Wage Information and Applicant Selection*

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Abstract

How much a job pays is a key factor in job seekers' search decisions, but most job adverts do not list salaries. To study the reasons for and consequences of this behavior, we conduct a field experiment in which we randomly vary whether real job adverts include salary information and observe resulting applications. We find that wage posting does not affect the average number of applicants but amplifies wage-based sorting: relatively high-wage postings attract more applicants, while low-wage postings attract fewer. Applicant quality, however, remains unchanged. We contrast these results with predictions from leading models of directed search and identify several puzzles: we find no sorting of workers on quality despite the differences in expected payoffs between vacancies; at the same time, firms continue to avoid posting wages despite the absence of adverse selection effects. We propose a new explanation for firms' behavior: bargaining offers an insurance mechanism against significant search and information frictions. Our results highlight how endogenous information frictions may arise and affect the sorting and matching processes central to talent allocation in labor markets.

Keywords: Vacancy posting, wage posting, information, field experiment, job search
JEL Codes: J31, J62, J63, C93

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1 Introduction

The wage is possibly the most important characteristic of a job, yet it is missing from most vacancies posted across developed and developing countries alike (e.g., Batra et al., 2023, Marinescu and Wolthoff, 2020, Banfi and Villena-Roldán, 2019, Brenčič, 2012). While job seekers prefer to know the wage of the vacancy they are applying to[1], the firms' perspective on whether to include it or not is more complex. Posting a wage may limit the employer's ability to negotiate pay, reveal information to competitors, and attract a different pool of applicants. These mechanisms have been studied theoretically (Ellingsen and Rosén, 2003, Michelacci and Suarez, 2006), and several papers have documented systematic empirical patterns in firms' decision to post wages (Banfi and Villena-Roldán, 2019, Marinescu and Wolthoff, 2020, Skoda, 2022). However, direct evidence on why firms do not post wages – and causal evidence on what would happen if they did – is missing.

In this paper, we answer these questions using a combination of a randomized controlled trial and a novel theory. We draw our data from a field experiment with 447 real job postings from 315 small and medium sized firms based in Addis Ababa, Ethiopia. We recruit firms looking to fill a vacant position and randomly determine whether their job adverts contain information on the offered salary or not. This exogenous variation allows us to estimate the effect of wage information on the applicant pool. Job adverts contain phone numbers that lead to a central call center, which enables us to track all expressions of interest by job seekers. Interested job seekers are then invited to an assessment center where we elicit further detailed information about their skills, job search behavior, and labor market expectations.

In total, we observe 'expressions of interest' from over 7,000 job seekers, detailed assessment center data for almost 4,000 applicants, and a firm survey to understand firms' own reasoning on their decision to include wage information. We contrast our empirical findings with predictions from leading theoretical models of search and use the model framework of directed search to rationalize our findings. Finally, we combine these insights to propose the first empirically-driven explanation for why firms do not post wage information in their vacancies.

Our experiment takes place between April and December 2022. Our data on the universe of publicly posted job adverts in Addis Ababa throughout 2022 shows that only 4.4% of all job adverts include explicit pay information. This is low relative to other contexts (Banfi and Villena-Roldán, 2019), despite both qualitative and quantitative data suggest-

[1]This is, for example, reflected in the existence of platforms for sharing information about firms, such as `glassdoor.com`, where information about the pay is the most frequently shared type of information (Sockin, 2022).

ing that offered salaries might be an important driver of application numbers (Abebe et al., 2022). Our experiment targets precisely this informational barrier and generates experimental variation in whether pay information is included in job adverts.

We find three main effects of wage posting in vacancies on the selection of applicants.

First, simply including pay information does not, on average, change the quantity of applicants. This is true for both 'expressions of interest' by telephone and participation in the assessment center. While the treatment coefficients on the number of applicants are always positive, the magnitudes are small (1% increase in expressions of interest and 5% increase at the assessment center) and the effects are insignificant.

Second, we find that the overall zero effect on the number of applicants masks strong heterogeneity in the effect of wage posting by the wage level. Including wage information increases the correlation between offered wage and number of applicants by 1.52 expressions of interest per standard deviation increase in the posted salary.[2] This is equivalent to 37% of the mean number of applications in the control group. We find a similar effect of 1.07 applicants to the assessment center per standard deviation of wage increase (a 48% increase relative to the mean number of applications in the control group). Overall, the wage elasticity of applicant numbers increases from 0.6 to 0.7 if the wage information is (exogenously) included.

Third, the inclusion of wage information does not substantially affect candidate quality. Applicants to treated job adverts have, on average, the same cognitive and only small positive effects on non-cognitive skills compared to applicants to the same, untreated job adverts. We also do not see an increase in the fraction of applicants who satisfy the minimum criteria posed by employers. Moreover, the treatment does not affect the relationship between offered wages and skills.

In the second part of the paper, we view the results of our experiment through a theoretical lens to answer our key motivating question: is the firms' reluctance to post wages optimal? We start by building a simple model of search by workers to identify the assumptions needed to replicate our experimental results. Our data provides evidence that workers direct their search along the wage dimension; however, standard models of directed search cannot explain the lack of differences in the quality of applications to different vacancies. Intuitively, if workers rationally direct their applications to different vacancies by wage, high-productivity workers should also be more likely to apply to higher-wage vacancies or vacancies allowing them to bargain over pay. The fact that we observe the

[2]We standardize the posted salary within three broad education requirement groups. This reflects the fact that perceptions of 'high' or attractive wages differ with education level. Our results are robust to a broad range of different standardization choices.

former, but not the latter, presents a previously undocumented puzzle. We show that these patterns can be rationalized with a single assumption: that workers do not know their productivity type. This assumption is motivated by the severe search and information frictions in the labor market for young workers in Addis Ababa (Tekleselassie ⓡ al., 2025, Abebe et al., 2021) and beyond (Carranza et al., 2022, Kiss ⓡ al., 2023, Bobba and Frisancho, 2020), and further evidenced by an additional treatment arm of our experiment, which shows that providing information about the required skill of a vacancy does not improve worker sorting.

Turning to modeling the behavior of firms, we show that existing frameworks struggle to explain why the majority of firms in our sample do not post wages. The seminal work by Michelacci and Suarez (2006) suggests that firms choose to bargain rather than post wages because, in a world of imperfect information, bargaining incentivizes sorting of higher-productivity workers. This motivation is absent when applicants do not sort into vacancies by their productivity, such as in our setting.

We conclude by suggesting a new explanation for why firms do not post wages. We argue that bargaining serves as an insurance mechanism against high search and matching frictions, in particular in settings where firms do not want to – or cannot afford to – overpay their workers, as may be the case under wage posting. Given the wealth of recent evidence on the severity of search and information frictions in labor markets in developing countries (Carranza et al., 2022, Kiss ⓡ al., 2023, Hensel et al., 2021, Banerjee and Sequeira, 2023, Bandiera et al., 2025), we argue that not posting a wage allows employers to maximize their chance of hiring, and for that match to be profitable.

This paper combines several empirical and theoretical contributions to the literature. On the empirical side, we are the first experimental paper to study the effect of including pay information on applicant numbers and characteristics. Our findings are in line with existing studies that provide correlational evidence that explicit wage information increases the relationship between offered pay and the number of applicants (Banfi and Villena-Roldán, 2019, Marinescu and Wolthoff, 2020). Importantly, we study effects both across low-cost expressions of interest and expensive assessment center attendance. This is important in contexts with high search costs, including many developing countries (Franklin, 2018, Abebe et al., 2021, Banerjee and Sequeira, 2023). Moreover, we go beyond studying applicant selection by education and experience, commonly used to proxy for applicant quality. Instead, we use actual skill assessments and detailed measures of expectations and preferences to study the effect on applicant quality. Contrary to the predictions of most models of directed search, we find that salary information only weakly increases sorting on skills (in line with evidence on the effect of higher wages by Abebe et al., 2021).[3]

We also speak to the empirical literature studying how job seekers direct their search. Our findings support the notion that expected pay is an important driver of search direction (He et al., 2023, Dal Bo et al., 2013, Deserranno, 2019, Hedblom et al., 2022, Abebe et al., 2021). We demonstrate that the number of applicants and the offered wage are positively correlated, even when pay information is not included (in line with evidence by Banfi et al., 2022). However, we provide causal evidence that the lack of information about pay limited the degree to which job seekers direct their search toward high-pay positions.

On the theoretical side, this paper contributes to the literature on directed search and employer wage-posting decisions by empirically testing standard sorting mechanisms. Existing models often assume that job seekers are informed about their productivity and use this knowledge to self-select into vacancies offering higher pay (Michelacci and Suarez, 2006, Cheremukhin and Restrepo-Echavarria, 2022, Cai et al., 2025, Eeckhout and Kircher, 2010). We show that these predictions do not hold in settings with high search frictions and low information among applicants, such as urban labor markets in developing countries, where job seekers lack information not only about vacancies but also about their own productivity. By embedding this assumption into a stylized search framework, we provide a theoretical rationale for the empirical puzzle observed in our data.

Second, we provide a new explanation for firms' unwillingness to post wages. Existing models argue that posting wages may reduce employer profits by restricting bargaining or attracting low-productivity applicants, but these arguments rely on effective sorting by job seekers (Michelacci and Suarez, 2006, Doniger, 2023, Flinn and Mullins, 2021, Hall and Krueger, 2012). Our findings suggest a complementary explanation: in contexts where workers face high uncertainty about their own quality and firms are reluctant to overpay mismatched applicants, wage posting may lead to ex-post unprofitable matches. In this setting, wage bargaining offers a mechanism to maximize the probability of making an ex-post profitable match even in the presence of high search and matching frictions.

Finally, our findings complement studies on policies mandating wage posting and wage transparency (Arnold et al., 2025, Skoda, 2022, Frimmel et al., 2023). We provide microevidence on how such mandates affect the application choices of applicants. Specifically, we show that it is the information contained in wage postings, rather than the sig-

[3] More broadly, we contribute to a large and growing literature on the importance of information frictions in labor markets in developing countries. We show both descriptively and causally that applicants have incomplete information about vacancies. Other studies in this space focus on information frictions about job seekers' skills (Carranza et al., 2022, Kiss ⓡ al., 2023, Hensel et al., 2021, Tekleselassie ⓡ al., 2025, Terviö, 2009) or misperceptions of labor market prospects in general (Banerjee and Sequeira, 2023, Bandiera et al., 2025).

naling value of being a wage-posting firm, that affects application choices. This suggests that any beneficial effects of wage-posting mandates would not be eroded away by general equilibrium effects if such a mandate covers all firms in a given labor market. At the same time, however, we propose an explanation for why firms' reluctance to post wages might be an optimal response to structural features of the labor market, which might make wage-posting mandates a suboptimal intervention (see also Cullen and Pakzad-Hurson (2023) for a similar argument).

The remainder of this paper is organized as follows. Section 2 describes the context and experimental design. Section 3 describes the data collection, empirical strategy, and the empirical results. Section 4 discusses the theoretical implications of our findings, and Section 5 concludes.

2 Context, sample, and experimental design

Our study took place between April and December 2022 in Addis Ababa, the capital and largest city of Ethiopia. Despite strong GDP growth over the last 15 years, most of the country's young urban population is out of formal and permanent employment. At the same time, many firms struggle to fill vacancies, potentially due to a mismatch of applicant expectations and firm offers. Increasing firms' applicant pools by nudging them to formally advertise vacancies does not improve vacancy-filling rates (Hensel et al., 2021).

One potential reason is that there is a lot of variation in the information firms include in job adverts. While some pieces of information are relatively common (e.g., job title and education requirements), others, such as a description of the tasks in the job, the skill requirements, and – crucially for our study – information on the pay are rarely included. Using the quasi-universe of publicly posted vacancies in Addis Ababa during the year 2022, we find that only 4.4% of vacancies contain information on wages (see Appendix Table A1). This lack of pay (and other) information has the potential to distort job seekers' application choices, with consequences for both job seekers and firms.

2.1 Sampling of vacancies and firms

The firms in our sample are predominantly recruited through door-to-door sampling in business areas throughout Addis Ababa (95% of firms), with the remaining 5% recruited from a previous study in the same context (Hensel et al., 2021).

Among all firms approached, 67% consent to participate in the survey. Of the firms not consenting to our survey, 96% do not consent because they do not plan to recruit workers in the near future, 3% are about to close the firm permanently, and 1% usually hire through the public employment office. Among the consenting firms, 85% agree with the stated conditions, in particular, that the research team decides whether to include wage information in the vacancy. Lastly, among all firms that consent to the conditions, around 8% have a vacancy ready that the research team can advertise immediately (while others might be approached again at a later date). We show correlates of firm inclusion in Appendix Table A2.

Our final sample comprises 447 different vacancies posted across several channels, for a total of 1,721 vacancy-channel combinations (or unique postings), our main unit of analysis. For each of the 1,721 unique vacancy postings, we observe phone 'expressions of interest' and assessment center data of job applicants. In total, we have 7,314 applicants expressing an interest in one of our sample vacancies and 3,976 showing up at the assessment center.

Panel A of Table 1 shows that the average firm in our sample has 11.5 employees. Over 40% of firms are in the manufacturing sector, followed by wholesale and retail (9%), hospitality (9%), and construction (7%).

Panel B of Table 1 shows that the median vacancy in our sample pays a monthly salary of 3000 ETB. Most vacancies in our sample are for blue-collar positions (40%), followed by white-collar (25%), pink-collar (22%), and gray-collar (13%) positions. For only a minority of 14% of vacancies, the firm would have included the salary. The majority of vacancies require little education, while roughly one quarter require secondary education and another quarter require tertiary education. Over two-thirds of vacancies are in Amharic (instead of English), and virtually all vacancies are for full-time positions. The median vacancy receives five applications, with substantial heterogeneity ranging from 0 to 323 applicants.[4]

2.2 Experimental design

Our field experiment on providing wage information in job vacancies is embedded into a package of vacancy-posting services for Addis Ababa-based firms. These vacancy-posting services are provided by the research team in collaboration with the Ethiopian Policy Studies Institute, a government-run research institute. Firms taking up these services can post job advertisements on online and offline job boards for free. They also receive the re-

[4]The finding that the number of applications is spread unevenly between different vacancies is also reported by Davis and Samaniego de la Parra (2024). While they attribute this empirical pattern to a labor market for highly specialized labor, we show it also holds for low- to medium-skill jobs in a developing labor market.

Table 1: Summary statistics of firms, vacancies, and applicants in the experiment

	Mean	SD	Median	Min	Max	# obs
Panel A: Firm characteristics:						
# of employees	11.49	11.90	7	1	70	314
Manufacturing	0.42	0.49	0	0	1	314
Wholesale and Retail	0.09	0.29	0	0	1	314
Hospitality	0.09	0.29	0	0	1	314
Construction	0.07	0.26	0	0	1	314
Panel B: Vacancy characteristics:						
Monthly salary	3700.80	2484.67	3000	180	17000	447
Blue collar	0.40	0.49	0	0	1	447
White collar	0.25	0.43	0	0	1	447
Pink collar	0.22	0.42	0	0	1	447
Gray collar	0.13	0.33	0	0	1	447
Would have included salary	0.14	0.35	0	0	1	447
Primary or no education	0.54	0.50	1	0	1	447
Secondary education	0.23	0.42	0	0	1	447
Tertiary education	0.23	0.42	0	0	1	447
In Amharic	0.68	0.47	1	0	1	447
Full-time job	0.99	0.09	1	0	1	447
# of applicants	16.36	34.84	5	0	323	447
Panel C: Applicant characteristics:						
Age	26.02	4.59	25	14	76	7314
Female	0.33	0.47	0	0	1	7314
From Addis Ababa	0.78	0.42	1	0	1	7314
Primary or no education	0.03	0.18	0	0	1	7314
Secondary education	0.22	0.42	0	0	1	7314
Tertiary education	0.74	0.44	1	0	1	7314

Notes: **Table 1 shows summary statistics on the 314 firms (Panel A), 447 vacancies (Panel B), and 7,314 applicants (Panel C) in our sample.**

sults of skill-assessments of applicants to these vacancies. The only condition is that firms have to agree that the research team determines whether the information about wage is included in job adverts or not, and that applications are routed through our screening center. Importantly, the wage for each vacancy is set by firms themselves.[5]

The applicant screening process includes various cognitive and non-cognitive tests, including a test of general intelligence, a Stroop test (measuring executive function), and a 'reading the mind in the eyes' test of emotional intelligence. In addition to these tests, applicants are also surveyed about recent job search behavior and labor market experience. Almost 4000 applicants participate in the assessment center.[6]

The detailed process is as follows. Firms decide whether to include a given vacancy in the project and state the wage they would post publicly. If included, each vacancy is posted across three channels: i) an online job-board (`ezega.com`), ii) a range of physical job-boards at central locations in the city, and iii) paid *Facebook* adverts.[7] Each vacancy is posted on each channel at the same time, but with varying content. Key to this paper is that we randomize *within a given vacancy* whether the version posted specifically on one of the three channels includes the wage or not. This random variation allows us to estimate the effect of wage posting on applicant selection. Appendix Table A3 shows that vacancy and firm characteristics are strongly balanced across the wage information treatment arm. We also cross-randomize a secondary information treatment: Whether we include which skill a firm deems most important for a given vacancy.[8] This variation serves to explore whether limited information about firms' skill demand affects sorting.[9]

Each job advert contains a channel-specific telephone number, which is staffed by the project team. This setup allows us to link each applicant to a specific posting channel and thus to the specific version of the vacancy (either with or without wage information). Importantly, the fact that each version of the vacancy has a unique phone number allows for

[5]We require firms to state a single number rather than a salary range to avoid ranges becoming uninformative.

