Formalized Employee Search and Labor Demand

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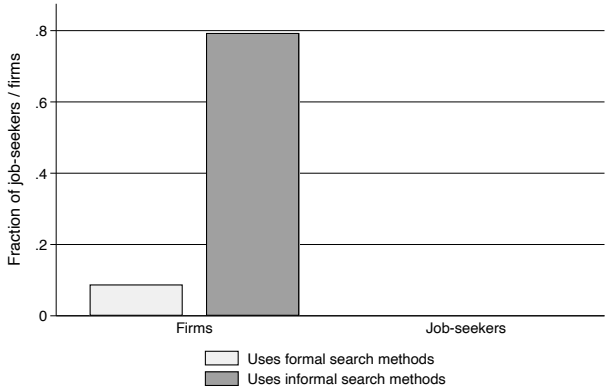
Informality and development

Informality is a key charactersistics of markets in low- and middle-income countries (e.g. Ulyssea, 2020; Banerjee et al. 2021; Mushfiq et al., 2013).

Informality in firms' employee search is prevalent in many developing countries. Instead of advertising vacancies publicly, firm managers often rely on personal connections to find suitable employees. figure

Firms in Addis Ababa, Ethiopia, rely on networks for employee search



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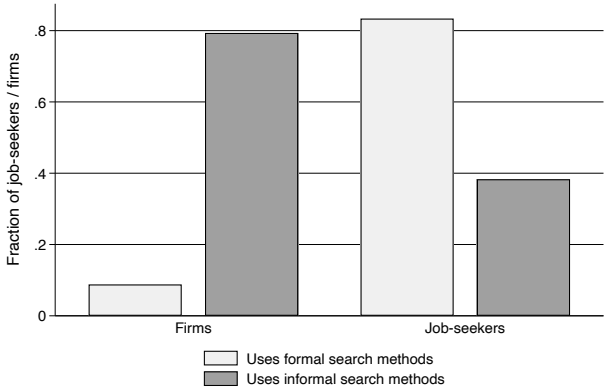

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What are the implications of such informal, network-based employee search?

Theoretical considerations

The use of networks can alleviate information frictions and moral hazard (Dustman et al., 2016; Heath, 2018).

However, hiring through networks can:

- discourage the use of formal search channels that could support larger firm sizes and a better skill distribution among workers; and
- prevent learning about the quality and quantity of applicants obtained through formal search channels (Chandrasekhar et al., 2020).

Overreliance on informal employee search can lead to suboptimal labor market outcomes.

This paper

We conduct an RCT with 625 firms in Addis Ababa (Ethiopia) to incentivize firms to publicly post vacancies (*formal* employee search).

We speak to the following research questions:

Does more formal employee search lead to a change in firms' labor demand?

- Does it increase labor demand?
- Does it shift the composition of labor demand?

To what extent do information frictions about skills contribute to the low uptake of formal search channels?

Do managers update their beliefs about the returns to formal employee search?

Design and implementation

The intervention

We recruit 625 firms with between 5 and 50 employees that are interested in the subsidy through door-to-door recruitment. inclusion criteria descriptives

We randomly assign them to 3 different treatment groups:

- **Control group**
- **Treatment group 1: Vacancy subsidy group**
  We offer all firms in this group to post their vacancies for free on online and offline job-boards, social media, and in the main weekly newspaper. ▸ details
- **Treatment group 2: Vacancy subsidies + applicant screening**
  Same service as treatment group 1 plus pre-screening of all applicants to vacancies posted with the subsidy. ▸ details

We pool both treatment groups due to lack of heterogeneity for most outcomes (*prespecified*).

Treated firms receive treatment for four months (staggered, Apr-Oct 2019).

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Main data collection with firms

Data collection:

- In-person baseline survey
- Follow-up phone surveys (5 per firm, on average)
- In-person endline survey (about 4 months after baseline, last in Dec 2019)

Experimental integrity

- The sample is balanced on most observables and observables do not jointly predict the treatment. balance table
- There were only four out of 625 that we could not reach for either phone or endline surveys. attrition results

Empirical specification

$$y_i = \beta_0 + \beta_1 vacsub_i + \varepsilon_i$$

Adding control variables does not affect the results.

We correct for multiple hypothesis testing (q-values in brackets).

