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## Searching with Friends

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DISCUSSION PAPER SERIES

IZA DP No. 13857

**Searching with Friends**

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NOVEMBER 2020

## DISCUSSION PAPER SERIES

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# Searching with Friends

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NOVEMBER 2020

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# ABSTRACT

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## Searching with Friends\*

We study how active labor market policies affect the exchange of information and support among jobseekers. Leveraging a unique social network survey in Ethiopia, we find that a randomized job-search assistance intervention reduces information sharing and support between treated jobseekers and their active job-search partners. Due to lower job-search support, untreated individuals search less and, suggestively, have worse employment outcomes. These results are explained by a model of networks where unemployed individuals form job-search partnerships to exploit the complementarities of job search. These partnerships are broken if policy creates inequality in the access to information about job vacancies.

**JEL Classification:** D85, L14, O12, J64, D8

**Keywords:** job search, social networks, RCT, active labor market policies

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# 1 Introduction

Social networks play a key role in job search.<sup>1</sup> This is particularly true in developing countries, where 50 percent of workers report that they found out about their job through social networks.<sup>2</sup> However, the nature of the social connections that people leverage in the labor market is poorly understood. This lack of understanding makes it hard to predict how labor market networks respond to policy. Do the direct beneficiaries of labor market policies support non-beneficiaries by sharing information and resources? Or do beneficiaries break social ties with non-beneficiaries because they no longer find it worthwhile to continue exchanging information?

In this paper, we use experimental evidence and theory to show that job search networks can be weakened by labor market interventions and that this can have adverse consequences for untreated individuals. These results have important implications for employment interventions, because typically such policies do not treat all people in a community – for example due to age, geographic, or neediness restrictions.<sup>3</sup> They also advance our understanding of the nature of social networks in the labor market. Our setting and empirical results are consistent with models in which network links are endogenously formed on the basis of strategic interests and therefore can be broken by external interventions that disrupt those interests.

We focus on the understudied information-sharing networks that exist between unemployed individuals. These networks deserve special attention for two reasons. First, survey data with young jobseekers in Addis Ababa, Ethiopia, shows that this is a crucial part of how networks are used to find jobs.<sup>4</sup> Second, from a conceptual standpoint, these types of networks may react differently to external interventions than the types of networks that have received more attention in the literature. Existing work has often assumed that information and support is offered only by people who are already employed to unemployed jobseekers (Granovetter, 1973, Munshi, 2003, Beaman and Magruder, 2012, Cingano and Rosolia, 2012). When we consider information sharing between the unemployed, benefits from an intervention could spread to untreated individuals even if treated individuals remain in unemployment, a prediction that does not come out of the existing models.<sup>5</sup> Further,

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<sup>1</sup>For an overview of the literature, see Beaman (2016). Sapin et al. (2020) show that the fraction of job seekers who heard about their current job from a social contact varies from 13 percent in the US to 72 percent in the Philippines.

<sup>2</sup>Authors own calculations based on Sapin et al. (2020) and further individual studies.

<sup>3</sup>See Crépon et al. (2013) for an example and Card et al. (2018) for an overview.

<sup>4</sup>We show that, of the jobsearch contacts with whom unemployed youth share information about jobs in this context, 50 percent are themselves unemployed. Furthermore, 42 percent of respondents who received information about jobs from their networks say that that none of those people had a particular connection to the employer.

<sup>5</sup>Indeed, our experiment was designed to test for this effect and therefore provide evidence of positive spillovers on untreated individuals. We had not initially anticipated the result that job search networks would be weakened.

the literature often takes labor market networks as exogenous. Instead, we hypothesise that unemployed jobseekers form information and support-sharing links with other jobseekers to take advantage of the positive externalities between the search effort of socially connected individuals. These job-search partnerships are likely to be vulnerable to disruption, particularly when partners' access to information becomes asymmetric. If a partnership stops being advantageous, treated individuals may break the link. Thus, employment policies can either hurt or benefit untreated individuals, depending on whether they disrupt the social equilibrium.

Our experimental evidence comes from studying the effects of a randomized labor market intervention—a transport subsidy offered to young jobseekers—that has positive direct impacts on job search intensity and labor market outcomes of treated individuals (Abebe et al., 2020). Treated individuals thus acquire new labor market information thanks to the intervention (but have not, at the time of our endline survey, found new jobs). We collect a unique dataset that tracks the close social ties of “seed” individuals from both the treatment and control groups of the original experimental study. These social ties are the job-search partners of the seeds: people with whom the seeds regularly share job search expenses and information about available vacancies accessed from publicly available job advertisements. Our primary empirical test compares the behavior and outcomes of the partners of treated seeds to that of the partners of untreated seeds.

We establish two central empirical results. First, we find the job search intervention decreases social interaction among those job search partnerships where both individuals search for employment at baseline. In particular, five months after the start of treatment, we document a significant, 32 percent, decrease in the probability of sharing information about vacancies and a significant, 49 percent, decrease in the likelihood of sharing transport expenses. In the full sample (which includes pairs where some individuals are inactive), we find insignificant declines in information sharing or in other forms of support such as sharing transport expenses.

To explain these findings, we propose a simple model that studies how network formation interacts with job search. We embed a sequential network formation game into a simple job-search model with costly search effort. The model illustrates how unemployed individuals have incentives to form job-search partnerships whenever there are positive externalities to job search effort. Furthermore, it shows that inequality in job search costs makes job-search partnerships unstable. In line with this model, we provide additional empirical evidence on the key role played by inequality in job-search costs: we find that the negative effects are stronger for pairs of friends who reciprocally exchange information at baseline and have similar levels of expenditure—that is, the job search partnerships that are most likely to be based on equal contributions to job search within the partnership. We also rule out a number of alternative explanations of the weakening of job search networks. First, we show that

the effects of social interaction are not a mechanical result of treated individuals spending more time working or commuting to work. Second, we show that treated individuals do not establish new links to higher-value job search partners, so there is no “rewiring” of network ties. Third, the results are not driven by temporary or permanent migration within or outside of the city. Fourth, we can rule out that the subsidy discourages the job-search partners of treated individuals, or changes their beliefs about the returns to job search. Finally, since treated individuals had not experienced increased employment by the time of our endline survey, we argue that the effect is driven by changes in information among these jobseekers, specifically, rather than because finding a job caused treated individuals to break with their partners.

Our second central result is that the partners of treated individuals reduce their job-search effort as a result of the intervention. In particular, we find that the job-search partners of treated individuals are significantly less likely to search for work compared to the partners of untreated recipients. Overall job search goes down by 20 percent, and job search strategies that require transport to the city centre are chosen less frequently (between 30 and 40 percent). We also discuss suggestive evidence of a reduction in employment for the partners of treated individuals. The coefficient magnitudes are economically meaningful, but marginally insignificant.

Our theoretical framework suggests that the break-up of job search partnerships can lead to a reduction in search intensity among the untreated if search efforts are strategic complements. We provide descriptive evidence using our data that supports the strategic complementarity hypothesis: the returns to search effort are higher for individuals with stronger networks. Consistent with this, we demonstrate quantitatively that the decrease in job search that we document can be explained in large part by the fall in social interaction. To show this, we use mediation analysis to estimate the Average Controlled Direct Effect (ACDE) of the intervention—that is, the effect of the intervention on the job-search partners’ job search if social interaction with the treated individuals had not changed (Acharya et al., 2016). We find that the ACDE is 80 percent smaller than the ATE we previously estimated: if social interaction between treated individuals and the job-search partners had not changed, the reduction in probability of searching for work of the latter would have only been 20 percent of what we find.

The paper make a number of contributions. First, we show that policy interventions can disrupt social networks. There is very little work studying how social networks are influenced by external interventions. An exception is the work of Comola and Prina (2017) and Banerjee et al. (2018) who investigate how savings and microfinance interventions affect financial networks. In addition, Stein (2018) finds that untreated microentrepreneurs in Uganda are more likely to create new links with entrepreneurs who participate in a training intervention. To the best of our knowledge, the finding that people stop sharing information with their

social ties after treatment is novel in the literature. The closest result to ours is from [Hess et al. \(2018\)](#), who show that a community-level intervention in the Gambia led to a reduction in transfers in social networks within treated villages.<sup>6</sup> We further advance this literature by showing that the negative effects on social networks are stronger when the ties have similar expenditure levels at baseline. This highlights that the inequality generated by targeted interventions is a possible mechanism leading to the deterioration of social capital.

Second, we advance this literature by providing some of the first evidence for these effects in the context of job-search networks. There has been particularly little work regarding the effects of labor market and social protection policies on and through social networks. A large body of literature shows that job search effort is affected by unemployment insurance ([Marinescu, 2017](#), [Lichter, 2016](#)), and job search assistance policies ([Altmann et al., 2018](#), [Belot et al., 2015](#)).<sup>7</sup> These effects could have important interactions within the social networks of beneficiaries. This is particularly true for programs where some members of the social network may be excluded from program benefits, such as means-tested social transfers, time-limited unemployment insurance, programs to which migrants and refugees do not have access, or age-restricted job search assistance.

Third, we advance the literature on networks and labor market outcomes by focusing on the sharing of information among unemployed job seekers. A large literature looks at the role of referrals in labor markets ([Bentolila et al., 2010](#), [Topa, 2011](#), [Burks et al., 2015](#), [Beaman and Magruder, 2012](#)).<sup>8</sup> These studies often focus on networks connecting the employed to the unemployed ([Granovetter, 1973](#), [Ioannides and Datcher Loury, 2004](#), [Cingano and Rosolia, 2012](#)). The young unemployed people in our urban context regularly share information and transport expenses with their friends when looking for work. This type of network structure lacks empirical and theoretical study. We extend a class of models generally used to focus on information flows and referrals from the employed to the unemployed to allow for information flows between unemployed job seekers. Our empirical results are consistent with a strong form of complementarity in job search-effort, in line with our theoretical explanation for the existence for these networks. This is a novel finding in the job search literature. Recent experimental evidence on migration decisions, however, also reveals a strong form of strategic complementarity ([Akram et al., 2018](#)). We further add to the job search literature by endogenizing the network structure to allow for members of the network to leave if membership is no longer beneficial to them. [Bramoullé and Saint-Paul \(2010\)](#) and [Krauth](#)

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<sup>6</sup>A related literature looks at the effects of interventions on non-participants through channels other than social networks. Examples include psychological well-being ([Haushofer et al., 2015](#)) and social preferences ([Cecchi et al., 2016](#)).

<sup>7</sup>The literature on the effects of welfare programs such as the earned income tax credit is more limited. However, the evidence showing large effects of these types of programs on labor supply presents good reasons to believe that job search would also be affected ([Eissa and Liebman, 1996](#), [Meyer and Rosenbaum, 2001](#)).

<sup>8</sup>A related literature focuses on the benefits of hiring through social networks for employers ([Dustmann et al., 2016](#)).



(2004) both develop models in which social ties can be created or severed, but maintain the assumption that job opportunities flow exclusively from the employed to unemployed.

Finally, from a methodological perspective, we show the importance of tracking geographically dispersed networks in urban areas and the limits of relying on neighbors or family members alone. Abebe et al. (2020) study the indirect effects of the intervention on a sample of control individuals residing close to program participants. Despite their geographical proximity, these individuals often have only weak social ties to treated jobseekers. Abebe et al. (2020) do not find evidence of spillover effects on this sample. Similarly, it is common in the literature to proxy social networks with family ties (e.g. Kramarz and Skans, 2014, Cruz et al., 2017). We find that very few of the job-search partners in our sample are related. These results highlight that tracking close social connections across space is necessary to develop a comprehensive view of the economic role of urban networks.

## 2 Job search networks in Addis Ababa

In this Section, we present some key stylised facts about social networks in Addis Ababa. We use four main sources of data: (i) the 2013 Labour Force Survey of the Central Statistical Agency of Ethiopia, (ii) the endline survey from the experimental study of Abebe et al. (2020), (iii) the network survey which we ran for this study and which is described in more detail below, and (iv) a representative survey of young people searching for jobs at vacancy boards, conducted in 2020.

**Fact 1.** *Social networks are a widespread and effective method of job search.*<sup>9</sup>

Data from the Labour Force Survey shows that 24.5 percent of jobseekers rely on social networks as their main method of job search. This makes social networks the second most popular method of job search, after visiting the job vacancy boards, which is chosen by 25.4 percent of jobseekers. At the same time, there are clear overlaps between the different methods: 85 percent of a representative sample of young people at the boards use networks to search, and 75 percent have received information about a vacancy from networks.<sup>9</sup>

Further, the information acquired from social networks often leads to employment. 48 percent of the employed individuals in the sample of Abebe et al. (2020) have heard about their current job through family, friends or acquaintances, while only 33 percent of individuals have found out about their current job by visiting the job boards. Referrals are also widespread. In our network baseline survey, of all the individuals working in the last seven days, 48 percent received the job or an interview for the job through a direct referral from a

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<sup>9</sup>43 percent of those who have received information said that the person who gave it to them had special information about the position. The other 57 percent say that all the information they received was publicly available.

social contact. Similarly, 70 percent of individuals usually ask relatives, friends or acquaintances for help getting a job, and in half of these cases, this involved a direct referral to a job in the past. Importantly, the use of social networks for job search is common across all demographic groups.<sup>10</sup>

**Fact 2.** *Most of the social networks support comes from close friends.*

In our baseline sample, the person informing the respondent about their current job is a close friend in 67 percent of the cases and a family member in 17 percent of the cases. On average, respondents interact with this person three days a week. These patterns stand in stark contrast to the strength of weak ties hypothesis (Granovetter, 1973). Gee et al. (2017) study a samples drawn from 55 countries, mostly from the developed world, and find that a single strong tie is more valuable even though most jobs are received through weak ties. Our findings show an even more prominent role for strong ties.

**Fact 3.** *Social network support is reciprocal and is often exchanged among unemployed people.*

In survey data that we collected from a representative sample of job-board visitors, 89 percent of people at the boards have friends who also visit the boards, and 90 percent of them have passed on information that they saw at the boards to their friends. Of those who have received information about a job vacancy, only 43 percent said that at least one person who passed them information had some special information about the vacancy. The other 57 percent only received information that was publicly available.

The exchange of information about jobs and vacancies is often reciprocal. In our network baseline survey, 80 percent of the close ties both give and receive information about jobs to and from their seeds. Further, reciprocal support is not limited to information sharing. For example, 50 percent of job search partners in our baseline sample travel together to the city centre with the seed to look for information about employment. Jobseekers often take turns to pay the transportation costs of these trips and further support each other in a number of ways.

A large share of job-search support is exchanged among individuals who are unemployed. The median unemployed jobseeker in Abebe et al. (2020) regularly shares information with four other people, two of whom are also currently unemployed. In our baseline sample, the

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<sup>10</sup>Women, migrants and individuals without tertiary education are more likely to rely on social networks (see Table H10 in the appendix). This is in line with the wider literature on social networks and job search, which emphasises the role of networks for migrants (Munshi, 2003) and individuals with lower levels of education (Wahba and Zenou, 2005). While women generally tend to be underserved by employment networks (Beaman et al. (2018) and overview in Ioannides and Datcher Loury (2004)), Seabright (2012) suggests that women are more likely to have a few strong ties rather than multiple weak ties. In Addis Ababa, men, non-migrants and educated individuals also make a substantial use of social networks in job search. Overall, our descriptive regression suggests that 95 percent of the working-age population in the city has a predicted probability of using social networks for job search above 10 percent.

average job search partner has 2.5 job contacts, of whom fewer than one is employed. Again, this is contrast with standard accounts of labor market networks where most information transmission occurs from the employed to the unemployed (Calvo-Armengol and Jackson, 2004, Cingano and Rosolia, 2012). Interestingly, job-search partners often live in different neighborhoods.<sup>11</sup>

**Fact 4.** *Not all job-search partners are actively searching.*

In our baseline sample, only 34 percent of job contacts have searched for a job in the past week and 53 percent have searched for a job in the past six months (61 percent if we restrict the sample to unemployed people). Active job-search partners differ from inactive job-search partners on several dimensions: they are less likely to be in employment, they have left school later and are also more likely to be poorer (Appendix Table E2, joint  $p$ -value=0.00). The seed individuals of active and inactive job-search partners, on the other hand, tend to have similar characteristics (Appendix Table E3, joint  $p$ -value=0.58), with the exception that active job search partners tend to have seeds that are also more active in job search. As a consequence, the baseline differences between the seed individuals and their actively searching job contacts are much less pronounced than the differences between seeds and inactive job contacts (Appendix Table E4). In particular, inactive job contacts are older, more likely to work, less likely to search, and out of school for longer than the seed. We can strongly reject the test of joint orthogonality of all covariates ( $p = 0.00$ ) for no differences between seeds and inactive job contacts.

Ultimately, our sample contains two types of job-search links: i) links to unemployed people who are also searching, and who are very similar to the seed individual; or ii) links to employed people who are not searching, and who are dissimilar to the seed. In the latter case the relationship is one of dependence; in the former case is one among equals.