[6]Part of this applicant sample is the subject of the applicant-facing experiment in Tekleselassie ⓡ al. (2025). All variation in Tekleselassie ⓡ al. (2025) occurs after outcomes for this study have been measured.

[7]At the beginning of the experiment, we randomized across more search channels, but then decided to collapse the number of channels to three to ensure a larger number of applicants per vacancy-channel observation. The exclusion of these early vacancies does not affect our results (see Appendix Table A10).

[8]For this purpose, we ask firms to choose one among the following skills to be shown on the skill-treated posting of the vacancy: general intelligence, emotional intelligence, Amharic language skills, grit/persistence, conscientiousness, emotional control, and executive function. The control posting would not disclose the required skill.

[9]We also randomize whether we include information about working hours and whether we include a statement encouraging the expected minority gender to apply for the vacancy. Neither had a measurable effect on the composition of the applicant pool. All our results are robust to controlling for all cross-randomized interventions jointly (see Appendix Table A11).

the fact that the vacancies might be shared from one posting channel to another search channel, and we would still be able to link an applicant to the precise version of the vacancy they have seen.[10] Job seekers can now apply to the sample of vacancies posted anywhere in Addis Ababa or online, by calling the specified telephone number. During the call ('expression of interest'), the applicants are asked about some basic demographic characteristics and then are invited to the assessment center, located in central Addis Ababa. Once a vacancy 'expires' (usually ten days after first posting), we compile all application materials from job seekers who participated in the assessment center and forward the packages to the relevant firm, which then can use them to make hiring decisions (our within-vacancy randomization means that we cannot study effects on hiring outcomes).

Panel C of Table 1 shows that the average applicant is 26 years old, lives in Addis Ababa, and is substantially more educated than the vacancies require, with almost 75% of applicants having a tertiary education. A third of all applicants are female.

3 Empirical results

In this Section, we describe the wage-posting behavior of the firms in our sample and present the results of our field experiment.

3.1 Descriptive evidence on wage posting

For every vacancy in our sample, we ask the firm whether it would have included the wage information in the posting. The answer is yes for only 14% of vacancies. This is higher than in the vacancy population in Addis Ababa where only 4% of job adverts include any pay information (Figure 1a).[11]

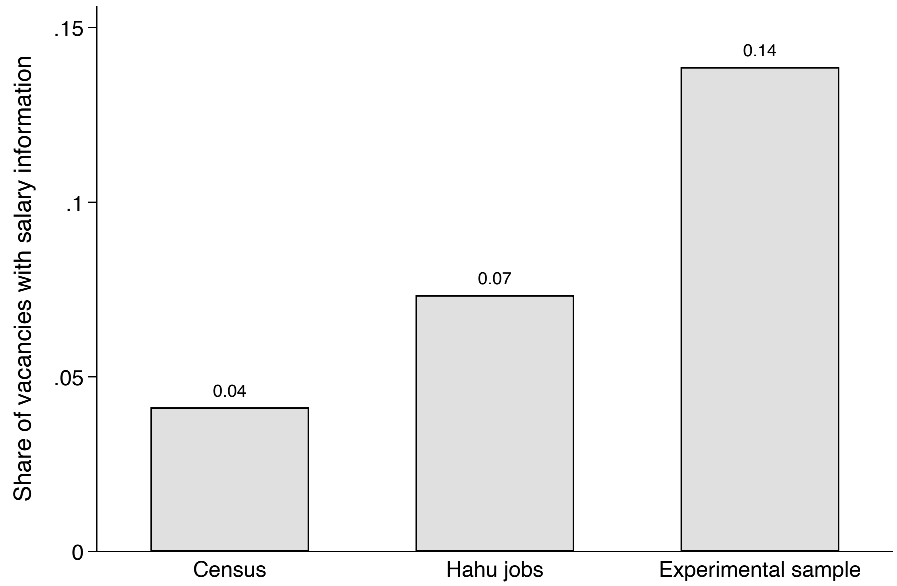
In the next step, we ask firms *why* they do not post wage information. We elicit firms' reasoning in a post-experimental survey with 204 firms regarding 299 vacancies that would not have included wage information. Figure 1b shows that the two main reasons are driven by firms' beliefs about the impact of wage posting on the size and quality of the applicant pool. Specifically, the main reason – applicable to 68% vacancies – is that posting a wage would attract under-qualified applicants (41%); and in 32% of cases, the

[10]For example, a vacancy originally posted on a job board might have been shared via instant messaging with a friend, who now applies. Even though this applicant might not have searched the job boards, we still know with certainty based on the number called whether she has seen a vacancy version with or without wage information. We examine the extent of information spillovers in Section 3.5.

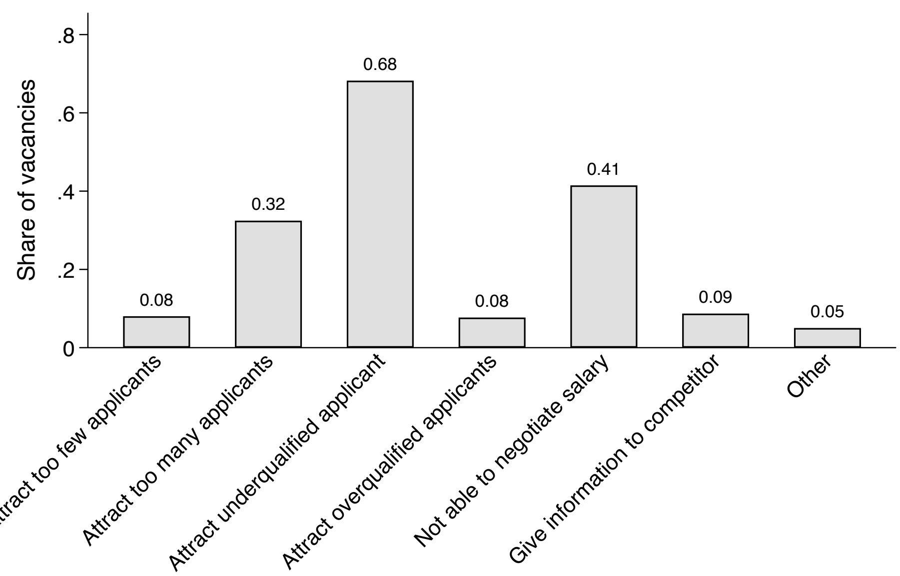
[11]We construct the census by collecting data throughout the study period. We collect data from all traditional offline job boards in the city center, online job postings (via the online job aggregator Hahu Jobs), and newspapers.

Figure 1: Vacancy wage information

(a) The share of vacancies with posted salary



(b) Reasons for not posting salary



Notes: **Figure 1 shows that most vacancies in Addis Ababa do not include wage information and that the fear of attracting unqualified applicants and not being able to negotiate salaries are the most important reasons.** Figure 1a shows the share of vacancies with wage information, across 3 different data sets: the economy-representative vacancy census we conducted while the study was running, an online job platform and aggregator Hahu Jobs, and our experimental sample of 447 vacancies. Figure 1b shows the self-reported reasons why firms do not include wage information. Firms could select multiple options. Data is based on the post-experimental survey about 299 of the 385 vacancies that would not have included wage information.

employers worry that posting the wage would attract too many applicants. Attracting too few or overqualified applicants, on the other hand, is mentioned in only 8% of vacancies each. Similarly, firms worry about giving away information to competitors in only 9% of vacancies. These motivations are thus relatively minor compared to the firms' desire to keep the applicant pool high-quality and manageable in size.

Importantly, the data also shows that in a large (41%) share of vacancies, firms understand posting a wage as synonymous with offering a fixed wage: they choose not to post wage information because they believe it would restrict their ability to negotiate the final pay with the hire. While this does not hold for all firms (or vacancies), it is the second most frequent reason stated. This finding is important for two reasons. First, it adds an important data point to the emerging debate on what wage posting actually implies from a wage-setting perspective (see also Haegele et al. (2025)). Second, it will inform our theoretical assumption that wage posting is equivalent to offering a fixed or at least downwardly rigid wage.

Finally, we examine whether firms' reasons (not) to post wages vary with the vacancy wage. The results are summarized in Appendix table A4. First, we find that better-paying firms are more likely to include wage information: a one standard deviation higher salary is associated with a 5.2 percentage points higher likelihood of including the information ($se = 2.5$ percentage points). Second, the salary correlates with reasons to include wage information in mostly intuitive ways. For example, low-paying firms are more likely to worry about attracting too few applicants, while high-paying firms worry more about attracting too many or underqualified applicants. Our experiment allows us to evaluate whether firms' beliefs and concerns are justified.

3.2 Treatment effect estimation

To estimate average treatment effects of including wage information on vacancies, we estimate the following equation:[12]

[12] We pre-registered the experiment at the AEA RCT registry (`https://www.socialscienceregistry.org/trials/9993`). The pre-analysis includes the main ATE analysis with two main outcomes: the inverse hyperbolic sine of the number of applicants and an applicant quality index. We have since learned that using the IHS to analyze data with zeros causes econometric problems as they depend on the scaling of the measured variable (Chen and Roth, 2024). Hence, we use raw numbers for our main analysis instead, though our pre-specified results are also robust to using IHS (Table A6). Poisson regressions – as suggested by Chen and Roth (2024) – produce even stronger results (Table A7). The interaction of the wage information treatment with the posted wage (equation 2) is an addition that was not pre-specified. This addition is motivated by theoretical models that predict correlations between applicant numbers (Wright et al., 2021) and descriptive findings supporting this prediction (Banfi et al., 2022). For more details of how our analysis relates to the pre-analysis plan, see Appendix Section C.

$$y_{v,c} = \alpha\, T^{wage}_{v,c} + \rho_v + \gamma_c + \varepsilon \tag{1}$$

where $y_{v,c}$ is the vacancy-channel outcome of interest (for example, how many applicants expressed an interest in the vacancy), $T^{wage}_{v,c}$ is a treatment indicator for whether vacancy v on posting channel c includes the wage information, and α identifies the average treatment effect of wage information. Because some vacancies are more attractive than others, we include ρ_v, vacancy fixed effects, to estimate the effect of including wage information *within* a given vacancy v. γ_c are posting-channel fixed effects.

We further trace the interaction of the wage information treatment with the level of the pre-specified wage. To take into account that different jobs and different sectors can pay different salaries, we standardize the offered wage with respect to its educational requirements. Specifically, we standardize within the sample of jobs that do not specify any educational requirement or require less than eight years of education, those requiring at most secondary or vocational education, and those requiring a diploma or university degree. We estimate the following equation:

$$y_{v,c} = \alpha\, T^{wage}_{v,c} + \beta\, T^{wage}_{v,c} \cdot W_v + \rho_v + \gamma_c + \varepsilon \tag{2}$$

where the notation is the same as in equation 1, and W_v is the standardized pre-specified wage offered for vacancy v.

We measure different types of outcome variables at two points: during the 'expression of interest' via phone (when job seekers call the number specified on the posted advertisement), and at the assessment center. Outcomes measured during the 'expression of interest' via phone include basic applicant demographics (age, gender, education, work experience) as well as detailed counts of applicants per vacancy. Outcomes measured at the assessment center include detailed measures of candidate quality (various cognitive and non-cognitive tests), recent job search behavior, and labor market experience. At both points, we measure the number of applicants as well as the share of eligible applicants, defined as fulfilling the education and experience requirements pre-specified by the searching firms.

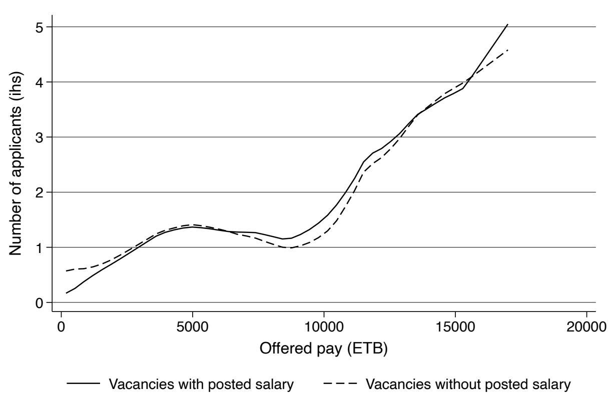
We collapse all applicant-level outcomes to the unique vacancy-channel posting level (v, c), which is our unit of analysis at which our treatment was randomly allocated. This means that outcomes are often expressed as counts or shares of applicants fulfilling certain criteria or as mean values of all applicants applying to a unique posting.

3.3 Wage posting and the size of the applicant pool

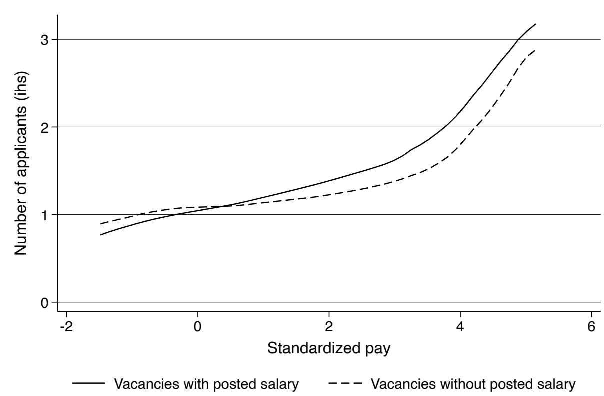
We first focus on the effect of including wage information in a job posting on the number of individuals applying to the vacancy.

Figure 2 displays the raw correlation between the number of applicants (inverse hyperbolic sine, IHS) and the offered pay, separately for whether the wage information was included in the unique vacancy posting (solid line) or not (dashed line). The left panel uses the raw salary, whereas the right panel uses the standardized salary by the vacancy's education requirements, as specified in Section 3.2. In both cases, for the left tail of the salary spectrum, we can see that unique vacancy postings that do not include pay information attract more applicants. For the right tail of higher-salaried vacancies, we observe that wage-treated vacancy postings have a larger number of applicants, suggesting that the effect of disclosing pay information in vacancies might have differential effects depending on the wage.

Figure 2: Number of applicants by wage and treatment status



(a) Raw salary



(b) Standardized salary

Notes: **Figure 2 shows that, once salaries are standardized for education requirements, the correlation between offered wage and the number of applicants is steeper when wage information is included.** Both figures display the non-parametric correlation between the offered pay and the inverse hyperbolic sine of the number of applicants separately for treatment and control versions of vacancies. Figure 2a shows the correlation for the raw monthly salary. Figure 2b shows the correlation for salary standardized by the vacancy education requirements.

Table 2 shows the results of estimating equations 1 (odd columns) and 2 (even columns) on our sample of posted vacancies across channels. The first four columns show the number of applicants as measured by expressions of interest via phone, while the last four columns count the number of applicants who participated in the assessment center. We show results for both the total number of applicants as well as the number of eligible applicants, i.e., those fulfilling the minimum criteria in terms of education and work experience required by the hiring firm.

Our baseline finding is that including the wage information in a vacancy posting does not significantly affect the number of applicants.[13] This is true regardless of whether we measure applications as low-cost phone expressions of interest or as more costly participation in the assessment center.

However, this pooled zero effect on the number of applicants masks strong heterogeneity in the effect of wage posting by the amount of the wage. The even columns in Table 2 show the results of equation 2, in which we interact the wage treatment with the offered wage. Here, we find strong effects by wage: higher-wage vacancies which randomly include the salary attract substantially more applicants, whereas lower-wage vacancies which include the salary attract significantly fewer applicants. The magnitude of this effect is substantial: a one standard deviation increase in the posted salary leads to 37% more expressions of interest and 48% assessment center applications. In Appendix Table A5, we estimate the wage elasticity of the number of applicants to be 0.6 for vacancies that do not include wage information; when wage information is included, the elasticity increases to 0.7. These estimates are comparable with the non-experimental results from Banfi and Villena-Roldán (2019).