Results

Result 1: Treated firms use more formal employee search channels

	Formal search		
	(1) Any	(2) # vacs	(3) % vacs
Treatment	0.169***	0.461***	0.313***
	(0.025)	(0.111)	(0.039)
Control mean	0.051	0.144	0.070
Observations	621	621	288

The treatment increased formal vacancy posting by more than 300%.

Result 2: There is no change in vacancy creation ...

	Vacancy creation		Hires		
	(1) Any	(2) # vacs	(3) Any	(4) # hires	(5) % vacs filled
Treatment	-0.048	0.124			
	(0.042)	(0.171)			
	[0.231]	[0.391]			
Control mean	0.495	1.153			
Observations	621	621			

There is no significant change on either the intensive or extensive margin of vacancy creation.

Result 2: ... but more vacancies remain unfilled

	Vacancy creation		Hires		
	(1) Any	(2) # vacs	(3) Any	(4) # hires	(5) % vacs filled
Treatment	-0.048	0.124	-0.078*	-0.210	-0.203***
	(0.042)	(0.171)	(0.042)	(0.171)	(0.041)
	[0.231]	[0.391]	[0.136]	[0.231]	[0.001]***
Control mean	0.495	1.153	0.454	1.218	0.877
Observations	621	621	621	621	288

The fraction of filled vacancies decreased by 20 percentage points.

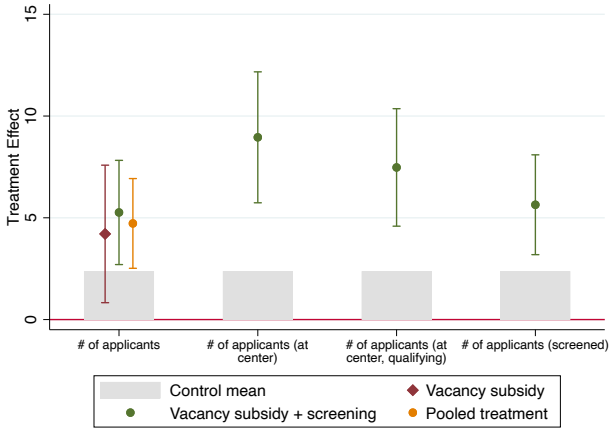
Why do firms fail to fill vacancies?

There are at least two possibilities:

1. Firms receive too few applicants.
   → Why would they not just use networks as before?
2. Firms shift to more difficult to fill vacancies in anticipation of more and/or better applicants.
   → Networks might not be able to fill these vacancies.

We find evidence in favor of the second but not the first mechanism.

Treated firms receive more applicants



→ Both self-reported and observed applicant numbers increase substantially.

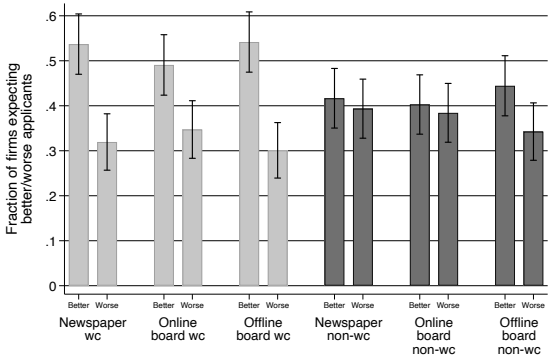
Managers anticipate better applicants through formal channels (1)

We ask managers about expected quality and quantity of applicants through formal channels:

> *"Imagine that you posted a vacancy for a (non-)white-collar employee on* **[search channel]**. *What do think would be the quality of applicants compared to hiring through family and friends?"*
> [Much better; better; a bit better; about the same; a bit worse; worse; much worse]

→ We measure beliefs for different types of jobs and channels.

Managers anticipate better applicants through formal channels (2)



→ A sizable fraction of managers expects to get better applicants through formal channels (endline, control).

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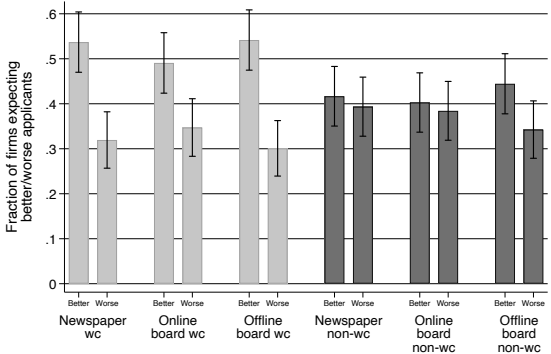

→ A sizable fraction of managers expects to get better applicants through formal channels (endline, control).