**Fact 5.** *Own job search and social network job search are strategic complements.*

The evidence on the returns to job search in the control group suggests that there are strategic complementarities in job search. We show this by comparing the returns to an additional day of job search for individuals with a below median job-search network to those of individuals with an above median network (where we proxy the strength of a network by

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<sup>11</sup>The left panel of Figure A1 displays the place of residence in Addis Ababa of the individuals in Abebe et al. (2020) whom we have sampled for this paper. The right panel shows the place of residence of their job-search partners. The original study participants were sampled from randomly selected geographical clusters outside of the centre of the city. Their job-search partners, on the other hand, are distributed all over the city. In total, less than 5 percent of the social contacts live within a 2 km radius of the city centre. Figure A2 displays the distribution of the distance between the place of residence of the original study participants and that of their job-search partners. The modal distance is approximately 2 km, with a mean of 3.75 km and a median of 1.6 km. This means that more than 50 percent of pairs live more than 25 minutes of walking distance apart, calculated “as the crow flies”. Actual walking times are likely to be higher.

its size). Figure 1 shows that, for individuals with a below-median network, the returns to job search are fairly low. On the contrary, these returns are significantly higher for individuals with a strong network. This suggests that job search efforts are complements: The more social access unemployed individuals have to other active jobseekers, the higher the payoff from additional job search.<sup>12</sup>

[Figure 1 about here.]

### 3 The experiment

#### 3.1 The transport subsidy

The transport subsidy consists of a monetary transfer that is available for collection in a central location in the city, three times a week. The transfer is thus conditional on reaching the centre of town, where jobseekers can visit the job vacancy boards and where many firms are located. This intervention is designed to help young jobseekers pay for the transport costs required for effective job-search and thus overcome the spatial frictions that emerge in large, congested cities (Abebe et al., 2020). The amount disbursed is calibrated to cover the cost of a return journey from the participant’s place of residence to the intervention centre. Figure A4 shows the amount and duration of the subsidy.<sup>13</sup> The amount available on a given visit varies by participant, ranging from 15 Ethiopian Birr (0.74 USD)<sup>14</sup> to 30 Ethiopian Birr (1.48 USD) with a median of 20 Ethiopian Birr (0.98 USD). The duration of the subsidy is randomized across participants and ranges between 13 and 21 weeks. The intervention started in late September 2014. By February 2015 the latest batch of participants had stopped receiving the subsidy.

#### 3.2 The network survey

This paper is based on a survey of the job-search partners of the original program participants. We proceed in three steps. First, we randomly select 165 individuals from the treatment and control group of the original study. We call these individuals the “seeds”. Second, we ask each seed the following, open-ended question: “With whom in Addis Ababa do you regularly share information about job opportunities?”<sup>15</sup> We further ask a number of questions about the

<sup>12</sup>We find similar results when we disaggregate by the search effort of the partner at baseline, see Appendix Figure A3.

<sup>13</sup>Here we report data computed over the subset of original program recipients that are sampled for this study.

<sup>14</sup>Dollar amounts calculated with the average exchange rate during the intervention period from September 2014 to February 2015.

<sup>15</sup>“Regularly” is defined as exchanging information at least once per month. We do not limit the number of job-search partners that can be reported.

interaction between seeds and job-search partners and collect the partners' contact details. This gives us a sample of about 1000 job-search partners. Third, we randomly select 596 job-search partners for interview. These 596 individuals constitute the main sample of this study. We conduct a baseline interview, before the start of the transport intervention, and an endline interview six months after the original interview. A timeline of events can be found in appendix Section A. We collect data on socioeconomic characteristics, labor market experience and job search decisions, measures of preferences and aspirations, as well as time use and expenditure data.

[Figure 2 about here.]

## 4 A model of network formation and job search

In this Section we develop a simple theoretical framework that clarifies how job search and network formation decisions are affected by a policy that subsidizes only one individual in a job-search partnership.

Our key assumption is that, when two individuals are in a partnership, the job search efforts of one person increase the chances of employment of both people in the pair. This is because individuals acquire and share information that may be valuable for their partners. Further, job seekers help each other by sharing expenses and psychological support, and opportunities for sharing this support may increase as job search activity intensifies. These positive externalities motivate individuals to form job search partnerships.

Maintaining social links is also costly. Individuals have to invest time and attention in the partnership. Further, when they share resources, there is a risk that favours will not be returned in the future. Thus, individuals have to weight the benefits of a job search partnership against its costs.

To model how individuals solve this tradeoff, we study a simple game where two job seekers — a seed individual  $i$  and a potential job partner  $j$  — make two sequential decisions. First, each individual decides whether they want to form a connection with the other job seeker. Link formation is bilateral: a connection is established only if both job seekers agree to the link. Second, after job seekers observe whether a connection has been formed, they decide how much effort to exert to find a job.

If a link has been formed in the first stage, the probability of finding a job is a CES function of the search efforts of the two job seekers, which we denote as  $y_i$  and  $y_j$ . The parameter  $p \in (0, 1]$  determines the degree of complementarity of these efforts. Further, we assume that both the marginal cost of job search ( $\kappa y^s$ ) and the marginal cost of maintaining the link ( $c y^s$ ) increase in own search effort ( $s > 1$ ) (evidence of the convexity of search costs is found, for example, in DellaVigna et al. (2017)). If a link has not been formed, job seekers do not

benefit from the external effect of the other person's job search. However, they also save on the costs required to maintain the link.

We consider an intervention that reduces job search costs by a factor  $\alpha \in (0, 1]$ . If a job seeker does not receive the intervention,  $\alpha = 1$ . If a job seeker receives the intervention,  $0 < \alpha < 1$ : the job seeker can search at a lower cost. In the second stage, job seeker  $i$  will choose how much search effort to exert in order to maximise the following payoff function:

$$\pi_i = \begin{cases} (y_i^p + y_j^p)^{1/p} - y_i^s c - y_i^s k \alpha_i & \text{if searching in a partnership,} \\ (y_i^p)^{1/p} - y_i^s k \alpha_i & \text{if searching alone.} \end{cases} \quad (1)$$

Job seeker  $j$  solves a symmetric problem. In the first stage, jobseekers work out equilibrium search efforts and payoffs under both scenarios, and then agree to a link only if the payoff searching in a partnership is larger than the payoff searching alone. The optimal search effort when searching alone is:

$$y_i^* = \frac{1}{s \alpha_i k}^{\frac{1}{s-1}}. \quad (2)$$

When searching in a partnership, the equilibrium level of effort is:

$$y_i^* = \left[ \frac{\left(1 + z^{\frac{p}{p-s}}\right)^{\frac{1-p}{p}}}{s(c + \alpha_i k)} \right]^{\frac{1}{s-1}}, \quad (3)$$

where  $z = \left(\frac{c + \alpha_j k}{c + \alpha_i k}\right)$ .

This analysis illustrates how, in a partnership, the person with the lower search costs exerts more effort in equilibrium. To see this, consider a simple case where  $\alpha_i < \alpha_j = 1$ , which we depict in the left panel of Figure 3: the more we subsidize the costs of the seed individual, the larger the asymmetry in optimal effort. This is intuitive: when costs are asymmetric and search effort is the same, the marginal return to search effort is not equalized. To reach an equilibrium, the low-cost individual has to exert more effort, while the high-cost individual free rides. If the link is maintained, then the high-cost individual naturally benefits from the subsidy given to their partner, as shown in the middle panel of Figure 3.

**Intuition 1.** *If the social connection does not break, there are positive spillovers: the reduction in search costs for  $i$  will increase  $j$ 's payoff.*

Free-riding reduces the value of being in a partnership relative to searching alone. The right panel of Figure 3 illustrates this for a case where, when search costs are equal, both

individuals prefer searching together than searching alone. In this case, a sufficiently large subsidy to the search costs of the seed individual makes searching alone more attractive for them. As a result, the subsidized individual breaks the partnership.

[Figure 3 about here.]

**Intuition 2.** *Subsidizing the search costs of one individual in a job search pair decreases the value of the partnership due to free riding. This can motivate the treated job seeker to break the link.*

How does the break-up of the partnership affect the other partner? This depends on whether search efforts are strategic complements or substitutes. If efforts are substitutes, losing a partner will incentivize the untreated job seeker to increase search effort. On the other hand, if efforts are complements, the untreated job seeker will exert less effort when searching alone compared to when searching in a partnership.

Formally, for the case where  $\alpha_i < \alpha_j = 1$ , effort in a partnership is greater than effort when searching alone when  $p < \frac{1}{1 + \frac{\ln(\frac{c+k}{k})}{\ln(2)}}$ . If  $c = k$ , this condition reduces to  $p < 1/2$ , which implies strategic complementarity (in our framework, search efforts are strategy complements whenever  $p < 1$ ).

**Intuition 3.** *For a sufficiently strong strategic complementarity between search efforts, the untreated individual exerts less effort when searching alone than when searching in a partnership.*

This final intuition suggests that an intervention that causes a job-sharing link to be severed could lead to a reduction in search effort among the untreated partner.

## 5 Data and empirical strategy

### 5.1 Balance and attrition

We test for balance with respect to (i) the characteristics of the seeds, (ii) the characteristics of the job-search partners, and (iii) the nature of the interaction between seeds and their partners.

Baseline differences in the characteristics of the treatment and control seeds are reported in appendix Table F5. Overall balance is good, as we cannot reject the test of joint orthogonality of all covariates ( $p = 0.13$ ). The only significant differences at five percent level are the higher share of females and the lower share of seeds who ever worked for pay in the treatment group. At a ten percent significance level, we have a lower proportion of casual workers and of individuals who recently searched at the job boards in the treatment group, as well as some small differences in the share of minority ethnicities.

Appendix Table F6 shows baseline balance in the characteristics of the job-search partners. We cannot reject the test of joint orthogonality of all covariates ( $p = 0.60$ ).<sup>16</sup> The only variables significantly different at a five percent or stronger level are whether the individual was born outside of Addis Ababa and had permanent work in the past seven days. We control for all unbalanced (at a ten percent or stronger level) baseline characteristics of the job-search partners in our analysis.

Lastly, we look at balance in the nature of the interaction between seeds and their partners. Table 1 shows that all variables are all balanced at the ten percent level, indicating that the experimental randomization was also successful for interactions in the job-search pairs. The test of joint orthogonality cannot be rejected (at  $p = 0.80$ ).

[Table 1 about here.]

We have low levels of attrition. 540 job search partners (91 percent) from our baseline sample of 596 are surveyed at endline. Attrition is very similar for the job search partners of treated seeds (90.5 percent resurveyed) and untreated seeds (91 percent resurveyed). Appendix Table G8 shows that attrited individuals are more likely to be female and to have worked in an office in the week before the baseline interview, while appendix Table G9 shows that these effects do not differ by treatment status of the seed, hence do not compromise the integrity of the experiment. Figure 2 gives an overview of our study sample. Interestingly, about half of the individuals would satisfy the eligibility criteria of the original study (age 18-29, at least high school education, no permanent employment). The other individuals tend to be older, more educated, and better positioned in the labor market.

## 5.2 Empirical strategy

We estimate the effects of the intervention on job-search partners using the following AN-COVA estimator:<sup>17</sup>

$$y_{i,t=1} = \beta_0 + \beta_1 y_{i,t=0} + \beta_2 Treat_{i,t=1} + \beta_3 X_{i,t=0} + \varepsilon_{i,t}, \quad (4)$$

where

$$Treat_{i,t=1} = \begin{cases} 1 & \text{if the job-search partner's seed received transport subsidy;} \\ 0 & \text{if the job-search partner's seed did not receive transport subsidy.} \end{cases}$$

<sup>16</sup>Due to the large number of covariates and the associated risk of overfitting, we exclude all covariates that have a correlation above 0.5 with any of the other covariates from the test of joint orthogonality.

<sup>17</sup>We did not register a pre-analysis plan, but rather view this study as an explorative exercise that departs from more traditional analysis of experimental data.



$y_{it}$  is the outcome of interest of job-search partner  $i$  at time  $t$  ( $t = 0$  refers to the pre-intervention period, and  $t = 1$  to the post-intervention period), and  $X_{i,t=0}$  is a vector of pre-treatment baseline controls. We study impacts on different measures of social interaction, job search and employment. For each family of tests, we also report effects for a summary index of all outcome measures in the family. Our choice to include the vector of pre-treatment baseline covariates enables us to control for minor baseline imbalances and to increase the precision of our estimates. We cluster the standard errors of all regressions at the level of the seed, the original unit of randomization.

We estimate heterogeneous impacts of the intervention on job-search partners with the following equation:

$$y_{i,t=1} = \beta_0 + \beta_1 y_{i,t=0} + \beta_2 Treat_{i,t=1} + \beta_3 Het_{i,t=0} + \beta_4 Het_{i,t=0} \cdot Treat_{i,t=1} + \beta_5 X_{i,t=0} + \varepsilon_{i,t}, \quad (5)$$

where  $Het_{i,t=0}$  is the baseline heterogeneity dimension of interest and  $\beta_4$  is the treatment difference between individuals fulfilling the heterogeneity criterion and those who do not.

Our key dimension of heterogeneity is whether the job-search partner of the seed was an active jobseeker at baseline or not. We assume that impacts might be stronger for pairs of job-search partners in which both individuals are actively searching for a job—pairs based on the sharing of information obtained through job search—compared to pairs where only the seed individual is an active jobseeker. Partnerships with inactive individuals cannot be grounded in the sharing of information and must be maintained for different reasons. It is unclear whether the intervention will affect these partnerships.

## 6 Results

In this Section, we study the effects of the transport subsidy on the job-search partners of treated individuals. We report results on social interaction, job search and employment outcomes. All outcome variables are defined in the appendix Section B.

### 6.1 Social interaction between seeds and their job-search partners

We do not find evidence that the intervention increases social interaction between seeds and their job-search partners. We show this in Table 2, for different dimensions of social interaction. In particular, the fraction of partners that share transport expenses with their seed decreases by a marginally insignificant 7 percentage points (over a control mean of 24 percent). Further, the fraction of partners that share information with the seed decreases by an insignificant 4 percentage points (over a control mean of 41 percent).

[Table 2 about here.]

### 6.1.1 Active job-search partners

As presented in Section 2, the seeds' job contacts can be either actively searching for a job themselves or not. We hypothesize that treatment effects are stronger for those job-search partners who are looking for work at baseline, and run heterogenous treatment effect regressions by whether job-search partners use the job vacancy boards at baseline.<sup>18</sup>

We find that the subsidy substantially reduces social interaction between treated seeds and their active job-search partners. The results of our analysis, reported in Table 3 (column (1)), show that the interaction between treated seeds and active job-search partners decreases substantially in almost all dimensions: the social interaction index, a standardised index of all outcome variables in the table, decreases by 0.5 standard deviations, which is a large effect. In terms of the detailed outcomes, job-search partners share fewer information with their seeds (-20 pp.), spend less time with their seeds (-15 pp.), travel to the centre less often (-19 pp.), and share travel expenses less often (-18 pp.). These effects are very large and statistically significant. Active job-search partners spend seven fewer hours per month with the seeds, when those seeds are treated. In our baseline sample, a one-kilometre increase in the geographical distance between the seed and the partner is associated with a reduction in the time they spend together of approximately one hour. The impact of the subsidy on time spent is thus comparable to doubling the baseline mean distance (3.75 km) between job-search partners.

We also find some suggestive evidence that the size of the overall job contact network decreases by 19 percent (over a baseline mean of 2.17 job contacts). These findings indicate a clear disruption of information sharing and other forms of social interaction between seeds and their job-search partner. Further, the job-search partners do not fully offset this by establishing new connections.

[Table 3 about here.]

## 6.2 Job search

We find that the intervention reduces the job search intensity of the partners of treated seeds, in the full sample of job-search partners. We show this by investigating both job search in the last seven days and in the last 30 days in Table 4. The search index decreases by a significant 0.2 standard deviations. Both recent overall job search and job search at the vacancy boards decrease by seven percentage points, respectively. These are declines of 21 percent and 41 percent, respectively, compared to the endline search levels of the control group. These are large effects, especially when contrasted with the direct effects of the intervention on

<sup>18</sup>A more detailed rationale for this analysis is given in Section 7.1.

program participants.<sup>19</sup> Recent job search using social network decreases by 3 percentage points, however this effect is statistically insignificant. The negative coefficient, however, is consistent with the decrease in the overall size of the job-search network that we have documented in the previous Section.

[Table 4 about here.]

We observe a strong shift away from vacancy board job search in the past month that is even larger in economic and statistical significance than for the seven-day recall period. Besides, the search at work agencies and at central locations (such as central squares in the city) goes significantly down by approximately 2-4 percentage points. Search strategies that *do not* depend on commuting to the centre of Addis Ababa are not affected by the transport subsidy: neither job search at work sites (such as construction sites that can be found everywhere in the city, not just in the centre) nor searching the internet for jobs decrease significantly.

### 6.2.1 Active job-search partners

Table 5 shows the impacts on the job-search partners' job search behavior, split by whether the partner is actively looking for a job at baseline. The negative spillover results of the transport subsidy on the job search of the social contacts of the subsidy recipients are almost entirely driven by active job-search partners. The search index decreases by 0.45 standard deviations, which is large and significant. The coefficients on overall job search, board search, and social network job search are similarly large and in the first two cases statistically significantly negative. For the one-month recall period, we similarly find a stronger decrease in job board and city centre search for the group of active job-search partners. The difference in the coefficient for search at work sites follows this pattern, but we fail to reject that it is equal to zero.