3.4 Wage posting and the quality of applicants

Standard models of directed search with limited search frictions imply that high-skilled job seekers should sort into high-paying vacancies while low-skilled job seekers should sort into low-paying vacancies. Providing information about the wage may increase this sorting by enabling a more efficient sorting of job seekers. However, 68% of firms fear attracting underqualified applicants when including wage information in job adverts, even more so for firms with higher salaries. We test empirically whether including wage information influences the average skill levels of candidates.

[13]In Appendix Table A8, we present the effect of the wage information treatment on whether a job posting receives *at least one* applicant. Once again, we show both equations 1 (odd columns) and 2 (even columns). The pooled treatment effects remain small and negative throughout. They are marginally statistically significant for the assessment center, where the wage information treatment reduces the share of vacancy postings on a given channel that receive any applicants by 3.5 percentage points (approximately 9 percent of the control mean, $p = 0.064$). The interaction with posted wages is positive but small and noisy, suggesting that the extensive margin effect is independent of posted wages. This suggests that including wage information may increase firms' risk of unsuccessful search.

Table 2: The effect of the wage information treatment on the number of applicants

	Expression of interest				Assessment center			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	# of applicants		# of eligible applicants		# of applicants		# of eligible applicants	
Wage treatment	0.058	-0.093	0.250	0.107	0.106	0.001	0.234	0.135
	(0.373)	(0.343)	(0.259)	(0.211)	(0.232)	(0.210)	(0.161)	(0.128)
Wage treatment		1.522**		1.441*		1.068**		1.001**
× Wage (std.)		(0.763)		(0.744)		(0.492)		(0.467)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	4.16	4.16	1.97	1.97	2.21	2.21	0.99	0.99
Number of obs.	1721	1721	1721	1721	1721	1721	1721	1721

Notes: **Table 2 shows that including wage information in job adverts increases the correlation between the number of applicants and the offered salary.** Columns 1 to 4 show effects on the number of expressions of interest. Columns 5 to 8 show the effects on the number of applicants who show up at the assessment center. Columns 1, 2, 5, and 6 show effects on the number of applicants. Columns 3, 4, 7, and 8 show effects on the number of eligible applicants, i.e., those fulfilling the minimum criteria in terms of education and work experience required by the hiring firm. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.4.1 Applicant eligibility in terms of education and experience

Columns 3, 4, 7, and 8 of Table 2 show treatment effects on the number of *eligible* applicants as an outcome. Applicants are eligible for the job if they fulfill the minimum formal requirements set by the searching firm, mostly in terms of education and years of prior work experience, but also other criteria the firm mentions (e.g., having a driving license). As such, the number of eligible applicants can be seen as the lowest standard of applicant quality. As before, we look at both phone expressions of interest (columns 3-4) and assessment center applications (columns 7-8).

Three results stand out. First, the first row of the table shows that posting the wage, on average, has no impact on the number of eligible candidates, regardless of whether we consider expressions of interest or assessment center applications. Second, the interaction effect of the treatment with the (standardized) wage is positive, large, and significant. Higher-wage vacancies enjoy an increase in the number of eligible candidates, while lower-wage vacancies see a decline when wage information is included. Third, comparing the size of the interaction coefficients to those for the total size of the applicant pool (columns 1, 2, 5, and 6) shows that virtually all of the additional applicants fulfill the eligibility criteria. When comparing the size of the coefficients to the control group means, it becomes apparent that the treatment effects on the number of eligible candidates are very large, leading to increases of 75% relative to the control mean with every standard deviation increase of the posted wage (column 4). Put together, these results show that while the average vacancy sees no improvement in the eligibility of its applicants, posting the wage improves the eligibility of applications for high-wage vacancies and reduces it for low-wage vacancies. However, formal qualifications are only an incomplete proxy for actual skills. We study these next.

3.4.2 Applicant skills

In this section, we focus on more detailed measures of applicant productivity and skill. In Table 3, we estimate treatment effects on the average applicant skills, measured in three different domains: i) the performance in the skill dimension deemed most important by the firm (among cognitive and non-cognitive skills), ii) a cognitive skill index (consisting of general intelligence, executive function, and Amharic language) and iii) the non-cognitive skills index (consisting of emotional control, grit, and conscientiousness). We construct these indices by adding the individual skills (which are each separately standardized across all applicants) and then re-standardizing the composite index.

We find that wage posting does not lower the quality of the applicant pool. Both the average treatment effect and its interaction with standardized wage are mostly small and statistically insignificant: the share of applicants with various types of skill is the same regardless of whether the posting includes wage information or not. The one exception is the effect on non-cognitive skills (columns 5 and 6), which is statistically significant and positive at between 0.1 and 0.11 standard deviations. Nevertheless, the effect does not vary with the wage, suggesting there is no impact of wage posting on the relationship between the wage of a vacancy and the skill level of its applicant pool.

This result mirrors worker sorting in the observational data. In Table A14, we estimate the elasticity regressions for wage and various measures of applicant skill. We find no statistically significant relationship between applicant skills and the wage of the vacancy, regardless of whether the wage is posted or not. This means that higher-wage and lower-wage vacancies attract, on average, applicants of the same quality.

One caveat is that we can only measure the quality of the applicant pool for vacancies that have received at least one application. As a bounding exercise for Table 3, we re-run the regressions after setting the standardized skill indices to zero – which is the standardized sample mean – for any missing observations, i.e., for any vacancy postings for which no applicants participated in the assessment center. This allows us to keep vacancy-channel postings with zero assessed applicants in our sample. The results, presented in Appendix Table A12, show that all average treatment effects and their interactions with standard-

Table 3: The effect of the wage information treatment on the average applicant quality

	Assessment center					
	(1)	(2)	(3)	(4)	(5)	(6)
	Firm's preferred skill index		Cognitive skills index		Non-cognitive skills index	
Wage treatment	0.024	0.031	0.060	0.055	0.097*	0.112**
	(0.082)	(0.087)	(0.062)	(0.065)	(0.054)	(0.055)
Wage treatment		-0.025		0.017		-0.053
× Wage (std.)		(0.053)		(0.040)		(0.033)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.04	0.04	-0.02	-0.02	0.08	0.08
Number of obs.	668	668	668	668	668	668

Notes: **Table 3 shows that including wage information in job adverts only marginally affects the average quality of applicants.** The table shows effects on the assessed average skill of applicants in the assessment center. Columns 1 and 2 show effects on the average skill level of the firms' preferred skill (among both cognitive and non-cognitive skills). Columns 3 and 4 show effects on the average cognitive skill index (general intelligence, executive function, and Amharic). Columns 5 and 6 show effects on the average non-cognitive skill level (emotional control, grit, and conscientiousness). Vacancy-channel observations with zero assessment center applicants are set to missing. Skill indices are created by summing the skill measures (standardized across all applicants) and then re-standardizing the index. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

ized wage remain small and statistically insignificant. The effect on non-cognitive skills now also becomes insignificant, both statistically and in terms of coefficient size. Taken together, this suggests a small but significant positive effect of wage posting on eliciting applications with higher non-cognitive skills to vacancy postings that otherwise would have received no applications.

We examine the impacts on the extensive and intensive margins explicitly by decomposing the total effect following the method by Attanasio et al. (2011). We define the extensive margin effect as the treatment effect on any applications multiplied by the mean skills for control group applications. The intensive margin effect is calculated as the difference between the total treatment effect and the extensive margin effect. The results, presented in Appendix Table A13, show that almost all of the treatment effects are explained by intensive margin effects, suggesting that the wage treatment is less about inducing applicants to apply and more about adding additional somewhat higher-skilled applications. Overall, however, none of the coefficients on the decomposition are significantly different from 0. This emphasizes our key result: we find no sorting of applicants by their skill.

In a last step, we present evidence that helps to shed light on why job applicants do not sort by skill. We leverage an alternative treatment design, closely mirroring our main experiment, in which we exogenously include information on the skills required by the firm in the job advertisement. As Appendix Table A15 shows, including the required skill explicitly in the job advertisement does not select applicants who perform better in the required skill – neither overall (column 1) nor interacted with the vacancy's wage offer (column 2). One explanation for this zero effect is that job applicants do not direct their applications because they do not know their (relative) performance in those skills. The companion experiment documents this pattern directly (Tekleselassie ⓡ al., 2025) in this setting.[14] The large positive treatment effect on worker eligibility, presented in the previous section, further supports this interpretation: workers are able to sort on easily observable attributes such as their work experience and education, but struggle to sort on skills they only get to measure in the assessment center.

3.4.3 Applicant characteristics

Does wage information induce non-skill-based selection of applicants? We find that the wage information treatment attracts more marginal applicants – individuals for whom job search is relatively more costly, and who overall search less.[15]

Columns 3 and 4 of Panel A in Table 4 show that including wage information attracts job seekers who live on average over 319 meters (or 4.2%) further away (as the crow flies) from the center of Addis Ababa than applicants to the no-wage version of the same vacancy, though the result is not quite significant ($p = 0.139$).[16] In line with attracting applicants from further away, applicants to treated versions of the vacancy spent more on job search last week and made fewer applications in the last month (columns 5-8). When combining these three variables into a search cost index (reverse coding the number of applications) in columns 1 and 2, we find that the wage information treatment attracts applicants who score 0.28 standard deviations higher on said index ($p < 0.01$). This estimated treatment effect does not vary with the posted wage, suggesting that it is the presence of wage information itself that attracts the marginal applicants.

One way to explain this pattern is that applying to postings with some information

[14]There is evidence that individuals also have imperfect information about their skills in other contexts (e.g., Kiss ⓡ al. (2023) and Bobba and Frisancho (2020)).

[15]However, the treatment does not significantly affect the gender composition of the applicant pool (Table A9), though the absolute effect on male applicants is larger in line with the average applicant pool being skewed towards male applicants.

[16]We are restricting the sample to commutable distances to Addis Ababa center here, which we define as everything within 30km of the center.

missing is riskier, and job seekers with high search costs are more responsive to reductions in this risk. This may be important when considering access to opportunity for job seekers. Limited information may exacerbate differences in job search outcomes between job seekers with low and high search costs.

We also find evidence of self-selection by search channels (Table 4, Panel B). The wage information treatment attracts applicants, among whom a larger share searched in their networks and at the job boards in the last month (columns 1-4). The treatment also leads to a larger share of applicants having come across the vacancy through the original posting channel (columns 5-6), perhaps indicating that, given the higher costs involved for job seekers from further away, they make immediate application decisions when facing a suitable vacancy. Specifically, wage information-treated vacancies have an 8.8 percentage point (or 25% of the control mean) higher share of applicants who applied through the original posting channel of the vacancy (instead of, for example, having received the vacancy from social contacts or through social media aggregators). This reinforces the notion that the mere presence of wage information affects the type of job seekers applying to vacancies.

We also find that the information treatment leads to a lower share of individuals planning to negotiate the salary when the posted wage is high (Table 4, Panel B, column 8). The interpretation of this result can go both ways. On the one hand, it might signal that applicants perceive the competition for high-wage treated vacancies to be tougher: they aren't likely to negotiate the wage because they believe their bargaining position is relatively weak. On the other hand, it might suggest that the applicants self-selecting into these vacancies are less likely to ask for higher pay, in line with their belief about their own relative strength as candidates (see Appendix Table A16). Since our data does not allow us to compare negotiation intentions across vacancies within an individual, we are unable to distinguish between these two explanations. However, and perhaps more importantly, the impact on wage-setting from the firm's perspective is clear: posting a relatively higher wage lowers the probability of wage renegotiation. Note that this pattern is in line with firms' beliefs about not revealing the wage: in Appendix Table A4, we show that not being able to renegotiate the wage as a reason for not posting it declines in significance as the vacancy wage increases.

Once again, we decompose the effects presented in Table 4 into extensive and intensive margin effects. As Appendix Table A17 shows, the effects on the search cost index can be mostly explained by the intensive margin, with the same holding true for network search and share applying through the original posting channel.

Table 4: The effect of the wage information treatment on the 'search types'

Panel A: Search cost

	Assessment center							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Search cost index		Distance to center (in km, commutable)		# of applications made in last 30d (IHS)		Job-search spending (last 7d, IHS)	
Wage treatment	0.280***	0.298***	0.319	0.357	-0.145**	-0.151**	0.198**	0.206**
	(0.084)	(0.085)	(0.215)	(0.220)	(0.066)	(0.068)	(0.098)	(0.101)
Wage treatment		-0.061		-0.130		0.023		-0.029
× Wage (std.)		(0.063)		(0.160)		(0.048)		(0.083)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	-0.00	-0.00	7.43	7.43	2.26	2.26	6.83	6.83
Number of obs.	668	668	659	659	668	668	668	668

Panel B: Search strategy

	Assessment center							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Share searching networks last 30d		Share searching boards last 30d		Share appl. through original channel		Share applicants likely to negotiate salary	
Wage treatment	0.059*	0.048	0.063**	0.062**	0.088**	0.081**	0.003	0.012
	(0.032)	(0.033)	(0.030)	(0.031)	(0.035)	(0.036)	(0.025)	(0.027)
Wage treatment		0.039*		0.001		0.025		-0.030**
× Wage (std.)		(0.022)		(0.025)		(0.025)		(0.013)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.28	0.28	0.50	0.50	0.37	0.37	0.83	0.83
Number of obs.	668	668	668	668	668	668	668	668

Notes: **Table 4 shows treatment effects on the search cost and behavior of applicants.** In Panel A, columns 1 and 2 show effects on a search cost index, consisting of the three following outcomes in that panel: Columns 3 and 4 show effects on the straight-line distance from the applicants' subdistrict to the city center (where the assessment center is located). This is measured for all expressions of interest, while all other outcomes are measured at the assessment center. Columns 3 and 4 show effects on the average inverse hyperbolic sine of the number of applications of applicants in the last 30 days. Columns 5 and 6 show effects on the average inverse hyperbolic sine of applicants' job search expenditure in the last 7 days. In Panel B, columns 1 and 2 show the effects on the share of applicants searching through social networks. Columns 3 and 4 show the effects on the share of applicants searching on job boards. Columns 5 and 6 show effects on the share of applicants coming through the original posting channel. And lastly, columns 7 and 8 show the effects on the share of applicants stating that they are likely to negotiate the salary. Even columns interact the wage information treatment with the standardized offered wage. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.4.4 Competitiveness

We find that wage posting does not lead to substantial differences in the quality of the applicant pool as measured by the applicants' skills and eligibility, but substantially changes the selection of applicants in terms of search costs. There are further dimensions the employer might care about, such as worker effort. If applicants for vacancies with wage information perceive these differently – as more or less competitive, for example – they might exert more effort to get (and keep) the job. Alternatively, we might observe more "hard-working" applicants sorting into different types of vacancies.

We test this hypothesis by analyzing the perceptions and intentions of applicants to the treated and control vacancies. We measure the perceived competitiveness of a posting as the expected number of competing applicants. We also ask the applicants to report their own perceived competitiveness in the labor market. We estimate equations 1 and 2.

The results are summarized in Appendix Table A16. In the first two columns, we find that the wage information treatment leads to applicants thinking that 10% more applicants applied to the vacancy, though the effect is noisily estimated. Moreover, we find no differential impact by wage, which would be expected if revealing the wage leads to the more competitive applicants flocking to higher-wage jobs. Indeed, the last two columns of the table suggest that, if anything, high-wage vacancies with wage information attract somewhat less competitive applicants as captured by the self-reported measure.

3.5 Robustness check: search channel spillovers

One potential concern with our experimental design is that job seekers may see several different versions of the same vacancy. However, we find that only 2.5% of all applicants to a given vacancy version have seen another version of the vacancy (Table A18, columns 1 and 2). This fraction is reassuringly very low and does not vary either with the wage information treatment nor with the interaction of the wage information treatment and the specified wage. Thus, if we assume the worst-case scenario, in which all 2.5% of applicants who saw a second version of the vacancy have seen a version including different wage information[17], our treatment effects would be slightly attenuated due to treatment contamination. Next, columns 3 and 4 show the share of applicants with whom the vacancy was shared (i.e., who did not apply through the original posting channel). Around 42% of applicants state that they received the vacancy from somewhere else than the original posting channel. This share is not affected by the treatment. Lastly, columns 5 and 6 show that applicants to the vacancy version with the wage information are 85% (9.3 percentage points) more likely to claim to have seen the posted wage (column 5). This does not significantly vary with the wage level (column 6). This suggests that our experimental design was successful in transmitting wage information. However, the fraction of applicants remembering the wage information is far from one, suggesting imperfect recall

[17]The chances of that are actually approximately 50%, given that there are two treatment conditions randomized over three or more vacancy-channel postings.

or transmission of information through networks.

