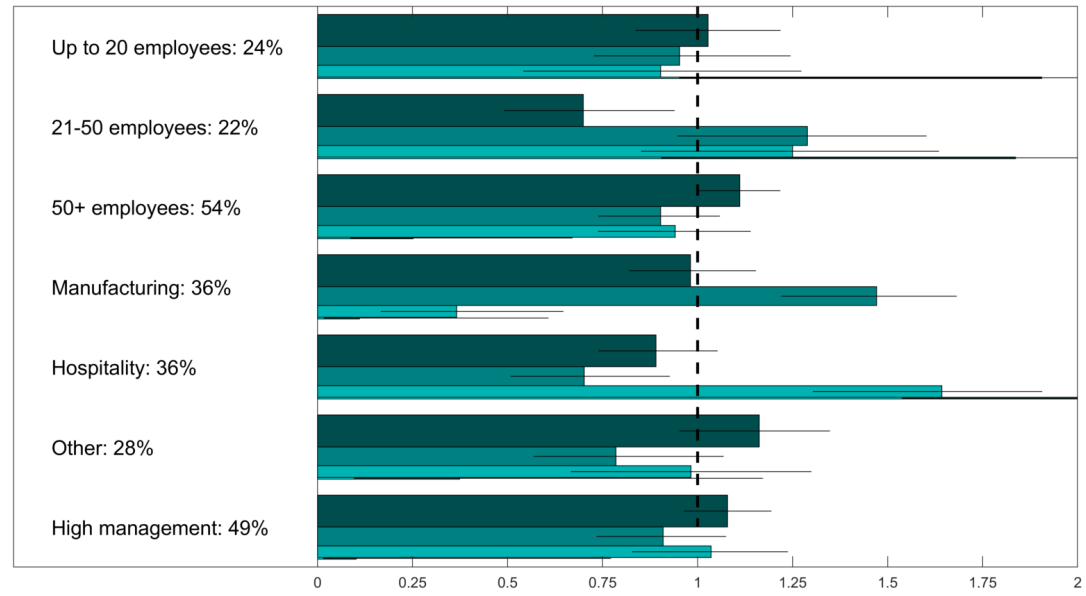
Note: Panel A of this figure graphs the coefficients ϕ_g of model 1 for $g = 1,...,4$. The variables correspond to firm characteristics x_f shown to the interns. The coefficients are normalised with respect to the standard deviation of the idiosyncratic preference shock η. The small inset tabulates the relative shares of each type in the intern sample. The types are color-coded and ordered by their prevalence. Panel *B* of the figure depicts the odds ratios of young professionals' characteristics by type, for the variables v_i that are included in the model estimation. Percentages correspond to sample mean of each binary variable. The thin whiskers in each panel represent 95% confidence intervals.

Figure A.3: **Bayesian classification estimates: Firms' preferences over young professionals**

PANEL A: COEFFICIENTS ON OBSERVED INTERN CHARACTERISTICS BY FIRM PREFERENCE TYPE



PANEL B: ODDS RATIOS OF FIRM CHARACTERISTICS BY PREFERENCE TYPE



Note: Panel A of this figure graphs the coefficients ψ_g of the model of firm preferences, for $g = 1,...,4$. The variables correspond to intern characteristics w_i shown to the firms. The coefficients are normalised with respect to the standard deviation of the idiosyncratic preference shock ν. The small inset tabulates the relative shares of each type in the firm sample. The types are color-coded and ordered by their prevalence. Panel *B* of the figure depicts the odds ratios of firm characteristics characteristics by type, for the variables q_f that are included in the model estimation. Percentages correspond to sample mean of each binary variable. The thin whiskers in each panel represent 95% confidence intervals.

C Appendix: Average effects of assignment to a high-management firm

To estimate the treatment effects under random assignment to host firms, we regress outcomes — among those interns assigned to treatment — on a dummy for being assigned to a high-management host; we then add a flexible control function in our simulated assignment probability p (Carneiro, Heckman, and Vytlacil, 2011; Abdulkadiroğlu, Angrist, Narita, and Pathak, 2017). That is, we estimate the model:

$$y_{it} = \beta_1 \cdot D_i + \beta_2 \cdot y_{i0} + K(p_i) + \varepsilon_{it} \tag{2}$$

This is a modified version of our basic ANCOVA specification (1) where we include a control function $K(p_i)$ for the propensity score. The coefficient of interest β_1 is the average additional effect of being matched to a high-management firm (defined as having a management practice score above the sample median) as opposed to a low-management firm.[4]

We report the average effects on occupation and income of being assigned to a high-management as opposed to a low-management firm in Table A.1. This matches the basic structure (and panel labels) of Table 4. As in Table 4, we implement propensity score conditioning using a linear control function, a centile dummy model, a semi-parametric regression model, and an inverse probability weighting. To this we add a further panel, 'F', showing the results implied by integrating appropriately over the MTE. Our results are remarkably stable across all six alternative specifications. We find that interns assigned to a high-management firm are more likely (by about 3-4 percentage points) to be running a business at six to twelve months after the program. This is significant at the 10% level in two out of three cases. We also see positive though non-significant effects on hours and earnings. On the other hand, we find suggestive evidence that interns assigned to a high-management firm are *less* likely than other interns to be in wage-employment. The coefficient estimates are all negative, and most p-values are just above 0.1.

These findings are especially interesting in light of the experimental average effects we presented in Table 2. There, we reported a precisely estimated zero effect on entry into self-employment, and a positive effects on all wage employment outcomes. These additional heterogeneity results now suggest that the management experience placement improved wage employment outcomes only for those who were placed in a less well managed firm. Indeed, a naive comparison of coefficients suggests that the differential effect of assignment to a high-management firm virtually offsets the estimated average effects. In other words, participation in the program seems to have boosted wage-employment outcomes only of those who were assigned to firm with below median management practices. On the other hand, assignment to well-managed firm did help young professionals to start a business, whereas assignment to a low-management firm did not.

[4] Since this model is estimated only on the treatment group of young professionals, pairwise dummies are necessarily omitted. For robustness, we estimate an alternative version of regression model 2 where we additionally control for batch dummies. We report the estimates in Table A.20. They are very similar to the results we report in Table A.1.

Table A.1: **Differential treatment effects of varieties: occupation outcomes and host management quality**

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
B. Linear control function for propensity score								
Dummy: High management	0.0422*	0.151	227.9	-0.0457	-0.0386	-0.0250	-0.381	-271.1
	(0.0223)	(0.162)	(231.6)	(0.0352)	(0.0374)	(0.0249)	(0.285)	(189.6)
Observations	1393	1399	1378	1399	1399	1399	1399	1393
C. Centile dummy control function for propensity score								
Dummy: High management	0.0399*	0.120	262.1	-0.0511	-0.0434	-0.0224	-0.412	-278.0
	(0.0229)	(0.167)	(238.1)	(0.0359)	(0.0383)	(0.0252)	(0.291)	(194.0)
Observations	1393	1399	1378	1399	1399	1399	1399	1393
D. Semi-parametric control function for propensity score								
Dummy: High management	0.0380	0.178	302.4	-0.0426	-0.0277	-0.0276	-0.347	-285.9
	(0.0238)	(0.170)	(269.9)	(0.0353)	(0.0388)	(0.0249)	(0.286)	(189.8)
Observations	1393	1399	1378	1399	1399	1399	1399	1393
E. Inverse probability weighting with the propensity score								
Dummy: High management	0.0435**	0.194	325.8	-0.0490	-0.0525	-0.0204	-0.320	-258.4
	(0.0212)	(0.149)	(233.9)	(0.0399)	(0.0427)	(0.0232)	(0.326)	(201.8)
Observations	1393	1399	1378	1399	1399	1399	1399	1393
F. MTE integration								
Dummy: High management	0.0295	0.114	297.6	-0.0261	-0.0207	-0.0178	-0.210	-157.6
	(0.0230)	(0.155)	(239.4)	(0.0345)	(0.0373)	(0.0226)	(0.278)	(195.2)
Observations	1393	1399	1378	1399	1399	1399	1399	1393

Note: In this table we report the average effect of being assigned to a high-management firm variety compared to a low-management firm. These are the results of estimating equation 2. We condition on the propensity score in different ways, following Table 4: using increasingly flexible control functions in Panels B-D; and by re-weighting the observations by the inverse assignment probability (propensity score) in Panel E. We also obtain an estimate from integrating up our MTE estimates, following equation 12 in Panel F. We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

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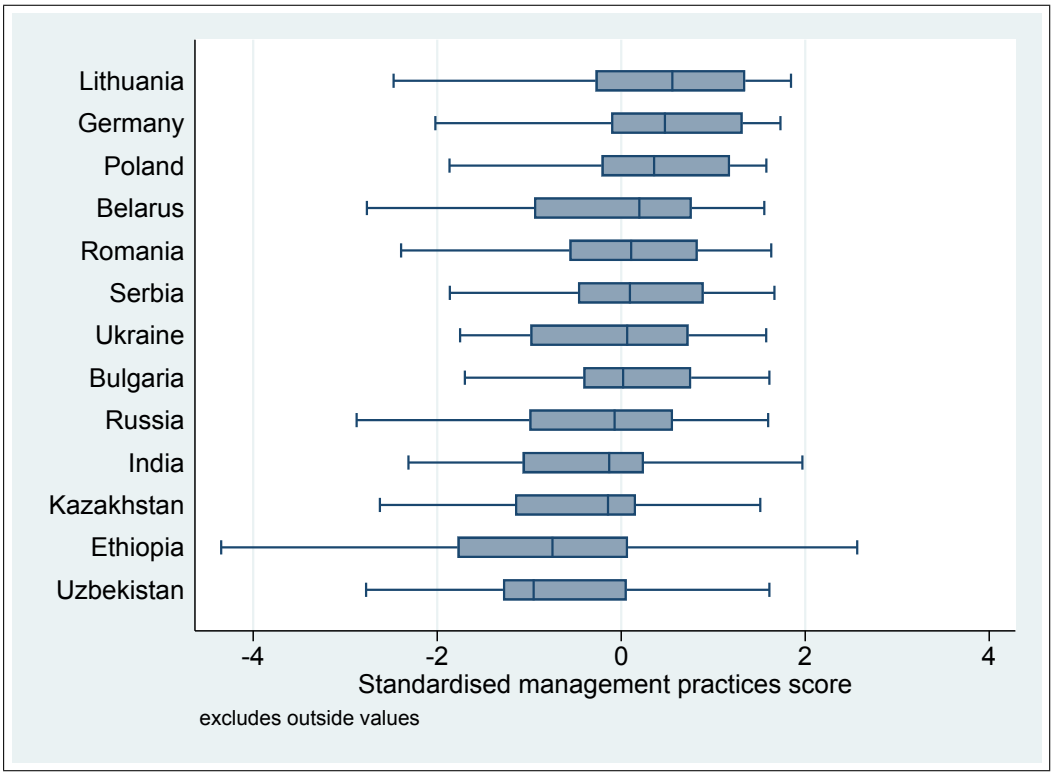
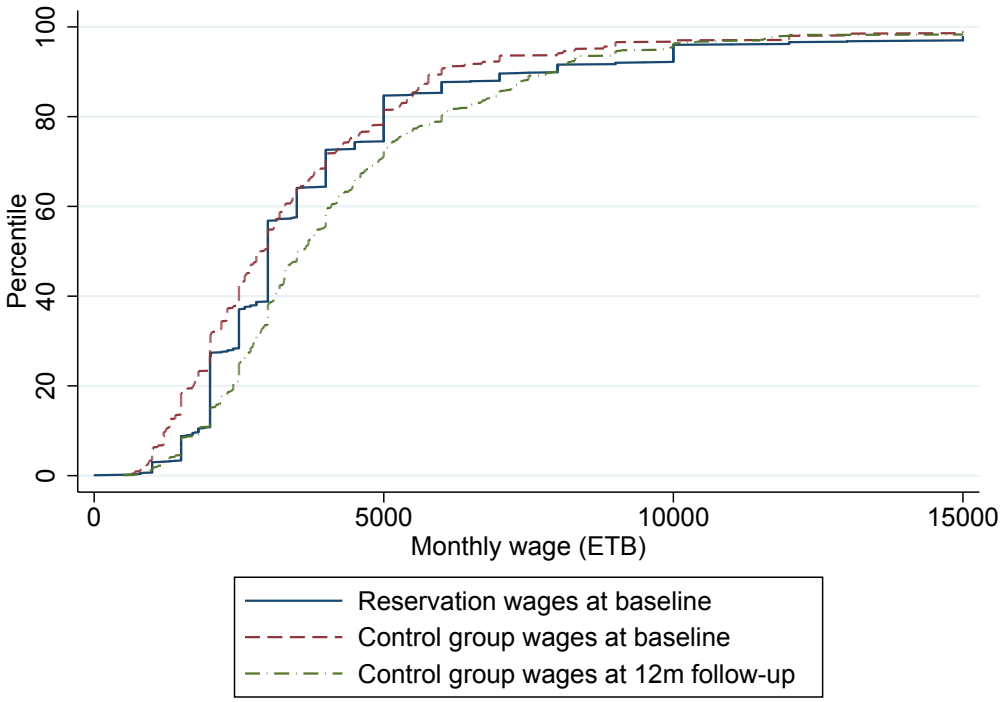
D Online Appendix Tables and Figures