[Table 5 about here.]

At baseline, both the seed and the job-search partner mutually exchange information about jobs. Our negative findings on the partners' job search suggest a strong complementarity in job search behavior. Once the partnership with the seed is broken, vacancy information from the seed stops coming in. As a consequence, own vacancy information obtained by the job-search partners become less useful, and own job search decreases.

The negative effects on job search are very large, in particular for the sample of job contacts actively searching for a job at baseline. When interpreting the magnitude, it is important to recall that the median job-search partner in our sample has only 2 job contacts at

<sup>19</sup>Abebe et al. (2020) report the direct effects on program beneficiaries: overall job search increase by 12.5 percent (or five pp.) and job search at the job vacancy boards increases by nearly a third (or nine pp.).

baseline, the seed individual being one of them. Losing one (the seed) out of two information-sharing partners is thus equivalent to a 50 percent reduction in the job search network, which can plausibly explain the magnitude of the negative search impacts.

### 6.3 Employment

We report the findings for the the job-search partners' employment status in Table H11. Abebe et al. (2020) document an insignificant, four percentage points increase in employment rates for program beneficiaries and a larger, significant increase for a subgroup of jobseekers with poor employment prospects. During the study period, the seeds also experience an insignificant, 2.5 percentage point increase in employment.

We also do not find effects on the employment of job search partners. This includes whether individuals are engaged in any work, whether they have a permanent job or a formal job, and their monthly earnings (Table H11).

#### 6.3.1 Active job-search partners

We once more split our results by whether the job-search partner is actively looking for a job at baseline. Now, Table H12 shows patterns in a similar direction as for social interactions and the partners' job search. We find economically meaningful, but statistically insignificant decreases in the treated partners' probability of having any work or permanent work in the last seven days, or any formal work over the whole treatment period (ten to eleven percentage points each). The employment index decreases by an insignificant 0.2 standard deviations. Thus, the significant decrease in job search of the treated partners directly leads to an overall lower likelihood of employment.

### 6.4 Using LASSO to improve precision and power

All our main results are robust to the inclusion of an additional set of controls selected through a double LASSO procedure (Belloni et al., 2014). This estimator enables us to obtain more precise estimates and hence to run tests that are more powered. We find that, despite the greater power, we are still unable to detect significant impacts for the sample of individuals who were not searching for work actively at baseline. This gives us further confidence in these null results. Further, we gain some precision when we estimate impacts on the employment index for the active jobseekers (we now have a marginally significant effect) and when comparing the estimates of active and non-active individuals (which are now statistically different for all outcome indices). We report these results in Table H29 in the appendix.

## 6.5 Mediation analysis

To more formally test the hypothesis that the decrease in search behavior is caused by a disruption of the job search network, we follow the recommendations on mediation analysis by [Acharya et al. \(2016\)](#). We compute the Average Controlled Direct Effect (ACDE) of the transport subsidy on the search behavior of the job-search partners who were actively looking for a job at baseline, fixing the potential mediators of interest. The ACDE captures the impact of an intervention when a particular mediator is not allowed to respond to the treatment. We can thus assess the importance of a given mediator by comparing the original treatment effect to the ACDE.

We show this comparison in Figure 4. In the left panel, we find that a large share of the negative impact on the job search index of the job-search partners can be explained by the decrease in social interactions. The decrease in social interactions with the seed individual explain 39 percent of the effect, and all social interactions together explain almost 80 percent of the decrease in the job-search partners' search behavior. Since the search index includes job search in social networks, we show in the right panel of Figure 4 that we get very similar results when the outcome variable is search at the job boards. The results of our mediation analysis are thus not driven by the fact that the outcome variable includes search through social networks.

[Figure 4 about here.]

## 6.6 The spatial dimensions of our findings

In the appendix Section D.2, we take a detailed look at the spatial dimension of the social network impact of the job search assistance. Broadly, we do not find much heterogeneity at the geographical level, but the negative impacts on job search and social interactions tend to be higher for job-search partners living closer to their seeds. In terms of distance to the city centre, the negative impacts on search and interactions tend to be larger for individuals living farther away from the city centre.

## 7 Mechanisms

Standard models would predict that as treated individuals learn about new vacancies, they will share this information with their job-search partners, enabling the latter to secure better employment outcomes and to reduce their search effort. Yet, our results from the previous Section show that treated individuals do not share more information with their job-search partners. On the contrary, among active jobseekers, information-sharing decreases as a result of the intervention.

In what follows, we explore a number of potential mechanisms that may drive these results. We find strongest empirical support for the hypothesis that the intervention undermines job-search partnerships by creating inequality in job search costs.

## 7.1 Does the intervention break down job-search cooperation by generating inequality between partners?

We exploit data on the similarity of the individuals who are job-search partners to test the hypothesis that the intervention disrupts job search partnerships by generating inequality in job search costs. As described in Section 5.1, the job-search partners are not restricted to meet the eligibility criteria of the transport subsidy sample from which our seeds were randomly drawn.<sup>20</sup> This means that our sample includes job-search pairs where both individuals have similar economic status and demographics—and thus similar job search costs—and job-search pairs where the two individuals differ markedly along these dimensions. Further, in some of the pairs information is exchanged reciprocally, whereas in other pairs only one person obtains information from the other. In line with our model, we expect the negative effects of the subsidy to be stronger for pairs where information exchange is reciprocal and for pairs that have similar characteristics at baseline.

We run two sets of regressions. The first set splits the sample based on whether information flows in both directions between the seed and the job-search partner or not. The second set splits the sample based on the difference in expenditure level at baseline between the two partners. Expenditure is a meaningful variable to use as it is related to an individual's ability to finance job search. For both sets of regressions, we focus on active job-search partners, as this is the group that drives the treatment effects. Overall, both sets of regressions support our hypothesized mechanism.<sup>21</sup> We describe the results in detail in the following two subsections.

### 7.1.1 Baseline reciprocity in information exchange

Table H13 shows our main results on social interaction for pairs of active jobseekers where information flows one way and pairs where information flows both ways. The results show that treatment effects are largely driven by pairs where information flows both ways. As a result of the intervention, individuals in these pairs share less information with each other, are less likely to travel together to the city center and to share expenses, and spend considerably less time together (on the intensive margin). The untreated person in the pair also

<sup>20</sup>Namely: Between 18-29 years of age, at least a high school degree, not in permanent employment, living outside of the city centre of Addis Ababa.

<sup>21</sup>We also studied heterogeneity with respect to the difference in education levels, a potential indicator of search effectiveness. The results for this sample split are inconclusive.

experiences a significant decrease in the overall size of her job network. On the contrary, when information flows one way, effects are much smaller in magnitude and insignificant (though we cannot reject that they are the same).

In Table H14, we display results for job search. The results give further support to our hypothesized mechanisms since, when information flows two ways, the spillover effects of the intervention on the untreated partner are more pronounced. When information flows two ways, the negative effect on the overall search index is more than twice the size of the effect we document when information flows one way. For two specific types of job search — search at the job boards and search using social networks — the difference is both large and statistically significant.

### 7.1.2 Baseline economic status

For the second type of test, Table H15 shows our main results on social interaction for the sample of baseline jobseekers, split between those who are similar or dissimilar to their seeds in baseline expenditure. Baseline economic similarity can to some extent explain the decrease in interactions. More similar pairs travel to the city less frequently, share the expenses less often, exchange less money and spend less time together (on the intensive margin). However, the information flow decreases more strongly in dissimilar partner-seed pairings.

In Table H16, we display the subsample results on job search activities for the sample of baseline jobseekers. Here, the results more strongly support our hypothesis of an asymmetry induced by the transport subsidy. For those partner-seed pairing that were more similar at baseline in economic status, the spillover effects of the intervention are much more negative, reducing job search and board search by almost two thirds and also decreasing the search within networks. The difference between the two effects is borderline statistically significant at 10 percent. A similar pattern can be seen for the one-month recall variables, with those jobseekers that were similar to their seeds at baseline responding more strongly negatively to their seeds' treatment. Given that job search pairs residing close to each other also tend to be more similar to each other in terms of baseline expenditure, these findings are consistent with the non-parametric findings from Section D.2.

## 7.2 Do treated individuals make new connections to “higher-value” individuals?

Next, we study whether treated individuals rewire their severed links to higher-value job-search partners. To investigate this, we first refer to Abebe et al. (2020): the authors do not find any significant effects on the amount of total social network interactions of seeds (i.e. interactions going beyond the social ties covered in this paper). However, there is an

insignificant decrease in the overall number of information sharing partners of treated individuals (which is consistent with our findings), and an insignificant increase in the number of employed information-sharing partners. In particular, Figure 5 shows that all original participants (among whom we randomly sample our seeds) are less likely to have talked to friends not only during the intervention, but also in the months after. If we produce a similar impact trajectory for the seed individuals only, we also find a negative effect on talking to friends – albeit a much larger one of almost five percentage points, which almost reaches statistical significance in the small sample of 165 seeds (appendix Figure A9). Importantly, this effect also remains negative after the end of the intervention.<sup>22</sup> Overall, we interpret this lack of significant changes in the seeds’ social network structure as evidence that no major re-wiring towards higher-value information-sharing partners is taking place.

[Figure 5 about here.]

### **7.3 Do treated individuals have less time to interact with their partners because of employment?**

One potential alternative explanation is that the transport subsidy enables seeds to find employment and, as a result of this, the seeds have less time to interact with their job-search partners. We have two pieces of evidence that are inconsistent with this explanation. First, treated seeds are not significantly more likely to have work at endline. Second, we do not find significant or qualitative differences between the impacts on the partners of unemployed seeds and those on the partners of seeds who have been employed (either for a wage or in self-employment) after the baseline interview (appendix Tables H21 to H22).

### **7.4 Do treated individuals have less time to interact with their partners because of job search?**

A second alternative explanation is that the transport subsidy increases the amount of time treated seeds spend searching for work (e.g. by travelling on the bus to the city centre) and this reduces the time available to interact with their job-search partners. We offer several pieces of evidence that do not support this explanation. First, the median *return* travel time from the seed’s place of residence to the city centre is about one hour. While this is a significant amount of time, it clearly leaves ample time for other activities. Second, there are no interaction effects between the duration of the seed’s travel to the city centre and the impacts of the interventions on the seeds’ job-search partners. To show this, we split our sample based on the median baseline distance of the seed’s residence to the city centre, which determines

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<sup>22</sup>This is not an artificial small sample effect: the results are very similar when using the complete control group sample ( $N \simeq 800$ ) instead of the 86 control group seeds.



how much time an extra trip takes, and run separate regressions. The results are presented in appendix Tables H23 and H24. We find that the decrease in search is if anything more pronounced for job-search partners of seeds with a below median baseline distance to the centre. The decrease in sharing of job information is similar in both samples, above and below the median baseline distance. Overall, this rules out that seeds simply spend more time on the bus and thus are too busy to talk to their friends.

## 7.5 Does relocation reduce interaction between seeds and job-search partners?

Are the effects we document driven by the relocation of treated seeds or their job-search partners? For example, job-search partners who find themselves cut off from the information networks could decide to move closer to the job-vacancy boards. Further, treated seeds may be more likely to find work away from their place of residence and more likely to move home as a result of this. Differential relocation patterns of these types may be responsible for a decrease in social interaction between seeds and their job-search partners. We investigate these alternative explanations starting with the relocation of job-search partners, both out of and within the capital. We present several pieces of evidence showing that relocation does not drive our results. We then look at the relocation of the seeds, showing similar evidence that this behavior does not explain our findings.

First, the fact that more job search partners of untreated than of treated seeds move out of the capital is descriptive evidence against this alternative hypothesis: in the six months between the baseline and follow-up survey, 30 job search partners move out of Addis Ababa temporarily or permanently (20 partners of untreated seeds, ten partners of treated seeds). The most frequent reason cited is work migration (temporary or permanent, 57 percent), followed by pursuing additional education (20 percent), caring for family members (20 percent), and holiday (3 percent). Second, when we run our main regression (equation 4) controlling for whether a job search partner leaves the capital, we get virtually identical results.<sup>23</sup>

In terms of relocation within the city, we also find very little change: 35 job search partners relocate within Addis Ababa over the course of the intervention (20 partners of untreated seeds, 15 of treated seeds). Of these 35 movers within the capital, the average distance to the city centre *after* moving is 6.8 km and hence very similar to the mean distance to the city centre that we find at baseline for the whole sample (7.0 km). The 35 partners move to a new location that is on average 2.7 km away from their prior residence (median: 1.9 km). Only one single individual moves from the suburbs to the city centre. These statistics indicate that the within-city relocation is uncommon and thus it is unlikely to be a major driver of our

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<sup>23</sup>Results left out due to similarity to main results, available from authors at request.

findings.<sup>24</sup>

Lastly, we also look at whether some of the seed individuals are induced by the subsidy to relocate within or out of Addis Ababa. Of the 165 seed individuals, two move out of Addis Ababa and 14 move within the capital at endline. Appendix Table H25 shows that there is no differential moving by treatment status.

Overall, the evidence suggests that our results are not driven by selective relocation of individuals either out of or within Addis Ababa.

## 7.6 Does the intervention discourage the job-search partners of treated seeds?

One final potential explanation is that the job-search partners of treated seeds become discouraged. For example, they may feel unable to compete with treated jobseekers. Again, our analysis does not support this alternative explanation. First, we have shown that job-search partners and seeds tend to live far away from each other. Hence it is not likely that they are competing for the same limited pool of jobs found in their local labor market. Second, by looking at the effects on the job-search partners' job market expectations and aspirations in appendix Tables H17 and H18, we can rule out that the intervention changes the job-search partners' expectations about how the labor market works – neither reservation or expected wages change significantly, nor does the amount of job offers expected in the near future. In addition to that, Table H26 displays the change in the job-search partners' beliefs, attitudes and life satisfaction. While there are no changes in overall happiness, we find that the intervention actually positively affects the two variables measuring the job-search partners' feeling of independence. Appendix table H27 shows that these effects are again primarily driven by the active baseline searchers. Taken together, this rules out direct discouragement effects through the subsidy. To the contrary, it seems that while the subsidy leads to a break in the job search collaboration and an erosion of social capital, as a consequence job-search partners develop a more independent attitude.

Finally, a related alternative explanation is that the job-search partners of treated seeds might become generally more pessimistic about the returns to job search. These individuals observe treated seeds search harder for work and obtain better jobs as a result. However, they may find the impacts on labor market outcomes to be ultimately unsatisfactory and may hence revise downwards their beliefs about the effectiveness of job search effort. We can test for this hypothesis by studying the relationship between expected job offers and job search intensity. This gradient captures respondents' perception of the returns to job search. In appendix Table H28, we show that the partners of treated seeds have the same expectations-search intensity gradient as the partners of untreated seeds. If anything, the gradient is

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<sup>24</sup>More rigorously, if we control for whether a job search partner moves within Addis Ababa in our regressions, our results remain virtually the same (these results are available from the authors at request).

(insignificantly) steeper for the partners of treated seeds. This evidence is inconsistent with this last discouragement story.

## 8 Conclusion

We study the exchange of information about job opportunities in the social networks of young jobseekers in Addis Ababa, Ethiopia. We find that a job-search assistance intervention induces program participants to interact less frequently with their job-search partners who are actively seeking employment at baseline. Program participants and their active partners exchange less information about job vacancies and also interact less along many other dimensions. Further, the job-search partners of treated individuals reduce job-search effort, suggesting a strong complementarity of job-search effort among job-search partners. We hypothesize that the intervention disrupts job-search networks because it increases inequality in the access to information within the pairs of jobseekers, making it harder to sustain job-search partnerships. Consistently with this, we find that the effects are stronger for pairs of friends with similar levels of baseline expenditure and education.

These findings generate leads for future research. First, a long-standing tradition in the social sciences laments the erosion of social interaction that is often associated with economic development (Polanyi, 1944, Putnam, 2000). It would be important to assess whether people intrinsically value the kinds of social connections that we study in this paper—that is, the friendships and interactions built specifically around job search. An alternative view is that at least some networks connections are purely instrumental: once the underlying market failures are addressed, these forms of interaction disappear with no loss of utility for the people involved. Jobseekers may even have the time to pursue friendships for their intrinsic value, rather than maintaining links solely for the purposes of finding employment. The welfare implications of our findings largely depend on this point.

A second and final point to explore is whether in some labor market contexts people are able to forecast network changes and whether they try to prevent these changes with side payments. For example, the recent literature has found evidence of a sophisticated ability to forecast future behavior among professional traders (Alevy et al., 2007) and households (Sourdin, 2008). In the context of job-search networks, sophisticated people understand that they may lose a social contact if this person were to receive job-search assistance. To prevent this from happening, they could pay their job-search partner on condition that they would not join the program. While in our study we find negative effects on shared travel expenses, sophistication and side payments of this kind would have important consequences for the ability of policymakers to treat selected individuals in the network.