4 Theoretical results

4.1 Baseline model of directed search

In this Section, we present a static model of directed search a la Acemoglu and Shimer (1999) with an extension in which firms can choose to bargain over wages instead of posting them. In the rest of the Section, we will use this model as a benchmark to rationalize our empirical findings.[18]

Model set-up Workers have productivity types i and firms have productivity types y. Match output $f(i, y)$ strictly increases in both arguments. Our benchmark is a full-information setup in which workers and firms know their own productivity type as well as the productivity of other market participants.

Workers observe every vacancy and apply to exactly one. As is standard in models of directed search, we assume that firms get randomly matched with one of the workers in their vacancy queue.[19] While this is a strong assumption, it is not unrealistic within the context of our experiment, the labor market for young workers in Addis Ababa. Previous work by Abebe et al. (2021) has documented that this labor market is characterized by very poor signaling between the workers and the employers: workers struggle to credibly signal their skills, which means firms find it difficult to advertise the relevant skills and select the right workers for the job (88% of the vacancies in our vacancy census do not include any explicit skill requirements). This can be true even if firms and workers know their productivity type but cannot communicate it credibly.

After a worker and a firm are matched, the wage, x, can be determined in one of two ways. A "posting vacancy" pays the advertised wage w to any hired worker, regardless of her productivity type. This setup is common in models of directed search. Following Michelacci and Suarez (2006), we also allow the wage to be specified in a bilateral bargaining with the matched worker ("a bargaining vacancy"). We assume standard Nash

[18] Our experiment is too small to alter the equilibrium in Addis Ababa's labor market. As a result, we interpret the workers' behavior captured in our experiment as an optimal response to an off-equilibrium strategy by firms. In the model presented throughout this paper, we keep equilibrium variables – such as the distribution of worker and firm productivity, the number of market participants, and market utility – as given.

[19] This means that the firm cannot hire the best worker, or exclude workers of a certain type from the applicant pool, despite firms knowing the productivity type of the applicants (and vice versa). We will discuss relaxing this assumption in Section 4.3.

bargaining where the worker receives a share β of the total output of the match $f(i, y)$. Under full information, workers know the productivity of the firm and hence the wage they would obtain under bargaining, even though bargaining vacancies do not advertise the wage.

Our definition of posting and bargaining vacancies rules out firms that have a fixed wage in mind but do not advertise it, and firms that advertise a wage but go on to negotiate the final pay with the hire. The results of our firm survey, presented in Tables A4, show that there is a relatively strong empirical relationship between not posting wages and negotiating pay.[20]

Workers A worker's utility depends on her wage x: $U(x) = x$. She chooses which vacancy to apply for to maximize her expected utility

$$\max_{x} \quad p(n(x))\, x$$

where $p(n)$ denotes the probability of making a match as a function of the number of applications to the vacancy (queue length) n, and wage x corresponds to either posted wage w or bargained wage $\beta f(i, y)$. We assume a general matching technology in which the probability of being matched decreases with the size of the applicant pool for workers ($p'(n) < 0$).[21]

In equilibrium, worker of type i is indifferent between all the vacancies her type applies to. These vacancies deliver the expected market utility $\bar{U}_i$:

$$p(n(x))\, x = \bar{U}_i \tag{3}$$

This condition holds for both posting and bargaining vacancies.

Firms A firm sets wage x and queue length n to maximize its expected profit:

[20]The empirical evidence on this assumption is rare, especially in our context. Haegele et al. (2025) provide evidence on the relationship between wage posting and (not) bargaining in Germany. They show that while only 4% of firms in their survey post wage information in their vacancies, up to 20% of firms have a set wage they are willing to pay for the job (the share rises to up to 50% for vacancies aimed at recent labor market entrants). However, their definition of bargaining is different from that employed in this paper (and in the broader literature): they define bargaining as firms differentiating pay between workers of the same productivity, regardless of whether such a wage schedule is announced ex ante or negotiated later on. As a result, their paper is silent on the key question of whether the posted information influences the applicant pool.

[21]The usual matching function is based on urn-ball technology, although alternatives are also used; see Wright et al. (2021) and Cai et al. (2025) for examples and discussion.

$$\max_{x,n} \quad q(n)[E(f(i,y)) - x] \tag{4}$$

subject to attracting workers of given type(s): $p(n)x = \bar{U}_i$. $q(n)$ is the probability a firm makes a match when it receives n applications: $p(n) = q(n)/n$. $E(f(i,y))$ is the expected output of the match as a function of worker productivity i and firm productivity y, and as such depends on workers' sorting pattern.[22] For now, we leave production complementarities and worker sorting unspecified and discuss them in the Section 4.3.

Under posting, the firm trades off paying a higher wage for the increased probability of making a match. The optimal wage equals $w = \epsilon(n_P)\, E(f(i,y))$ where ϵ is the elasticity of the matching function and n_P denotes equilibrium queue length. We assume constant elasticity of the matching function so that $\epsilon(n_P) = \epsilon$.

Under bargaining, the firm doesn't set the wage, so the probability of making a match depends on firm productivity and the market utility of the worker type(s) it attracts. The equilibrium queue length under bargaining, n_B, is given by:

$$p(n_B)\beta E(f(i,y)) = \bar{U}_i \tag{5}$$

Firms choose to bargain or post depending on which strategy is more profitable. Optimal profits under posting and bargaining (respectively) are:

$$\pi_p = q(n_P)E(f(i,y))(1-\epsilon) \tag{6}$$

$$\pi_b = q(n_B)E(f(i,y))(1-\beta) \tag{7}$$

We explore this choice in greater detail in Section 4.3.

4.2 Explaining worker behavior

4.2.1 Key finding #1: Positive relationship between wage and the size of the applicant pool

The robust relationship between vacancy wage and the number of applications (Table A5) indicates that workers don't apply for jobs randomly. Instead, they appear to direct their search: higher-wage vacancies receive more applications, but some applicants still choose

[22] For our benchmark model, we assume that firms do not use any screening to reject applicants with particular productivity levels. This is in line with the perfect-information case studied in e.g. Eeckhout and Kircher (2010), who describe the necessary properties of production and matching functions to support assortative matching in a model of directed search with two-sided heterogeneity. For a theoretical examination of directed search with screening costs and frictions, see Cai et al. (2025).

lower-wage vacancies as a response to the congestion effects from other applicants.[23] This pattern aligns well with the standard models of directed search (Acemoglu and Shimer, 1999, Wright et al., 2021) and corroborates the existing empirical evidence that job search is directed rather than random (Faberman and Menzio, 2018, Marinescu and Wolthoff, 2020, Banfi and Villena-Roldán, 2019, Belot et al., 2018, Kiss ⓡ al., 2023).

In our benchmark model introduced in Section 4.1, equation 3 states that workers of the same type i apply to two different vacancies if both result in the same market utility $\bar{U}_i$. This implies more applications for higher-wage positions and shorter queues for lower-wage positions:

$$\begin{aligned} &\bar{U}_i = p(n(x_L))x_L = p(n(x_H))x_H \\ &\text{if} \quad x_L < x_H : \quad p(n(x_L)) > p(n(x_H)) \Rightarrow n(x_L) < n(x_H) \end{aligned}$$

Note that we observe this pattern for both posting and bargaining vacancies, suggesting that search can be directed even if firms do not post wages.[24,25]

4.2.2 Key finding #2: The wage-applications slope is steeper for posting vacancies

In Table 2, we show that posting a wage increases the number of applicants for vacancies with above-average pay and reduces it for below-wage vacancies compared to the same vacancy without any wage information. These experimental results corroborate the descriptive pattern in Banfi et al. (2022) who similarly find that the wage-applications relationship is steeper for vacancies that post the wage information.

[23]In theory, some of the worker behavior observed in the experiment *could* be driven by random search a la Burdett-Mortensen in which job seekers are randomly matched with vacancies and choose to apply if the posted wage weakly exceeds their reservation wage. In this setting, vacancies offering a higher wage would receive more applications because they satisfy the reservation wage condition for a larger number of job seekers. Other experimental findings are arguably harder to rationalize in a model of random search, such as the different wage-application slope for posting and bargaining vacancies. Perhaps most importantly, however, random search also cannot rationalize the lack of sorting by skill across both posting and bargaining vacancies.

[24]Banfi et al. (2022) document a similar pattern in their descriptive study of a job platform in Chile, and Marinescu and Wolthoff (2020) show that the most important part of a job posting is its title, explaining 90% of wage variation.

[25]While we cannot test it for bargained wages directly – bargained wages are not observed – we can combine the empirical and theoretical evidence to show indirectly that this pattern also holds for bargaining vacancies in our setting. First, our baseline model predicts that firms that offer high bargained wages – i.e., high-productivity firms – also post high wages. To see this, recall that optimal posted wage equals $w = \epsilon E(f(i,y))$ and the bargained wage equals $\beta E(f(i,y))$; both of these expressions increase in firm productivity y. In line with this prediction, Figure 2 shows that firms that post higher wages also see longer queues for their bargained vacancies. As long as workers can observe firm productivity, they will expect bargained pay to increase in firm productivity, and direct their applications accordingly.

Table 5: Treatment effects by deviation from expected wage

	Expression of interest		Assessment center	
	(1) # of applicants	(2) # of eligible applicants	(3) # of applicants	(4) # of eligible applicants
Wage treatment	1.125	1.620	0.822	1.198*
	(1.231)	(1.064)	(0.772)	(0.647)
Wage treatment	1.919*	1.789*	1.243*	1.199*
$\times$ Δ wage exp.	(1.155)	(1.067)	(0.729)	(0.650)
Channel FE	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes
Control mean	6.97	3.32	3.83	1.72
Number of obs.	961	961	961	961

Notes: **Table 5 shows treatment effects are robust to using the difference between average wage expectations in the control group and offered wage instead of standardized offered wages.** Columns 1 and 2 show impacts on expressions of interest. Columns 3 and 4 show impacts on assessment center applicants. Columns 1 and 3 show the impacts on the number of applicants. Columns 2 and 4 show impacts on the number of candidates meeting all eligibility criteria. Sample restricted to vacancies with at least one assessment center applicant through control channels. We define a vacancy's expected wage as the mean expected wage of applicants to the control version of the vacancy. Δ wage exp. is standardized to have standard deviation one to make effect sizes comparable to our main specification. The wage treatment dummy can be interpreted as the effect of revealing a wage at the expected mean. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Finding #2 can be explained as arising from workers' imperfect perceptions about pay in bargaining and posting vacancies. First, we show that workers are more likely to apply for vacancies that they *perceive* as paying more. For each vacancy, we calculate the difference between the actual posted wage and wage expectations of individuals applying to the control version of the vacancy (i.e. with no wage information).[26] We use this measure of changing wage perceptions to re-estimate the results of the experiment. The estimates, presented in Table 5, show a strong and statistically significant effect of the change in wage perceptions on the number of applicants to a vacancy, both in terms of phone expressions of interest and in the number of applicants attending the assessment center. The larger the difference between actually offered and mean expected wages, the more individuals apply to a vacancy once its wage is randomly revealed.[27]

Furthermore, in Figure A1 we show that a large share of workers has imperfect information about pay, but this misperception is smaller when workers observe vacancies with posted wages. In particular, the distribution of applicants' misperceptions about wage has a smaller variance and a significantly larger share of mass at 0, i.e., a closer alignment between workers' reservation wages and actual pay, for applicants to posting vacancies.[28] As a result, applicants observing posting vacancies respond to wages more strongly, generating the steeper wage-applications relationship for posting vacancies observed in the experiment. We model this mechanism formally in Appendix B.[29]

The existing literature offers an alternative rationalization of Key finding #2. Cheremukhin and Restrepo-Echavarria (2022) present a model of partial directed search in which directing search comes at a cost. If workers and firms are willing to pay the price, they can target particular worker/firm type; if not, their search is random. They show that posting a high wage can motivate workers to direct their search towards the vacancy. Bargaining vacancies are less likely to attract directed search, and are thus filled via random search, producing a weaker relationship between the wage and the number of applications.

[26]We collect the wage expectation data as a part of the expression of interest over the phone. As a result, the expectations of applicants to the treated version of the vacancy are, to at least some extent, driven by the observed posted wage. Using the expectations of applicants from the control vacancies ensures the measure of expectations is not contaminated by the treatment. In fact, we do find some evidence that the wage information treatment leads to information updating by the applicants. See Appendix A.3 for more details.

[27]As the wage expectations difference Δ is in levels, this also means that fewer individuals apply to vacancies in which the offered wage is below the mean expected wage ($\Delta < 0$), once the offered wage is randomly revealed.

[28]Here, we define misperceptions as the difference between applicants' reservation wage and the posted wage. Importantly, it is not the case that workers only report reservation wages that are too high: the difference between actual and reservation wages is positive as well as negative, suggesting a dispersion of pay expectations compared to the actual distribution.

[29]We also show that the baseline model of directed search can generate finding #2 without imperfect information if we relax the assumption of constant matching elasticity.

4.2.3 Key finding #3: The quality of the applicant pool does not vary across wage

Table A14 shows that the average quality of the applicant pool, as measured by skills and eligibility, does not vary significantly between high- and low-wage vacancies. In other words, while workers direct the number of applications depending on the wage of a vacancy, there is no sorting by quality.

This result is in line with several existing theoretical models. Eeckhout and Kircher (2010) outline the conditions for assortative matching in the baseline model of directed search with double-sided heterogeneity, perfect information, and directed search. The direction of sorting on quality depends on the relative strength of production and search complementarities between firm and worker types. The result of our experiment implies that the production and search complementarities perfectly offset each other; it is possible that workers might still direct the number of their applications.[30]

Michelacci and Suarez (2006) show that the no-sorting outcome in Eeckhout and Kircher (2010) does not depend on the assumption of perfect information. When wage posting is "incomplete", i.e., firms cannot condition on and verify workers' productivity before the contract commences, low-productivity workers will apply to the same vacancies as high-productivity workers because the firms cannot exclude them from the matching process. This will generate Key finding #3 in equilibria where all firms find it optimal to post the same type of vacancy (all posting, or all bargaining).[31]

The model of directed search by Cai et al. (2025) shows that a no-sorting outcome is possible even if firms can circumvent adverse selection through the use of screening technology. In this model, firms can choose a number of applicants to interview and choose the best candidate from this set, making it possible to screen out the lowest-productivity applicants. The authors show that workers' application strategy will depend on firms' screening technology. In particular, if screening is relatively cheap (i.e., firms interview many candidates), and high-productivity workers are relatively abundant, their optimal strategy will be to apply equally across vacancies of all wages (productivity) to maximize their chances of getting hired. This results in an equilibrium in which high-productivity workers do *not* sort into high-productivity vacancies, generating a mixed applicant pool regardless of the posted wage.

[30] Eeckhout and Kircher (2010) focus on equilibria that exhibit sorting, so our no-sorting result corresponds to a knife-edge case where the production and search complementarities perfectly balance out. However, there are other equilibria, not considered in the paper, in which the production or search complementarities hold locally but not globally.

[31] This model does not consider double-sided heterogeneity; firms in their setup are homogeneous. However, the authors show that incomplete contracts create an incentive for workers to sort on quality even if all firms are the same.

Overall, the literature provides several theoretical explanations of why higher-ability applicants in our experiment do not sort into higher-wage vacancies. However, it is unclear whether the underlying model assumptions can be justified in the context of an urban labor market in a developing country. It is unlikely that there is perfect information about workers' and firms' productivity, especially in light of possible misperceptions about the wage distribution presented in the previous section. At the same time, screening costs are likely to be relatively high. However, as we argue in the next section, the key issue is how to rationalize finding #3 with a similar lack of sorting between bargaining and posting vacancies.

4.2.4 Key finding #4: The quality of the applicant pool does not vary across vacancy type

Table 3 shows that the quality of the applicant pool does not significantly vary with the type of vacancy. Unlike the no-sorting pattern across wages, this result cannot be easily rationalized by the baseline model of directed search or the existing models in the literature.