Figure A.4: **Benchmarking Ethiopian management practices across countries**



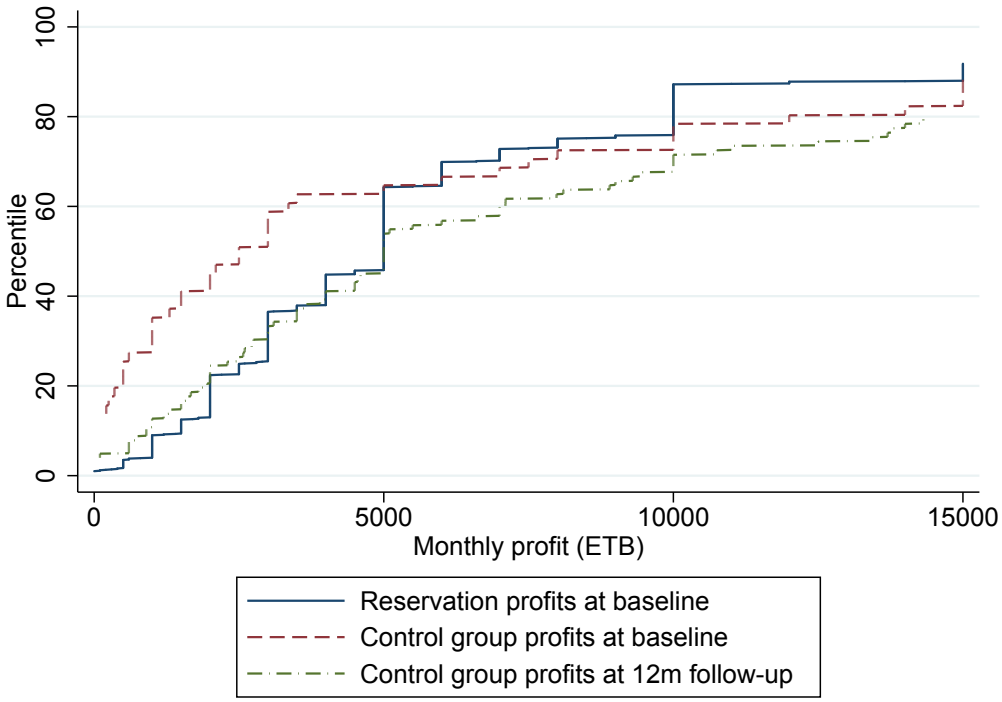
Note: This graph compares the distribution of the management practices score we obtain in our firms survey in Ethiopia with the management scores in the 12 other countries surveyed by Bloom, Schweiger, and Van Reenen (2012). We obtained this data from the EBRD companion web site to the paper.

Figure A.5: **Wages: Actual and reservation**



Note: This graph compares the distribution of wages earned by the control group at baseline and at the 12-month follow-up survey to the distribution of reservation wages measured at baseline. For each distribution of earned wages, the sample is restricted to individuals with a wage job. Note that the graph is plotted on the same scale as Figure A.6.

Figure A.6: **Profits: Actual and reservation**



Note: This graph compares the distribution of profits earned by entrepreneurs in the control group at baseline and at the 12-month follow-up survey to the distribution of reservation profits measured at baseline. For each distribution of earned profits, the sample is restricted to individuals who run a business. Note that the distribution has been calculated for the whole sample, but is graphed only for part of the distribution for ease of comparison with Figure A.5.

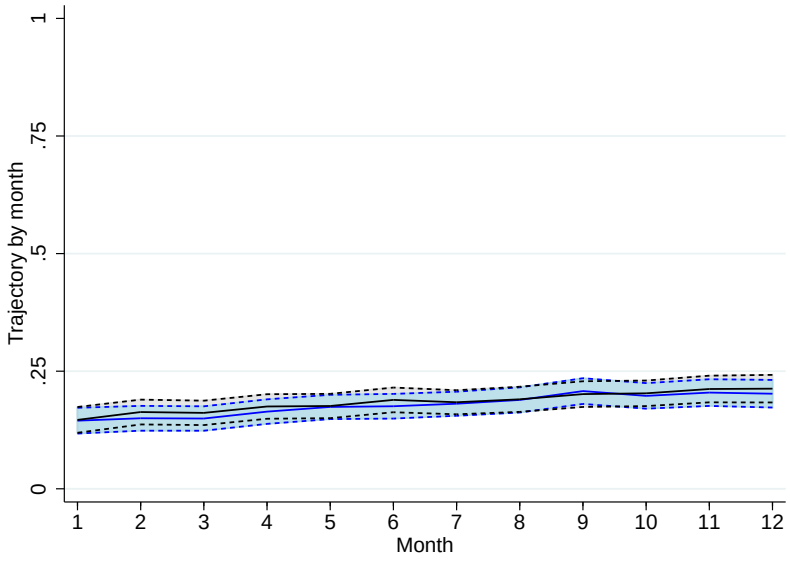
Figure A.7: **Interns: Constructed CV**

Intern CV

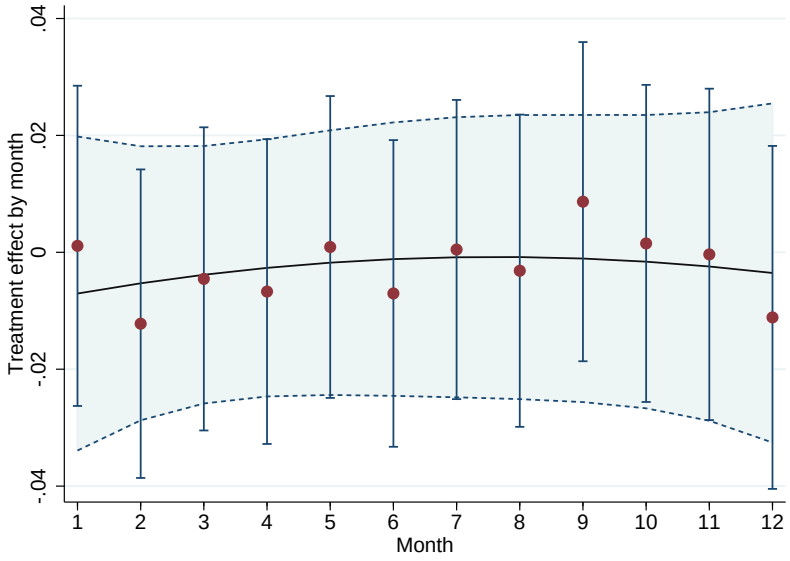
1. Intern Id			
2. Age in full years	**3. Gender** 01=Male 02=Female	**4. School attended** 01=Public 02=Private (including NGO and missionary schools)	
5. Completed level of education 06 = High school (old curriculum) 07 = High school first cycle (new curriculum) 08 = Preparatory school 09 = 10 +1 Vocational (old) 10 = 10 +2 Vocational (old) 11 = 10 +3 Vocational (old) 12 = Vocational school level1 13 = Vocational school level 2 14 = Vocational school level 3 15 = Vocational school level 4 16 = Vocational school level	17 = Diploma (non-vocational) 18 = BED (teachers) 19 = Teachers certificate 20 = BA (BSc) degree 21 = MA/MSc 22 = PhD	**6. The higher education course was…** 01=Regular 02=Extension 03=Distance 04=Summer	
7. Name of the University or College attended			
8. Field of study	**University** 01= Engineering & Technology 02= Business and Economics 03= Natural and Computational Sciences 04= Social Sciences & Humanities 05= Medicine and Health Sciences 06= Agriculture and Life Sciences **TVET** 07=Automotive Technology 08= Electrical & Electronics Technology	09= Construction Technology 10= Information Technology 11= Surveying Technology 12= Manufacturing Technology 13= Architectural Design Technology 14= Wood Science Technology 15= Textile or Garment Engineering 16= Accounting and Business **All institutions** 17= Other	
9. Years of work experience	**10. Industry of experience** 01 = Transportation 02 = Finance 03 = Manufacturing 04 = Hospitality 05 =Tour and travel 06 =Trading (wholesale and retail) 07 = Health	8 = Profession services (accounting, architecture or law) 09 = Education 10 = Mining/ Quarrying 11 = Construction 12 = Others	

Note: This figure shows the standardized CV template that we asked our participants who had been randomized into the internship to fill out. We showed photocopies of these documents to the hiring manager at the firm, who would then rank the CVs of candidates within their batch.

Figure A.8: **Self-employment at monthly intervals**



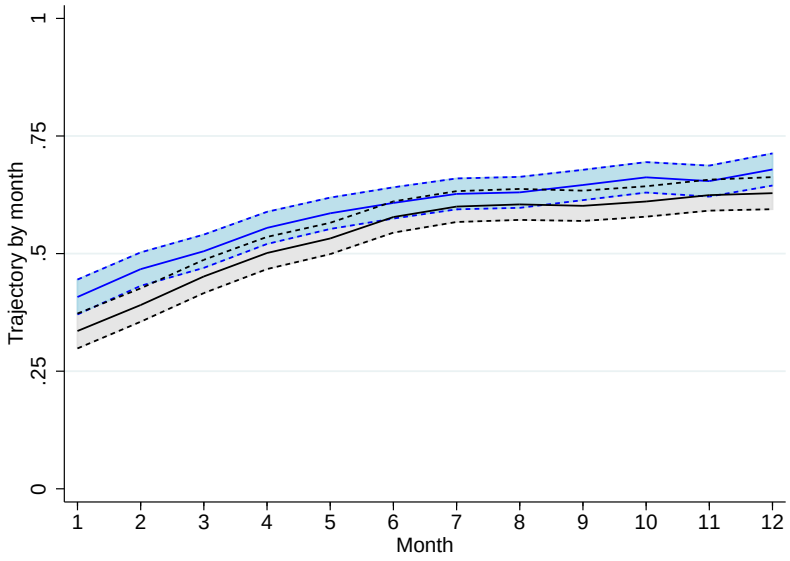
(a) Self-employment trajectories by month



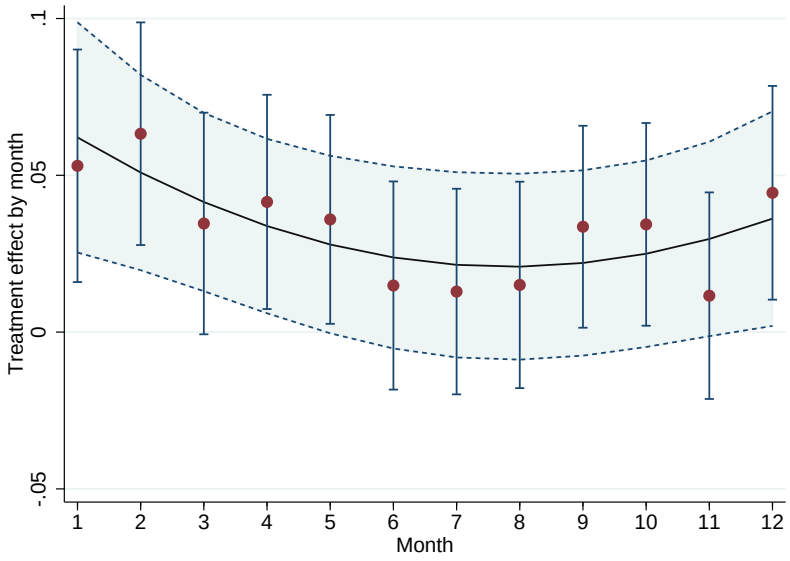
(b) Self-employment treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) of self-employment over the 12 months after the placement. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.9: **Wage employment at monthly intervals**