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Figure 1: Complementaries between own and network search

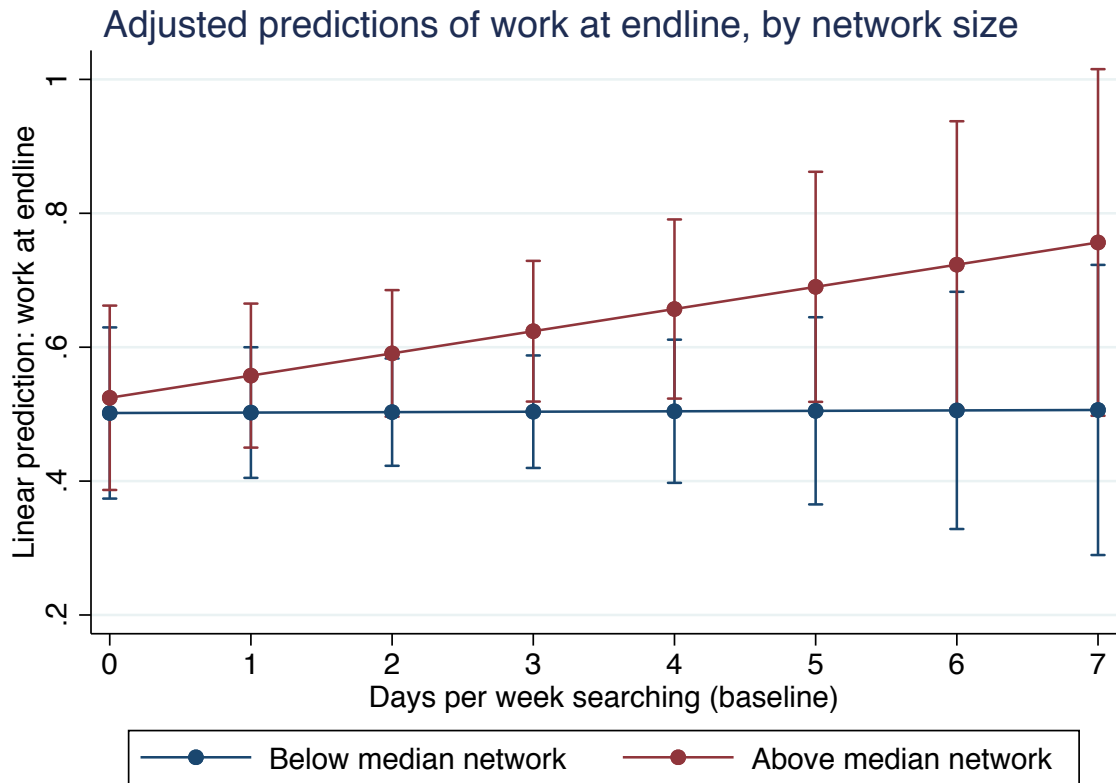




Figure 2: Sample overview

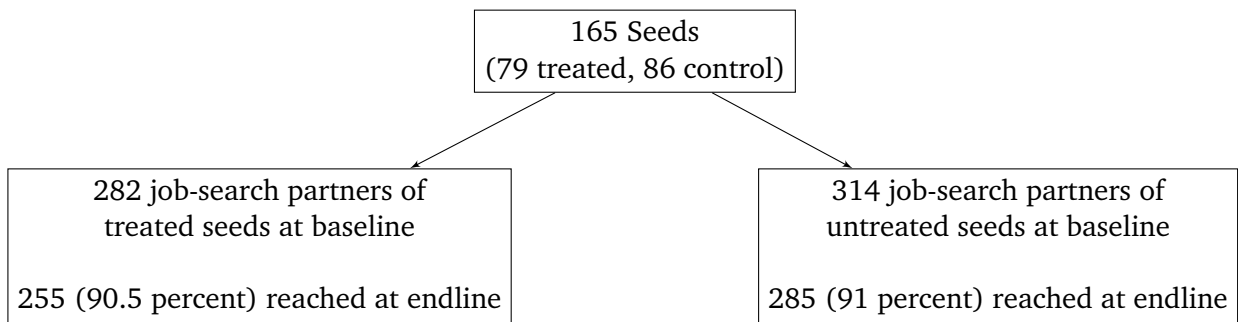
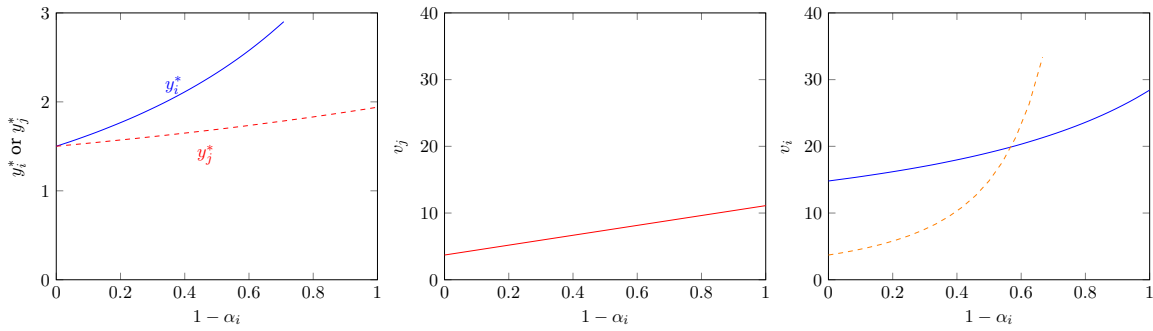
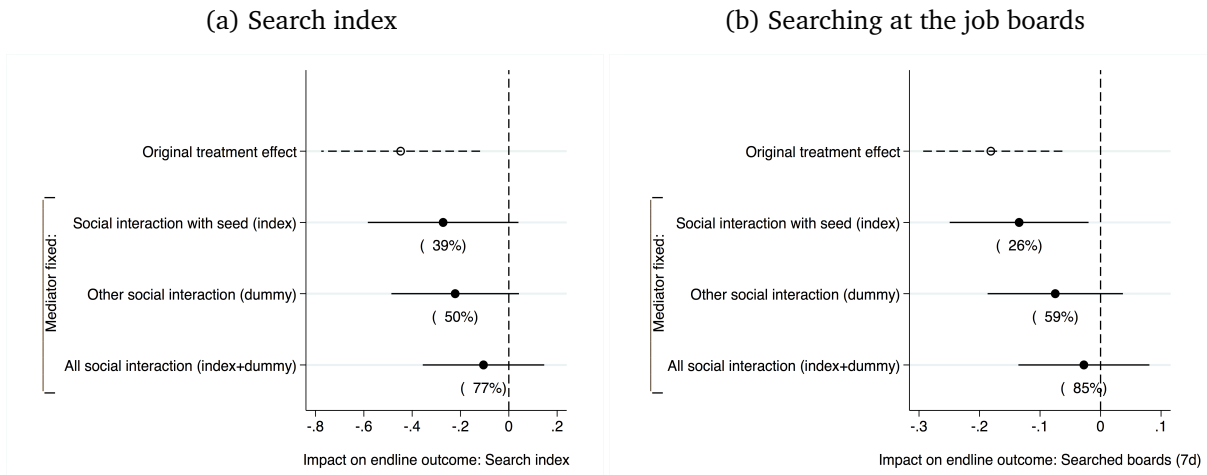


Figure 3: Search efforts and payoffs as a function of the job-search subsidy ( $1 - \alpha_i$ )



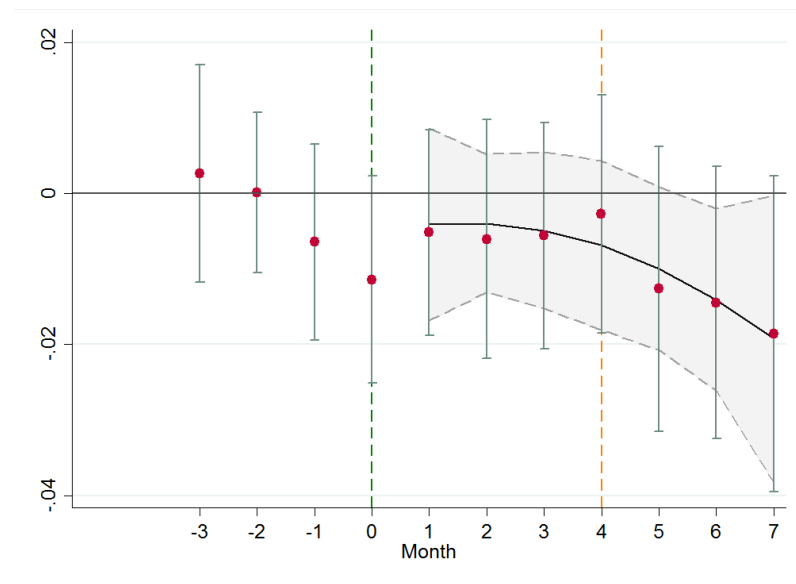
Notes: This figure shows various search efforts and payoffs as a function of the job-search subsidy ( $1 - \alpha_i$ ), for the parameters  $c = k = 0.2, p = 0.6, s = 1.5$ . Left panel: The blue (red) solid (dashed) line shows the search effort of job-seeker  $i$  ( $j$ ) as a function of the job-search subsidy ( $1 - \alpha_i$ ), when searching in a partnership. Middle panel: The red solid line displays the payoff for job-seeker  $j$  when searching in a partnership. Right panel: The blue solid line displays the payoff for job seeker  $i$  when searching in a partnership, the orange dashed line the payoff when searching alone.

Figure 4: Mediation analysis: impact of transport subsidy on job search



Notes: This figures reports coefficient estimates and 90 percent confidence intervals of the impact of the transport subsidy on endline search outcomes of the job-search contacts. The first row reports the original treatment effect. The following rows report the Average Controlled Direct Effect (ACDE) of the intervention, obtained by fixing the mediator indicated in the row's name (Acharya et al., 2016). We can assess the importance of a given mediator by comparing the original treatment effect to the ACDE. To facilitate comparison, we report below each coefficient the share of the original treatment effect that is accounted for by the mediator. The variable “Other social interaction (dummy)” is an indicator for whether the respondent has received information about a job from relatives, friends or acquaintances in the last 7 days.

Figure 5: Impact trajectory of the transport treatment: impact on talking to friends



Notes: The green dotted line indicates the fortnight when the treatment begins. The orange dotted line indicates the week when the treatment ends. From Abebe et al. (2020).

Table 1: Interaction and distance between job-search partners and seeds, by seed treatment status, at baseline

	(1) Treatment difference	(2) (Standard error)	(3) Control mean	(4) (SD)	(5) Max pairwise difference	(6) Obs.
Spoken (30d)	1.01	(1.27)	11.99	(9.82)	0.10	589
Travel (30d)	-0.00	(0.05)	0.50	(0.50)	0.01	592
Info from seed (ever)	0.03	(0.05)	0.82	(0.39)	0.08	592
Info to seed (ever)	-0.02	(0.02)	0.97	(0.18)	0.12	591
Lent/borrowed (ever)	-0.04	(0.06)	0.50	(0.50)	0.08	592
Distance from Seed to center	0.64	(0.46)	6.74	(3.33)	0.18	596
Distance between Seed and Peer	-0.30	(0.58)	3.87	(4.48)	0.07	594
Lives in center	-0.02	(0.02)	0.05	(0.23)	0.09	596
Same neighbourhood	0.01	(0.02)	0.04	(0.21)	0.02	596
Joint $p$ -value	0.80					

*Notes:* OLS estimates of individual baseline differences by seed treatment status. The data are shown on individual peer level. Outcome variables are listed on the left. Standard errors are in column 2 and clustered by seed. Stars on the standard errors reflect unadjusted  $p$ -values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. In column 5, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015). The last row shows the  $p$ -value from a test for joint orthogonality of all covariates.

Table 2: Impacts on social interaction

	(1)	(2)	(3)	(4)
	Treatment effect	Mean of control search partners (SD)	Max pairwise difference	Obs.
Social interaction index	-0.05 (0.11) [0.63]	0.00 (1.00)	0.05	540
Spent time with seed (30d)	0.02 (0.05) [0.67]	0.72 (0.45)	0.06	490
Travel to Addis (30d)	-0.04 (0.04) [0.37]	0.25 (0.43)	0.09	540
Shared travel expenses (30d)	-0.07 (0.04) [0.11]	0.24 (0.42)	0.18	540
Shared information (6m)	-0.04 (0.06) [0.56]	0.41 (0.49)	0.06	540
Lent/borrowed (ever)	0.04 (0.04) [0.37]	0.25 (0.44)	0.05	540
Hours spent with seed (30d)	-0.83 (2.30) [0.72]	14.37 (21.35)	0.02	490
Job network	-0.01 (0.19) [0.98]	1.49 (1.54)	0.01	540

*Notes:* ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. In column 3, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015). If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table 3: Impacts on social interaction for active and inactive job-search partners

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Searchers at baseline	Treat. effect for non-Searchers at baseline	Treatment difference: (1)-(2)	Searchers at baseline (control)	Mean of control search partners (SD)	Obs.
Social interaction index	-0.50** (0.20) [0.01]**	0.10 (0.11) [0.37]	-0.59*** (0.20) [0.00]***	0.45*** (0.15) [0.00]***	0.00 (1.00)	540
Spent time with seed (30d)	-0.15 (0.09) [0.11]	0.07 (0.05) [0.18]	-0.23** (0.10) [0.02]**	0.07 (0.07) [0.32]	0.72 (0.45)	490
Travel to Addis (30d)	-0.19** (0.09) [0.03]**	0.01 (0.04) [0.76]	-0.20** (0.09) [0.02]**	0.17** (0.07) [0.01]**	0.25 (0.43)	540
Shared travel expenses (30d)	-0.18** (0.09) [0.04]**	-0.03 (0.04) [0.46]	-0.15* (0.09) [0.09]*	0.13** (0.07) [0.04]**	0.24 (0.42)	540
Shared information (6m)	-0.20** (0.10) [0.04]**	0.03 (0.07) [0.69]	-0.23** (0.11) [0.04]**	0.22*** (0.08) [0.01]***	0.41 (0.49)	540
Lent/borrowed (ever)	-0.08 (0.09) [0.34]	0.08* (0.04) [0.06]*	-0.16* (0.09) [0.08]*	0.11* (0.07) [0.10]*	0.25 (0.44)	540
Hours spent with seed (30d)	-6.81 (4.91) [0.17]	1.17 (2.35) [0.62]	-7.98 (5.15) [0.12]	5.09 (3.67) [0.16]	14.37 (21.35)	490
Job network	-0.42 (0.28) [0.14]	0.16 (0.22) [0.45]	-0.58* (0.33) [0.08]*	0.68*** (0.26) [0.01]***	1.49 (1.54)	540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table 4: Impacts on job search

	(1) Treatment effect	(2) Mean of control search partners (SD)	(3) Max pairwise difference	(4) Obs.
Search index	-0.20** (0.10) [0.04]**	-0.64 (1.09)	0.20	540
Searched job (7d)	-0.07 (0.04) [0.11]	0.34 (0.48)	0.15	540
Searched boards (7d)	-0.07** (0.03) [0.03]**	0.17 (0.38)	0.18	540
Searched in networks (7d)	-0.03 (0.05) [0.54]	0.34 (0.47)	0.07	540
Searched boards (1m)	-0.17** (0.07) [0.02]**	0.52 (0.50)	0.30	540
Searched in network (1m)	-0.07* (0.04) [0.10]*	0.72 (0.45)	0.19	540
Searched at work sites (1m)	-0.01 (0.03) [0.80]	0.15 (0.36)	0.02	540
Searched at agency (1m)	-0.03 (0.02) [0.20]	0.10 (0.30)	0.11	540
Searched at central locations (1m)	-0.02** (0.01) [0.04]**	0.02 (0.14)	0.15	540
Searched internet (1m)	0.03 (0.03) [0.32]	0.08 (0.27)	0.16	540

*Notes:* ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. In column 3, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015).