Existing models Starting with our baseline model, assume for simplicity that there are only two types of workers – high and low productivity (H and L, respectively). The expected utility of posting vacancies is the same for both worker types because the posted wage w does not depend on worker productivity, and the firm matches randomly with anyone in its applicant pool:

$$p(n_P)\, w = \bar{U}_L = \bar{U}_H \tag{8}$$

The previous section outlined several explanations of why we might observe this pattern in the data.

In contrast, the expected utility of bargaining vacancies does vary with worker type because of the variation in bargained wages. For a given vacancy, the expected utility is strictly lower for L workers:

$$p(n_B)\, \beta f(y, L) = \bar{U}_L < p(n_B)\, \beta f(y, H) = \bar{U}_H \tag{9}$$

This directly contradicts equation 8 above and highlights the difficulty in reconciling Key findings #3 and #4. If both types of workers apply to the same bargaining vacancies, inequality 9 holds, and we should observe L and H workers sorting into different posting vacancies (contradicting Key finding #3). If both types of workers apply to the same posting vacancies, equation 8 holds and we should observe sorting of workers into different bargaining vacancies (contradicting Key finding #4).[32]

Other models of directed search either directly contradict findings #3 and #4, or do not consider bargaining and posting strategies simultaneously. Eeckhout and Kircher (2010) and Cai et al. (2025) only focus on wage posting[33], while Cheremukhin and Restrepo-Echavarria (2022) and Michelacci and Suarez (2006) present models that predict differential sorting of workers into posting and bargaining vacancies. The model of partial directed search by Cheremukhin and Restrepo-Echavarria (2022) shows that posting and bargaining vacancies should attract different workers, even if the jobs themselves are very similar, because bargaining and posting vacancies generate different incentives for worker sorting. When directing search is costly, workers have a greater incentive to direct their search to vacancies with a posted wage. If the marginal value of directed search varies across workers, the composition of applicant pools will differ between posting and bargaining vacancies.

The framework closest to ours is the model of directed search with asymmetric information, wage posting and bargaining by Michelacci and Suarez (2006). Under imperfect information, a posting vacancy will receive applications from low-productivity workers who cannot be excluded from the candidate pool. In contrast, because bargaining vacancies offer a higher payoff to H workers, they will receive applications from higher-productivity workers H but not from lower-productivity workers L. As a result, bargaining vacancies will attract higher-productivity applicants than posting vacancies in any equilibrium where firms post both types of vacancies; this theoretical prediction contradicts finding #4.

Baseline model with imperfect information about own worker productivity In this section, we argue that Key findings #3 and #4 can be rationalized by the baseline model of directed search if we assume that workers do not know their productivity type.

Proposition 1. *In a model of directed search with double-sided heterogeneity:*

1. *workers direct their applications to higher-wage vacancies*

2. *workers direct their applications more strongly for posting than for bargaining vacancies*

[32]Appendix B, we explore whether allowing for hiring probabilities to vary in worker type could bridge the gap between experimental and theoretical results. We show that to replicate the empirical results, H workers would have to be *less* likely to be hired from a given pool than L workers, which is unlikely if the production function exhibits complementarities between worker and firm productivity.

[33]The wage posting studied in Cai et al. (2025) is different from the way we use the term in our paper. In Cai et al. (2025), firms post a menu of productivity-contingent wages for each vacancy. This wage posting is thus more akin to wage bargaining in our model in that the firm can tailor pay to the productivity of the hired candidate. At the same time, firms in Cai et al. (2025) can take advantage of their wage-setting power by picking the optimal wage for the wage-queue length trade-off. They are able to do this because the screening technology allows them to verify worker productivity completely before hiring them.

3. *higher- and lower-productivity workers are equally likely to apply to higher-wage vacancies*

4. *higher- and lower-productivity workers are equally likely to apply to bargaining vacancies*

if neither firms nor workers observe workers' productivity type before matching.

If neither workers nor firms can observe workers' productivity, all bargaining vacancies are ex ante the same and in expectation yield the output of an average worker. Posting (equation 10) and bargaining (equation 11) vacancies yield the same (expected) market utility to all workers:

$$p(n_P)\, w = \bar{U}_L = \bar{U}_H \tag{10}$$

$$p(n_B)\, \beta E[f(y,i)] = \bar{U}_L = \bar{U}_H \tag{11}$$

$$\therefore p(n_P)\, w = p(n_B)\, \beta E[f(y,i)] \tag{12}$$

As a consequence, workers do not sort between bargaining and posting vacancies (finding #4) nor across high- and low-wage posting vacancies (finding #3).[34]

The assumption that workers are ignorant about their own productivity levels is strong, but our data offers some supportive evidence. First, in the skill-information treatment arm of the experiment, we explicitly show that the disclosure of required skill does not have any impact on applicant sorting (see Appendix Table A14). Second, higher-paying firms are only marginally more likely to include wage information in their vacancies. If more productive workers sorted into high-productivity and bargaining vacancies, high-productivity firms should be significantly more likely to advertise bargaining vacancies to take advantage of such a sorting mechanism. Instead, in Table A4, we show that firms paying 1 standard deviation higher wages are only 5.2 percentage points more likely to advertise the wage.

[34]Earlier, in Section 4.2, we discussed a weaker form of incomplete information in which workers observed the age of a specific vacancy noisily. This assumption is not sufficient to rationalize finding #4 because such worker beliefs were not random. If workers perceive, albeit imperfectly, that some vacancies are more productive than others, more productive workers should still sort (albeit imperfectly) into bargaining (or more productive) vacancies.

4.3 Explaining firm behavior

4.3.1 Existing theoretical explanations

There are several theoretical papers studying firms' choice to post wages or bargain. Despite their different settings and assumptions, they identify the same mechanism: firms bargain when it incentivizes worker sorting by quality when information is imperfect or costly. Michelacci and Suarez (2006) present a setup in which firms have imperfect (or unverifiable) information about the productivity of the individual worker. Offering bargaining vacancies circumvents this problem by attracting higher-productivity workers, so if the adverse selection problem is sufficiently large, firms will prefer to bargain rather than post wages.[35] In the partial directed search model by Cheremukhin and Restrepo-Echavarria (2022), both sides of the market have perfect information, but screening job applicants is costly. When this cost is too high, firms prefer to bargain so that high-productivity workers self-select into their vacancies. However, neither rationale for bargaining applies in our setting because workers do not sort by quality.[36]

Other research studies bargaining and posting under random search, making it less applicable to our setting. Doniger (2023) examines a setup in which workers differ in their employment histories and firms in their cost of offering contingent wage contracts. Bargaining can reduce the overall wage bill, but being able to tailor wages to each worker's employment history comes at a cost, which is why some firms prefer bargaining and some prefer posting. Flinn and Mullins (2021) present a similar model in which firms choose to bargain when workers' bargaining power is low, or when workers receive many outside offers, which firms need to counter to reduce turnover. The empirical paper by Hall and Krueger (2012) describes the choice of posting as a trade-off between compressing wage below $\beta f(y, i)$ and attracting higher-productivity workers with reservation wage above the posted wage. While this mechanism is present in our setting as well, the authors assume that bargaining elicits random search and posting elicits directed search. This puts them at odds with our key observation that the search is directed, even for bargaining vacancies.

4.3.2 Baseline model: directed search when workers are ignorant about their type

In this section, we examine firms' optimal choice of wage setting under the observed behavior of workers in our experiment: workers direct their search to higher-wage vacancies,

[35] However, bargaining always delivers lower social welfare than an equilibrium with wage posting.

[36] In Cheremukhin and Restrepo-Echavarria (2022), the lack of sorting by productivity among workers implies that workers' search costs are also very high. The model predicts that firms' best response to high workers' search costs is to post low wages and screen applications themselves rather than rely on worker sorting – which is also contradicted by our evidence.

but do not sort by skills or ability, so that the quality of the applicant pool is the same for low- and high-wage vacancies and across wage setting types. In Section 4.2, we argued that these patterns of worker behavior can be rationalized by assuming that workers don't know their productivity type. The following proposition summarizes firms' optimal wage-setting strategy under this assumption.

Proposition 2. *In a model of directed search with double-sided heterogeneity where neither firms nor workers observe workers' productivity type before matching, bargaining is weakly dominated by wage posting.*

The assumption that workers do not know their productivity type simplifies the equilibrium solution considerably. Firms make decisions based on the expected (average) worker, removing the need to consider the nature of matching between worker and firm types. For workers, the wage of a bargaining vacancy depends on firm productivity and the productivity of the average worker: $\beta f(E(i), y))$. Bargaining becomes a specific case of posting, and we can invoke Hosios condition (Hosios, 1990) to argue that bargaining is optimal only if the optimal posting wage equals the expected bargaining wage: $w_P(y) = \beta f(E(i), y))$. We present the full proof in Appendix B.

Under Proposition 2, firm behavior in our experiment is optimal if the wages firms would have posted are equal to the bargained wages of the average worker. Our experimental results provide evidence that this is unlikely to hold. First, the first two columns of Table A21 show that posted wages specified by firms are significantly different from the expected bargaining wages given by applicants in the control group. Second, the experimental data (Table 5) shows that the size of the applicant pool is different for bargaining and posting vacancies *within the same job opening*: it is larger for bargaining vacancies for low-wage jobs, and smaller for bargaining vacancies for high-wage jobs. In directed search, these differences in n must be matched by differences between wages of bargaining and posting vacancies.[37] Overall, this suggests that bargaining vacancies – corresponding to 86% of our sample – is suboptimal. In the rest of this section, we present a possible explanation for this puzzle.

4.3.3 Bargaining as an insurance mechanism

Bargaining allows the firm to tailor the wage offer to the applicant's productivity. This also means that under bargaining, the firm does not need to impose a productivity standard for

[37] In Section 4.2, we discussed these results in the context of workers' misperceptions about the wage. Worker misperceptions and Proposition 2 do not necessarily contradict each other: instead of the actual $\beta f(E(i), y))$, we apply Proposition 2 to workers' expectations of bargaining wages. The same condition applies: bargaining is weakly optimal when workers' expected bargaining wage equals optimal posting wage.

its hires to ensure a profitable match. We argue that this feature of bargaining presents its chief advantage compared to wage posting, and can explain why, in some settings, firms prefer to bargain even if it means giving up control over the size of their applicant pool.[38]

Our point of departure is a standard assumption of models of directed search: that the firm always hires the worker it matches with.[39] This implies that a wage-posting firm will make an *ex post* loss on some of its hires as long as there are some workers whose output falls below the optimal posting wage $\epsilon E(f(y,i))$. We argue that making an *ex post* unprofitable match is unlikely within the context of relatively small, often liquidity-constrained firms in a developing country. Instead, we define a *no-ex-post-loss* condition as one where the firm refuses matches with workers whose value of the match is lower than the cost of employing them.

Definition 1. *Under the no-ex-post-loss condition, a firm hires a worker if and only if the output of the match weakly exceeds the cost of employment.*

To avoid making an ex-post-loss match, firms can screen workers, at a cost of C per worker. A firm posting a wage can screen all its applicants, discard those who are not sufficiently productive, and then match at random with one of the workers in the remaining applicant pool. Its optimization problem is:

$$\max_{x,n} \quad q(n\bar{G}(\kappa))[E(f(i,y|i \geq \kappa)) - w] - Cn \qquad \text{s.t.} \quad p(n\bar{G}(\kappa))w = \bar{U} \tag{13}$$

where κ denotes some cutoff productivity that corresponds to the no-ex-post-loss condition: $f(y,\kappa) = w + \frac{Cn}{\mu q(n)}$; $\bar{G}(\kappa)$ captures the share of workers with productivity above this cutoff: $\bar{G}(\kappa) = \text{Prob}(i \geq \kappa)$; and $E(f(i,y|i \geq \kappa))$ is conditional expected output of the match.

The cost of screening is lower for a bargaining vacancy. Bargaining ensures that all workers satisfy the no-ex-post-loss condition by construction, so the firm only needs to screen the single worker it matches with. Its profit maximization is:

$$\max_{x,n} \quad q(n)(1-\beta)[E(f(i,y)) - C] \qquad \text{s.t.} \quad p(n)\beta[E(f(i,y)) - C] = \bar{U} \tag{14}$$

where the bargained wage equals the worker's share of the match output net of the screening cost. For both types of vacancies, the expected utility must equal that of the average

[38]A similar mechanism has been suggested in Ellingsen and Rosén (2003). However, they do not discuss any effect on worker sorting because they model the search to be random.

[39]This assumption is also present in many models that allow the firm to screen for the best worker. For an example of a model where the firm sets an *ex ante* hiring standard, see Wolthoff (2017).

worker in the market, $\bar{U}$, reflecting the assumption that workers do not know their productivity type.

The firm will choose to post or bargain depending on which strategy yields higher expected profits. Proposition 3 below shows our key result: there exists a set of model parameters under which firms prefer bargaining to posting.

Proposition 3. *In a model of directed search with double-sided heterogeneity where neither firms nor workers observe workers' productivity type before matching, and where firms do not hire workers who would make an ex post loss, bargaining is more profitable than posting if*

$$\frac{q(n_B)}{q(\mu n_P)} > \frac{f(y,H)}{\mu f(y,H) + (1-\mu) f(y,L) - C} \frac{1-\epsilon}{1-\beta} \tag{15}$$

This condition holds if

1. *workers' bargaining power β is neither too large nor too small relative to the elasticity of the matching function ϵ*
2. *the share of highly-productive workers μ is not too large, or the productivity gap between less- and more-productive workers is not too large*
3. *the cost of screening C is sufficiently small*

The full proof can be found in Appendix B. Intuitively, bargaining will dominate if workers' share of output β isn't too large, or the elasticity of the matching function is not too small. The former implies that bargaining firms retain a sufficiently large share of the output, while the latter ensures that the number of applications falls sufficiently fast in response to the screening costs, making it difficult to fill a posting vacancy. In the spirit of the Hosios condition, it is the relative size of these parameters that matters, leading to the condition for β and ϵ being sufficiently similar.

The second condition ensures that hiring lower-productivity workers is a viable strategy. If there were too few of them, or their output was very low compared to that of H workers, it would be worth it for the posting firm to screen these workers out and set the optimal wage via a posting vacancy. In order for bargaining to be the dominant strategy, hiring L workers must be sufficiently profitable for the firm.

Finally, the costly screening creates the scope for bargaining to be more profitable than posting, but paradoxically, bargaining is the dominant strategy only when screening costs C are not too large. This is because, under posting, workers internalize the relationship between the number of applications and the screening cost, while under bargaining, the cost is fixed at the time of the match, so a high C will not reduce the number of applications by as much. When C is very large, this will make bargaining less profitable than posting.

Put together, Proposition 3 shows that there is a range of parameters under which bargaining is preferred to posting. It is plausible that such conditions might hold in the labor market captured in our experiment: small and credit-constrained firms might refuse to make an ex-post loss on match, and the significant search and matching conditions would further shift the focus on making any profitable match rather than finding the best worker. Moreover, the applicant pool in our experiment is over-educated compared to the requirements of the majority of vacancies, suggesting potentially relatively low complementarities between worker- and firm-types in the production function within the set of actual job applicants. All of these conditions, combined with the low propensity of workers to sort by quality, rationalize firms' decision not to post wages.

4.3.4 Biased beliefs

An alternative explanation of why firms do not post wages is that they do not have a good understanding of worker behavior. The comparison between the firm survey and our experimental results lends some credence to this hypothesis.

First, the employers in our firm survey (Table A4) state they do not post wages to avoid attracting under-qualified (and, for a smaller share of firms, over-qualified) applicants. However, our experiment shows that posting a wage does not lower the cognitive skills of the average applicant and weakly increases average non-cognitive skills.

Second, firms are, in general, worried about attracting too many applicants. While we do find evidence that posting high-wage vacancies increases the number of applications, firms seem to overestimate the magnitude of this effect. In reality, a significant share of firms would see a reduction in the size of their applicant pool after posting the wage because they offer below-average wages.

Finally, there is a broader set of alternative beliefs that could generate the observed behavior, such as firms bargaining because they calculate their optimal posting wage incorrectly, or optimizing other objectives besides profits. Ruling out all of these explanations is outside the scope of this paper. However, we note that there are numerous aspects of the labor market that the firms do get right. Firms understand and respond to our request for a posted wage to be included in treated vacancy postings, and similarly offer considered answers to our questions of why they choose not to reveal this information. The asymmetric concern about attracting too many applicants makes sense in a setting where screening costs are high, and a similarly asymmetric concern about underqualified applications can be viewed through the lens of the no-ex-post-loss assumption. Finally, not revealing wage information in vacancy postings is a persistent and pervasive behavior, extending well beyond Ethiopia, raising the question of whether it can plausibly be based on biased, unprofitable beliefs by the firms.