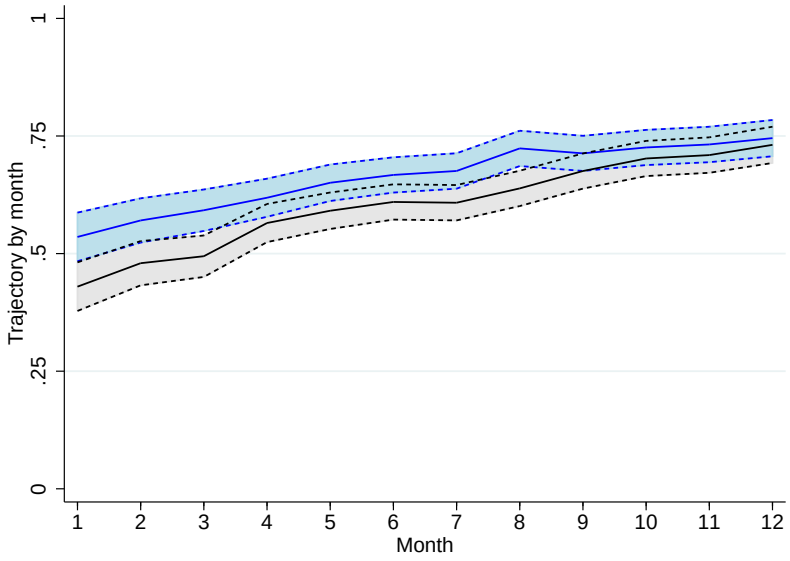
(a) Wage employment trajectories by month



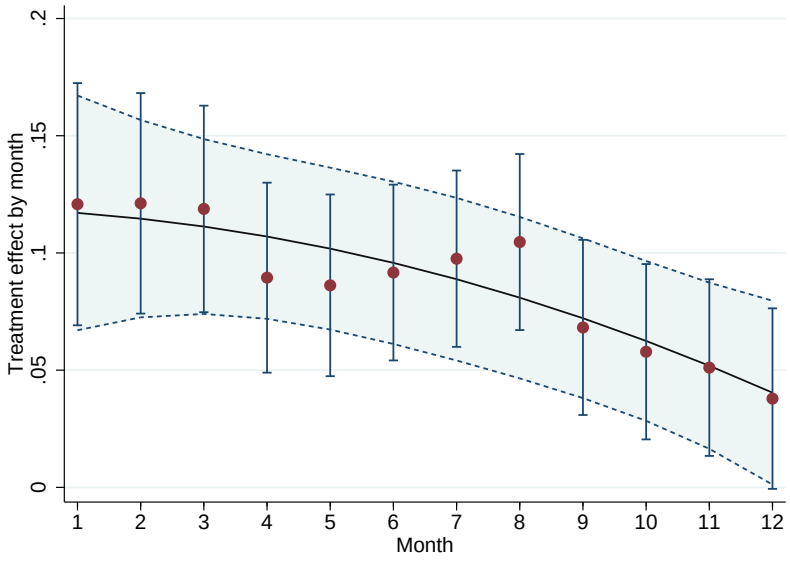
(b) Wage employment treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) of wage employment over the 12 months after the placement. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.10: **Treatment effect of job satisfaction at monthly intervals**



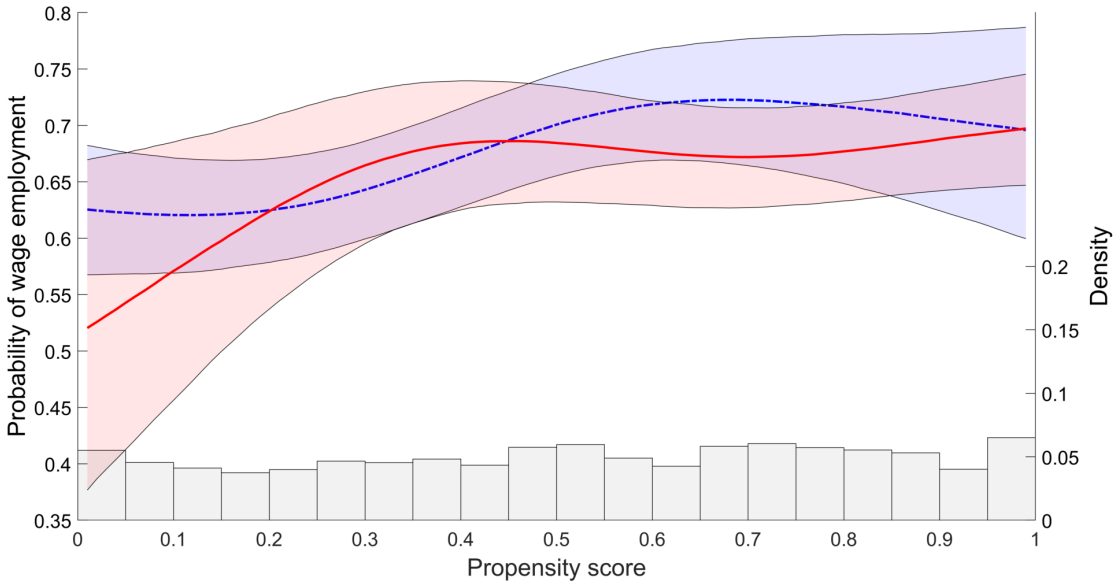
(a) Job satisfaction trajectories by month



(b) Job satisfaction treatment effects by month

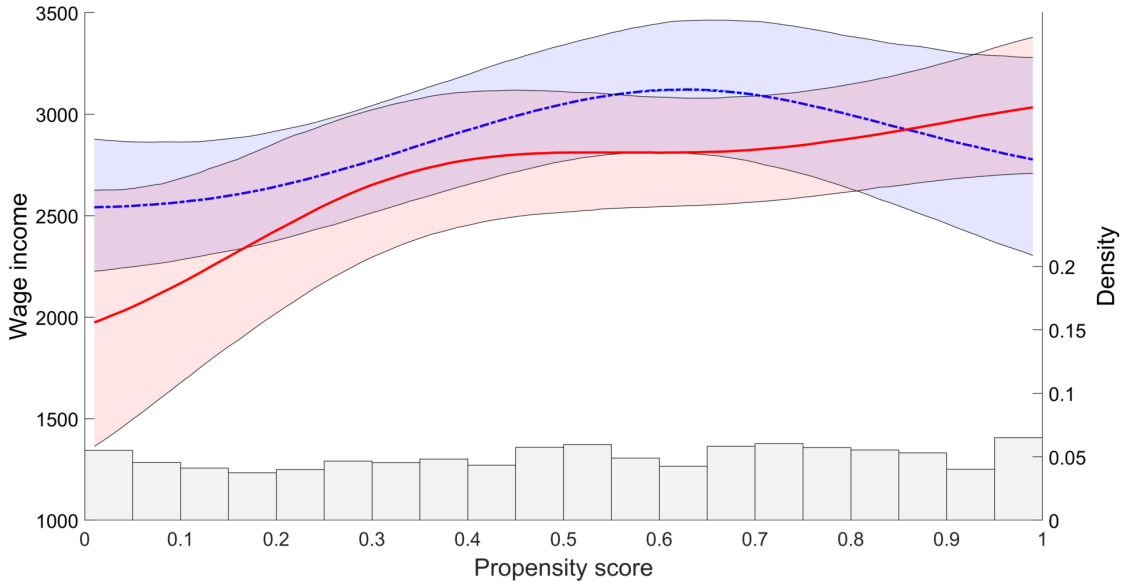
Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) of job satisfaction over the 12 months after the placement. Job satisfaction is a dummy for an affirmative answer to the question "Are you satisfied with your current employment situation?". Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.11: **Marginal Treatment Effects under matching: Probability of wage-employment**



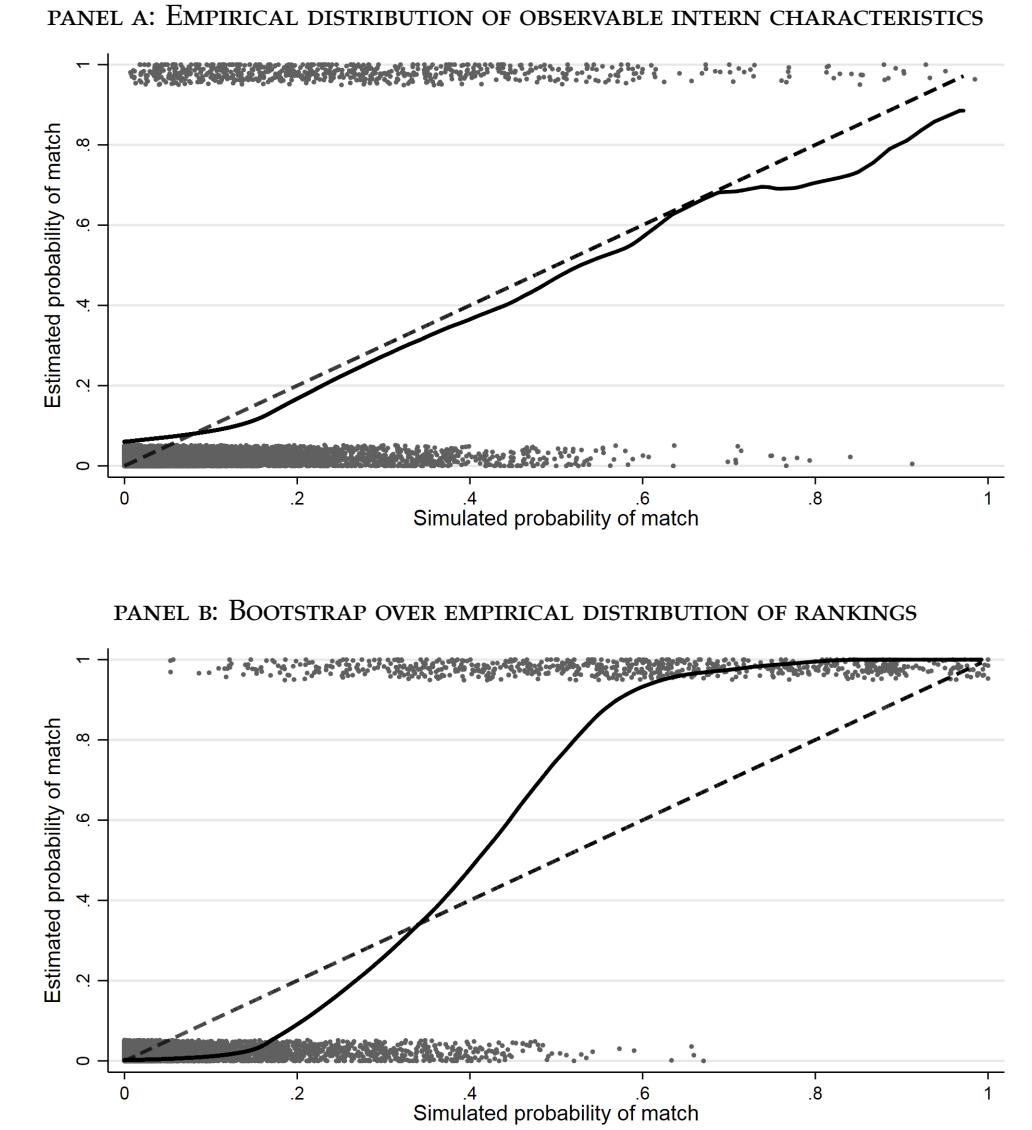
Note: This figure graphs the marginal treatment effects (MTE) as a function of the propensity score p of the implemented assignment mechanism. Outcome is a dummy for being wage-employed at follow-up. The scale corresponds to the left y-axis. The red solid curve graphs the outcome for interns assigned to a high-management firm ($y_1(p)$), the blue dashed curved graphs the outcome for interns assigned to a low-management firm ($y_0(p)$). The curves are obtained from a Kernel regression with a Gaussian Kernel and a bandwidth of 0.15. The difference between these curves is the integral of MTE over a small interval around p. Shaded areas around the curves are 90% confidence intervals. These take into account parameter uncertainty that underlies the simulated propensity scores by repeatedly drawing from the posterior distributions to obtain a posterior distribution of propensity scores. At the bottom of the graph is the histogram of propensity scores, in 20 equal-width bins (densities scale on the right y-axis).