→ Stark differences between expectations about higher skilled white-collar compared to non–white-collar vacancies.

Firms shifts towards higher skilled white collar vacancies

	White collar				Non-white collar		
	(1) Any vac	(2) # vacs	(3) % vacs filled	(4) % vacs	(5) Any vac	(6) # vacs	(7) % vacs filled
Treatment	0.072***	0.173***	-0.357***	0.118***	-0.069*	-0.051	-0.167***
	(0.026)	(0.066)	(0.102)	(0.040)	(0.042)	(0.147)	(0.043)
	[0.006]***	[0.008]***	[0.002]***	[0.006]***	[0.034]**	[0.130]	[0.001]***
Control mean	0.079	0.144	0.847	0.119	0.449	1.009	0.877
Observations	621	621	78	288	621	621	252

7.2 percentage points more treated firms create a white collar vacancy

But firms struggle to fill these new white collar vacancies

	White collar			Non-white collar	
	(1) Any hire	(2) # hires	(3) % hires	(4) Any hire	(5) # hires
Treatment	0.019	0.005	0.062	-0.086**	-0.215
	(0.022)	(0.062)	(0.042)	(0.041)	(0.154)
	[0.366]	[0.594]	[0.273]	[0.215]	[0.273]
Control mean	0.069	0.153	0.118	0.412	1.065
Observations	621	621	250	621	621

Are candidates worse than expected?

Managers update negatively about the applicant pool

	Applicant quality			Applicant numbers (standardized)		
	(1) Index	(2) WC	(3) Non-WC	(4) Index	(5) WC	(6) Non-WC
Treatment	-0.169**	-0.133	-0.183**	-0.214*	-0.198*	-0.203*
	(0.084)	(0.084)	(0.084)	(0.111)	(0.115)	(0.110)
	[0.072]*	[0.072]*	[0.072]*	[0.091]*	[0.091]*	[0.091]*
Control mean	0.110	0.087	0.120	0.141	0.131	0.134
Observations	605	605	605	561	553	560

Treated managers update their beliefs about the formal applicant pool negatively.

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Treated managers update their beliefs about the formal applicant pool negatively.

→ They were not perfectly informed but already acted in the 'correct' way.

The role of applicant expectations: expected vs realised earnings

Applicants to unfilled vacancies have higher reservation and expected wages than applicants to filled vacancies. ▸ Table

White-collar vacancies (compared to non-white-collar vacs): ▸ Table

- applicants have higher reservation wages
- higher gap between reservation and expectation wages
- filled vacancies: realised salaries relatively higher than baseline salaries and closer to reservation wages

Does information about applicants matter?

We observe that managers update negatively about the quality of applicants.

Is it possible that they have misconceptions about how skilled applicants via formal channels are?
$\rightarrow$ After all they have less information about them.

We test whether providing validated information about applicant skills changes firms' behavior.

Alleviating information frictions about applicants does not change the results

details

	Vacancies posted formally			Vacancy creation		Hiring outcomes		
	(1) Any	(2) # vacs	(3) %	(4) Any vacancy	(5) # vacs	(6) Any hire	(7) # hires	(8) % vacancies filled
Treatment	0.152***	0.446***	0.297***	-0.065	0.142	-0.082*	-0.140	-0.178***
	(0.032)	(0.135)	(0.050)	(0.049)	(0.197)	(0.048)	(0.200)	(0.049)
Treatment × screening	0.034	0.032	0.031	0.035	-0.037	0.007	-0.143	-0.049
	(0.041)	(0.168)	(0.065)	(0.050)	(0.225)	(0.048)	(0.197)	(0.058)
Treatment effect screening	0.186***	0.478***	0.328***	-0.031	0.105	-0.075	-0.283	-0.227***
	(0.034)	(0.145)	(0.051)	(0.049)	(0.212)	(0.048)	(0.195)	(0.051)
Control mean	0.051	0.144	0.070	0.495	1.153	0.454	1.218	0.877
Observations	621	621	288	621	621	621	621	288

The screening add-on has no additional effect on vacancy creation or hires.

What do we learn from this?