Table 5: Impacts on job search for active and inactive job-search partners

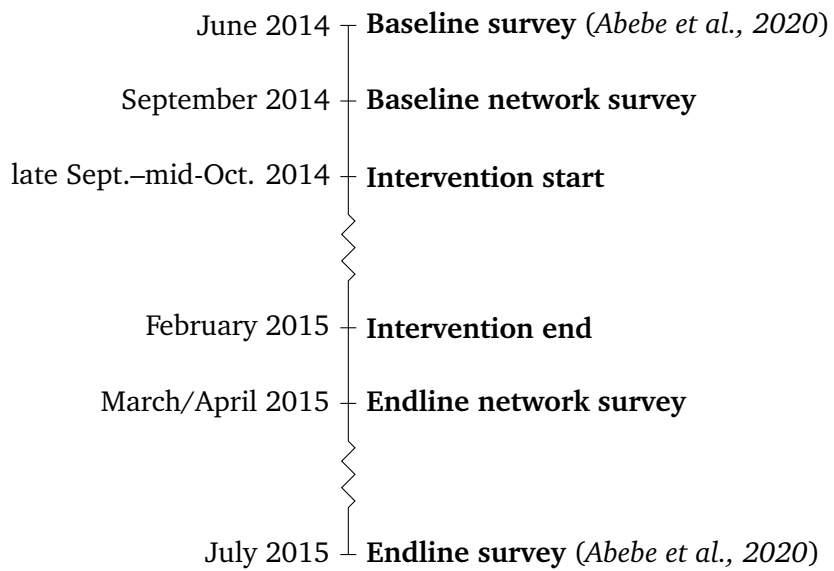
	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Searchers at baseline	Treat. effect for non-Searchers at baseline	Treatment difference: (1)-(2)	Searchers at baseline (control)	Mean of control search partners (SD)	Obs.
Search index	-0.45** (0.20)	-0.11 (0.10)	-0.34 (0.21)	0.52** (0.19)	-0.64 (1.09)	540
Searched job (7d)	[0.03]** -0.22** (0.09)	[0.28] -0.02 (0.05)	[0.11] -0.19* (0.10)	[0.01]** 0.13 (0.09)	0.34 (0.48)	540
Searched boards (7d)	[0.02]** -0.18** (0.07)	[0.62] -0.04 (0.03)	[0.06]* -0.15* (0.08)	[0.14] 0.15** (0.06)	0.17 (0.38)	540
Searched in networks (7d)	[0.01]** -0.11 (0.09)	[0.27] -0.00 (0.05)	[0.06]* -0.11 (0.10)	[0.01]** 0.05 (0.08)	0.34 (0.47)	540
Searched boards (1m)	[0.20] -0.22** (0.09)	[0.99] -0.14* (0.08)	[0.23] -0.08 (0.10)	[0.51] 0.17** (0.08)	0.52 (0.50)	540
Searched in network (1m)	[0.02]** -0.04 (0.08)	[0.09]* -0.08 (0.05)	[0.39] 0.04 (0.09)	[0.02]** 0.03 (0.08)	0.72 (0.45)	540
Searched at work sites (1m)	[0.65] -0.07 (0.08)	[0.11] 0.02 (0.03)	[0.63] -0.09 (0.08)	[0.70] 0.13** (0.06)	0.15 (0.36)	540
Searched at agency (1m)	[0.38] -0.06 (0.06)	[0.50] -0.01 (0.02)	[0.28] -0.05 (0.07)	[0.02]** 0.08* (0.05)	0.10 (0.30)	540
Searched at central locations (1m)	[0.32] -0.06** (0.03)	[0.58] -0.01 (0.01)	[0.46] -0.05* (0.03)	[0.08]* 0.04 (0.03)	0.02 (0.14)	540
Searched internet (1m)	[0.04]** 0.06 (0.07)	[0.36] 0.03 (0.03)	[0.08]* 0.02 (0.07)	[0.11] 0.13** (0.05)	0.08 (0.27)	540
	[0.42] [0.24]	[0.24]	[0.77]	[0.01]**		

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

# Supplementary Appendix

## Contents

### A Survey and intervention timeline



### B Outcome variables

Table B1: Outcome variable definitions

<i>Variable name</i>	<i>Definition</i>
Spent time with seed (30d)	Job-search partner and seed spent any time together in past 30 days
Travel to Addis (30d)	Job-search partner and seed travelled to the city centre together in past 30 days
Shared travel expenses (30d)	Job-search partner and seed shared travel expenses in past 30 days
Shared information (6m)	Job-search partner and seed shared job information in past 6 months
Lent/borrowed (ever)	Job-search partner and seed ever lent/borrowed money from each other
Hours spent with seed (30d)	Number of hours job-search partner and seed spent together in past 30 days
Job network	Number of individuals job-search partner shares job information with
Searched job (7d)	Job-search partner searched for a job in past 7 days
Searched boards (7d)	Job-search partner searched at the job boards in past 7 days
Searched in networks (7d)	Job-search partner searched in social networks in past 7 days
Searched boards (1m)	Job-search partner searched at the job boards in past month
Searched in network (1m)	Job-search partner searched in social networks in past month
Searched at work sites (1m)	Job-search partner searched at work sites in past month
Searched at agency (1m)	Job-search partner searched at work agencies in past month
Searched at central locations (1m)	Job-search partner searched at central locations in past month
Searched internet (1m)	Job-search partner searched in the internet in past month
Worked (7d)	Job-search partner worked in past 7 days
Permanent work (7d)	Job-search partner had permanent job in past 7 days
Written agreement	Job-search partner had job with written agreement in past 7 days
Earnings	Job-search partner's monthly earnings
Alone in charge of own life's course	Answer to "How my life takes course is entirely dependent on me" (Likert scale)
Life achievements are primarily luck	Answer to "What one achieves is, in the first instance, a question of destiny and luck" (Likert scale)
Doubts own abilities during difficulties	Answer to "When I encounter difficulties in life, I often doubt my abilities" (Likert scale)
Possibilities dependent on social circumstances	Answer to "The possibilities I have in life are dependent on social circumstances" (Likert scale)
Has little control over own life	Answer to "I have little control over things which happen in my life" (Likert scale)
Life satisfaction (0-10)	Answer to "Please imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you, and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"
Offers expected (next 4m)	Number of job offers the job-search partner expects in next 4 months
Reservation wage (in ETB)	Job-search partner's reservation wage (in ETB)
Aspired wage (in 5y, in ETB)	Job-search partner's aspired wage in 5 years (in ETB)

## C Theoretical model appendix

### Payoffs for $i$ under link or no link

For job-seeker  $i$ , the payoff with optimal effort  $y_j^*$  when connected to job-seeker  $j$  is

$$\begin{aligned}
 u_i(\text{link} = 1) &= (y_i^{*p} + y_j^{*p})^{1/p} - y_i^{*s} c - y_i^{*s} k \alpha \\
 &= \left[ \left( \left[ \frac{\left( 1 + \left( \frac{c+k}{c+\alpha k} \right)^{\frac{p}{p-s}} \right)^{\frac{1-p}{p}}}{s(c+\alpha k)} \right]^{\frac{1}{s-1}} \right)^p + \left( \left( \frac{c+k}{c+\alpha k} \right)^{\frac{1}{p-s}} \cdot \left[ \frac{\left( 1 + \left( \frac{c+k}{c+\alpha k} \right)^{\frac{p}{p-s}} \right)^{\frac{1-p}{p}}}{s(c+\alpha k)} \right]^{\frac{1}{s-1}} \right)^p \right]^{1/p} \\
 &\quad - \left( \left[ \frac{\left( 1 + \left( \frac{c+k}{c+\alpha k} \right)^{\frac{p}{p-s}} \right)^{\frac{1-p}{p}}}{s(c+\alpha k)} \right]^{\frac{1}{s-1}} \right)^s (c + \alpha k)
 \end{aligned} \tag{6}$$

In comparison,  $i$ 's payoff with optimal effort  $y_j^*$  when *not* connected to  $j$  is

$$\begin{aligned}
 u_i(\text{link} = 0) &= (y_i^{*p})^{1/p} - y_i^{*s} k \alpha \\
 &= \left( \frac{1}{s\alpha k} \right)^{\frac{1}{s-1}} - \left( \frac{1}{s\alpha k} \right)^{\frac{s}{s-1}} \alpha k
 \end{aligned} \tag{7}$$

## D Additional findings

### D.1 The impact of the transport subsidy on the seed individuals

In the original study of the transport subsidy (Abebe et al., 2020), the authors find relatively strong and immediate short-run effects of the transport subsidy on job search, which is measured every fortnight: job search at the vacancy boards increases significantly during the first eight fortnights after treatment, by approximately nine percentage points (which corresponds to a 30 percent increase over the control group mean of 28 percent). Overall job search does not increase quite as much, but still goes up by five percentage points or 12.5 percent during the first four months after the onset of the intervention (both at 5 percent level). Beyond that, the authors find no short-run average treatment effects on employment probability, on hours worked, on monthly earnings, or on work satisfaction, all measured during a follow-up survey in August 2015. However, there is a 5.5 percentage point increase in formal work for the subsidy recipients (at a 1 percent level), and 3.4 percentage point increase in permanent work (at 10 percent level).<sup>25</sup> Further, the authors find significant impacts on employment among the workers with the worst employment prospects (following Abadie et al., 2017), with overall employment going up by about 25 percent.

The original treatment effect on job board search from Abebe et al. (2020) is displayed in appendix Figure A5. Since we sampled our 165 seeds randomly from the complete sample of transport subsidy recipients of the main study, we expect these impacts to equally hold true for them. We can test this explicitly, by running the same high-frequency regressions on the sample of 165 seeds only.<sup>26</sup>

Figure A6 displays the results both for whether and for how many days per week a seed individual searched at the job boards. The coefficients in the left panel are very similar in size to the treatment effect of the subsidy on the whole sample. As expected, the confidence bounds for our impacts are much wider, given that our seed sample consists of 165 individuals, while the original paper looks at almost 2000 individuals. Overall, the similarities of

<sup>25</sup>While the effect on formal work holds for both males and females if the results are split up by gender, the effects on permanent work are concentrated among women. Additionally, the authors find heterogenous impacts by educational level, with the effects on permanent work being driven by jobseekers with only high-school education.

<sup>26</sup>We follow Abebe et al. (2020) by estimating the following model:

$$y_{itc} = \sum_{w=S_f}^{E_f} [\beta_w \cdot Treat_{ic} \cdot d_{wit}] + \alpha_t \cdot y_{itc,pre} + \delta \cdot x_{ic0} + \eta_t + \mu_{itc}, \quad (8)$$

where  $w$  indicates the number of fortnights since each treated individual began receiving her subsidy.  $d_{wit}$  is a dummy variable equal to 1 in period  $t$  if an individual started receiving the subsidy  $w$  periods ago. Individuals in the control group have all such dummy variables set to 0. Thus,  $\beta_w$  is our estimate of the impact of the subsidy,  $w$  fortnights after the intervention started. We then estimate the trajectory of treatment effects by pooling all post treatment ( $w > 0$ ) observations and estimating quadratic trends of the treatment effects over time. More details on this can be found in Abebe et al. (2020).

the trajectories in Figures A5 and A6 is striking and leaves us confident that the transport subsidy had the same effect for our sample of 165 randomly selected seed individuals as for the overall intervention group.<sup>27</sup> We exploit this exogenous and short-run search shock in order to see how the social contacts react to a change in their close ties' job search behavior.

## D.2 Spatial dimension of results

This Section describes the spatial dimension of the indirect impact of the job search assistance. At baseline, 27 — or fewer than 5 percent — of the information sharing partners live in the city centre of Addis Ababa – 17 are friends of untreated seeds and ten are connected to treated seeds. Even though this number of central dwellers is small, it is possible that spillover effects look differently for individuals that already live close to the vacancy boards (as discussed in Section 2). First, when estimating the main specification 4 controlling for whether a job-search partner lives in the city centre, we get virtually identical results, which is not surprising, given that central residence is not imbalanced across treatment groups. Second, when simply excluding centrally living job-search partners, our results also remain almost entirely unchanged in terms of direction, size and significance levels.<sup>28</sup> In a third step, we estimate heterogeneous treatment effects by whether a job-search partner lives in the centre at baseline. The results, presented in appendix tables H19-H20, show that the negative spillover effects for job search and communication are mostly driven by the majority of partners living outside the city centre, i.e. those partners who rely on shared trips to and information exchange from the centrally located vacancy boards.<sup>29</sup>

Figures A7 and A8 display non-parametric regressions of the previously discussed job search and partner-seed interaction outcomes on a) the distance between the partner's and seed's place of residence or b) the distance of the job-search partner's residence to the city centre.<sup>30</sup> Starting with appendix Figure A7, we can see that most of the negative impacts on recent (seven-day) job search are borne by those job-search partners living relatively close to their seeds (top three graphs). While there often seems to be a reversal of the effect taking place for distances above eight kilometres, it is important to keep in mind that the 75th percentile of distance is at 5.9 km, so the higher distances in the graphs are supported by only few observations. For the longer search horizons (behavior in past month, bottom six

<sup>27</sup>We get very similar results when using the complete control group sample ( $N \simeq 800$ ) instead of the 86 control group seeds, which shows that this is not a small sample artefact.

<sup>28</sup>Results for both previous steps are left out due to similarity to the main results, but are available from authors at request.

<sup>29</sup>The one exception is job search at agencies, which decreases much more strongly for centrally living job-search partners of treated seeds. However, this seems to be a mostly artificial effect of the small sample of only 23 central residents at endline.

<sup>30</sup>We run kernel-weighted (epanechnikov) local polynomial regressions of the variable on the y-axis on distance between partner and seed or distance between partner residence and city centre, by seed treatment status.

graphs of appendix Figure A7), some negative effects are supported over the whole distribution (job board search), while others are also stronger for search pairs living closer to each other. In terms of partner-seed interactions (middle graphs 4-9), a similar reversal seems to be in place for the exchange of job information: while the overall effect is insignificantly negative, the negative effect becomes significant for closely living search pairs, but then becomes strongly positive (yet remaining insignificant) for pairs living more than ten kilometres apart. Again, this only applies to a small sample of only 10 percent of information sharers, but it is nonetheless interesting to see that the negative partner-seed communication and interaction effects of the job search assistance mostly affect pairs living close to each other, while there is weak evidence of an opposite trend for pairs living very far apart.

Appendix Figure A8 displays similar non-parametric estimates, for the distance of the job-search partner's residence to the city centre. Here, the mean distance is 7.0 km (median: 7.1 km), so the distributions are shifted further to the middle of the x-axis compared to the previous set of graphs. While there is some evidence for the short-run effects (seven days) being driven by job-search partners living slightly closer to the centre, overall most of the effects seem to be supported over the whole distance distribution.

## **E Summary statistics**

Table E2: Baseline differences for active and inactive job-search partners

	(1) Active searcher difference	(2) (Standard error)	(3) Mean of inactive searchers	(4) (SD)	(5) Max pairwise difference	(6) Obs.
Age	-0.82	(0.86)	25.52	(6.51)	0.13	596
Female	-0.11	(0.05)**	0.41	(0.49)	0.23	596
Degree	0.13	(0.05)**	0.16	(0.36)	0.32	596
Vocational Training	0.11	(0.05)**	0.24	(0.43)	0.24	596
Post-Secondary Degree	-0.12	(0.05)**	0.84	(0.37)	0.30	596
Born outside Addis	-0.07	(0.05)	0.41	(0.49)	0.14	596
Amhara	0.01	(0.05)	0.49	(0.50)	0.01	596
Oromo	0.01	(0.05)	0.22	(0.41)	0.03	596
Worked (7d)	-0.19	(0.05)***	0.54	(0.50)	0.38	596
Permanent work (7d)	-0.07	(0.03)**	0.17	(0.38)	0.18	596
Satisfied with work	-0.13	(0.03)***	0.23	(0.42)	0.33	596
Written agreement	-0.04	(0.05)	0.22	(0.41)	0.10	596
Applied to temporary jobs	0.31	(0.05)***	0.14	(0.35)	0.76	596
Applied to permanent jobs	0.40	(0.05)***	0.16	(0.37)	0.92	596
Uses CV for applications	0.46	(0.05)***	0.15	(0.36)	1.05	596
Uses certificates	0.50	(0.04)***	0.17	(0.38)	1.11	596
Received job by interview	-0.01	(0.04)	0.14	(0.35)	0.02	596
Office work (7d)	-0.06	(0.03)*	0.18	(0.39)	0.16	596
Offers expected (next 4m)	0.62	(0.26)**	1.52	(1.66)	0.33	520
Life satisfaction (0-10)	-0.36	(0.17)**	4.55	(1.93)	0.19	594
Expenditure (7d)	-164.76	(56.77)***	548.97	(771.48)	0.23	596
Savings	-886.75	(1294.32)	5607.47	(15962.07)	0.06	542
Monthly earnings	-810.14	(199.24)***	1305.90	(3585.66)	0.25	596
Reservation wage (in ETB)	-489.60	(200.79)**	2377.31	(2882.84)	0.19	588
Aspired wage (in 5y, in ETB)	-5152.21	(4581.65)	12619.64	(95008.95)	0.06	575
Trip to center (7d)	0.25	(0.22)	2.30	(2.56)	0.10	566
Works away from home	0.06	(0.04)*	0.83	(0.37)	0.18	596
In full-time education	-0.04	(0.02)**	0.07	(0.26)	0.17	596
In part-time education	0.03	(0.03)	0.14	(0.35)	0.08	596
In informal training	0.01	(0.03)	0.09	(0.29)	0.04	596
Searched job (7d)	0.85	(0.02)***	0.15	(0.35)	1.80	596
Searched job (6m)	0.62	(0.03)***	0.38	(0.49)	1.24	569
Ever searched wage job	0.32	(0.02)***	0.68	(0.47)	0.74	596
Searched boards (1m)	0.63	(0.02)***	0.37	(0.48)	1.27	596
Searched in networks (7d)	0.74	(0.04)***	0.14	(0.35)	1.61	596
Married	-0.07	(0.04)*	0.21	(0.41)	0.18	596
Lives with parents	0.11	(0.06)**	0.41	(0.49)	0.23	596
Years since school	-2.00	(0.84)**	5.73	(5.82)	0.35	523
Joint <i>p</i> -value	0.00***					

Notes: OLS estimates of individual baseline differences by the job contact's active search status. The data are shown on individual peer level. Outcome variables are listed on the left. Standard errors are in column 2 and clustered by seed. Stars on the standard errors reflect unadjusted *p*-values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. In column 5, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015). The last row shows the *p*-value from a test for joint orthogonality of all covariates.