Figure A.12: **Marginal Treatment Effects under matching: Income from wage employment**



Note: This figure graphs the marginal treatment effects (MTE) as a function of the propensity score p of the implemented assignment mechanism. Outcome is a the monthly income from wage-employment at follow-up. The scale corresponds to the left y-axis. The red solid curve graphs the outcome for interns assigned to a high-management firm ($y_1(p)$), the blue dashed curved graphs the outcome for interns assigned to a low-management firm ($y_0(p)$). The curves are obtained from a Kernel regression with a Gaussian Kernel and a bandwidth of 0.15. The difference between these curves is the integral of MTE over a small interval around p. Shaded areas around the curves are 90% confidence intervals. These take into account parameter uncertainty that underlies the simulated propensity scores by repeatedly drawing from the posterior distributions to obtain a posterior distribution of propensity scores. At the bottom of the graph is the histogram of propensity scores, in 20 equal-width bins (densities scale on the right y-axis).

Figure A.13: **Estimated and simulated propensity scores: alternative implementations**



Note: The scatterplot in this figure graphs q_{if} (the simulated assignment probability of intern i to firm f in their batch) on the x-axis and a dummy whether such assignment actually occurred m_{if} on the y-axis. The smooth and thick black line is a local linear Kernel regression with a bandwidth of 0.075; this is an estimate of $E(m_{if}|q_{if})$. In theory this should equal a 45 degree line: $E(m_{if}|q_{if}) = q_{if}$ which is graphed as a dashed line. In panel A, q_{if} are mean posterior probabilities of assignment, where counterfactual rankings are based on the preference model, and the empirical distribution of observable characteristics of all interns in the program. The Kernel plot lies closely around the 45-degree line. In panel B, q_{if} is based on integrating assignments over bootstrap samples drawn with replacement from the empirical distribution of rankings of interns within a given batch. The Kernel plot systematically deviates from the 45-degree line in a way that shows compression of simulated match probabilities.

Table A.2: Benchmarking wages with the National Labour Force Survey

	Control Group		NLFS 2013			
	Non-Degree	Degree	Non-Degree		Degree	
			Addis Ababa	National	Addis Ababa	National
Wages p(25)	1,427	2,500	1,540	1,540	2,406	2,380
Wages p(50)	2,100	3,514	2,240	2.098	3,500	3,220 S
Wages p(75)	3,294	5,300	3,500	3,055	4,900	4,578

Note: NLFS indicates data from the 2013 National Labour Force Survey from the Ethiopian Central Statistical Agency. All values deflated to 2017 prices using the Ethiopian CPI.

Table A.3: **Balance of randomisation for the interns sample**

	N	Mean	Treatment balance (p)
Dummy: is self-employed	1636	0.07	0.313
Hours worked (last weekday) in self-employment	1637	0.43	0.151
Profit for the last month (ETB)	1623	500.53	0.337
Dummy: is wage-employed	1637	0.25	0.495
Dummy: has a permanent wage job	1637	0.19	0.415
Dummy: has a managerial wage job	1637	0.04	0.572
Hours worked (last weekday) in wage employment	1637	1.72	0.447
Wage earnings for the last month (ETB)	1630	864.70	0.995
Dummy: has a good idea	1637	0.94	0.131
Dummy: has necessary technical skills	1637	0.82	0.350
Dummy: Could accurately estimate costs	1637	0.70	0.398
Dummy: Could accurately estimate demand	1637	0.79	0.948
Dummy: Could sell to a new customer	1637	0.82	0.641
Dummy: Could identify good employees	1637	0.84	0.357
Dummy: Could inspire/encourage/motivate employees	1637	0.92	0.852
Dummy: Could find suppliers to offer a good price	1637	0.67	0.512
Dummy: Has seed money to start	1637	0.17	0.716
Dummy: Could persuade a bank to lend to finance a business	1637	0.36	0.497
Dummy: Could persuade friend/family to lend to finance a business	1637	0.56	0.123
Dummy: Has necessary business networks	1637	0.45	0.563
Dummy: Too complicated to handle business tasks	1637	0.35	0.377
Dummy: Business success is mostly determined by luck, not skill	1637	0.11	0.267
Overall score for management practices	120	0.09	0.917
Score for marketing practices	120	0.00	0.696

Score for costing/record-keeping practices	120	0.15	0.727
Score for costing/record-keeping practices	120	0.06	0.781
Dummy: respondent has plans to start a business	1637	0.28	0.710
Dummy: respondent has plans to expand a business	1637	0.03	0.023
Score for preparatory steps taken	1636	0.07	0.861
Minimum monthly profit to open a business (ETB)	1542	6233.01	0.818
Dummy: Any search for a wage job in the past four weeks	1636	0.80	0.790
Dummy: Search for manual work	1624	0.12	0.754
Dummy: Search for clerical/administrative work	1623	0.19	0.380
Dummy: Search for professional work	1624	0.77	0.607
Dummy: Search for management work	1623	0.28	0.549
Minimum monthly wage to accept a job (ETB)	1598	3796.34	0.455
Total years of contacts' experience	1637	4.38	0.422
Number of contacts listed (up to 5)	1637	0.54	0.951
Number of senior contacts	1637	0.24	0.813
Number of mid-level contacts	1637	0.10	0.825

Table A.4: **Balance of randomisation for the firms sample**

	N	Mean	Treatment balance (p)
Dummy: firm did any advertisting for new hires	698	0.70	0.692
Dummy: advertised for hires on job boards	698	0.36	0.643
Dummy: advertised for hires in newspapers	698	0.39	0.489
Dummy: advertised for hires outside premises	698	0.32	0.274
Dummy: advertised for hires online	698	0.14	0.488
Dummy: advertised for hires by agency/broker	697	0.14	0.413
Dummy: advertised for hires on campuses	698	0.07	0.375
Dummy: advertised for hires at job fairs	696	0.04	0.031
Total hires (last two months)	673	12.97	0.544
Professional hires (last two months)	696	3.21	0.279
Client services hires (last two months)	687	1.64	0.706
Production worker hires (last two months)	679	5.80	0.095
Support services hires (last two months)	695	2.32	0.089
Total separations (last 12 months)	692	12.85	0.835
Professional separations (last 12 months)	694	3.24	0.158
Client services separations (last 12 months)	693	1.78	0.209
Production worker separations (last 12 months)	693	5.42	0.132
Support services separations (last 12 months)	692	2.39	0.141
Overall management practices z-score	713	-0.00	0.053
Operations practices z-score	700	0.00	0.164
Monitoring practices z-score	700	-0.00	0.002
How many production performance indicators?	700	-0.00	0.006
How frequently PPI collected?	700	0.00	0.010
How frequently PPI shown to managers?	699	-0.00	0.009

How frequently PPI shown to workers?	700	0.00	0.015
Where are PPI displayed?	700	0.00	0.001
How often are PPI displayed?	698	0.00	0.001
Are PPI compared?	700	0.00	0.517
Target practices z-score	700	0.00	0.305
Incentive practices z-score	713	0.00	0.302
Rewarding target achievements	693	-0.00	0.866
Promoting employees	696	-0.00	0.625
Moving employees	701	-0.00	0.177
Record-keeping practices z-score	700	-0.00	0.803
Firm issues invoices	697	-0.00	0.346
Firm pays on invoices	699	-0.00	0.441
Firm takes minutes of meetings	700	0.00	0.606
Firm archives minutes of meetings	700	-0.00	0.486
Managers produce written reports	699	-0.00	0.223
Marketing practices z-score	700	-0.00	0.232
Has firm done advertising?	700	0.00	0.300
Does firm offer warranties?	700	-0.00	0.459

Table A.5: Size of the core

Batch	Number of interns	Number of firms	Size of core
1	10	4	2
2	24	12	3
3	16	7	2
4	15	7	4
5	22	10	5
6	15	7	2
7	10	5	1
8	19	9	3
9	19	9	3
10	17	7	1
11	17	8	2
12	19	9	2
13	17	8	3
14	16	8	1
15	15	8	1
16	19	9	2
17	14	6	1
18	21	8	5
19	19	9	2
20	19	10	2
21	26	13	4
22	15	8	1
23	24	10	3
24	18	10	2
25	22	10	3
26	24	12	6
27	23	13	1
28	23	9	2
29	18	8	3
30	21	9	3
31	23	9	2
32	21	10	2
33	17	6	3
34	18	10	4
35	14	6	3
36	20	6	1
37	26	8	4
38	19	9	3
39	26	7	5
40	16	6	2
41	27	7	4
42	28	14	1

Note: This table lists the size of the core for each of the 42 batches, together with the number of interns (places) and the number of firms for each batch. The size of the core was calculated using the algorithm proposed by McVitie and Wilson (1971). When the core is a singleton, it only contains the firm-proposing DA solution. When the core is of size 2, it contains the firm-proposing and the intern-proposing DA solution. Cores of size 3 and larger contain additional stable solutions.

Table A.6: Take-up and completion rates

Group	**Headcount**	**% of treated**
Applications	6,424	
Experimental sample	1,651	
thereof: control	822	
thereof: treated	829	100 %
Assigned to firm	788	95 %
Completed at least 1 day	588	71 %
Completed at least 10 days	553	67 %
Completed full placement	487	59 %

Note: This table summarizes take-up of the treatment, based on our administrative program data.

Table A.7: Comparison of main results with elicited expectations

Outcome	C	T	Students $n=28$	Academics $n=14$	HR experts $n=5$
Self-employment rate at six-month follow-up	10%	**12%**	19%	16%	19%
Self-employment rate at 12-month follow-up	13%	**15%**	24%	17%	29%
Wage employment rate at six-month follow-up	59%	**62%**	65%	62%	48%
Wage employment rate at six-month follow-up	69%	**73%**	74%	73%	53%

Note: In this table we report the expert predictions of treatment effects described in the main text. We showed experts the first two columns of the table, and asked for a prediction about the third column labelled "T". Each subsequent column reports the mean prediction of each expert group.