Barriers in the hiring process affect the composition (but not quantity) of firms' labor demand (Algan et al. 2020; Hardy and McCasland, 2020; Chandrasekhar et al., 2020).
$\Rightarrow$ Formal employee search in our context does not seem to be an important constraint to firms' labor demand.

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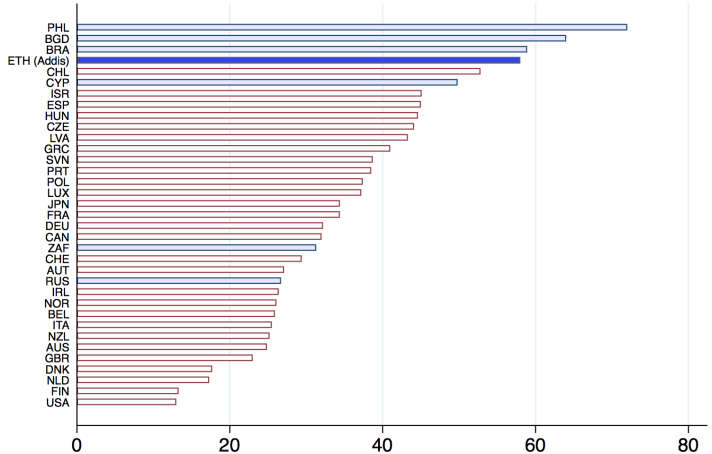
Cross-country evidence



Source: data compiled from ECHP, ISSP, and own data. Red bars: OECD countries.

▸ I.

Sampling of firms

We recruit through a mix of door-to-door recruitment and existing firms list.

To be eligible, firms have to meet the following criteria at baseline:

- Have between 5 and 50 employees.
- Do not rule out hiring a new worker over the next three months.
- Do not exclusively hire through existing employment agencies.
- Are interested in using our intervention.

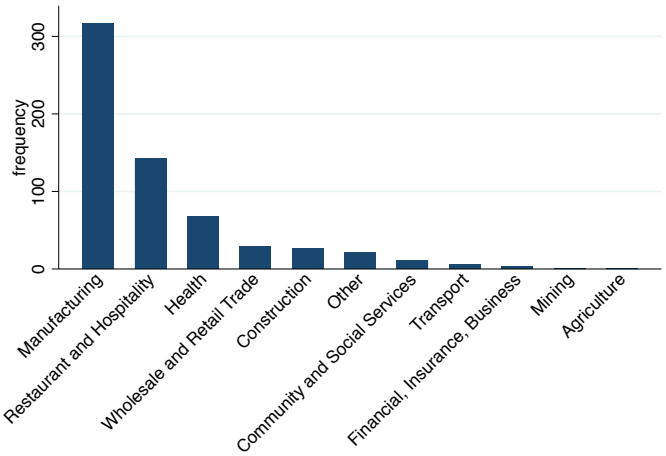
We randomize firms into treatment groups during the baseline survey. back

Descriptive statistics

Characteristics	Mean or mean share
Manager characteristics	
Age	34.797
Female	0.256
Amhara ethnicity	0.670
University degree	0.454
Sector	
Manufacturing	0.507
Restaurants & Hospitality	0.227
Health	0.109
Employees	
# of employees	14.493
% white-collar Employees	0.016
Average white-collar wage	5131.831
% blue-collar employees	0.063
Average blue-collar wage	3649.989
% pink-collar employees	0.018
Average pink-collar wage	2361.513
% grey-collar employees	0.010
Average grey-collar wage	1466.395
Business indicators	
Age of firm (in years)	7.187
Business turnover (in '000 ETB)	2,600
Profit (in '000 ETB)	34
Number of firms	625

back

Sectoral and geographical distribution



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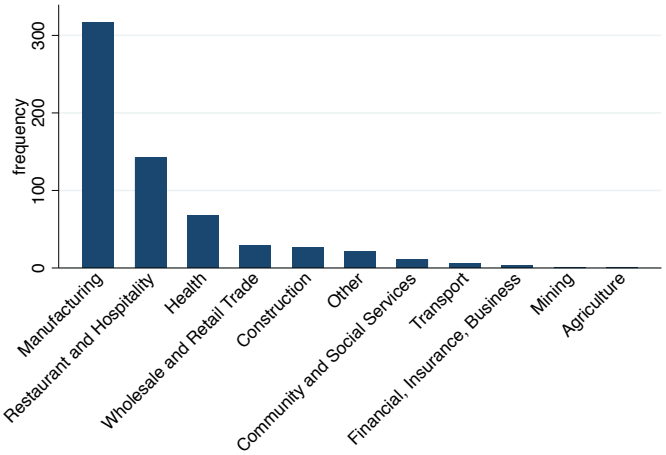