Table E3: Baseline differences in seed covariates for active and inactive job-search partners

	(1) Coefficient on share of contacts actively searching	(2) (Standard error)	(3) Mean for seeds without active search contacts	(4) (SD)	(5) Obs.
Number of job contacts	-0.59	(0.59)	3.03	(2.25)	165
Age	-1.11	(0.77)	23.67	(2.97)	165
Female	-0.13	(0.13)	0.58	(0.50)	165
High school	0.05	(0.12)	0.27	(0.45)	165
Preparatory school	-0.02	(0.04)	0.04	(0.19)	165
Vocational school	-0.21	(0.13)*	0.50	(0.50)	165
Diploma	0.07	(0.06)	0.04	(0.19)	165
University	0.12	(0.11)	0.15	(0.36)	165
Business	-0.01	(0.14)	0.24	(0.43)	92
Vocational	-0.23	(0.16)	0.45	(0.50)	92
Humanities	0.05	(0.10)	0.05	(0.22)	92
Worked (7 d)	0.06	(0.13)	0.37	(0.49)	165
Return job	-0.07	(0.05)	0.06	(0.25)	165
Wage empl (6 m)	-0.03	(0.13)	0.46	(0.50)	165
Self empl (6 m)	-0.03	(0.08)	0.13	(0.34)	165
Ever worked for pay	-0.06	(0.13)	0.58	(0.50)	165
Searched job (7 d)	0.19	(0.13)	0.45	(0.50)	165
Searched job (6 m)	0.12	(0.11)	0.69	(0.46)	165
Ever searched wage job	-0.25	(0.12)**	0.44	(0.50)	165
Plans to start business	-0.03	(0.03)	0.03	(0.16)	165
Potential job	-0.01	(0.05)	0.05	(0.22)	165
Searched boards (7 d)	0.25	(0.12)**	0.18	(0.39)	165
Ever searched boards	0.15	(0.12)	0.65	(0.48)	165
Lives with parents	0.15	(0.13)	0.51	(0.50)	165
Years since school	-1.01	(0.74)	3.59	(2.81)	165
Temporarily empl	0.00	(0.11)	0.22	(0.42)	165
Casual worker	0.11	(0.05)**	0.01	(0.11)	165
Contract worker	-0.11	(0.05)**	0.08	(0.27)	165
Self-employed	0.05	(0.06)	0.06	(0.25)	165
Amhara	0.01	(0.13)	0.51	(0.50)	165
Oromo	0.18	(0.11)	0.24	(0.43)	165
Tigre	-0.02	(0.06)	0.04	(0.19)	165
Guraghe	-0.06	(0.09)	0.12	(0.32)	165
Mixed	-0.02	(0.03)	0.01	(0.11)	165
Other	-0.09	(0.06)	0.08	(0.27)	165
Joint <i>p</i> -value	0.58				

Notes: OLS estimates of individual baseline differences by the job contact's active search status. The data are shown on individual seed level. Outcome variables are listed on the left. Standard errors are in column 2. Stars on the standard errors reflect unadjusted *p*-values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. The last row shows the *p*-value from a test for joint orthogonality of all covariates.

Table E4: Baseline differences between seeds and job-search partners, for active and inactive job-search partners

	(1) Mean contact-seed difference (contacts actively searching)	(2) (Standard error)	(3) Mean contact-seed difference (inactive contacts)	(4) (Standard error)	(5) Obs.
Age	1.04	(0.72)	1.62	(0.40)***	596
Female	-0.13	(0.05)**	-0.09	(0.04)**	596
High school	-0.19	(0.06)***	-0.08	(0.05)	595
Preparatory school	0.02	(0.02)	0.03	(0.02)	595
Vocational school	0.04	(0.08)	-0.12	(0.05)**	595
Diploma	0.02	(0.06)	0.03	(0.02)	595
University	0.01	(0.05)	-0.07	(0.04)*	595
Business	0.10	(0.06)	-0.00	(0.05)	158
Vocational	-0.04	(0.06)	-0.03	(0.05)	158
Humanities	-0.04	(0.07)	-0.03	(0.07)	158
Worked (7 d)	-0.09	(0.08)	0.14	(0.05)***	596
Return job	0.04	(0.02)**	0.00	(0.03)	596
Wage empl (6 m)	0.06	(0.07)	0.05	(0.05)	596
Self empl (6 m)	0.01	(0.05)	-0.00	(0.04)	596
Ever worked for pay	0.14	(0.06)**	0.24	(0.05)***	596
Searched job (7 d)	0.41	(0.06)***	-0.34	(0.05)***	596
Searched job (6 m)	0.19	(0.05)***	-0.38	(0.05)***	569
Ever searched wage job	0.71	(0.06)***	0.27	(0.05)***	596
Plans to start business	-0.01	(0.01)	0.04	(0.02)**	596
Potential job	-0.03	(0.02)	0.03	(0.04)	596
Searched boards (7 d)	0.63	(0.06)***	-0.28	(0.04)***	596
Ever searched boards	0.23	(0.05)***	-0.30	(0.05)***	596
Lives with parents	-0.03	(0.06)	-0.05	(0.05)	596
Years since school	0.06	(0.57)	2.01	(0.42)***	523
Temporarily empl	-0.10	(0.06)*	-0.02	(0.04)	596
Casual worker	-0.04	(0.04)	0.00	(0.02)	596
Contract worker	0.01	(0.02)	-0.02	(0.03)	596
Self-employed	-0.06	(0.04)	0.01	(0.03)	596
Amhara	-0.04	(0.07)	-0.00	(0.04)	590
Oromo	-0.03	(0.06)	0.01	(0.04)	590
Tigre	0.06	(0.03)**	0.01	(0.02)	590
Guraghe	-0.02	(0.04)	-0.04	(0.03)	590
Mixed	0.03	(0.02)*	-0.01	(0.02)	590
Other	0.00	(0.02)	0.03	(0.02)*	590
Joint <i>p</i> -value	0.00***				

Notes: OLS estimates of individual baseline differences between seed and job contact characteristics, by the job contact's active search status. The data are shown on individual peer level, showing the difference between job contact and seed. Outcome variables are listed on the left. Standard errors are in column 2 and clustered by seed. Stars on the standard errors reflect unadjusted *p*-values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. The last row shows the *p*-value from a test for joint orthogonality of all covariates.

## F Experimental integrity

Table F5: Balance of covariates for seeds, by seed treatment status, full sample at baseline

	(1) Treatment difference	(2) (Standard error)	(3) Control mean	(4) (SD)	(5) Max pairwise difference	(6) Obs.
Number of job contacts	-0.04	(0.36)	3.67	(2.41)	0.02	165
Age	-0.34	(0.47)	23.85	(3.18)	0.11	165
Female	0.15	(0.08)**	0.45	(0.50)	0.31	165
High school	-0.09	(0.07)	0.33	(0.47)	0.19	165
Preparatory school	-0.01	(0.03)	0.03	(0.18)	0.06	165
Vocational school	0.02	(0.08)	0.40	(0.49)	0.05	165
Diploma	-0.02	(0.04)	0.07	(0.26)	0.08	165
University	0.09	(0.06)	0.17	(0.38)	0.22	165
Business	-0.04	(0.09)	0.24	(0.43)	0.10	92
Vocational	-0.13	(0.10)	0.43	(0.50)	0.27	92
Humanities	-0.07	(0.06)	0.13	(0.34)	0.22	92
Worked (7 d)	-0.02	(0.08)	0.38	(0.49)	0.03	165
Return job	-0.02	(0.03)	0.05	(0.21)	0.11	165
Wage empl (6 m)	-0.04	(0.08)	0.51	(0.50)	0.09	165
Self empl (6 m)	-0.03	(0.05)	0.13	(0.34)	0.08	165
Ever worked for pay	-0.18	(0.08)**	0.67	(0.47)	0.37	165
Searched job (7 d)	-0.04	(0.08)	0.55	(0.50)	0.08	165
Searched job (6 m)	-0.05	(0.07)	0.77	(0.42)	0.11	165
Ever searched wage job	0.05	(0.07)	0.33	(0.47)	0.11	165
Plans to start business	-0.01	(0.02)	0.02	(0.15)	0.08	165
Potential job	0.00	(0.03)	0.03	(0.18)	0.02	165
Searched boards (7 d)	-0.12	(0.07)*	0.35	(0.48)	0.27	165
Ever searched boards	0.07	(0.07)	0.69	(0.47)	0.16	165
Lives with parents	0.05	(0.08)	0.51	(0.50)	0.09	165
Years since school	-0.34	(0.45)	3.64	(2.98)	0.12	165
Temporarily empl	0.04	(0.06)	0.20	(0.40)	0.10	165
Casual worker	-0.06	(0.03)*	0.07	(0.26)	0.28	165
Contract worker	0.03	(0.03)	0.03	(0.18)	0.13	165
Self-employed	-0.03	(0.04)	0.08	(0.28)	0.12	165
Amhara	-0.04	(0.08)	0.53	(0.50)	0.08	165
Oromo	0.07	(0.07)	0.21	(0.41)	0.16	165
Tigre	0.07	(0.04)*	0.02	(0.15)	0.29	165
Guraghe	-0.10	(0.05)*	0.17	(0.38)	0.29	165
Mixed	0.00	(0.02)	0.01	(0.11)	0.01	165
Other	0.00	(0.03)	0.05	(0.21)	0.02	165
Joint <i>p</i> -value	0.13					

Notes: OLS estimates of individual baseline differences by seed treatment status. The data are shown on individual seed level. Outcome variables are listed on the left. Standard errors are in column 2. Stars on the standard errors reflect unadjusted *p*-values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. In column 5, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015). The last row shows the *p*-value from a test for joint orthogonality of all covariates.

Table F6: Balance of covariates for job-search partners, by seed treatment status, at baseline

	(1) Treatment difference	(2) (Standard error)	(3) Control mean	(4) (SD)	(5) Max pairwise difference	(6) Obs.
Age	-0.67	(0.72)	25.66	(6.71)	0.11	596
Female	0.06	(0.06)	0.36	(0.48)	0.13	596
Degree	0.05	(0.05)	0.16	(0.37)	0.14	596
Vocational Training	0.03	(0.05)	0.25	(0.43)	0.07	596
Post-Secondary Degree	-0.05	(0.05)	0.83	(0.37)	0.13	596
Born outside Addis	-0.16	(0.06)***	0.47	(0.50)	0.33	596
Amhara	-0.00	(0.05)	0.49	(0.50)	0.01	596
Oromo	0.06	(0.04)	0.19	(0.39)	0.15	596
Worked (7d)	-0.01	(0.05)	0.50	(0.50)	0.03	596
Permanent work (7d)	0.08	(0.03)**	0.12	(0.32)	0.21	596
Satisfied with work	-0.01	(0.03)	0.20	(0.40)	0.02	596
Written agreement	0.02	(0.04)	0.20	(0.40)	0.05	596
Applied to temporary jobs	-0.04	(0.04)	0.23	(0.42)	0.09	596
Applied to permanent jobs	0.02	(0.05)	0.25	(0.43)	0.04	596
Uses CV for applications	0.02	(0.05)	0.25	(0.43)	0.04	596
Uses certificates	0.03	(0.05)	0.27	(0.45)	0.07	596
Received job by interview	0.04	(0.04)	0.12	(0.32)	0.12	596
Office work (7d)	0.05	(0.04)	0.15	(0.36)	0.12	596
Offers expected (next 4m)	-0.18	(0.21)	1.75	(1.89)	0.10	520
Life satisfaction (0-10)	0.05	(0.20)	4.44	(1.85)	0.03	594
Expenditure (7d)	-1.81	(70.32)	512.51	(772.12)	0.00	596
Savings	-238.95	(1338.50)	5505.32	(17115.79)	0.02	542
Monthly earnings	-48.78	(278.68)	1145.48	(3634.03)	0.02	596
Reservation wage (in ETB)	-3.84	(263.42)	2266.70	(3011.99)	0.00	588
Aspired wage (in 5y, in ETB)	-4995.59	(6580.57)	13782.62	(114256.50)	0.06	575
Trip to center (7d)	0.06	(0.25)	2.33	(2.60)	0.02	566
Works away from home	0.03	(0.03)	0.83	(0.37)	0.08	596
In full-time education	0.01	(0.02)	0.06	(0.23)	0.04	596
In part-time education	0.04	(0.03)	0.13	(0.34)	0.11	596
In informal training	0.03	(0.03)	0.08	(0.27)	0.12	596
Searched job (7d)	-0.08	(0.05)	0.38	(0.49)	0.16	596
Searched job (6m)	-0.05	(0.05)	0.55	(0.50)	0.09	569
Ever searched wage job	-0.05	(0.04)	0.78	(0.42)	0.12	596
Searched boards (7d)	-0.03	(0.04)	0.24	(0.43)	0.06	596
Searched boards (1m)	0.09	(0.05)*	0.47	(0.50)	0.18	596
Searched in networks (7d)	-0.06	(0.05)	0.34	(0.47)	0.14	596
Married	0.01	(0.04)	0.19	(0.39)	0.03	596
Lives with parents	0.09	(0.06)	0.39	(0.49)	0.18	596
Years since school	-0.72	(0.72)	5.57	(5.89)	0.13	523
Joint <i>p</i> -value	0.60					

Notes: OLS estimates of individual baseline differences by seed treatment status. The data are shown on individual peer level. Outcome variables are listed on the left. Standard errors are listed in column 2 and clustered by seed. Stars on the standard errors reflect unadjusted *p*-values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. In column 5, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015). The last row shows the *p*-value from a test for joint orthogonality of all covariates.

Table F7: Balance of covariates for job-search partners, by seed treatment status and collapsed by seed, at baseline

	(1) Treatment difference	(2) (Standard error)	(3) Control mean	(4) (SD)	(5) Max pairwise difference	(6) Obs.
Age	-0.40	(0.93)	25.58	(7.59)	0.07	165
Female	0.08	(0.06)	0.37	(0.39)	0.21	165
Degree	0.13	(0.05)***	0.13	(0.27)	0.40	165
Vocational Training	0.00	(0.06)	0.30	(0.37)	0.00	165
Post-Secondary Degree	-0.12	(0.05)**	0.86	(0.27)	0.38	165
Born outside Addis	-0.09	(0.06)*	0.41	(0.40)	0.26	165
Amhara	0.03	(0.06)	0.52	(0.36)	0.09	165
Oromo	0.07	(0.04)	0.18	(0.26)	0.25	165
Worked (7d)	0.04	(0.05)	0.50	(0.35)	0.13	165
Permanent work (7d)	0.10	(0.04)**	0.11	(0.24)	0.38	165
Satisfied with work	-0.04	(0.04)	0.22	(0.27)	0.16	165
Written agreement	0.06	(0.05)	0.21	(0.30)	0.20	165
Applied to temporary jobs	-0.02	(0.05)	0.23	(0.32)	0.06	165
Applied to permanent jobs	0.07	(0.05)	0.24	(0.32)	0.20	165
Uses CV for applications	0.01	(0.05)	0.25	(0.34)	0.04	165
Uses certificates	0.05	(0.05)	0.29	(0.34)	0.15	165
Received job by interview	0.08	(0.04)**	0.11	(0.22)	0.31	165
Office work (7d)	0.11	(0.04)***	0.11	(0.20)	0.43	165
Offers expected (next 4m)	-0.46	(0.28)	2.06	(1.95)	0.26	162
Life satisfaction (0-10)	-0.09	(0.22)	4.52	(1.39)	0.06	165
Expenditure (7d)	78.91	(76.89)	453.45	(432.28)	0.16	165
Savings	595.54	(1138.48)	4770.97	(7469.80)	0.08	162
Monthly earnings	138.57	(264.72)	1069.29	(1723.97)	0.08	165
Reservation wage (in ETB)	172.90	(312.05)	2092.31	(2420.15)	0.09	165
Aspired wage (in 5y, in ETB)	-3006.77	(5027.29)	11545.87	(43626.42)	0.09	162
Trip to center (7d)	0.14	(0.27)	2.34	(1.89)	0.08	163
Works away from home	0.02	(0.04)	0.83	(0.28)	0.07	165
In full-time education	0.00	(0.02)	0.05	(0.15)	0.03	165
In part-time education	0.05	(0.03)	0.11	(0.20)	0.21	165
In informal training	0.06	(0.03)*	0.08	(0.17)	0.27	165
Searched job (7d)	-0.07	(0.06)	0.40	(0.37)	0.20	165
Searched job (6m)	-0.03	(0.06)	0.55	(0.36)	0.09	163
Ever searched wage job	-0.03	(0.04)	0.77	(0.30)	0.12	165
Searched boards (7d)	-0.03	(0.05)	0.26	(0.31)	0.11	165
Searched boards (1m)	0.08	(0.05)	0.50	(0.36)	0.22	165
Searched in networks (7d)	-0.05	(0.06)	0.36	(0.37)	0.15	165
Married	0.03	(0.05)	0.17	(0.30)	0.11	165
Lives with parents	0.07	(0.06)	0.42	(0.40)	0.18	165
Years since school	-0.27	(0.64)	5.07	(4.57)	0.07	160
Joint $p$ -value	0.18					

Notes: OLS estimates of individual baseline differences by seed treatment status. The data are shown on individual peer level averages, collapsed by seed. Outcome variables are listed on the left. Standard errors are in column 2. Stars on the standard errors reflect unadjusted  $p$ -values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. All monetary values are displayed in Ethiopian birr (ETB). Brackets refer to the recall period in the baseline questionnaire: d=days, m=months, y=years, ever=whole life as recall period. The distances are measured in kilometres. Life satisfaction is measured with a picture of a ladder with steps from 0 (bottom) to 10 (top), representing lowest to highest life satisfaction. Respondents point to the step where they currently see themselves on the ladder. In column 5, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015). The last row shows the  $p$ -value from a test for joint orthogonality of all covariates.