Table A.8: **Effects of treatment on steps to start a business**

Outcome:	(1) Start Business	(2) Expand Business	(3) Steps Taken	(4) Business knowledge	(5) Reservation profit
Dummy: Treated	0.01	0.00	0.04	0.00	140.65
	(0.01)	(0.01)	(0.02)	(0.02)	(151.34)
	[0.33]	[0.98]	[0.09]*	[0.88]	[0.35]
	{0.89}	{1.00}	{0.79}	{1.00}	{0.89}
Control mean (follow-up)	0.16	0.03	-0.03	0.00	6254.82
Control mean (baseline)	0.27	0.02	0.07	.	6156.10
Observations	3,121	3,121	3,119	1,396	3,038

Note: In this table we report the *intent-to-treat* estimates of the placement on primary employment outcomes. These are obtained by least-squares estimation of equation 1. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.9: **Effects of treatment on job search**

Outcome:	(1) Search any steps	(2) Search for manual	(3) Search for clerical	(4) Search for prof.	(5) Search for manag.	(6) Reservation Wage
Dummy: Treated	-0.04	0.00	-0.01	-0.04	-0.01	174.80
	(0.02)	(0.00)	(0.01)	(0.02)	(0.01)	(96.50)
	[0.01]***	[0.88]	[0.35]	[0.02]**	[0.52]	[0.07]*
	{0.05}*	{0.79}	{0.36}	{0.05}*	{0.45}	{0.10}
Control mean (follow-up)	0.62	0.02	0.08	0.61	0.16	5642.55
Control mean (baseline)	0.80	0.12	0.19	0.76	0.29	3709.44
Observations	3,111	3,096	3,096	3,096	3,094	3,071

Note: In this table we report the *intent-to-treat* estimates of the placement on search for wage employment. These are obtained by least-squares estimation of equation 1. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.10: **Effects of treatment on job search - By wave**

Dependent Variable:	(1) Search any steps	(2) Search for manual	(3) Search for clerical	(4) Search for prof.	(5) Search for manag.	(6) Reservation Wage
Treatment × Survey wave=1	-0.02	-0.00	-0.02	-0.00	-0.02	211.92
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(131.66)
	[0.49]	[0.82]	[0.34]	[0.88]	[0.38]	[0.11]
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{0.37}
Treatment × Survey wave=2	-0.07	0.00	0.00	-0.08	-0.00	229.81
	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(135.26)
	[0.01]***	[0.84]	[0.89]	[0.00]***	[0.96]	[0.09]*
	{0.03}**	{1.00}	{1.00}	{0.02}**	{1.00}	{0.37}
Control mean: baseline	0.80	0.12	0.19	0.76	0.29	3709.44
Control mean: 6 months	0.62	0.04	0.14	0.59	0.19	5282.51
Control mean: 12 months	0.63	0.00	0.02	0.62	0.13	6003.53
Equality test	0.14	0.79	0.44	0.05	0.58	0.92
Observations	3,107	3,069	3,067	3,069	3,065	2,996

Note: In this table we report the *intent-to-treat* estimates of the placement on search for wage employment. These are obtained by least-squares estimation of equation 1; except column (4) which is estimated without controlling for the baseline value because business knowledge was only tested at endline. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. We correct standard errors for arbitrary autocorrelation at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006).

Table A.11: **Effects of treatment on business networks**

Outcome:	(1) Network Experience	(2) Number Contacts	(3) Senior Contacts	(4) Mid-level Contacts
Dummy: Treated	0.50	0.02	0.03	-0.01
	(0.23)	(0.02)	(0.02)	(0.01)
	[0.03]**	[0.43]	[0.08]*	[0.10]
	{0.15}	{0.16}	{0.15}	{0.15}
Control mean (follow-up)	4.01	0.50	0.20	0.07
Control mean (baseline)	4.57	0.54	0.24	0.10
Observations	3,121	3,121	3,121	3,121

Note: In this table we report the *intent-to-treat* estimates of the internship on primary employment outcomes. These are obtained by least-squares estimation of equation 1. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.12: **Wording of questions on confidence in management skills**

"How much do you agree with the following statements?"
(Strongly disagree – disagree – neutral – agree – strongly agree)

Number	Area	Statement
(1)	**Idea**	I have a good idea to run a business.
(2)	**Skills**	I have the technical skills required to run a business successfully.
(3)	**Cost**	I could accurately estimate the costs of a new business venture.
(4)	**Demand**	I could accurately estimate the customer demand for a new product or service.
(5)	**Client**	I would be able to sell a product or service to a customer whom I am meeting for the first time.
(6)	**Find**	I would be able to identify good employees for a business.
(7)	**Inspire**	I would be able to inspire, encourage, and motivate employees.
(8)	**Supply**	I would be able to find suppliers who can sell me raw materials at the best price.
(9)	**Seed**	I have seed money to start if I want to.
(10)	**Bank**	I would be able to persuade a bank to lend me money to finance a business venture.
(11)	**Friend**	I would be able to persuade a friend or family member to lend me money to finance a business venture.
(12)	**Network**	I have the necessary business networks to run a business successfully.
(13)	**Tricky**	It is too complicated to handle all the tasks involved in running a business.
(14)	**Luck**	Success in running a business is mostly determined by luck, rather than by the skill of the entrepreneur.

Table A.13: **Effect of treatment on confidence in management skills**

Outcome:	(1) Idea	(2) Skills	(3) Cost	(4) Demand	(5) Client	(6) Find	(7) Inspire
Dummy: Treated	0.02	0.01	0.04	0.02	0.03	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	[0.01]**	[0.55]	[0.00]***	[0.09]*	[0.02]**	[0.91]	[0.90]
	{0.05}**	{0.63}	{0.04}**	{0.12}	{0.06}*	{0.85}	{0.85}
Control mean (follow-up)	0.94	0.85	0.72	0.77	0.81	0.88	0.94
Control mean (baseline)	0.95	0.81	0.71	0.79	0.83	0.85	0.92
Observations	3,121	3,121	3,121	3,121	3,121	3,121	3,121

Outcome:	(8) Supply	(9) Seed	(10) Bank	(11) Friend	(12) Netw.	(13) Tricky	(14) Luck
Dummy: Treated	0.01	0.00	0.03	0.02	0.03	0.00	-0.02
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
	[0.51]	[0.92]	[0.05]**	[0.30]	[0.04]**	[0.87]	[0.01]***
	{0.63}	{0.85}	{0.08}*	{0.36}	{0.08}*	{0.85}	{0.04}**
Control mean (follow-up)	0.62	0.14	0.33	0.60	0.47	0.25	0.06
Control mean (baseline)	0.68	0.18	0.36	0.54	0.46	0.34	0.12
Observations	3,121	3,121	3,121	3,121	3,121	3,121	3,119

Note: In this table we report the *intent-to-treat* estimates of the placement on confidence in management skills. This complements Table A.13 in the main paper. Estimates are obtained by least-squares estimation of equation 1. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.14: Effect of treatment management practices for incumbents and entrants

Subsample	**Incumbents**				**Entrants**			
Outcome:	(1) Overall Practices	(2) Marketing Practices	(3) Recording Practices	(4) Financial Practices	(5) Overall Practices	(6) Marketing Practices	(7) Recording Practices	(8) Financial Practices
Dummy: Treated	0.16	0.14	0.14	0.22	0.01	0.02	0.04	-0.09
	(0.09)	(0.11)	(0.17)	(0.13)	(0.06)	(0.08)	(0.11)	(0.08)
	[0.09]*	[0.19]	[0.40]	[0.09]*	[0.86]	[0.77]	[0.70]	[0.26]
	{0.23}	{0.23}	{0.25}	{0.23}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	-0.02	0.00	-0.05	-0.01	-0.02	0.00	-0.05	-0.01
Control mean (baseline)	0.07	0.02	0.17	0.02	0.07	0.02	0.17	0.02
Observations	115	115	115	115	269	269	269	269

Note: In this table we report the *intent-to-treat* estimates of the placement on management practices separately for individuals with a firm at baseline (incumbents) and those with firms first found after baseline (entrants). This estimation is exploratory and was not specified in our pre-analysis plan. Coefficients are obtained by least-squares estimation of equation 1. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006), within each subsample. We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.15: Effect of treatment on host firms' recruitment advertising

Outcome:	(1) Advertised	(2) Advertised on boards	(3) Advertised in papers	(4) Advertised by posting	(5) Advertised online	(6) Advertised by agency	(7) Advertised on campus
Dummy: Treated	-0.01	0.01	-0.02	0.02	0.04	0.02	0.00
	(0.04)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)
	[0.89]	[0.78]	[0.52]	[0.51]	[0.07]*	[0.31]	[0.90]
	{1.00}	{1.00}	{1.00}	{1.00}	{0.94}	{1.00}	{1.00}
Control mean (follow-up)	0.50	0.28	0.29	0.17	0.08	0.07	0.01
Control mean (baseline)	0.73	0.36	0.40	0.35	0.13	0.17	0.07
Observations	648	648	648	648	648	648	648

Note: In this table we report the *intent-to-treat* estimates of the placement on firm outcomes. These are obtained by least-squares estimation of equation

$$y_{ibt} = \beta_1 \cdot T_i + \beta_2 \cdot y_{ib0} + \delta_b + \varepsilon_{ibt}$$

where b is batch. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.16: Effect of treatment on host firms' labor flows

Outcome:	(1) Hires (total)	(2) Hires (prof.)	(3) Hires (client)	(4) Hires (prod.)	(5) Hires (support)	(6) Separat. (total)	(7) Separat. (prof.)	(8) Separat. (client)	(9) Separat. (prod.)	(10) Separat. (support)
Dummy: Treated	0.44	0.17	-0.03	0.16	0.34	2.96	0.36	0.20	1.72	0.59
	(0.70)	(0.24)	(0.15)	(0.52)	(0.18)	(1.05)	(0.37)	(0.27)	(0.65)	(0.27)
	[0.53]	[0.46]	[0.83]	[0.76]	[0.07]*	[0.00]***	[0.33]	[0.47]	[0.01]***	[0.03]**
	{0.65}	{0.65}	{0.99}	{0.99}	{0.14}	{0.05}**	{0.65}	{0.65}	{0.05}**	{0.08}*
Control mean (follow-up)	5.15	1.54	0.66	2.10	0.81	9.78	3.11	1.63	3.21	1.80
Control mean (baseline)	12.94	3.65	1.85	4.89	2.70	13.58	3.85	2.15	4.74	2.80
Observations	633	640	638	635	640	631	636	632	632	633

Note: In this table we report the *intent-to-treat* estimates of the placement on firm outcomes. These are obtained by least-squares estimation of equation

$$y_{ibt} = \beta_1 \cdot T_i + \beta_2 \cdot y_{ib0} + \delta_b + \varepsilon_{ibt}$$

where b is batch. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.17: Effect of treatment on host firms' management practices

Outcome:	(1) Management (total)	(2) Management (operations)	(3) Management (monitoring)	(4) Management (target)	(5) Management (incentives)	(6) Management (records)	(7) Management (marketing)
Dummy: Treated	0.05	0.06	0.06	0.03	-0.02	0.02	0.08
	(0.10)	(0.08)	(0.08)	(0.08)	(0.15)	(0.07)	(0.08)
	[0.63]	[0.44]	[0.45]	[0.72]	[0.88]	[0.76]	[0.30]
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	-0.08	-0.18	-0.13	0.02	0.09	0.07	0.04
Control mean (baseline)	-0.02	0.00	-0.10	0.00	0.06	0.04	0.06
Observations	654	651	650	647	653	651	651

Note: In this table we report the *intent-to-treat* estimates of the placement on firm outcomes. These are obtained by least-squares estimation of equation

$$y_{ibt} = \beta_1 \cdot T_i + \beta_2 \cdot y_{ib0} + \delta_b + \varepsilon_{ibt}$$

where b is batch. Below each coefficient, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. Standard errors allow for clustering at the level of the individual. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.18: Propensity score conditioning baseline balance: Additional results

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income	(9) Total income
G. Control function: quadratic (second order polynomial)									
Dummy: High management	-0.00333	0.141	71.36	0.0391	0.0430	-0.00984	0.378	41.52	111.2
	(0.0231)	(0.158)	(211.0)	(0.0396)	(0.0356)	(0.0153)	(0.289)	(153.4)	(267.4)
Observations	704	704	695	704	704	704	704	700	691
H. Control function: cubic (third order polynomial)									
Dummy: High management	-0.00319	0.143	78.80	0.0384	0.0423	-0.0101	0.370	37.44	114.0
	(0.0231)	(0.159)	(214.6)	(0.0396)	(0.0356)	(0.0154)	(0.289)	(153.5)	(270.8)
Observations	704	704	695	704	704	704	704	700	691
I. Control function: fourth order polynomial									
Dummy: High management	-0.00257	0.148	88.95	0.0372	0.0425	-0.0106	0.357	31.98	118.4
	(0.0231)	(0.159)	(217.8)	(0.0397)	(0.0357)	(0.0153)	(0.289)	(154.0)	(273.7)
Observations	704	704	695	704	704	704	704	700	691

Note: In this table we report propensity score balance test using additional functional forms for $K()$. In particular, we control for polynomials in p of order two to four. The results are not significantly different from a linear control function (a polynomial of order one). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.19: Propensity score conditioning baseline balance: Alternative implementations

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
A. Empirical distribution of intern observables across all batches								
Dummy: High management	0.00208	0.172	96.89	0.0422	0.0446	-0.00850	0.374	66.76
	(0.0230)	(0.159)	(209.4)	(0.0400)	(0.0362)	(0.0157)	(0.291)	(156.2)
Observations	704	704	695	704	704	704	704	700
B. Bootstrap over empirical distribution of rankings within a batch								
Dummy: High management	0.00876	0.128	205.6	0.0243	0.0358	-0.0122	0.0368	-75.90
	(0.0390)	(0.282)	(256.5)	(0.0614)	(0.0568)	(0.0232)	(0.454)	(239.4)
Observations	718	718	708	718	718	718	718	714