5 Conclusion

In this paper, we examine the causal effect of wage posting on applicant selection using a unique field experiment. By randomly varying whether a real job posting does or does not include wage information, we can estimate the causal impact of posting a wage on the quantity and quality of applications for the same vacancy. We find that posting wage information increases the number of applications for vacancies offering above-average wages, but decreases it for vacancies with below-average wages. Importantly, these changes in the quantity of applicants are not accompanied by significant changes in the quality of applications; in fact, we show that the quality of the average applicant, as measured in our assessment center, is constant across all types of vacancies and levels of pay.

In the second half of the paper, we examine these empirical results through the lens of models of directed search, showing that the existing models cannot rationalize all four main findings at the same time. Moreover, the standard explanations for bargaining rather than posting in the literature rely on workers sorting by quality, making them inapplicable to our setting. We propose a new explanation for why firms prefer not to post wages. We show that, in a labor market suffering from large information and search frictions and costly screening, bargaining acts like an insurance mechanism that increases the firm's chance of making an ex-post profitable match.

This theoretical result suggests that policies making wage-posting mandatory (see e.g. Arnold et al. (2025), Skoda (2022), Frimmel et al. (2023)) might not necessarily improve welfare. The overall effect will depend on workers' (and firms') behavior in a posting-only equilibrium. If workers' behavior does not change, posting is likely to reduce the number of matches and/or offered pay, depending on whether firms find it optimal to post a relatively higher wage and discard many of their applications, or set wages low but hire anyone. Related work on the impact of policies that reduce the amount of certain information in hiring, such as criminal record and pay history, finds a similar pattern of reduced wages and hiring (Agan and Starr, 2017, Agan et al., 2025, Sran et al., 2020). On the other hand, if workers start to sort by quality – perhaps because wage transparency makes them better informed, as we discuss below – or if mandatory wage posting incentivizes firms to invest in screening, the overall effect on the labor market might be positive via lower search frictions and better worker-firm matching.

While our experiment is too small to shift the steady state of an entire labor market, it does offer suggestive evidence on the different ways workers might respond. First, we show that vacancies with posted wages are more likely to attract candidates who are marginal (in terms of geography, labor market attachment, and search effort), so mandatory wage posting might improve labor market outcomes of disadvantaged workers. Second, we find that all job seekers are relatively misinformed about pay, but their expectations become more realistic when they observe posted wages. Mandatory wage posting could bring workers' expectations in line with actual pay, likely improving the efficiency of the search and matching process. Again, however, the effect of the policy strongly depends on the various margins through which firms and workers adjust: for example, Cullen and Pakzad-Hurson (2023) argue that pay transparency policies reduce workers' bargaining power by giving firms an additional strategic reason to offer lower pay.

We run our experiment in a large urban labor market in a developing country (Addis Ababa, Ethiopia). This market is particularly prone to search and information frictions, which makes the question of whether providing more information in job postings improves matching efficiency especially relevant (Tekleselassie ⓡ al., 2025, Abebe et al., 2021, Carranza et al., 2022, Kiss ⓡ al., 2023, Bobba and Frisancho, 2020). However, we believe our findings are applicable to other labor markets, in particular those where productivity is difficult to measure or signal before being employed (e.g. Terviö, 2009). The importance of multiple screening stages and in-person interviews (Weinstein, 2018, Barrios et al., 2020), the fact that employers take time to learn the full extent of workers' productivity (Altonji and Pierret, 2001, Ablay and Lange, 2023), and may act on irrelevant signals (Bertrand and Mullainathan, 2004) all suggest that productivity is difficult to infer in labor markets across the world. Furthermore, the fact that the majority of vacancies in developed countries do not contain wage information means that the question of wage posting is likely important for our understanding of the labor market in general.

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Online Appendix

A Appendix exhibits

Appendix A displays additional exhibits, with Appendix A.1 showing appendix tables and Appendix A.2 showing appendix figures. Table A1 summarizes vacancy-level characteristics. Table A2 shows the selection of firms from the sampling frame into the study. Table A3 shows that treatment and control vacancy-channel observations are balanced on observables. Table A4 shows how offered salary correlates with reasons not to include salary information. Table A5 shows that the number of applicants increases in the offered log wage and that this relationship becomes stronger when wage information is included in the job advert. Table A6 shows that using the inverse hyperbolic sine instead of raw numbers yields consistent results. Table A7 shows treatment effects on applicant numbers estimated using Poisson regressions. Table A8 shows the effects of whether job adverts receive any applications. Table A9 disaggregates the main effects on applicant numbers by gender. Table A10 shows that our main results remain qualitatively unchanged when only looking at the subset of vacancies posted on the reduced number of three different channels only. Table A11 shows that our main treatment effects are robust to controlling for treatment status in the cross-randomized treatments. Table A12 shows that the applicant pool also does not change when missing values are replaced with the mean value. Table A13 decomposes the effect on skills into an extensive and intensive margin effect. Table A14 shows that applicants' skills are not related to offered wages, regardless of treatment status. Table A15 shows that including information about the most in-demand skill in the job advert does not lead to increased sorting by skills. Table A16 shows that including wage information in job adverts does not affect the number of other applicants expected by actual applicants. Table A17 decomposes the effect on applicant types into an extensive and intensive margin effect. Table A18 shows that information spillovers are small and not related to treatment. Table A19 shows that the wage information treatment does not induce differential discovery of vacancies. Table A20 shows that the wage information treatment only marginally affects the average search strategies of applicants. Table A21 shows that wage information aligns wage expectations with posted wages.

Figure A1 shows that including wage information leads to applicants with reservation wages more likely to be at or below the posted wage.

A.1 Appendix Tables

Table A1: Vacancy characteristics

	Hahu Jobs	Vacancy census	Experimental sample
Req. less than high school	0.04	0.19	0.67
Req. vocational educ.	0.16	0.32	0.10
Req. university educ.	0.54	0.39	0.12
Any required work experience	0.88	0.82	0.85
Required experience (years)	3.65	1.87	1.65
White-collar position		0.66	0.25
Full-time position		0.76	0.99
No skill req. mentioned		0.88	
Mentions salary	0.04	0.07	0.14
Number of observations	18458	2616	447

Notes: **Table A1 summarizes vacancy-level characteristics across three samples.** Column 1 contains all vacancies from an online aggregator website (*Hahu Jobs*) for Addis Ababa in 2022. Column 2 contains randomly sampled vacancies from major sources in Addis Ababa during our study period in 2022. Column 3 lists vacancies in our experimental sample.

Table A2: Selection of firms

	Consented	Agreed to T&Cs		Vacancy to advertise	
	(1)	(2)	(3)	(4)	(5)
# of employees			0.006		-0.004**
			(0.004)		(0.002)
Any open positions			0.132		0.608***
			(0.085)		(0.043)
Manufacturing			0.020		0.138***
			(0.070)		(0.038)
Community and Social			0.107		0.031
Services			(0.092)		(0.048)
Construction			0.142		0.126*
			(0.152)		(0.076)
Restaurant and			0.040		0.038
Hospitality services			(0.176)		(0.088)
Constant	0.674***	0.846***	0.749***	0.082***	0.008
	(0.028)	(0.026)	(0.041)	(0.022)	(0.022)
Observations	279	188	188	159	159

Notes: **Table A2 shows the selection of firms from the sampling frame into the study.** All columns show the results of linear regressions on take-up–related outcomes. Column 1 shows the fraction of firms that consent to taking part in the screening survey. Columns 2 and 3 show regressions with a dummy indicating agreement to the terms and conditions of the study as the outcome. Columns 4 and 5 show regressions with a dummy indicating that firms have at least one vacancy included in the study as the outcome. Data for the analysis was collected from June 6^{th} to June 17^{th} 2022, during which we collected data on all approached firms, including non-consenting, non-agreeing, and firms without vacancies. During the rest of the study period, we only collected data on consenting firms for efficiency reasons. Heteroskedasticity robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Balance

	Control	Treatment	Δ	p(Control=Treatment)
Panel A: Firm characteristics:				
# of employees	14.32	14.09	-0.226	0.738
Manufacturing	0.46	0.44	-0.024	0.317
Construction	0.10	0.11	0.004	0.795
Wholesale and Retail	0.08	0.08	-0.002	0.873
Restaurant and Hospitality services	0.10	0.11	0.010	0.515
Panel B: Vacancy characteristics:				
Monthly salary	3979.69	3915.57	-64.118	0.615
White collar	0.26	0.27	0.010	0.631
Pink collar	0.20	0.20	0.001	0.971
Blue collar	0.41	0.40	-0.008	0.740
Gray collar	0.13	0.13	-0.003	0.851
Would have included salary	0.13	0.12	-0.002	0.906
Primary or no education	0.55	0.54	-0.007	0.758
Secondary education	0.21	0.22	0.008	0.696
Tertiary education	0.24	0.24	-0.000	0.988
In Amharic	0.71	0.70	-0.010	0.638
Full-time job	0.99	0.99	-0.001	0.802
Panel C: Posting characteristics:				
Posted on boards	0.48	0.49	0.010	0.684
Posted on Facebook	0.25	0.27	0.014	0.518
Posted on ezega	0.27	0.25	-0.023	0.267

Notes: **Table A3 shows that treatment and control vacancy-channel observations are balanced on observables.** Randomization was stratified at the vacancy level.

Table A4: Reasons not to include the wage information by wage level

		Reasons to not include salary						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Would include wage information	Attracting too few applicants	Attracting too many applicants	Attracting underqualified applicants	Attracting overqualified applicants	Not being able to negotiate salaries with new hires	Giving away information to competitor firms	Other
Posted salary (std.)	0.052**	-0.038**	0.061	0.082**	0.037	-0.083**	-0.018	0.033
	(0.025)	(0.016)	(0.038)	(0.033)	(0.025)	(0.034)	(0.014)	(0.024)
Constant	0.139***	0.077***	0.330***	0.689***	0.080***	0.407***	0.085***	0.053***
	(0.018)	(0.021)	(0.035)	(0.033)	(0.022)	(0.037)	(0.021)	(0.015)
Number of obs.	447	299	299	299	299	299	299	299

Notes: **Table A4 shows how offered salary correlates with reasons not to include salary information.** It shows the coefficients of a vacancy-level regression of outcomes on the standardized posted salary. Column 1 shows the correlations with a dummy indicating that the wage information would have been included. Columns 2 to 8 show regressions on dummies indicating reasons not to include wage information. The outcomes in Columns 2 to 8 are measured in the post-treatment survey for vacancies that would not include wage information. Standard errors clustered at the firm level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Wage elasticity of the number of applicants

	# of applicants (IHS)	
	(1)	(2)
Wage treatment	-0.896*	-0.894*
	(0.537)	(0.542)
Log monthly wage	0.603***	0.571***
	(0.102)	(0.074)
Wage treatment=1	0.105+	0.103+
$\times$ Log monthly wage	(0.067)	(0.065)
Channel FE	Yes	Yes
Control mean	1.10	1.10
Number of obs.	1721	1721

Notes: **Table A5 shows that the number of applicants increases in the offered log wage and that this relationship becomes stronger when wage information is included in the job advert.** It shows results of regressions of the inverse hyperbolic sine of the number of applicants (IHS) on the wage information treatment, the log offered monthly wage, and the interaction of the wage information treatment with the log wage. Column 1 shows the result of a linear regression. Column 2 shows the result of a negative-binomial regression. All regressions include advertisement channel fixed effects. Standard errors clustered at the vacancy-level in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Impacts on the pre-specified inverse hyperbolic sine (IHS) of the number of applicants.

	Expression of interest		Assessment center	
	(1)	(2)	(3)	(4)
	# of applicants (IHS)		# of applicants (IHS)	
Wage treatment	-0.041	-0.051	-0.030	-0.038
	(0.039)	(0.039)	(0.034)	(0.033)
Wage treatment		0.099***		0.072**
× Wage (std.)		(0.034)		(0.033)
Channel FE	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes
Control mean	1.10	1.10	0.71	0.71
Number of obs.	1721	1721	1721	1721

Notes: **Table A6 shows that using the inverse hyperbolic sine instead of raw numbers yields consistent results.** It shows results of regressions of an indicator variable for a vacancy-channel posting on the number of expressions of interest (columns 1 and 2) or applications (columns 3 and 4) on the wage information treatment, the offered monthly wage standardized by education requirements, and the interaction of the wage information treatment with the standardized wage. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Poisson regression estimates of the effect on application numbers

	Expression of interest		Assessment center	
	(1)	(2)	(3)	(4)
	# of applicants		# of applicants	
Wage treatment	0.017	-0.081	0.048	-0.080
	(0.104)	(0.103)	(0.115)	(0.114)
Wage treatment		0.160***		0.175***
× Wage (std.)		(0.051)		(0.054)
Channel FE	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes
Control mean	4.16	4.16	2.21	2.21
Number of obs.	1721	1721	1721	1721

Notes: **Table A7 shows that Poisson regressions yield similar results as our main specification.** It shows results of regressions of an indicator variable for a vacancy-channel posting on the number of expressions of interest (columns 1 and 2) or applications (columns 3 and 4) on the wage information treatment, the offered monthly wage standardized by education requirements, and the interaction of the wage information treatment with the standardized wage. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: The effect of the wage information treatment on any applications

	Expression of interest				Assessment center			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Any applications		Any eligible applications		Any applications		Any eligible applications	
Wage treatment	-0.026	-0.027	-0.023	-0.027	-0.035*	-0.037*	-0.026*	-0.027*
	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)	(0.016)	(0.016)
Wage treatment		0.019		0.035**		0.014		0.007
× Wage (std.)		(0.018)		(0.017)		(0.017)		(0.015)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.55	0.55	0.37	0.37	0.40	0.40	0.23	0.23
Number of obs.	1721	1721	1721	1721	1721	1721	1721	1721

Notes: **Table A8 shows that pooled treatment marginally reduces the share of vacancy-channel postings with any applicants showing up to the assessment center.** It shows results of regressions of an indicator variable for a vacancy-channel posting receiving any expressions of interest (columns 1 and 2) or applications (columns 3 and 4) on the wage information treatment, the offered monthly wage standardized by education requirements, and the interaction of the wage information treatment with the standardized wage. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Effects on number of applications by gender

	Expression of interest						Assessment center					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	# of female applicants		# of male applicants		% of female applicants		# of female applicants		# of male applicants		% of female applicants	
Wage treatment	0.018	-0.015	0.040	-0.077	0.028	0.028	0.020	0.003	0.087	-0.002	-0.005	-0.012
	(0.146)	(0.138)	(0.265)	(0.239)	(0.022)	(0.024)	(0.076)	(0.074)	(0.177)	(0.155)	(0.030)	(0.032)
Wage treatment		0.338		1.185**		0.001		0.172		0.896**		0.022
× Wage (std.)		(0.247)		(0.571)		(0.016)		(0.120)		(0.407)		(0.020)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	1.37	1.37	2.78	2.78	0.34	0.34	0.68	0.68	1.53	1.53	0.36	0.36
Number of obs.	1721	1721	1721	1721	922	922	1721	1721	1721	1721	668	668

Notes: **Table A9 shows that the treatment did not significantly affect the gender composition of the applicant pool.** It shows results of regressions of the number of female applicants (columns 1, 2, 7, and 8), male applicants (columns 3, 4, 9, and 10), and the fraction of female applicants in the pool (columns 5, 6, 11, and 12) on the wage information treatment, the offered monthly wage standardized by education requirements, and the interaction of the wage information treatment with the standardized wage. Columns 1 to 6 show effects for ”expressions of interest”, and columns 7 to 12 show effects on applicants who were screened in person. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: The effect of the wage information treatment on the number of applicants, only new structure

	Expression of interest				Assessment center			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	# of applicants		# of eligible applicants		# of applicants		# of eligible applicants	
Wage treatment	0.205	0.404	0.470	0.677	0.229	0.359	0.380	0.510*
	(0.553)	(0.610)	(0.380)	(0.453)	(0.339)	(0.376)	(0.231)	(0.276)
Wage treatment		2.468		2.566*		1.614*		1.616*
× Wage (std.)		(1.517)		(1.461)		(0.962)		(0.900)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	5.14	5.14	2.27	2.27	2.64	2.64	1.09	1.09
Number of obs.	1113	1113	1113	1113	1113	1113	1113	1113

Notes: **Table A10 shows that our main results from Table 2 remain qualitatively unchanged when only looking at the subset of vacancies posted on the reduced number of three different channels.** Columns 1 to 4 show effects on the number of expressions of interest. Columns 5 to 8 show the effects on the number of applicants who show up at the assessment center. Columns 1, 2, 5, and 6 show effects on the number of applicants. Columns 3, 4, 7, and 8 show effects on the number of eligible applicants, i.e., those fulfilling the minimum criteria in terms of education and work experience required by the hiring firm. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: The effect of the wage information treatment on the number of applicants, controlling for orthogonal treatments

	Expression of interest				Assessment center			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	# of applicants		# of eligible applicants		# of applicants		# of eligible applicants	
Wage treatment	0.049	-0.100	0.250	0.108	0.101	-0.003	0.236	0.137
	(0.373)	(0.342)	(0.259)	(0.210)	(0.231)	(0.208)	(0.161)	(0.128)
Skill demand	0.011	0.000	0.237	0.228	0.061	0.054	0.117	0.111
treatment	(0.447)	(0.448)	(0.373)	(0.374)	(0.310)	(0.310)	(0.262)	(0.263)
Gender inclusivity	0.647	0.628	0.153	0.135	0.332	0.319	0.045	0.032
treatment	(0.436)	(0.437)	(0.346)	(0.347)	(0.304)	(0.306)	(0.246)	(0.248)
Flexibility	-0.403	-0.378	-0.208	-0.184	-0.261	-0.243	-0.023	-0.006
treatment	(0.439)	(0.432)	(0.332)	(0.320)	(0.268)	(0.262)	(0.198)	(0.188)
Wage treatment		1.512**		1.436*		1.062**		1.000**
$\times$ Wage (std.)		(0.765)		(0.748)		(0.494)		(0.468)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	4.16	4.16	1.97	1.97	2.21	2.21	0.99	0.99
Number of obs.	1721	1721	1721	1721	1721	1721	1721	1721

Notes: **Table A11 shows that our main results from Table 2 remain qualitatively unchanged when controlling for the other orthogonally randomized vacancy information treatments.** The other information treatments are i) information on the skill most required by the hiring firm, ii) on the minority gender that is encouraged to apply, and iii) on whether the working hours are flexible. Columns 1 to 4 show the effects on the number of expressions of interest. Columns 5 to 8 show the effects on the number of applicants who show up at the assessment center. Columns 1, 2, 5, and 6 show effects on the number of applicants. Columns 3, 4, 7, and 8 show effects on the number of eligible applicants, i.e., those fulfilling the minimum criteria in terms of education and work experience required by the hiring firm. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: The effect of the wage information treatment on the average applicant quality, by different skill. Missing values replaced with the mean.