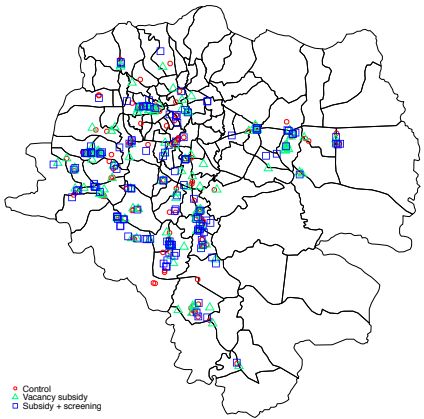

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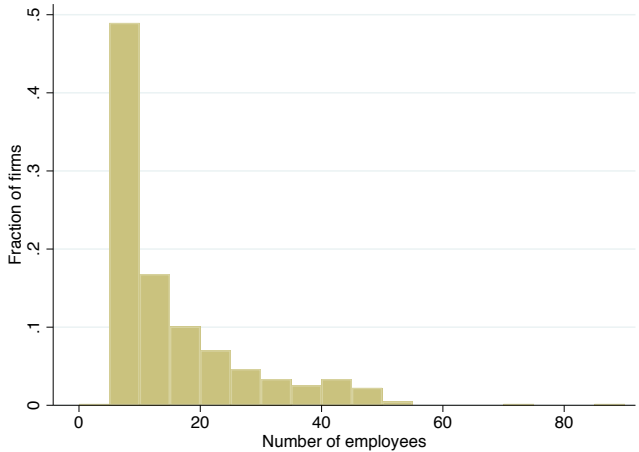
Firm-size distribution at baseline: most firms with 5-10 employees



Baseline balance table: N=625 firms

	Control	Treatment	Δ	p(Control=Treatment)
Firm characteristics				
Age of firm (in years)	7.45	7.05	-0.404	0.548
# of employees	15.12	14.16	-0.952	0.352
Share of white-collar employees	0.13	0.15	0.014	0.271
Manufacturing sector	0.52	0.50	-0.024	0.563
Service sector (retail, hospitality)	0.27	0.28	0.008	0.836
Health Sector	0.07	0.13	0.060	0.013
Hiring practices				
Uses formal hiring channels	0.10	0.08	-0.021	0.391
Uses network hiring channels	0.81	0.79	-0.018	0.588
Uses employment agencies	0.36	0.41	0.054	0.183
Manager expectations				
Expected number of hires over the next three months	3.06	3.67	0.618	0.159
Positive bus. outlook next 3 months	0.62	0.61	-0.008	0.840
Positive bus. outlook next 12 months	0.79	0.76	-0.028	0.441
Expects pos. impact on # hiring of vacancy subsidies	0.59	0.61	0.018	0.673
Manager characteristics				
Female	0.30	0.23	-0.069	0.068
Manager age	34.98	35.50	0.519	0.565
Manager has univ. degree	0.42	0.47	0.051	0.226
Raven's Matrix score (out of 20)	8.99	8.86	-0.128	0.716

Attrition was generally very low

	(1) Any highfreq survey	(2) # highfreq survey	(3) Has endline survey	(4) Has highfreq or endline survey
Treatment	-0.005	0.171	0.003	-0.010**
	(0.017)	(0.193)	(0.015)	(0.005)
Control mean	0.958	5.440	0.968	1.000
Observations	625	625	625	625

back

Vacancy subsidy treatment

We offer firms in this treatment group **fully subsidized vacancy posting** via:
i) physical job boards,
ii) main weekly newspaper (*The Reporter*),
iii) online platforms (*Ezega*),
iv) social media (*Telegram group*).

We take care of all logistical aspects of the vacancy posting.