## G Attrition

Table G8: Job-search partner baseline predictors of attrition

	(1)	
	Job-search partner attrited between baseline and endline	
Treated seed	-0.050	(0.299)
Age	-0.002	(0.023)
Female	1.189***	(0.310)
Vocational Training	0.166	(0.393)
Post-Secondary Degree	-0.082	(0.445)
Born outside Addis	0.079	(0.441)
Amhara	-0.661	(0.362)
Oromo	-0.497	(0.408)
Worked (7d)	-0.667	(0.562)
Permanent work (7d)	0.315	(0.547)
Satisfied with work	-0.075	(0.496)
Written agreement	0.068	(0.597)
Applied to temporary jobs	-0.443	(0.446)
Applied to permanent jobs	-0.343	(0.593)
Uses CV for applications	0.623	(0.712)
Uses certificates	0.139	(0.861)
Received job by interview	-1.117	(0.606)
Office work (7d)	0.899*	(0.449)
Expenditure (7d)	0.000	(0.000)
Works away from home	1.107	(0.717)
In full-time education	-0.221	(0.705)
In part-time education	0.603	(0.368)
In informal training	0.078	(0.470)
Searched job (7d)	-0.790	(0.977)
Ever searched wage job	-0.240	(0.543)
Searched boards (7d)	-0.089	(0.706)
Searched boards (1m)	-0.000	(0.512)
Searched in networks (7d)	1.057	(0.856)
Married	0.151	(0.462)
Lives with parents	-0.371	(0.485)
Constant	-3.135**	(1.149)
Number of observations	596	

*Notes:* Marginal effects from a logit regression of individual-level job-search partner attrition indicators on demographics. Standard errors are shown in parentheses and are clustered on seed level. Stars on the coefficient estimates reflect unadjusted  $p$ -values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table G9: Job-search partner baseline predictors of attrition, by seed treatment status

	(1)		(2)	
	Job-search partner attrited between baseline and endline		Difference by seed treatment status	
Treated seed	-1.565	(2.457)		
Treated seed=0 × Age	0.012	(0.035)		
Treated seed=1 × Age	-0.033	(0.049)	-0.045	(0.060)
Treated seed=0 × Female	0.852	(0.516)		
Treated seed=1 × Female	1.556**	(0.535)	0.704	(0.744)
Treated seed=0 × Vocational Training	0.070	(0.650)		
Treated seed=1 × Vocational Training	0.338	(0.552)	0.268	(0.853)
Treated seed=0 × Post-Secondary Degree	0.097	(0.669)		
Treated seed=1 × Post-Secondary Degree	-0.175	(0.743)	-0.271	(1.000)
Treated seed=0 × Born outside Addis	0.544	(0.600)		
Treated seed=1 × Born outside Addis	-0.193	(0.590)	-0.737	(0.841)
Treated seed=0 × Amhara	-1.498**	(0.552)		
Treated seed=1 × Amhara	0.318	(0.644)	1.816	(0.848)*
Treated seed=0 × Oromo	-1.464*	(0.713)		
Treated seed=1 × Oromo	0.449	(0.715)	1.912	(1.010)
Treated seed=0 × Worked (7d)	-2.050	(1.072)		
Treated seed=1 × Worked (7d)	0.645	(0.811)	2.695	(1.345)*
Treated seed=0 × Permanent work (7d)	-0.126	(1.449)		
Treated seed=1 × Permanent work (7d)	0.074	(0.967)	0.200	(1.742)
Treated seed=0 × Satisfied with work	0.370	(0.948)		
Treated seed=1 × Satisfied with work	-0.564	(0.773)	-0.934	(1.224)
Treated seed=0 × Written agreement	-0.542	(1.256)		
Treated seed=1 × Written agreement	-0.016	(1.042)	0.526	(1.632)
Treated seed=0 × Applied to temporary jobs	-0.125	(0.698)		
Treated seed=1 × Applied to temporary jobs	-1.471	(1.052)	-1.346	(1.262)
Treated seed=0 × Applied to permanent jobs	0.258	(1.116)		
Treated seed=1 × Applied to permanent jobs	-1.783	(1.200)	-2.041	(1.638)
Treated seed=0 × Uses CV for applications	2.177	(1.137)		
Treated seed=1 × Uses CV for applications	-0.324	(1.062)	-2.501	(1.555)
Treated seed=0 × Uses certificates	-0.695	(1.129)		
Treated seed=1 × Uses certificates	1.582	(1.598)	2.277	(1.956)
Treated seed=0 × Received job by interview	-1.488	(1.463)		
Treated seed=1 × Received job by interview	-0.657	(1.025)	0.832	(1.786)
Treated seed=0 × Office work (7d)	1.891*	(0.940)		
Treated seed=1 × Office work (7d)	0.586	(0.773)	-1.305	(1.217)
Treated seed=0 × Expenditure (7d)	0.000	(0.000)		
Treated seed=1 × Expenditure (7d)	-0.000	(0.001)	-0.001	(0.001)
Treated seed=0 × Works away from home	0.158	(1.001)		
Treated seed=1 × Works away from home	2.223	(1.217)	2.065	(1.576)
Treated seed=0 × In full-time education	0.267	(0.997)		
Treated seed=1 × In full-time education	-1.205	(1.259)	-1.472	(1.606)
Treated seed=0 × In part-time education	1.004	(0.668)		
Treated seed=1 × In part-time education	0.658	(0.665)	-0.346	(0.943)
Treated seed=0 × In informal training	0.543	(0.778)		
Treated seed=1 × In informal training	-0.323	(0.776)	-0.867	(1.099)
Treated seed=0 × Searched job (7d)	-0.798	(1.231)		
Treated seed=1 × Searched job (7d)	-10.947	(647.582)	-10.148	(647.583)
Treated seed=0 × Ever searched wage job	0.284	(0.656)		
Treated seed=1 × Ever searched wage job	-1.049	(0.819)	-1.333	(1.050)
Treated seed=0 × Searched boards (7d)	-1.013	(1.088)		
Treated seed=1 × Searched boards (7d)	0.013	(0.945)	1.027	(1.441)
Treated seed=0 × Searched boards (1m)	-0.364	(0.685)		
Treated seed=1 × Searched boards (1m)	0.531	(0.809)	0.895	(1.060)
Treated seed=0 × Searched in networks (7d)	0.453	(1.146)		
Treated seed=1 × Searched in networks (7d)	12.012	(647.582)	11.559	(647.583)
Treated seed=0 × Married	-0.056	(0.654)		
Treated seed=1 × Married	0.522	(0.657)	0.577	(0.927)
Treated seed=0 × Lives with parents	-0.453	(0.666)		
Treated seed=1 × Lives with parents	-0.435	(0.589)	0.018	(0.889)
Constant	-2.621	(1.628)		
Number of observations	596			

Notes: Marginal effects from a logit regression of individual-level job-search partner attrition indicators on demographics. Standard errors are shown in parentheses and are clustered on seed level. Stars on the coefficient estimates reflect unadjusted *p*-values. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

## H Additional tables and mechanism checks

Table H10: Demographic predictors of using social networks for job search, from Ethiopian Labour Force Survey 2013

	(1)
	Uses social networks for job search
Age	-0.00155 (0.00128)
Female	-0.0710** (0.0232)
Migrant	0.0652** (0.0243)
High school	-0.0333 (0.0274)
Above high school	-0.155*** (0.0408)
Constant	0.297*** (0.0261)
<i>N</i>	1423

*Notes:* OLS estimate of a binary variable indicating whether an individual uses social networks to find work on a range of demographic characteristics. Standard errors are in parentheses. Ethiopian Labour Force Survey (2013) data for adults (17-64 years of age) from Addis Ababa. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

### H.1 Additional results



Table H11: Impacts on employment

	(1)	(2)	(3)	(4)
	Treatment effect	Mean of control search partners (SD)	Max pairwise difference	Obs.
Employment index	0.01 (0.10) [0.91]	0.43 (1.06)	0.07	540
Worked (7d)	-0.01 (0.04) [0.79]	0.70 (0.46)	0.02	540
Permanent work (7d)	-0.01 (0.04) [0.71]	0.25 (0.43)	0.07	540
Written agreement	0.01 (0.04) [0.88]	0.29 (0.45)	0.08	540
Monthly earnings	104.16 (169.10) [0.54]	1553.75 (1738.63)	0.05	540

*Notes:* ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. In column 3, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015).

Table H12: Impacts on employment for active and inactive job-search partners

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Searchers at baseline	Treat. effect for non-Searchers at baseline	Treatment difference: (1)-(2)	Searchers at baseline (control)	Mean of control search partners (SD)	Obs.
Employment index	-0.19 (0.21) [0.38]	0.09 (0.11) [0.42]	-0.28 (0.23) [0.23]	0.27* (0.16) [0.09]*	0.43 (1.06)	540
Worked (7d)	-0.10 (0.09) [0.30]	0.01 (0.05) [0.78]	-0.11 (0.11) [0.31]	0.04 (0.07) [0.53]	0.70 (0.46)	540
Permanent work (7d)	-0.10 (0.08) [0.22]	0.02 (0.04) [0.70]	-0.11 (0.08) [0.18]	0.11* (0.06) [0.07]*	0.25 (0.43)	540
Written agreement	-0.07 (0.09) [0.48]	0.04 (0.04) [0.40]	-0.10 (0.09) [0.27]	0.12* (0.07) [0.07]*	0.29 (0.45)	540
Monthly earnings	-3.48 (325.76) [0.99]	156.51 (186.84) [0.40]	-159.99 (362.29) [0.66]	255.23 (265.38) [0.34]	1553.75 (1738.63)	540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H13: Impacts on social interaction by whether the baseline exchange of information is reciprocal

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for two-way info flow at baseline	Treat. effect for non-two-way info flow at baseline	Treatment difference: (1)-(2)	Two-way info flow at baseline (control)	Mean of control search partners (SD)	Obs.
Social interaction index	-0.59*** (0.21) [0.01]***	-0.09 (0.44) [0.84]	-0.50 (0.47) [0.30]	0.06 (0.30) [0.85]	0.32 (1.07)	123
Spent time with seed (30d)	-0.17 (0.11) [0.13]	-0.10 (0.20) [0.63]	-0.07 (0.23) [0.76]	-0.03 (0.13) [0.81]	0.79 (0.41)	115
Travel to Addis (30d)	-0.27*** (0.09) [0.00]***	0.10 (0.21) [0.65]	-0.37 (0.22) [0.10]	0.26* (0.15) [0.08]*	0.37 (0.49)	123
Shared travel expenses (30d)	-0.25*** (0.09) [0.01]***	0.10 (0.22) [0.64]	-0.35 (0.22) [0.12]	0.21 (0.15) [0.16]	0.34 (0.48)	123
Shared information (6m)	-0.18* (0.10) [0.08]*	-0.27 (0.23) [0.24]	0.09 (0.26) [0.73]	-0.17 (0.16) [0.30]	0.55 (0.50)	123
Lent/borrowed (ever)	-0.06 (0.10) [0.56]	-0.18 (0.18) [0.33]	0.12 (0.20) [0.55]	-0.04 (0.14) [0.79]	0.34 (0.48)	123
Hours spent with seed (30d)	-9.69** (4.55) [0.04]**	6.85 (13.65) [0.62]	-16.54 (13.94) [0.24]	-2.09 (9.61) [0.83]	18.18 (24.10)	115
Job network	-0.46* (0.27) [0.09]*	-0.20 (0.68) [0.77]	-0.27 (0.70) [0.71]	-0.63 (0.44) [0.16]	1.87 (1.44)	123

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table H14: Impacts on job search by whether the baseline exchange of information is reciprocal

	(1) Treat. effect for two-way info flow at baseline	(2) Treat. effect for non-two-way info flow at baseline	(3) Treatment difference: (1)-(2)	(4) Two-way info flow at baseline (control)	(5) Mean of control search partners (SD)	(6) Obs.
Search index	-0.50** (0.23)	-0.21 (0.44)	-0.29 (0.50)	0.10 (0.34)	-0.15 (1.33)	123
Searched job (7d)	[0.03]** -0.23** (0.10)	[0.64] -0.29 (0.19)	[0.56] 0.05 (0.22)	[0.77] 0.12 (0.14)	0.49 (0.50)	123
Searched boards (7d)	[0.03]** -0.21** (0.08)	[0.13] -0.04 (0.20)	[0.80] -0.16 (0.21)	[0.38] 0.01 (0.12)	0.34 (0.48)	123
Searched in networks (7d)	[0.01]** -0.14 (0.10)	[0.84] -0.14 (0.22)	[0.44] -0.00 (0.25)	[0.96] 0.07 (0.14)	0.45 (0.50)	123
Searched boards (1m)	[0.17] -0.27*** (0.10)	[0.54] 0.13 (0.19)	[1.00] -0.40* (0.23)	[0.62] -0.02 (0.14)	0.72 (0.45)	123
Searched in network (1m)	[0.01]** -0.12 (0.09)	[0.49] 0.28 (0.18)	[0.08]* -0.40** (0.19)	[0.90] 0.21* (0.12)	0.72 (0.45)	123
Searched at work sites (1m)	[0.18] -0.07 (0.09)	[0.12] -0.14 (0.17)	[0.04]** 0.07 (0.20)	[0.09]* 0.01 (0.14)	0.27 (0.45)	123
Searched at agency (1m)	[0.47] -0.05 (0.06)	[0.41] -0.05 (0.20)	[0.71] -0.00 (0.21)	[0.96] -0.12 (0.12)	0.15 (0.36)	123
Searched at central locations (1m)	[0.41] -0.05* (0.03)	[0.80] -0.05 (0.07)	[1.00] 0.00 (0.08)	[0.28] -0.01 (0.08)	0.06 (0.23)	123
Searched internet (1m)	[0.09]* 0.06 (0.08)	[0.42] -0.22 (0.18)	[0.99] 0.28 (0.19)	[0.91] -0.10 (0.11)	0.15 (0.36)	123
	[0.40]	[0.23]	[0.15]	[0.38]		

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

## H.2 Results by baseline economic status

Table H15: Impacts on social interaction for partners with similar expenditure levels as the seed and partners with different expenditure levels

	(1) Treat. effect for Similar expenses at baseline	(2) Treat. effect for non-Similar expenses at baseline	(3) Treatment difference: (1)-(2)	(4) Similar expenses at baseline (control)	(5) Mean of control search partners (SD)	(6) Obs.
Social interaction index	-0.55** (0.24)	-0.38 (0.26)	-0.16 (0.31)	0.34 (0.24)	0.32 (1.07)	123
Spent time with seed (30d)	[0.02]** -0.09 (0.12)	[0.15] -0.18 (0.14)	[0.60] 0.09 (0.17)	[0.16] 0.06 (0.10)	0.79 (0.41)	115
Travel to Addis (30d)	[0.46] -0.21* (0.12)	[0.20] -0.15 (0.12)	[0.59] -0.06 (0.16)	[0.54] 0.12 (0.11)	0.37 (0.49)	123
Shared travel expenses (30d)	[0.09]* -0.23* (0.11)	[0.22] -0.11 (0.11)	[0.69] -0.12 (0.14)	[0.28] 0.14 (0.10)	0.34 (0.48)	123
Shared information (6m)	[0.05]* -0.12 (0.12)	[0.32] -0.25* (0.14)	[0.41] 0.14 (0.17)	[0.18] 0.07 (0.12)	0.55 (0.50)	123
Lent/borrowed (ever)	[0.32] -0.20* (0.11)	[0.07]* 0.07 (0.12)	[0.41] -0.27* (0.16)	[0.56] 0.18* (0.10)	0.34 (0.48)	123
Hours spent with seed (30d)	[0.08]* -10.95* (5.90)	[0.56] -2.48 (6.27)	[0.09]* -8.47 (7.79)	[0.08]* 7.20 (5.94)	18.18 (24.10)	115
Job network	[0.07]* -0.24 (0.38)	[0.69] -0.72* (0.42)	[0.28] 0.49 (0.56)	[0.23] -0.17 (0.35)	1.87 (1.44)	123
	[0.54]	[0.09]*	[0.39]	[0.62]		

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table H16: Impacts on job search for partners with similar expenditure levels as the seed and partners with different expenditure levels