	Assessment center					
	(1)	(2)	(3)	(4)	(5)	(6)
	Firm's preferred skill index		Cognitive skills index		Non-cognitive skills index	
Wage treatment	-0.015	-0.014	0.019	0.019	0.019	0.020
	(0.029)	(0.029)	(0.021)	(0.021)	(0.019)	(0.019)
Wage treatment		-0.010		0.001		-0.009
$\times$ Wage (std.)		(0.028)		(0.021)		(0.017)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.02	0.02	-0.01	-0.01	0.03	0.03
Number of obs.	1721	1721	1721	1721	1721	1721

Notes: **Table A12 shows that including wage information in job adverts only marginally affects the average quality of applicants.** The table shows the effects on the assessed average skill of applicants in the assessment center. In this bounding exercise, missing skill values are replaced with 0, i.e., the mean value. Columns 1 and 2 show effects on the average skill level of the firms' preferred skill (among both cognitive and non-cognitive skills). Columns 3 and 4 show effects on the average cognitive skill index (general intelligence, executive function, and Amharic). Columns 5 and 6 show effects on the average non-cognitive skill level (emotional control, grit, and conscientiousness). Vacancy-channel observations with zero assessment center applicants are set to missing. Skill indices are created by summing the skill measures (standardized across all applicants) and then re-standardizing the index. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: The effect of the wage information treatment on the average applicant quality, Extensive and Intensive Margins

	(1) Firm's preferred skill index	(2) Cognitive skills index	(3) Non-cognitive skills index
Total treatment effect	0.024	0.060	0.097
	(0.081)	(0.061)	(0.054)
Extensive margin	0.006	-0.005	0.012
	(0.041)	(0.035)	(0.080)
Intensive margin	0.017	0.065	0.085
	(0.088)	(0.069)	(0.099)
Conditional treatment effect	0.004	0.015	0.020
	(0.020)	(0.016)	(0.023)

Notes: **Table A13 reports decompositions of treatment effects on applicant skills into extensive and intensive margin effects.** The extensive margin effects are the treatment effects on applicant skills due to the treatment effect on whether the vacancy-channel received any applicants, evaluated at the mean applicant skills for the control group. The intensive margin effects are the differences between the treatment effects and the extensive margin effects, which must be due to changes in skills for the assessed applicants in the treatment group. The conditional effect is the implied mean change in skills per assessed treatment group candidate. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: Wage elasticity of applicant skills

	Skills (std)		
	Cognitive (1)	Noncognitive (2)	Preferred (3)
Wage treatment	0.033	0.298	0.398
	(0.684)	(0.643)	(1.005)
Log monthly wage	0.009	0.005	0.002
	(0.067)	(0.060)	(0.097)
Wage treatment=1	-0.002	-0.035	-0.060
× Log monthly wage	(0.083)	(0.077)	(0.121)
Channel FE	Yes	Yes	Yes
Control mean	2.32	2.32	2.32
Number of obs.	668	668	668

Notes: **Table A14 shows that applicants' skills are not related to offered wages, regardless of treatment status.** It regresses standardized skill measures on the wage information treatment, the log monthly wage, and the interaction of the wage information treatment with the log wage. Column 1 estimates effects on a cognitive skill index (general intelligence, executive function, and Amharic). Column 2 estimates effects on a non-cognitive skill index (emotional control, grit, and conscientiousness). Column 3 shows effects on firms' preferred skills (among both cognitive and non-cognitive skills). All regressions include advertisement channel fixed effects. Standard errors clustered at the vacancy-level in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A15: The effect of the skill information treatment on the average applicant skill performance

	Performance in required skill (std.)	
	(1)	(2)
Skill requirement treatment	-0.016	-0.012
	(0.088)	(0.091)
Skill requirement treatment		-0.014
× Wage (std.)		(0.051)
Channel FE	Yes	Yes
Vacancy FE	Yes	Yes
Control mean	0.02	0.02
Number of obs.	668	668

Notes: **Table A15 shows that including information about the most in-demand skill in the job advert does not lead to increased sorting by skills.** When collecting vacancies for the study, we asked firms which of the following skills they demand most for this position: general intelligence, emotional intelligence, executive function, Amharic, grit, and emotional control. The outcome is the standardized skill scores on the dimension the firm required. All regressions include advertisement channel fixed effects. Standard errors clustered at the vacancy-level in parentheses. + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A16: Treatment effects on perceived competition and competitiveness

	Assessment center			
	(1)	(2)	(3)	(4)
	Expected # of competing applicants		Competitiveness scale (self-report)	
Wage treatment	11.467	11.746	0.008	0.038
	(9.267)	(9.866)	(0.071)	(0.071)
Wage treatment		-0.997		-0.107**
× Wage (std.)		(5.102)		(0.049)
Channel FE	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes
Control mean	104.96	104.96	0.01	0.01
Number of obs.	668	668	668	668

Notes: **Table A16 shows that including wage information in job adverts does not affect the number of other applicants expected by actual applicants.** Columns 1 and 2 show effects on the mean number of expected applicants among actual applicants. Columns 3 and 4 show effects on the average self-reported preference for competition among applicants. Vacancy-channel observations with zero assessment center applicants are set to missing. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A17: The effect of the wage information treatment on search types, Extensive and Intensive Margins

	(1) Search cost index	(2) Distance to center (in km, commutable)	(3) # of applications made in last 30d (IHS)	(4) Job-search spending (last 7d, IHS)	(5) Share searching networks last 30d	(6) Share searching boards last 30d	(7) Share appl. through original channel	(8) Share applicants likely to negotiate salary
Total treatment effect	0.280	0.422	-0.145	0.198	0.059	0.063	0.088	0.003
	(0.083)	(0.216)	(0.065)	(0.097)	(0.032)	(0.030)	(0.035)	(0.025)
Extensive margin	-0.015	0.372	0.132	0.385	0.008	0.033	0.019	0.045
	(-0.094)	(2.397)	(0.850)	(2.479)	(0.053)	(0.213)	(0.120)	(0.293)
Intensive margin	0.295	0.050	-0.277	-0.187	0.051	0.030	0.069	-0.042
	(0.126)	(2.413)	(0.851)	(2.473)	(0.059)	(0.214)	(0.126)	(0.296)
Conditional treatment effect	0.068	0.011	-0.064	-0.043	0.012	0.007	0.016	-0.010
	(0.029)	(0.557)	(0.196)	(0.571)	(0.014)	(0.049)	(0.029)	(0.068)

Notes: **Table A17 reports decompositions of treatment effects on applicant types into extensive and intensive margin effects.** The extensive margin effects are the treatment effects on applicant types due to the treatment effect on whether the vacancy-channel received any applicants, evaluated at the mean applicant types for the control group. The intensive margin effects are the differences between the treatment effects and extensive margin effects, which must be due to changes in types for the assessed applicants in the treatment group. The conditional effect is the implied mean change in types per assessed treatment group candidate. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A18: Information spillovers

	Expression of interest		Assessment center			
	(1)	(2)	(3)	(4)	(5)	(6)
	Share appl. seen vacancy multiple times		Share appl. with whom vacancy was shared		Share applicants who claim to have seen wage	
Wage treatment	-0.006	-0.007	-0.032	-0.034	0.093***	0.088***
	(0.009)	(0.009)	(0.031)	(0.031)	(0.026)	(0.026)
Wage treatment		0.003		0.005		0.021
$\times$ Wage (std.)		(0.006)		(0.021)		(0.018)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.02	0.02	0.42	0.42	0.11	0.11
Number of obs.	921	921	668	668	668	668

Notes: **Table A18 shows that information spillovers are small and not related to treatment.** Columns 1 and 2 show effects on the fraction of applicants who claim to have seen the job advert more than once. Sample in columns 1 and 2 restricted to vacancy-channel observations with at least one expression of interest. Columns 3 and 4 show the effects on the share of applicants who received the vacancy from someone else. Columns 5 and 6 show the effects on the share of applicants who claim to have seen the offered wage. Sample in columns 3 to 6 restricted to vacancy-channel observations with at least one assessment center applicant. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A19: Treatment effects on vacancy discovery sources

	Assessment center											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Friend/Family		Job-board		Facebook		Telegram Channel		Direct from company		ezega.com	
Wage treatment	-0.020	-0.021	0.046	0.048	0.001	0.001	-0.012	-0.013	-0.015	-0.014	0.012	0.012
	(0.026)	(0.027)	(0.029)	(0.030)	(0.026)	(0.027)	(0.023)	(0.024)	(0.012)	(0.012)	(0.012)	(0.011)
Wage treatment		0.002		-0.007		0.002		0.003		-0.006		-0.001
× Wage (std.)		(0.018)		(0.025)		(0.020)		(0.012)		(0.007)		(0.007)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.27	0.27	0.21	0.21	0.28	0.28	0.15	0.15	0.03	0.03	0.02	0.02
Number of obs.	668	668	668	668	668	668	668	668	668	668	668	668

Notes: **Table A19 shows that the wage information treatment does not induce differential discovery of vacancies.** Columns 1 to 12 show treatment effects on the share of applicants discovering the vacancy through a given source. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Sample restricted to vacancy-channel observations with at least one assessment center applicant. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A20: Treatment effect on applicant search channels

	Assessment center									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Share searching boards last 30d		Share searching networks last 30d		Share searching Telegram last 30d		Share searching Facebook last 30d		Share searching Ezega last 30d	
Wage treatment	0.063**	0.062**	0.059*	0.048	-0.022	-0.030	0.026	0.024	0.016	0.021
	(0.030)	(0.031)	(0.032)	(0.033)	(0.031)	(0.033)	(0.028)	(0.028)	(0.017)	(0.016)
Wage treatment		0.001		0.039*		0.026		0.009		-0.020
× Wage (std.)		(0.025)		(0.022)		(0.021)		(0.029)		(0.015)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.50	0.50	0.28	0.28	0.53	0.53	0.40	0.40	0.07	0.07
Number of obs.	668	668	668	668	668	668	668	668	668	668

Notes: **Table A20 shows that the wage information treatment only marginally affects the average search strategies of applicants.** Columns 1 to 12 show treatment effects on the share of applicants using each search channel in the last 30 days. Even columns interact the wage information treatment dummy with the offered wage standardized by vacancy education requirements. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

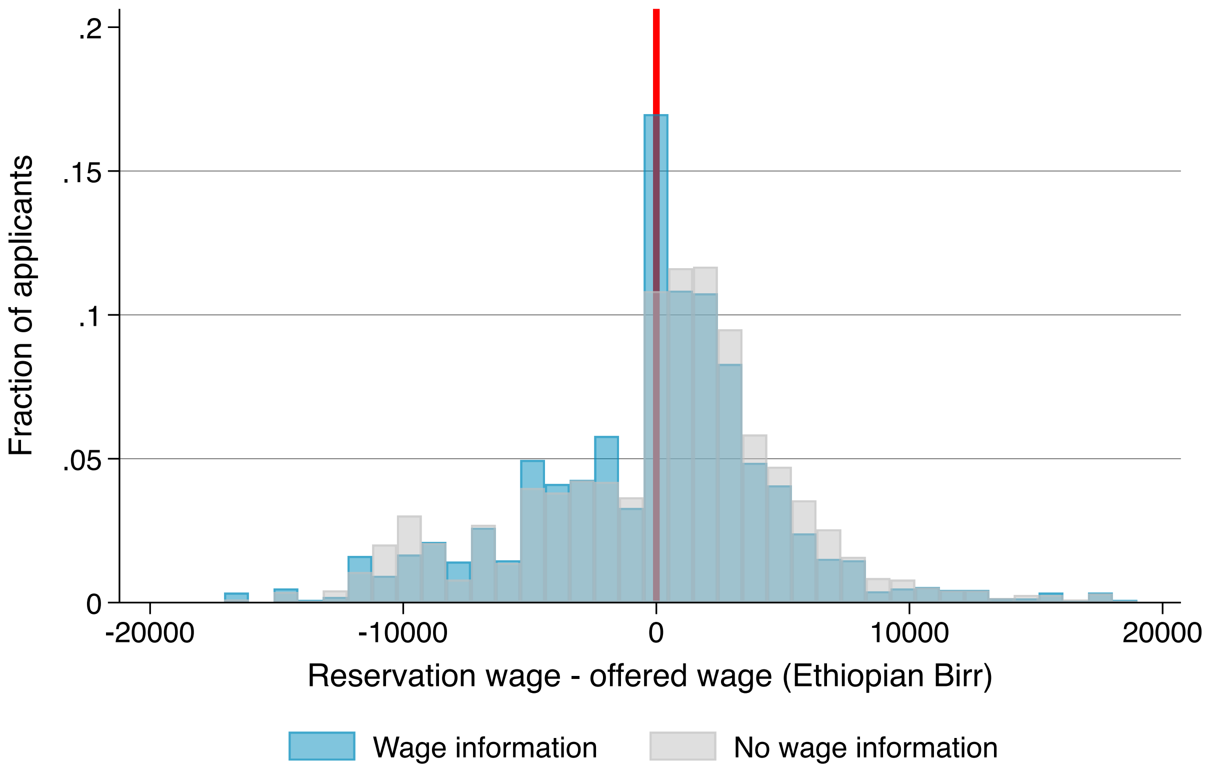
Table A21: The effect of the wage information treatment on wage expectations

	Assessment center					
	(1)	(2)	(3)	(4)	(5)	(6)
	Absolute difference between expected and offered wage		Absolute difference between reservation and offered wage		Res. wage $\leq$ posted wage	
Wage treatment	-440.706**	-397.090**	-615.723***	-518.130***	0.051*	0.046
	(189.408)	(187.595)	(196.155)	(179.706)	(0.029)	(0.029)
Wage treatment		-156.009		-349.079*		0.017
$\times$ Wage (std.)		(158.912)		(194.771)		(0.022)
Channel FE	Yes	Yes	Yes	Yes	Yes	Yes
Vacancy FE	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	3263.61	3263.61	3395.47	3395.47	0.30	0.30
Number of obs.	668	668	668	668	668	668

Notes: **Table A21 shows that wage information aligns wage expectations with posted wages.** Even columns interact the wage information treatment with the standardized offered wage. Columns 1 and 2 show effects on the absolute difference between expected and offered wages. Columns 3 and 4 show effects on the absolute difference between reservation and offered wages. Columns 5 and 6 show effects on a dummy indicating a reservation wage at or below the offered wage. All regressions include vacancy and advertisement channel fixed effects. Standard errors clustered at the vacancy-level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.2 Appendix Figures

Figure A1: Difference between reservation wage and posted wage



Notes: **Figure A1 shows that including wage information leads to applicants with reservation wages more likely to be at or below the posted wage.** It displays a histogram of the distribution of applicants' reservation wage minus the posted wage, for applicants to treated (blue) and untreated (gray) versions of the vacancies. x-variable top-coded at 20,000 Birr for visibility. The sample is restricted to the 3,948 applicants at the assessment center.