Treatment firms will receive service for four months. Back

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Screened applicant skills (1)

- Cognitive skills:
  - General intelligence (Raven's progressive matrices) ▸ Example
  - Executive function ▸ Example
  - Emotional intelligence ▸ Example
  - Math ability
  - English ability

Screened applicant skills (2)

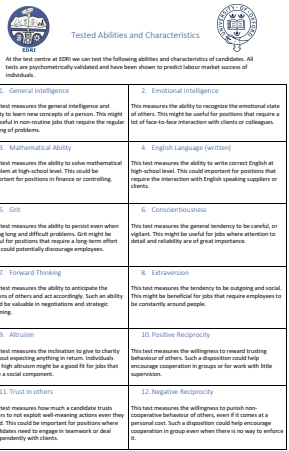
- Socio-emotional / non-cognitive skills:
  - Reliability (conscientiousness + behavioral measure)
  - Emotional stability (neuroticism)
  - Grit

Screened applicant skills (2)

- Socio-emotional / non-cognitive skills:
  - Reliability (conscientiousness + behavioral measure)
  - Emotional stability (neuroticism)
  - Grit
- Social preferences:
  - Trust
  - Positive and negative reciprocity

back to setup back to results

Presentation of skill information to firms

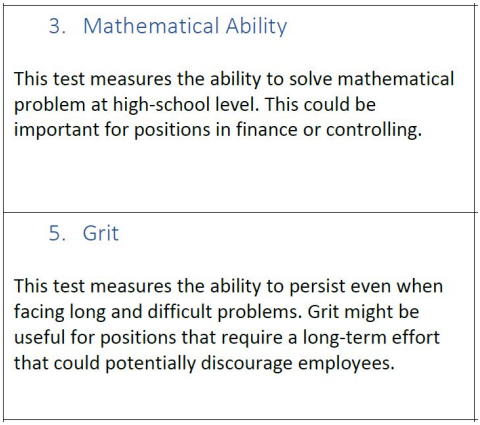


Tested Abilities and Characteristics

EDRI

At the test centre at EDRI we can test the following abilities and characteristics of candidates. All tests are psychometrically validated and have been shown to predict labour market success of individuals.

1. General Intelligence This test measures the general intelligence and ability to learn new concepts of a person. This might be useful in non-routine jobs that require the regular solving of problems.	2. Emotional Intelligence This measures the ability to recognize the emotional state of others. This might be useful for positions that require a lot of face-to-face interaction with clients or colleagues.
3. Mathematical Ability This test measures the ability to solve mathematical problem at high-school level. This could be important for positions in finance or controlling.	4. English Language (written) This test measures the ability to write correct English at high-school level. This could important for positions that require the interaction with English speaking suppliers or clients.
5. Grit This test measures the ability to persist even when facing long and difficult problems. Grit might be useful for positions that require a long-term effort that could potentially discourage employees.	6. Conscientiousness This test measures the general tendency to be careful, or vigilant. This might be useful for jobs where attention to detail and reliability are of great importance.
7. Forward Thinking This test measures the ability to anticipate the actions of others and act accordingly. Such an ability could be valuable in negotiations and strategic planning.	8. Extraversion This test measures the tendency to be outgoing and social. This might be beneficial for jobs that require employees to be constantly around people.
9. Altruism This test measures the inclination to give to charity without expecting anything in return. Individuals with high altruism might be a good fit for jobs that have a social component.	10. Positive Reciprocity This test measures the willingness to reward trusting behaviour of others. Such a disposition could help encourage cooperation in groups or for work with little supervision.
11. Trust in others This test measures how much a candidate trusts others to not exploit well-meaning actions even they could. This could be important for positions where candidates need to engage in teamwork or deal independently with clients.	12. Negative Reciprocity This test measures the willingness to punish non-cooperative behaviour of others, even if it comes at a personal cost. Such a disposition could help encourage cooperation in group even when there is no way to enforce it.