Note: In this table we report the baseline balance (for a linear specification of the control function) for propensity score estimates obtained using alternative implementations described in the main text. We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

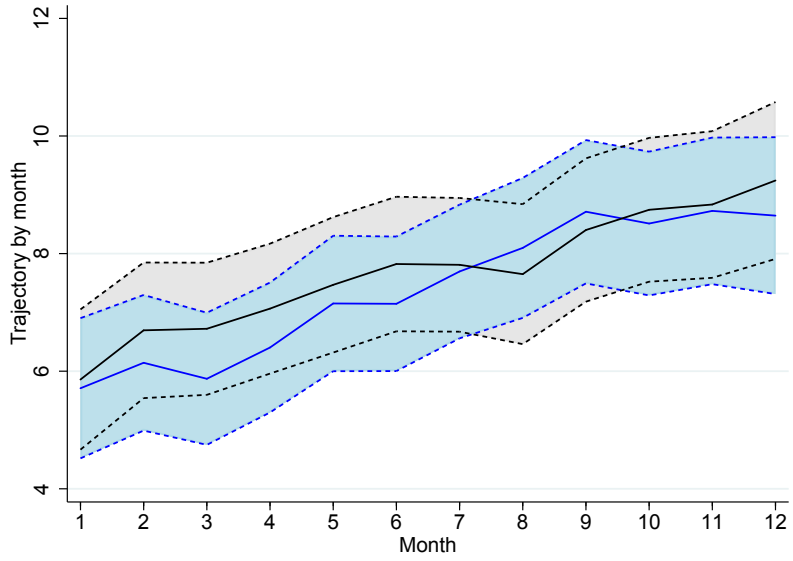
Table A.20: Differential treatment effects of varieties: robustness to inclusion of batch dummies

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
A. Controlling for host batch dummies								
Dummy: High management	0.0472**	0.202	266.5	-0.0498	-0.0466	-0.0271	-0.412	-250.3
	(0.0215)	(0.153)	(233.9)	(0.0354)	(0.0374)	(0.0250)	(0.287)	(188.3)
Observations	1393	1399	1378	1399	1399	1399	1399	1393
B. Controlling for randomization batch dummies								
Dummy: High management	0.0463**	0.201	236.5	-0.0468	-0.0414	-0.0292	-0.404	-235.4
	(0.0216)	(0.152)	(234.5)	(0.0351)	(0.0372)	(0.0245)	(0.284)	(188.8)
Observations	1393	1399	1378	1399	1399	1399	1399	1393

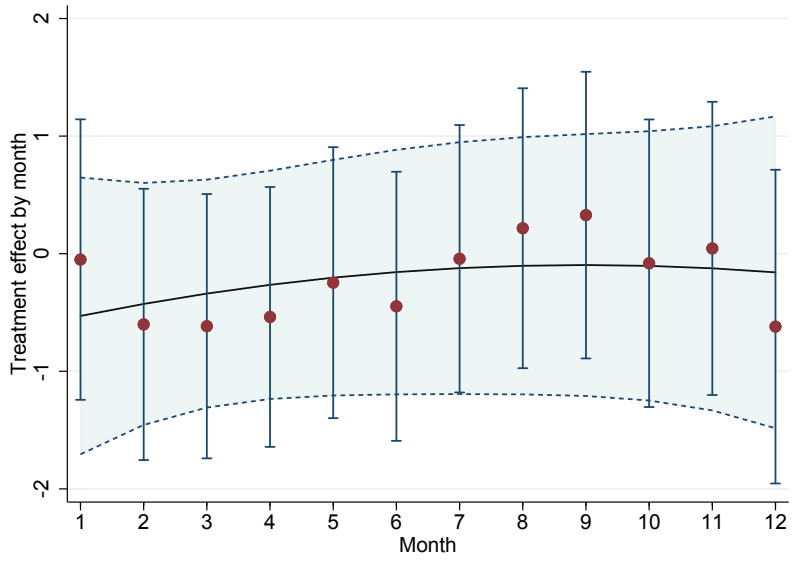
Note: In this table we robustness of the results in Panel A of Table A.1 to the inclusion of batch fixed effects in regression model 2. We have two ways of defining the batch of a treated participants: the batch they were ranked and assigned with (host batch) or the batch when they completed the baseline survey and were randomized into treatment (randomization batch). The two differ if an intern defers the placement. We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

E Additional pre-specified analysis

Figure A.14: **Self-employment hours at monthly intervals**



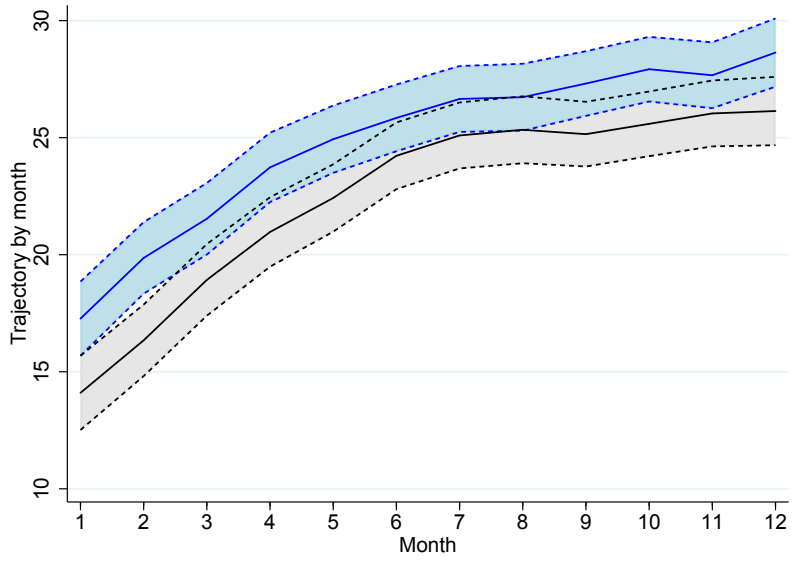
(a) Self-employment hours trajectories by month



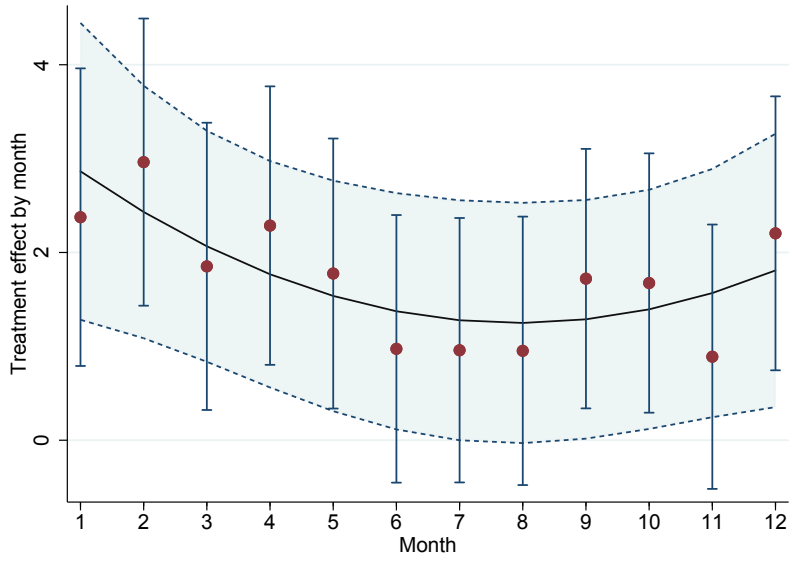
(b) Self-employment hours treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) of self-employment hours over the 12 months after the placement. Hours are the hours worked in self-employment in the last 7 days, set to zero if not self-employed. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.15: **Wage employment hours at monthly intervals**



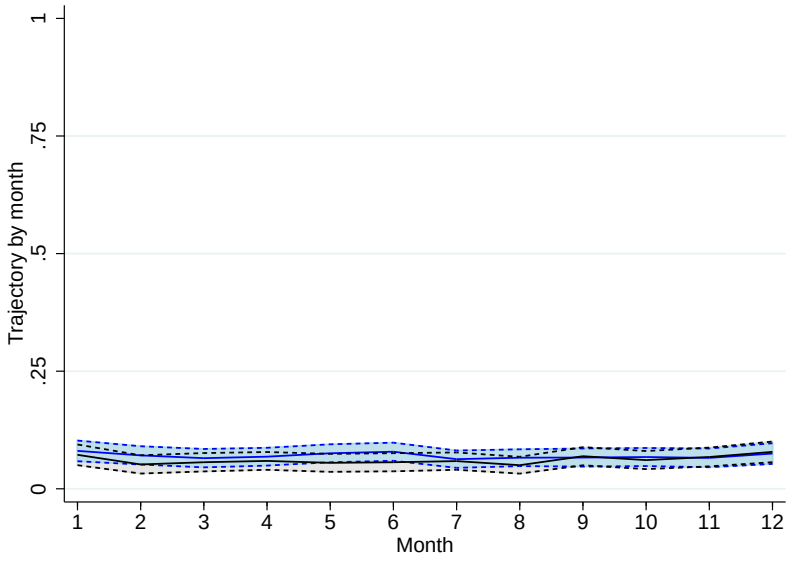
(a) Wage employment hours trajectories by month



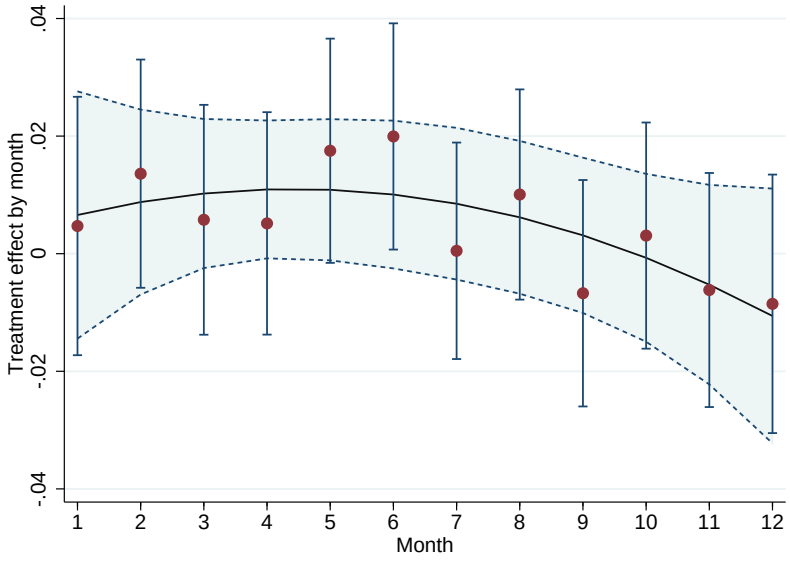
(b) Wage employment hours treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) of wage employment hours over the 12 months after the placement. Hours are the hours worked in a wage job in the last 7 days, set to zero if not self-employed. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.16: **Planning to set up own business at monthly intervals**



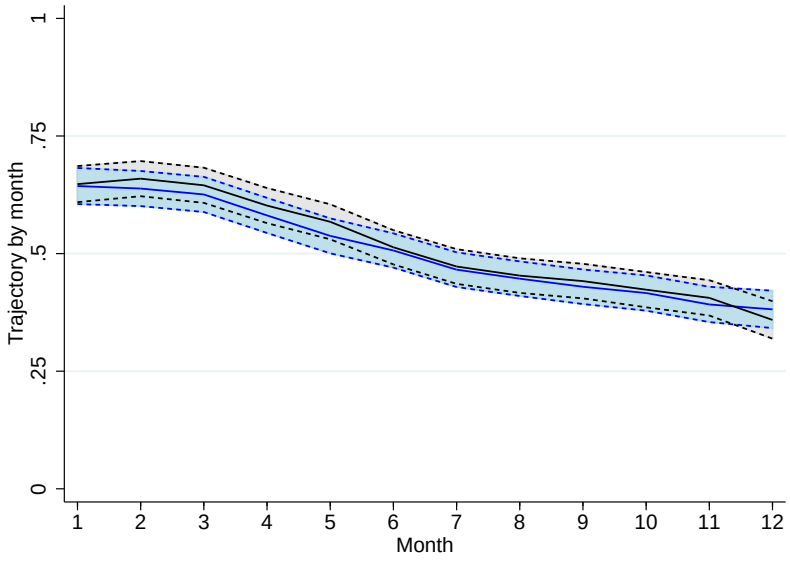
(a) Planning to set up own business trajectories by month