A.3 Wage posting and wage expectations

We show that applicants to treated vacancies have a better understanding of the prospective pay of the job than applicants to the same vacancy without wage information.

First, we demonstrate that applicants to versions of the same vacancy that include the wage have better information about the wage that is paid in the job. This means that applicants note and remember the information randomly added to a vacancy, and this information appears to change their priors about the labor market. As table A18 shows, applicants to vacancies that included the wage treatment are more likely to recall having seen the wage (column 1), and this effect does not vary with the amount of the wage (column 2). While the share of applicants seeing the wage increases by 85%, it is still very far away from one, suggesting imperfect recall.

Next, we look at the differences between reservation wages of applicants to the treated and control postings. Figure A1 displays a histogram of applicants' reservation wage minus the posted wage, split by whether the person applied to the treated (red) or untreated (blue) versions of the vacancies. We observe a large spike at zero for the expectations of applicants to treated vacancies, almost doubling the proportion of applicants with reservation wages that are exactly as high as the offered wage. Moreover, the variance of the difference decreases for treated vacancy postings. At the same time, even for control postings, the largest spike is at the zero difference line, suggesting that even without explicit wage information, a substantial proportion of applicants has the reservation wage matched to the offered wage – for example, due to 'sectoral'/aggregate wage information or informational spillovers.

Table A21 presents corresponding results on unique vacancy posting level, demonstrating that applicants to versions of the same vacancy that include the wage have closer matching wage expectations and reservation wages, as measured by the absolute difference between their expectation/reservation wage and the vacancy's offered wage. This is true for the average vacancy-channel (columns 1 and 3), and the expectations become even more precise as the amount of the offered wage increases (columns 2 and 4). The updating is incomplete: the gap between the expected and actually offered wage decreases by 13%, which is far from complete updating (even when taking into account potential expected wage adjustments from the applicants' perspective, e.g., through wage negotiations). Interestingly, applicants to treated versions of vacancies update their reservation wages slightly stronger than their expected wages. We also find that in response to the wage information treatment, the share of applicants with a reservation wage below or equal to the posted wage increases by 5.1 percentage points or 15% of the control mean.

This suggests that by posting the wage, firms can ensure a larger fraction of potential workers who would likely accept the offered wage. Even though not significantly so, this share increase in the amount of the posted wage.

B Further theoretical results

B.1 Modeling misperceptions

We can model workers' imperfect expectations $\tilde{w}$ as the average wage $E(w)$ plus a signal which is partially informative about the actual wage:

$$\tilde{w} = E(w) + \alpha[w - E(w)] + (1 - \alpha)\nu \tag{16}$$

The informativeness of the signal is measured by α: if $\alpha = 1$, the workers perceive the actual wage w perfectly, while $\alpha = 0$ describes workers whose best guess is the average wage and noise ν. Figure A1 shows that α is higher for posting vacancies than for vacancies without any wage information. In our setup, this will generate a flatter applications profile for bargaining vacancies, because perceptions of wages of bargaining vacancies center more strongly around the average wage. In other words, the perceived wages of posting vacancies react more strongly to the actual wage, which translates into a stronger relationship between the posted wage and the number of applications compared to bargaining vacancies. Finally, this setup also explains why the number of applications is the same for posting and bargaining vacancies at $w = E(w)$: this wage is perceived the same (and correct) regardless of whether the wage is posted or not.

The baseline model of directed search can generate Key finding #2 without imperfect information if we relax the assumption of constant matching elasticity. The steeper relationship for posting vacancies suggests that posted wages are higher than expected bargained wages for above-average vacancies, and lower than the expected bargained wage for below-average vacancies. Recall that optimal posted wage equals $w = \epsilon\, E(f(i, y))$ and the expected bargained wage equals $w = \beta\, E(f(i, y))$, where ϵ is the elasticity of the matching function with respect to queue length. For posting wages to be higher than bargained wages, we need $\epsilon > \beta$ for above-average wages, and $\epsilon < \beta$ for below-average wages. (Because our result holds within vacancy, we hold the expected output $E(f(i, y))$ constant.) Such a pattern is consistent with an increasing elasticity of matching: higher wages generally attract more applicants, which increases the proportional matching rate, which motivates firms to raise wages further.[40] The fact that bargaining and posting vacancies receive the same number of applications at average wage would imply that β equals the matching elasticity of the average-wage vacancy.

B.2 Differential hiring probabilities

Can we rationalize the experimental results with a simple tweak to our assumptions, namely by linking hiring probability with worker type? Even in a market with imperfect signaling like Addis Ababa, firms might be able to distinguish somewhat between more and less productive workers, so that H workers would face a higher hiring probability than L workers for any queue length q.

The main consequence of allowing differential hiring probabilities is that the expected utilities for H and L workers in the posting market are no longer the same. H workers have a higher probability of getting hired from the same queue, so their market utility will be greater than that of the less productive workers:

$$p_L(n(w))\,w = \bar{U}_L < p_H(n(w))\,w = \bar{U}_H \tag{17}$$

The expected utilities in the bargaining market will look similar:

$$p_L(n(\beta f(y,i)))\,\beta f(y,L) = \bar{U}_L < p_H(n(\beta f(y,i)))\,\beta f(y,H) = \bar{U}_H \tag{18}$$

The problem is that the expected utilities between these two different vacancy types must be the same within worker type, i.e., we need to show that:

$$p_L(n(w))\,w = p_L(n(\beta f(y,i)))\,\beta f(y,L) \tag{19}$$
$$p_H(n(w))\,w = p_H(n(\beta f(y,i)))\,\beta f(y,H) \tag{20}$$

To check whether this holds, we can make a further assumption that the matching function has constant returns to scale; in other words, the *relative* hiring probability between worker types does not depend on the length of the queue. As a result, since the experiment shows that the composition of the applicant pools is the same for bargaining and posting vacancies, the relative hiring probabilities for the two worker types will be the same across

[40] Note that this explanation does not rely on increasing returns to scale in matching, although such a matching function would also deliver this empirical pattern. The necessary condition is a matching function with any elasticity with increases in n, including one with decreasing returns to scale.

the two vacancy types:

$$\frac{p_H(n(w))}{p_H(n(w))} = \frac{p_H(n(\beta f(y,i)))}{p_L(n(\beta f(y,i)))} \tag{21}$$

As a result, we can show that relative market utilities under posting are equal to this relative hiring probability:

$$\frac{\bar{U}_H}{\bar{U}_L} = \frac{p_H(n(w))\, w}{p_H(n(w))\, w} = \frac{p_H(n(\beta f(y,i)))}{p_L(n(\beta f(y,i)))} \tag{22}$$

The problem is that the bargaining vacancy implies a different ratio of expected utilities:

$$\frac{\bar{U}_H}{\bar{U}_L} = \frac{p_H(n(\beta f(y,i)))\,\beta f(y,H)}{p_L(n(\beta f(y,i)))\,\beta f(y,L)} > \frac{p_H(n(\beta f(y,i)))}{p_L(n(\beta f(y,i)))} = \frac{\bar{U}_H}{\bar{U}_L} \tag{23}$$

which is a contradiction. This shows that a simple tweak to the assumptions of the standard directed search model - allowing for higher-productivity workers to be more likely to get hired - cannot rationalize our experimental findings. In fact, what we need is for H workers to be *less* likely to be hired in the bargaining market, to offset their higher expected wages there. However, as we show later in this paper, that would defeat the firms' purpose in offering bargaining vacancies to attract high-productivity workers.

B.3 Proof of Proposition 2

Under wage-setting, the firm's choice of optimal wage is a simpler version of the profit-maximization described in Section 4.1. Firms choose optimal wage w and number of applications n to maximize their expected profit, conditional on giving the applicants expected market utility $\bar{U}$:

$$\max_{w,n} \quad q(n)[E(f(i,y)) - w] \qquad \text{s.t.} \quad p(n)w = \bar{U} \tag{24}$$

This problem is simpler than the general profit-maximization problem in two dimensions. First, to calculate the expected output of the match $E(f(i,y))$, firm y takes expectation over the population distribution of worker ability i because workers do not sort into vacancies – each vacancy receives, in expectation, a representative sample of workers. Second, expected market utility does not depend on worker type i because we assume that workers do not know their type and hence all have the same expected utility. The optimal wage set by a firm of productivity y is:

$$w = \epsilon\, E(f(i,y)) \tag{25}$$

Similarly, under bargaining, each worker expects to earn the wage of the average worker employed in a firm of type y. (The worker's actual productivity and wage will become known to both sides during the bargaining process.) As a result, the size of the applicant pool n_b is given by expected bargaining wage $\beta E(f(i,y))$ so that the applicant receives the expected market utility $\bar{U}$: $p(n_b)\beta E(f(i,y)) = \bar{U}$.

The comparison of the quantity and quality of applicant pools under posting and bargaining shows that a bargaining vacancy will receive the same applicant pool as a posting vacancy offering $w = \beta E(f(i,y))$. This makes bargaining a specific case of posting. As a consequence, bargaining is weakly dominated by wage posting: bargaining is optimal only if $w = \beta\, E(f(i,y))$ happens to be the optimal wage, i.e., when the Hosios condition holds. This means that in our baseline model of directed search with worker ignorance about their productivity, bargaining is never strictly preferred to posting a wage.

B.4 Proof of Proposition 3

We prove Proposition 3 for a case of two types of workers, H and L, with μ denoting the share of the high-productive workers H. Because workers do not know their productivity, both types have the same market utility $\bar{U}$.

Under the no-ex-post loss condition, a firm posting a wage must screen all applications unless the optimal posted wage is low enough to satisfy the condition for the lowest-productivity worker:

$$\begin{aligned} &f(y,L) \geq w \\ &f(y,L) \geq \epsilon[\mu f(y,H) + (1-\mu) f(y,L)] \end{aligned} \tag{26}$$

where the optimal wage w depends on the expectations over the whole worker productivity distribution. If this inequality holds, the firm doesn't need to screen its applications because it's willing to hire anyone. In this case, posting dominates bargaining. We can apply Proposition 2, noting that under the no-ex-post-loss condition, bargaining firms' profits are lower by their expected share of the screening cost $q(n)(1-\beta)C$, which leads to posting strictly dominating bargaining.

If inequality (26) does not hold, the firm will screen all applications and discard workers with low productivity. Its optimization problem is:

$$\max_{x,n} \quad q(n\bar{G}(\kappa))[E(f(i,y|i \geq \kappa)) - w] - Cn \qquad \text{s.t.} \quad p(n\bar{G}(\kappa))w = \bar{U} \tag{27}$$

where κ denotes some cutoff productivity that corresponds to the no-ex-post-loss condition: $f(y,\kappa) = w + \frac{Cn}{\mu q(n)}$; $\bar{G}(\kappa)$ captures the share of workers with productivity above this cutoff: $\bar{G}(\kappa) = \text{Prob}(i \geq \kappa)$; and $E(f(i,y|i \geq \kappa))$ is conditional expected output of the match.

The optimal posting wage is given by:

$$w_S = \epsilon E(f(i, y|i \geq \kappa)) - C\frac{n}{q(n\bar{G}(\kappa))} \tag{28}$$

and the optimal profit is:

$$\pi_{S,P} = (1-\epsilon)q(n\bar{G}(\kappa))E(f(i, y|i \geq \kappa)) \tag{29}$$

We use the subscript S to denote a screening strategy.

In the case with two productivity types, $f(y, L) < w$ means that the firm will only match with workers of the H type. The profit maximization problem becomes:

$$\max_{x,n} \quad q(\mu n)[f(y, H) - w] - Cn \qquad \text{s.t.} \quad \frac{q(\mu n)}{n} w = \bar{U} \tag{30}$$

The optimal wage is:

$$w_S = \epsilon f(y, H) - C\frac{n_P}{q(\mu n_P)} \tag{31}$$

The profit arising from this vacancy is:

$$\pi_{S,P} = (1-\epsilon)q(\mu n_P)f(y, H) \tag{32}$$

Bargaining vacancies satisfy the no-ex-post-loss condition by construction. As a result, the firm is willing to hire both L and H workers, and screens only the worker it matches with. We also assume that $(1-\mu)f(y, L) > C$, i.e., hiring L workers is ex-post profitable under bargaining.

The profit maximization is given by:

$$\max_{x,n} \quad q(n)(1-\beta)[E(f(i, y)) - C] \qquad \text{s.t.} \quad p(n)\beta[E(f(i, y)) - C] = \bar{U} \tag{33}$$

The bargained wage equals the workers' share of match output net of the screening cost: $\beta[Ef(y, i) - C]$, and the resulting profit is:

$$\pi_B = q(n_B)(1-\beta)[E(f(i, y)) - C] \tag{34}$$

The firm will choose to post or bargain depending on which strategy delivers a higher profit. Bargaining will dominate if:

$$\begin{aligned} q(n_B)(1-\beta)[E(f(i,y))-C] &> q(\mu n_P)f(y,H)(1-\epsilon) \\ \frac{q(n_B)}{q(\mu n_P)} &> \frac{f(y,H)}{\mu f(y,H)+(1-\mu)f(y,L)-C}\frac{1-\epsilon}{1-\beta} \end{aligned} \tag{35}$$

To prove that there exists some set of parameter values for which this inequality holds, we first derive the sign for the ratio $n_B/\mu n_P$ from the expressions for market utility in equilibrium. For bargaining, it is:

$$p(n_B) = \frac{\bar{U}}{E(f(i,y))-C}\frac{1}{\beta} \tag{36}$$

and for posting:

$$p(\mu n_P) = \frac{\bar{U}+C}{\mu f(y,H)}\frac{1}{\epsilon} \tag{37}$$

$n_B > \mu n_P$ if:

$$p(\mu n_P) > p(n_B) \quad \Leftrightarrow \quad \frac{\bar{U}+C}{\bar{U}} > \frac{\epsilon}{\beta}\frac{\mu f(y,H)}{\mu f(y,H)+(1-\mu)f(y,L)-C} \tag{38}$$

This inequality is likely to hold when:

- β is not too small compared to ϵ
- μ is not too large
- C is smaller than $(1-\mu)f(y,L)$

If it's true that $n_B > \mu n_P$, $q(N_B)/q(\mu n_P)$ is greater than 1. The sufficient conditions for inequality 35 to hold then are:

- β is not too large compared to ϵ
- the gap in productivity between H and L workers isn't too large
- μ is not too large
- C is small

Putting conditions 35 and 38 together, we arrive at the following set of parameter values under which bargaining is more profitable than posting:

- medium values of β

- μ is not too large
- low C
- the gap in productivity between H and L workers is not too large

C Deviations from the pre-analysis plan

We pre-registered the experiment at the AEA RCT registry (https://www.socialscienceregistry.org/trials/9993). This pre-analysis combines the pre-specification for 3 of the 4 cross-randomized experiments (we did not pre-specify the fourth, information about the flexibility of working hours, as it seemed more speculative), but we registered our intention to write separate papers about the experiments. Our results are robust to controlling for all treatment status simultaneously (Table A11). It includes the main ATE analysis with two main outcomes: the inverse hyperbolic sine (IHS) of the number of applicants and an applicant quality index.

We have since learned that using the IHS to analyze data with zeros causes econometric problems as the results depend on the scaling of the measured variable (Chen and Roth, 2024). Hence, we reverted to using raw numbers for our main analysis instead, though our pre-specified results are also robust to using IHS (Table A6). We also show results for Poisson regressions as suggested by Chen and Roth (2024), which are even stronger (Table A7).

A key, non-prespecified addition to our analysis is the interaction of the wage information treatment with the offered wage. This addition is motivated by theoretical models that predict correlations between applicant numbers (Wright et al., 2021) and descriptive findings supporting this prediction (Banfi et al., 2022).

We also pre-specified three categories of secondary outcomes: gender composition (Table A9), worker preferences (Table A16), and beliefs (about competition (Table A16) and wages (Table A21)). All other outcomes should be treated as exploratory analysis.