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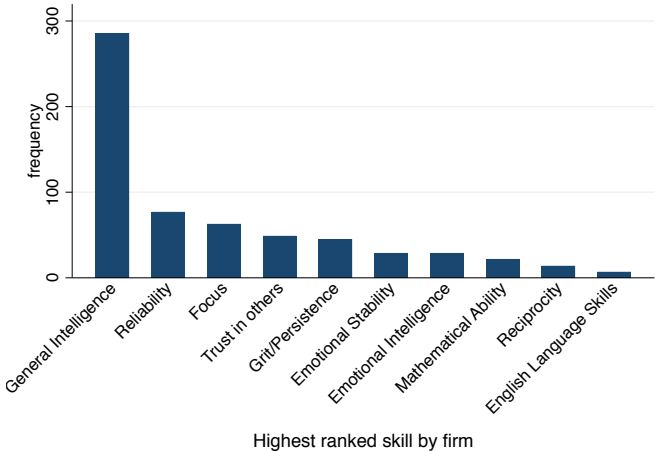
Preference for skills as stated by firms



Presentation of screening results to firms

Applicant summaries for [redacted]

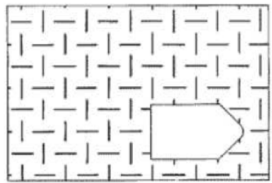
The Policy Studies Institute (PSI) and the University of Oxford have offered an applicant screening service to your firm.

For your vacancy for a nurse/clinical nurse (vacancy number 52691002), the following individuals applied for the job. We have ranked them below based on their overall score, starting with the applicant who fits best to the vacancy. Applicants to this position are divided into three groups. Applicants in the top third are marked green. Applicants in the middle third are marked yellow. Finally, applicants in the bottom third are marked red.

Rank	Name	Overall Score Lo -------- medium -------- hi	General Intelligence Lo ------ medium ------- hi	Reliability Lo ------ medium ------- hi	Focus Lo ------ medium ------- hi	Contact
1	[redacted]					[redacted]
2						
3						
4						
5						
6						

If you have any questions about this report, you can reach us under 0118233121.

Raven's matrices



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Stroop

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RME

irritated

thoughtful

encouraging

sympathetic

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Treatment effects on vacancy composition: Panel specification

	White collar			Non-white collar	
	(1) Any vac	(2) # vacs	(3) % vacs	(4) Any vac	(5) # vacs
Treatment	0.010**	0.014**	0.071**	-0.016	-0.001
	(0.005)	(0.007)	(0.027)	(0.011)	(0.018)
	[0.053]*	[0.053]*	[0.053]*	[0.090]*	[0.261]
Control mean	0.017	0.020	0.093	0.134	0.171
Observations	3839	3839	534	3839	3839

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What explains the decrease in formal hiring?

The overall decrease in hiring and the shift towards white collar hiring is achieved in three ways:

- Suggestive evidence that treated firms manage to keep existing employees for longer. ▸ results
- At endline, workers in treated firms earn more – driven by non-white collar workers. ▸ results
- After the treatment ends, treated firms pay new hires more. ▸ results

This suggests that firms update their beliefs about the productivity of white collar workers (i.e. their production function).

▸ back

Treatment effects on employee turnover

	Employees left		Leaving reasons		
	(1) Any	(2) #	(3) Personal	(4) Better opp.	(5) Fired for performance
Panel A: Pooled					
Treatment	-0.002	-0.361	-0.075**	-0.012	-0.018
	(0.041)	(0.292)	(0.035)	(0.022)	(0.019)
	[0.920]	[0.767]	[0.096]*	[0.643]	[0.513]
Control mean	0.597	2.435	0.241	0.079	0.060
Observations	621	621	621	621	621

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Number of applicants by collar type and posting method

	network		formal	
	mean	count	mean	count
# of applications (WC)	6.285714	7	9.769231	13
# of applications (NWC)	1.367089	79	4.5	18

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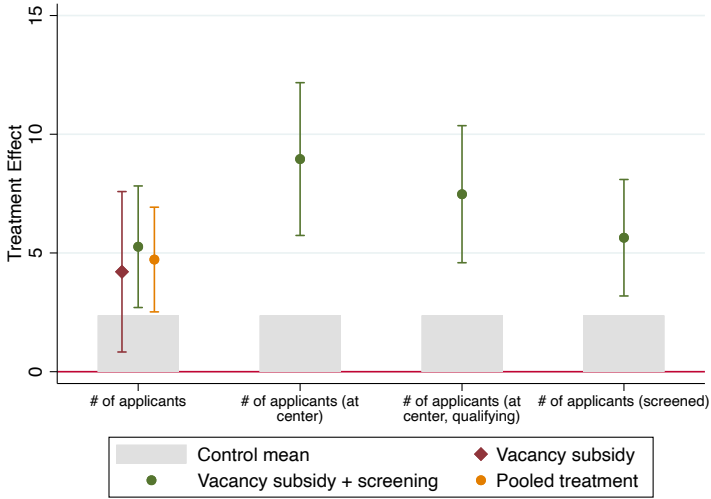
The treatment increased application volumes