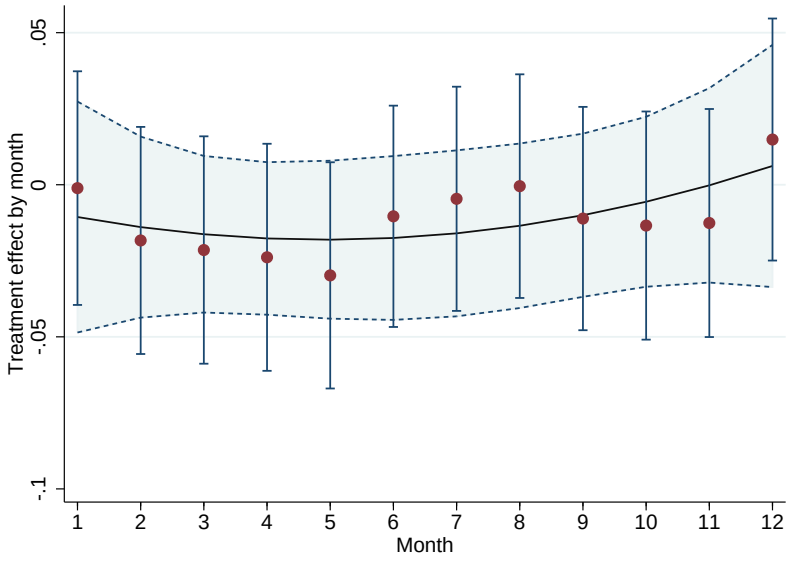
(b) Planning to set up own business treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) on planning to set up a business over the 12 months after the placement. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.17: **Searching for a wage job at monthly intervals**



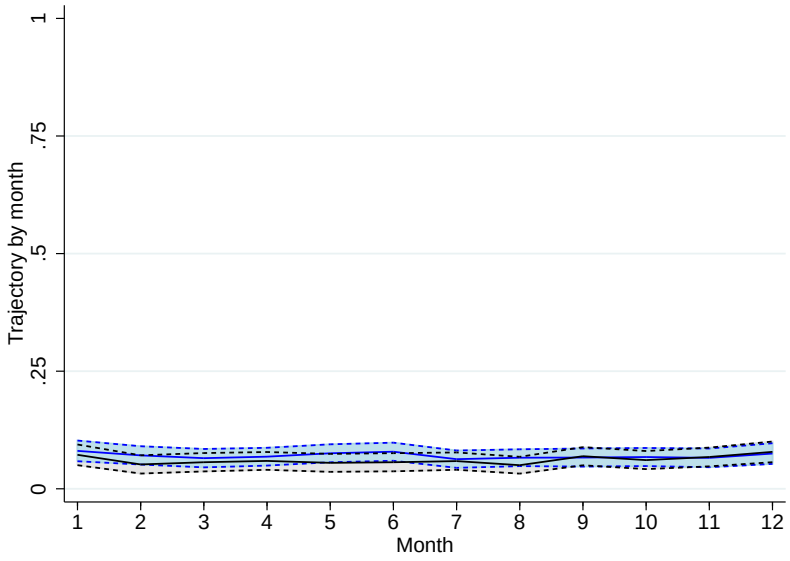
(a) Searching for a wage job at monthly intervals



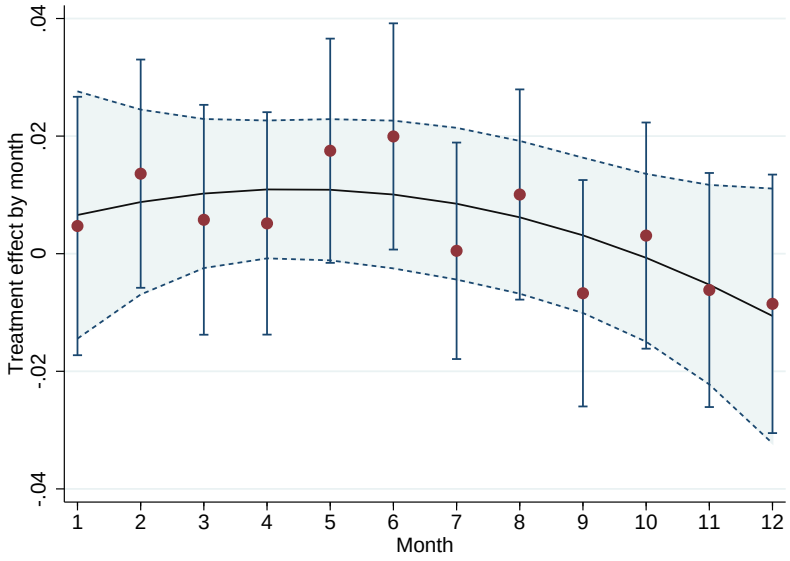
(b) Searching for a wage job at monthly intervals

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) on searching for a wage job over the 12 months after the placement. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.18: **Belief in being self-employed in 12 months**



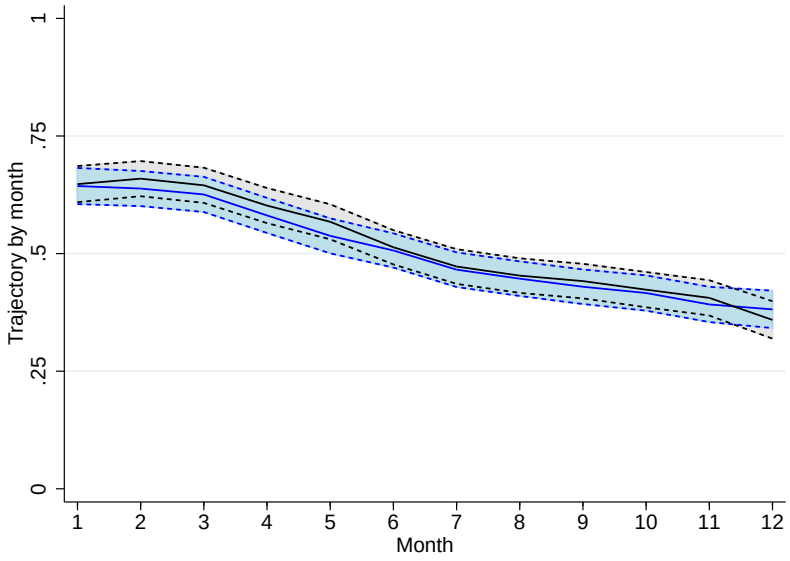
(a) Belief in being self-employed trajectories by month



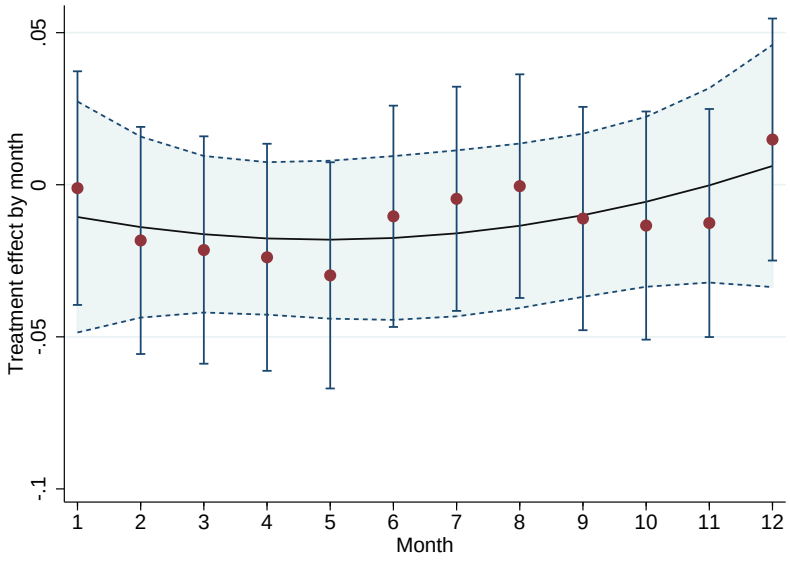
(b) Belief in being self-employed treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) on belief in being self-employed over the 12 months after the placement. Outcome is responding likely / very likely to "12 months from now, you will be self-employed." Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.19: **Belief in being wage-employed in 12 months**



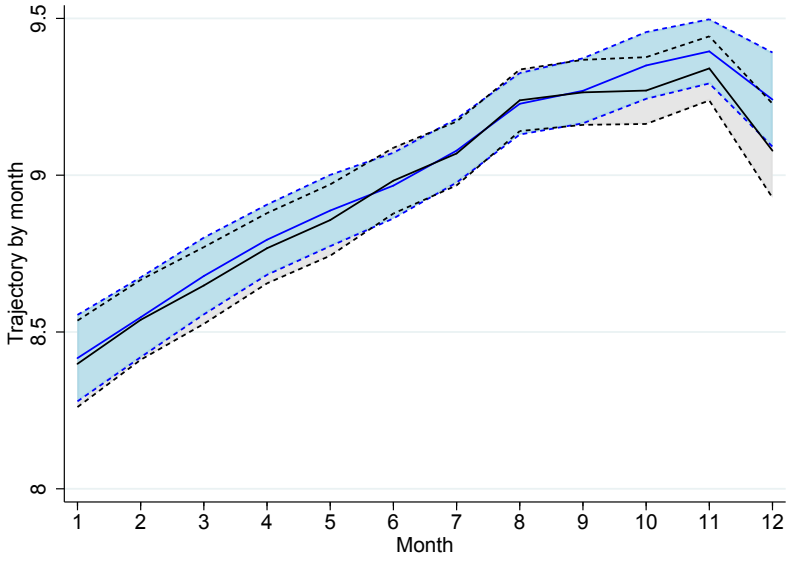
(a) Belief in being wage-employed trajectories by month



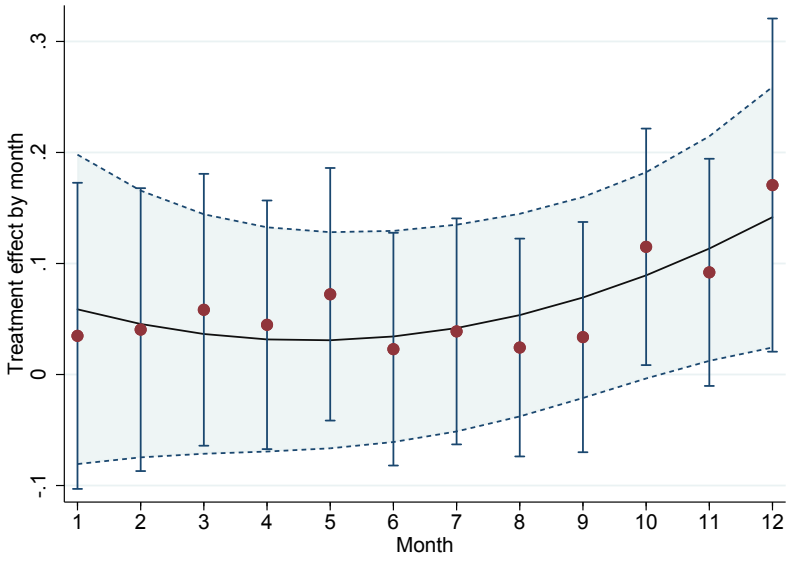
(b) Belief in being wage-employed treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) on belief in being wage-employed over the 12 months after the placement. Outcome is responding likely / very likely to "12 months from now, you will have a wage job." Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Figure A.20: **Confidence in management abilities (sum)**