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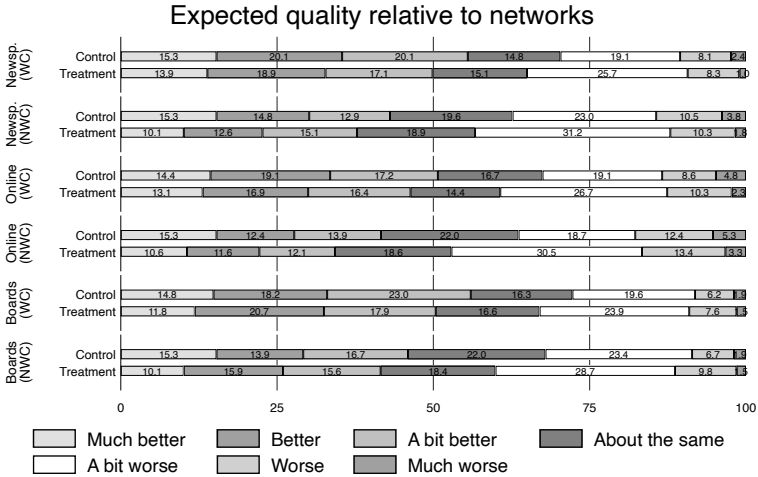
Expected quality of candidates



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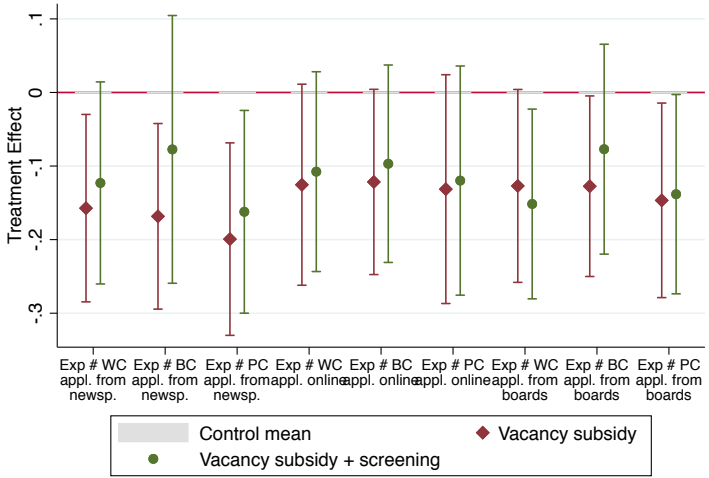
Expected application volumes



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Observations	621	621	621	621	621

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Treatment effects on earnings

	Averages salaries at endline (ihs)		
	(1) Pooled	(2) White collar	(3) Non-white collar
Panel A: Pooled			
Treatment	0.120*	-0.015	0.121*
	(0.063)	(0.070)	(0.062)
	[0.094]*	[0.381]	[0.094]*
Control mean	8.412	8.944	8.327
Observations	597	418	596

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Treatment effects on new hires, post-intervention

	(1) Salary (ETB, IHS)	(2) Satisfaction	(3) Share female
Treatment	0.321***	-0.025	0.082
	(0.116)	(0.210)	(0.089)
	[0.021]**	[1.000]	[0.552]
Control mean	7.959	0.014	0.388
Observations	85	90	93

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The role of applicant expectations: expected vs realised earnings

All wages in ETB (1000 ETB ≃ 30 USD)	Applicant data		Realized salary data	
	(1) Reservation wage (mean)	(2) Wage expectation	(3) Realized salary	(4) Average salary at baseline
Panel A: All vacancies				
All vacancies	5059	5490	.	2945
Vacancies with hires	4066	4700	3256	2996
Vacancies without hires	5601	5907	.	2804
Panel B: White collar vacancies				
All white collar vacancies	5848	6791	.	3454
White collar vacancies with hires	4728	5892	4184	3148
White collar vacancies without hires	6435	7233	.	3465
Panel C: Non white collar vacancies				
All non white collar vacancies	4384	4329	.	2866
Non white collar vacancies with hires	3507	3741	2813	2862
Non white collar vacancies without hires	4822	4621	.	2596

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