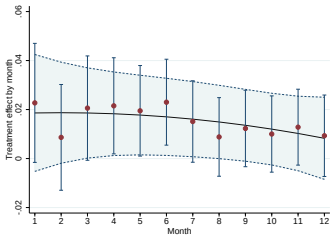
(a) Confidence in management abilities trajectories by month



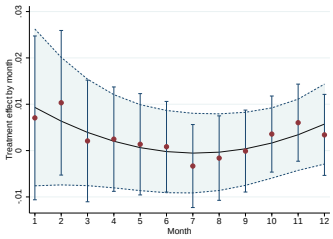
(b) Confidence in management abilities treatment effects by month

Note: This figure reports the trajectory (top panel) and treatment effects (bottom panel) on index of confidence in management skills. The index is the sum of the domain-specific questions shown in Figure A.21. Trajectories are month-by-month sample mean plots for treatment (blue) and control (grey). Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

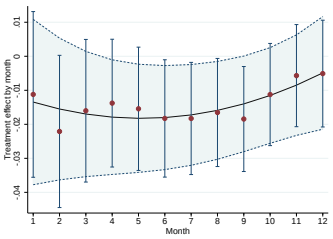
Figure A.21: **Confidence in management abilities: treatment effects by month**



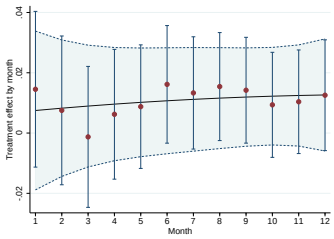
(a) Supervise workers



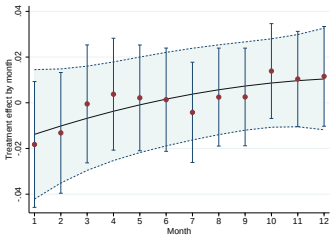
(b) Deal with customers



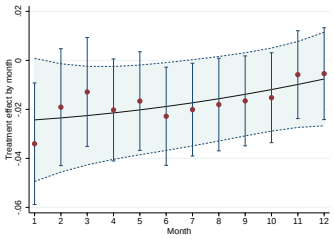
(c) Deal with suppliers



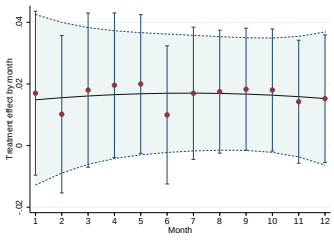
(d) Marketing



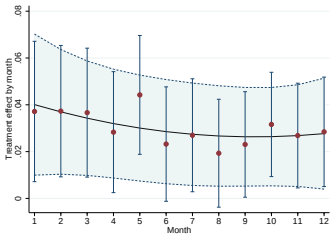
(e) Source materials



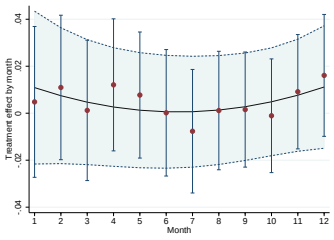
(f) Deal with accounts



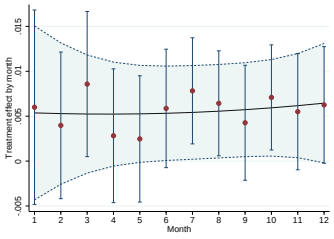
(g) Hire new workers



(h) Deal with debtors



(i) Deal with banks



(j) Prioritise my time

Note: This figure reports the trajectory of treatment effects of the confidence in management skills across 10 domains. Treatment effects are estimates of β_m of the regression $y_{ipmc} = \sum_m \beta_m \cdot T_{im} + \delta_p + \eta_m + \omega_c + \epsilon_{ipmc}$ for survey month m and calendar month c. We also estimate the trajectory of treatment effects imposing a quadratic trend. Shaded areas and whiskers denote 95% confidence intervals, with standard errors clustered at the individual level.

Table A.21: Individual baseline heterogeneity in treatment effects: Cognitive skills

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
Dummy: Treated	0.01	0.05	-208.01	0.03	0.02	0.01	0.29	28.24
	(0.02)	(0.12)	(246.56)	(0.03)	(0.03)	(0.02)	(0.23)	(132.84)
	[0.55]	[0.69]	[0.40]	[0.33]	[0.60]	[0.53]	[0.22]	[0.83]
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Treated × Cognitive Skills	-0.01	-0.12	403.28	0.01	0.06	0.01	0.22	510.13
	(0.03)	(0.22)	(433.70)	(0.04)	(0.05)	(0.03)	(0.36)	(238.56)
	[0.75]	[0.59]	[0.35]	[0.80]	[0.23]	[0.70]	[0.55]	[0.03]**
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	0.12	0.71	1018.69	0.64	0.51	0.12	4.88	2520.80
Control mean (baseline)	0.07	0.35	442.18	0.26	0.19	0.04	1.74	853.33
Observations	3,110	3,121	3,077	3,121	3,121	3,121	3,121	3,105

Note: In this table we report the *intent-to-treat* estimates of the internship on primary employment outcomes. These are obtained by least-squares estimation a modified version of our ANCOVA specification where treatment status is interacted with baseline heterogeneity. For continuous variables, we obtain a binary indicator by splitting at the baseline median of the heterogeneity variable. Below each coefficient related to treatment, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. We also report standard errors allow for clustering at the level of the individual. All regressions control for the non-interacted baseline value of the interaction variable. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.22: Individual baseline heterogeneity in treatment effects: Assets

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
Dummy: Treated	0.03	0.09	142.32	0.02	0.02	0.02	0.34	199.91
	(0.01)	(0.11)	(220.89)	(0.03)	(0.03)	(0.02)	(0.23)	(129.32)
	[0.08]*	[0.44]	[0.52]	[0.38]	[0.46]	[0.31]	[0.14]	[0.12]
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Treated × Assets	-0.05	-0.21	-331.82	0.01	0.04	0.00	0.03	32.30
	(0.03)	(0.22)	(502.00)	(0.04)	(0.05)	(0.03)	(0.35)	(233.14)
	[0.12]	[0.34]	[0.51]	[0.81]	[0.36]	[0.88]	[0.94]	[0.89]
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	0.12	0.71	1018.69	0.64	0.51	0.12	4.88	2520.80
Control mean (baseline)	0.07	0.35	442.18	0.26	0.19	0.04	1.74	853.33
Observations	2,966	2,976	2,939	2,976	2,976	2,976	2,976	2,962

Note: In this table we report the *intent-to-treat* estimates of the internship on primary employment outcomes. These are obtained by least-squares estimation a modified version of our ANCOVA specification where treatment status is interacted with baseline heterogeneity. For continuous variables, we obtain a binary indicator by splitting at the baseline median of the heterogeneity variable. Below each coefficient related to treatment, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. We also report standard errors allow for clustering at the level of the individual. All regressions control for the non-interacted baseline value of the interaction variable. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.23: Individual baseline heterogeneity in treatment effects: Permanent wage job

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
Dummy: Treated	0.01	0.02	-41.54	0.03	0.05	0.02	0.40	233.65
	(0.01)	(0.10)	(178.96)	(0.02)	(0.02)	(0.01)	(0.16)	(101.06)
	[0.52]	[0.86]	[0.82]	[0.14]	[0.02]**	[0.16]	[0.02]**	[0.02]**
	{1.00}	{1.00}	{1.00}	{0.68}	{0.13}	{0.68}	{0.13}	{0.13}
Treated × Permanent wage job	-0.03	-0.17	197.00	0.02	-0.03	0.00	-0.06	175.73
	(0.03)	(0.23)	(574.02)	(0.05)	(0.06)	(0.05)	(0.42)	(333.11)
	[0.46]	[0.45]	[0.73]	[0.74]	[0.60]	[0.98]	[0.89]	[0.60]
	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	0.12	0.71	1018.69	0.64	0.51	0.12	4.88	2520.80
Control mean (baseline)	0.07	0.35	442.18	0.26	0.19	0.04	1.74	853.33
Observations	3,108	3,119	3,075	3,119	3,119	3,119	3,119	3,103

Note: In this table we report the *intent-to-treat* estimates of the internship on primary employment outcomes. These are obtained by least-squares estimation a modified version of our ANCOVA specification where treatment status is interacted with baseline heterogeneity. For continuous variables, we obtain a binary indicator by splitting at the baseline median of the heterogeneity variable. Below each coefficient related to treatment, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. We also report standard errors allow for clustering at the level of the individual. All regressions control for the non-interacted baseline value of the interaction variable. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.24: Individual baseline heterogeneity in treatment effects: Search for a wage job

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
Dummy: Treated	-0.03	-0.65	-451.90	0.07	0.02	0.01	0.68	424.77
	(0.04)	(0.33)	(785.95)	(0.05)	(0.05)	(0.04)	(0.42)	(299.13)
	[0.46]	[0.05]**	[0.57]	[0.18]	[0.70]	[0.76]	[0.10]	[0.16]
	{1.00}	{0.61}	{1.00}	{1.00}	{1.00}	{1.00}	{0.95}	{1.00}
Treated × Search for wage job	0.04	0.80	568.97	-0.04	0.03	0.01	-0.37	-196.21
	(0.05)	(0.36)	(850.57)	(0.06)	(0.06)	(0.05)	(0.48)	(335.88)
	[0.35]	[0.03]**	[0.50]	[0.45]	[0.62]	[0.91]	[0.45]	[0.56]
	{1.00}	{0.61}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	0.12	0.71	1018.69	0.64	0.51	0.12	4.88	2520.80
Control mean (baseline)	0.07	0.35	442.18	0.26	0.19	0.04	1.74	853.33
Observations	3,106	3,117	3,073	3,117	3,117	3,117	3,117	3,101

Note: In this table we report the *intent-to-treat* estimates of the internship on primary employment outcomes. These are obtained by least-squares estimation a modified version of our ANCOVA specification where treatment status is interacted with baseline heterogeneity. For continuous variables, we obtain a binary indicator by splitting at the baseline median of the heterogeneity variable. Below each coefficient related to treatment, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. We also report standard errors allow for clustering at the level of the individual. All regressions control for the non-interacted baseline value of the interaction variable. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.

Table A.25: Individual baseline heterogeneity in treatment effects: Gender

Outcome:	(1) Self-employed	(2) Self-emp. hours	(3) Profit income	(4) Wage work	(5) Perm. work	(6) Managerial work	(7) Wage work hours	(8) Wage income
Dummy: Treated	-0.03	-0.65	-451.90	0.07	0.02	0.01	0.68	424.77
	(0.04)	(0.33)	(785.95)	(0.05)	(0.05)	(0.04)	(0.42)	(299.13)
	[0.46]	[0.05]**	[0.57]	[0.18]	[0.70]	[0.76]	[0.10]	[0.16]
	{1.00}	{0.61}	{1.00}	{1.00}	{1.00}	{1.00}	{0.95}	{1.00}
Treated × Female	0.04	0.80	568.97	-0.04	0.03	0.01	-0.37	-196.21
	(0.05)	(0.36)	(850.57)	(0.06)	(0.06)	(0.05)	(0.48)	(335.88)
	[0.35]	[0.03]**	[0.50]	[0.45]	[0.62]	[0.91]	[0.45]	[0.56]
	{1.00}	{0.61}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}	{1.00}
Control mean (follow-up)	0.12	0.71	1018.69	0.64	0.51	0.12	4.88	2520.80
Control mean (baseline)	0.07	0.35	442.18	0.26	0.19	0.04	1.74	853.33
Observations	3,106	3,117	3,073	3,117	3,117	3,117	3,117	3,101

Note: In this table we report the *intent-to-treat* estimates of the internship on primary employment outcomes. These are obtained by least-squares estimation a modified version of our ANCOVA specification where treatment status is interacted with baseline heterogeneity. For continuous variables, we obtain a binary indicator by splitting at the baseline median of the heterogeneity variable. Below each coefficient related to treatment, we report a standard error in parenthesis, a p-value in brackets, and a q-value in curly braces. We also report standard errors allow for clustering at the level of the individual. All regressions control for the non-interacted baseline value of the interaction variable. q-values are obtained using the sharpened procedure of (Benjamini, Krieger, and Yekutieli, 2006). We denote significance using $*$ for 10%, $**$ for 5% and $***$ for 1%.