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Similar expenses at baseline	Treat. effect for non-Similar expenses at baseline	Treatment difference: (1)-(2)	Similar expenses at baseline (control)	Mean of control search partners (SD)	Obs.
Search index	-0.64** (0.28)	-0.18 (0.30)	-0.46 (0.42)	0.43 (0.30)	-0.15 (1.33)	123
Searched job (7d)	[0.03]** -0.37*** (0.11)	[0.56] -0.08 (0.13)	[0.28] -0.28 (0.17)	[0.15] 0.14 (0.12)	0.49 (0.50)	123
Searched boards (7d)	[0.00]*** -0.28*** (0.10)	[0.53] -0.05 (0.10)	[0.10] -0.23 (0.14)	[0.24] 0.19** (0.09)	0.34 (0.48)	123
Searched in networks (7d)	[0.01]*** -0.19 (0.13)	[0.62] -0.04 (0.12)	[0.10] -0.14 (0.17)	[0.05]** 0.13 (0.11)	0.45 (0.50)	123
Searched boards (1m)	[0.14] -0.21* (0.12)	[0.72] -0.20 (0.14)	[0.42] -0.01 (0.18)	[0.25] 0.08 (0.11)	0.72 (0.45)	123
Searched in network (1m)	[0.08]* -0.20* (0.12)	[0.15] 0.11 (0.12)	[0.95] -0.31* (0.17)	[0.45] 0.15 (0.11)	0.72 (0.45)	123
Searched at work sites (1m)	[0.10]* -0.06 (0.12)	[0.36] -0.07 (0.13)	[0.08]* 0.01 (0.19)	[0.20] 0.07 (0.11)	0.27 (0.45)	123
Searched at agency (1m)	[0.64] -0.18** (0.08)	[0.60] 0.06 (0.09)	[0.96] -0.24** (0.12)	[0.56] 0.12 (0.08)	0.15 (0.36)	123
Searched at central locations (1m)	[0.02]** -0.05 (0.03)	[0.47] -0.07 (0.05)	[0.04]** 0.02 (0.06)	[0.12] -0.03 (0.06)	0.06 (0.23)	123
Searched internet (1m)	[0.14] 0.12 (0.11)	[0.19] -0.06 (0.08)	[0.76] 0.18 (0.14)	[0.67] 0.00 (0.07)	0.15 (0.36)	123
	[0.28]	[0.48]	[0.19]	[0.96]		

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

### H.3 Labor market expectations

Table H17: Impacts on labor market expectations

	(1)	(2)	(3)	(4)
	Treatment effect	Mean of control search partners (SD)	Max pairwise difference	Obs.
Offers expected (next 4m)	-0.05 (0.23) [0.82]	1.65 (2.12)	0.02	450
Reservation wage (in ETB)	-203.88 (223.44) [0.36]	2628.36 (2758.72)	0.04	499
Aspired wage (in 5y, in ETB)	-1494.03 (1639.37) [0.36]	9721.51 (19971.20)	0.03	514

*Notes:* ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. In column 3, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015).



Table H18: Impacts on labor market expectations for active and inactive job-search partners

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Searchers at baseline	Treat. effect for non-Searchers at baseline	Treatment difference: (1)-(2)	Searchers at baseline (control)	Mean of control search partners (SD)	Obs.
Offers expected (next 4m)	0.09 (0.39) [0.81]	-0.10 (0.26) [0.71]	0.19 (0.43) [0.66]	-0.22 (0.33) [0.50]	1.65 (2.12)	450
Reservation wage (in ETB)	-404.21 (283.83) [0.16]	-150.26 (255.99) [0.56]	-253.95 (309.72) [0.41]	31.21 (250.63) [0.90]	2628.36 (2758.72)	499
Aspired wage (in 5y, in ETB)	-4276.98 (4461.20) [0.34]	-441.57 (1223.03) [0.72]	-3835.41 (4432.52) [0.39]	3611.97 (4159.10) [0.39]	9721.51 (19971.20)	514

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H19: Impacts on job search for job-search partners living in and outside the city centre at baseline

	(1) Treat. effect for In centre at baseline	(2) Treat. effect for non-In centre at baseline	(3) Treatment difference: (1)-(2)	(4) In centre at baseline (control)	(5) Mean of control search partners (SD)	(6) Obs.
Search index	-0.32 (0.38) [0.40]	-0.20* (0.10) [0.06]*	-0.12 (0.39) [0.76]	-0.03 (0.25) [0.91]	-0.64 (1.09)	540
Searched job (7d)	-0.10 (0.20) [0.62]	-0.07 (0.04) [0.13]	-0.03 (0.20) [0.88]	0.00 (0.14) [0.97]	0.34 (0.48)	540
Searched boards (7d)	-0.01 (0.15) [0.93]	-0.07** (0.03) [0.03]**	0.06 (0.16) [0.71]	-0.02 (0.09) [0.80]	0.17 (0.38)	540
Searched in networks (7d)	0.08 (0.21) [0.69]	-0.03 (0.05) [0.48]	0.12 (0.22) [0.59]	-0.06 (0.14) [0.65]	0.34 (0.47)	540
Searched boards (1m)	-0.09 (0.24) [0.71]	-0.17** (0.07) [0.02]**	0.08 (0.24) [0.74]	-0.04 (0.11) [0.71]	0.52 (0.50)	540
Searched in network (1m)	-0.17 (0.21) [0.42]	-0.07 (0.04) [0.12]	-0.10 (0.22) [0.64]	-0.07 (0.13) [0.57]	0.72 (0.45)	540
Searched at work sites (1m)	0.03 (0.14) [0.84]	-0.01 (0.03) [0.75]	0.04 (0.15) [0.79]	-0.07 (0.07) [0.29]	0.15 (0.36)	540
Searched at agency (1m)	-0.28*** (0.09) [0.00]***	-0.02 (0.02) [0.46]	-0.27*** (0.09) [0.00]***	0.19** (0.09) [0.04]**	0.10 (0.30)	540
Searched at central locations (1m)	-0.01 (0.01) [0.29]	-0.02** (0.01) [0.04]**	0.01 (0.01) [0.15]	-0.02** (0.01) [0.03]**	0.02 (0.14)	540
Searched internet (1m)	-0.10 (0.09) [0.26]	0.03 (0.03) [0.25]	-0.14 (0.10) [0.16]	0.02 (0.09) [0.81]	0.08 (0.27)	540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H20: Impacts on social interaction for job-search partners living in and outside the city centre at baseline

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for In centre at baseline	Treat. effect for non-In centre at baseline	Treatment difference: (1)-(2)	In centre at baseline (control)	Mean of control search partners (SD)	Obs.
Social interaction index	0.01 (0.47) [0.98]	-0.06 (0.11) [0.60]	0.07 (0.47) [0.88]	-0.14 (0.30) [0.64]	0.00 (1.00)	540
Spent time with seed (30d)	0.00 (0.23) [0.99]	0.02 (0.05) [0.69]	-0.02 (0.23) [0.93]	-0.11 (0.14) [0.43]	0.72 (0.45)	490
Travel to Addis (30d)	0.03 (0.19) [0.86]	-0.04 (0.05) [0.34]	0.08 (0.19) [0.69]	-0.04 (0.14) [0.76]	0.25 (0.43)	540
Shared travel expenses (30d)	-0.09 (0.18) [0.60]	-0.07 (0.05) [0.12]	-0.02 (0.18) [0.90]	-0.03 (0.14) [0.84]	0.24 (0.42)	540
Shared information (6m)	0.08 (0.26) [0.76]	-0.04 (0.06) [0.53]	0.12 (0.27) [0.65]	0.00 (0.17) [0.98]	0.41 (0.49)	540
Lent/borrowed (ever)	0.11 (0.19) [0.58]	0.03 (0.04) [0.42]	0.07 (0.20) [0.72]	0.01 (0.12) [0.94]	0.25 (0.44)	540
Hours spent with seed (30d)	0.24 (2.46) [0.92]	-1.11 (2.40) [0.64]	1.35 (3.33) [0.69]	-11.05*** (2.02) [0.00]***	14.37 (21.35)	490
Job network	-0.52 (0.82) [0.52]	0.02 (0.20) [0.91]	-0.55 (0.83) [0.51]	0.56 (0.59) [0.34]	1.49 (1.54)	540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table H21: Impacts on job search, by whether the seed works at endline

	(1) Treat. effect for Seed working at endline	(2) Treat. effect for non-Seed working at endline	(3) Treatment difference: (1)-(2)	(4) Seed working at endline (control)	(5) Mean of control search partners (SD)	(6) Obs.
Search index	-0.17 (0.13) [0.20]	-0.21 (0.15) [0.16]	0.04 (0.19) [0.84]	0.10 (0.15) [0.49]	-0.64 (1.09)	540
Searched job (7d)	-0.03 (0.05) [0.59]	-0.11 (0.07) [0.10]	0.09 (0.09) [0.33]	-0.00 (0.07) [0.98]	0.34 (0.48)	540
Searched boards (7d)	-0.08* (0.04) [0.05]*	-0.04 (0.04) [0.38]	-0.04 (0.06) [0.47]	0.06 (0.05) [0.16]	0.17 (0.38)	540
Searched in networks (7d)	-0.02 (0.06) [0.72]	-0.03 (0.07) [0.71]	0.00 (0.09) [0.96]	0.04 (0.07) [0.57]	0.34 (0.47)	540
Searched boards (1m)	-0.15* (0.09) [0.09]*	-0.19* (0.11) [0.09]*	0.04 (0.14) [0.80]	-0.02 (0.11) [0.82]	0.52 (0.50)	540
Searched in network (1m)	-0.04 (0.06) [0.48]	-0.09 (0.06) [0.12]	0.05 (0.09) [0.55]	0.04 (0.06) [0.51]	0.72 (0.45)	540
Searched at work sites (1m)	0.00 (0.04) [0.92]	-0.02 (0.05) [0.75]	0.02 (0.06) [0.75]	0.02 (0.04) [0.61]	0.15 (0.36)	540
Searched at agency (1m)	-0.03 (0.03) [0.19]	-0.02 (0.04) [0.51]	-0.01 (0.04) [0.81]	-0.02 (0.03) [0.64]	0.10 (0.30)	540
Searched at central locations (1m)	-0.03* (0.01) [0.06]*	-0.00 (0.00) [0.31]	-0.02* (0.01) [0.09]*	0.03*** (0.01) [0.01]***	0.02 (0.14)	540
Searched internet (1m)	0.03 (0.04) [0.43]	0.02 (0.04) [0.56]	0.00 (0.05) [0.93]	-0.01 (0.03) [0.75]	0.08 (0.27)	540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted *p*-values (in brackets). *p*-values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H22: Impacts on social interaction, by whether the seed works at endline

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Seed working at endline	Treat. effect for non-Seed working at endline	Treatment difference: (1)-(2)	Seed working at endline (control)	Mean of control search partners (SD)	Obs.
Social interaction index	-0.05 (0.14) [0.75]	-0.08 (0.17) [0.66]	0.03 (0.23) [0.89]	-0.06 (0.18) [0.75]	0.00 (1.00)	540
Spent time with seed (30d)	0.05 (0.07) [0.44]	-0.03 (0.08) [0.71]	0.08 (0.11) [0.43]	-0.06 (0.07) [0.38]	0.72 (0.45)	490
Travel to Addis (30d)	-0.02 (0.05) [0.70]	-0.07 (0.07) [0.33]	0.05 (0.09) [0.58]	-0.05 (0.07) [0.52]	0.25 (0.43)	540
Shared travel expenses (30d)	-0.06 (0.06) [0.32]	-0.10 (0.07) [0.15]	0.05 (0.09) [0.60]	-0.05 (0.07) [0.44]	0.24 (0.42)	540
Shared information (6m)	-0.05 (0.08) [0.50]	0.00 (0.10) [0.97]	-0.06 (0.13) [0.66]	0.07 (0.10) [0.49]	0.41 (0.49)	540
Lent/borrowed (ever)	-0.03 (0.05) [0.48]	0.11 (0.07) [0.13]	-0.14 (0.09) [0.10]	-0.03 (0.07) [0.69]	0.25 (0.44)	540
Hours spent with seed (30d)	1.14 (3.11) [0.71]	-3.78 (3.65) [0.30]	4.92 (4.79) [0.31]	-3.08 (3.56) [0.39]	14.37 (21.35)	490
Job network	0.02 (0.25) [0.95]	0.05 (0.33) [0.89]	-0.03 (0.42) [0.94]	0.30 (0.32) [0.35]	1.49 (1.54)	540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table H23: Impacts on job search, by seed's baseline distance to centre

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Short distance to center at baseline	Treat. effect for non-Short distance to center at baseline	Treatment difference: (1)-(2)	Short distance to center at baseline (control)	Mean of control search partners (SD)	Obs.
Search index	-0.42*** (0.15)	0.07 (0.15)	-0.49** (0.21)	0.22 (0.16)	-0.64 (1.09)	540
Searched job (7d)	[0.00]*** -0.15** (0.06)	[0.66] 0.03 (0.06)	[0.02]** -0.19** (0.09)	[0.18] 0.08 (0.06)	0.34 (0.48)	540
Searched boards (7d)	[0.01]** -0.13** (0.05)	[0.63] -0.04 (0.04)	[0.03]** -0.09 (0.07)	[0.22] 0.08 (0.06)	0.17 (0.38)	540
Searched in networks (7d)	[0.02]** -0.12* (0.06)	[0.37] 0.10 (0.08)	[0.20] -0.21** (0.10)	[0.13] 0.07 (0.07)	0.34 (0.47)	540
Searched boards (1m)	[0.07]* -0.19** (0.09)	[0.19] -0.13 (0.11)	[0.03]** -0.05 (0.14)	[0.34] 0.02 (0.11)	0.52 (0.50)	540
Searched in network (1m)	[0.05]** -0.16*** (0.06)	[0.21] 0.08 (0.07)	[0.70] -0.24*** (0.09)	[0.85] 0.05 (0.06)	0.72 (0.45)	540
Searched at work sites (1m)	[0.01]*** -0.03 (0.05)	[0.24] 0.05 (0.05)	[0.01]*** -0.09 (0.07)	[0.41] 0.00 (0.05)	0.15 (0.36)	540
Searched at agency (1m)	[0.47] -0.04 (0.04)	[0.31] -0.06** (0.02)	[0.22] 0.02 (0.05)	[0.95] 0.04 (0.04)	0.10 (0.30)	540
Searched at central locations (1m)	[0.34] -0.03* (0.02)	[0.02]** -0.01 (0.02)	[0.67] -0.02 (0.02)	[0.28] 0.01 (0.02)	0.02 (0.14)	540
Searched internet (1m)	[0.07]* -0.00 (0.04)	[0.68] 0.05 (0.04)	[0.30] -0.05 (0.06)	[0.57] 0.05 (0.04)	0.08 (0.27)	540
	[0.94]	[0.25]	[0.40]	[0.23]		

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H24: Impacts on social interaction, by seed's baseline distance to centre

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Short distance to center at baseline	Treat. effect for non-Short distance to center at baseline	Treatment difference: (1)-(2)	Short distance to center at baseline (control)	Mean of control search partners (SD)	Obs.
Social interaction index	-0.10 (0.17)	-0.06 (0.17)	-0.04 (0.24)	0.09 (0.18)	0.00 (1.00)	540
Spent time with seed (30d)	[0.56]	[0.73]	[0.88]	[0.64]		
	0.02 (0.08)	-0.00 (0.08)	0.02 (0.11)	0.03 (0.08)	0.72 (0.45)	490
Travel to Addis (30d)	[0.84]	[1.00]	[0.88]	[0.70]		
	-0.04 (0.07)	-0.05 (0.07)	0.01 (0.10)	0.02 (0.07)	0.25 (0.43)	540
Shared travel expenses (30d)	[0.52]	[0.44]	[0.93]	[0.81]		
	-0.08 (0.07)	-0.07 (0.07)	-0.01 (0.10)	0.02 (0.07)	0.24 (0.42)	540
Shared information (6m)	[0.22]	[0.32]	[0.88]	[0.79]		
	-0.03 (0.09)	-0.05 (0.09)	0.03 (0.13)	-0.00 (0.09)	0.41 (0.49)	540
Lent/borrowed (ever)	[0.75]	[0.57]	[0.84]	[0.98]		
	0.07 (0.05)	0.02 (0.07)	0.05 (0.09)	-0.06 (0.06)	0.25 (0.44)	540
Hours spent with seed (30d)	[0.19]	[0.75]	[0.60]	[0.36]		
	-4.40 (3.74)	0.70 (3.74)	-5.10 (5.33)	5.70 (3.68)	14.37 (21.35)	490
Job network	[0.24]	[0.85]	[0.34]	[0.12]		
	-0.21 (0.27)	0.09 (0.30)	-0.30 (0.40)	0.31 (0.27)	1.49 (1.54)	540
	[0.44]	[0.76]	[0.46]	[0.25]		

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. If the number of observations is smaller than 540, it is because of missing observations for the number of hours spent with the seed.

Table H25: Direct impacts on seeds moving within or out of Addis

	(1) Moved within Addis	(2) Moved out of Addis
Treatment effect	0.00674 (0.0455)	0.000963 (0.0179)
Constant	0.0854** (0.0316)	0.0122 (0.0124)
<i>N</i>	158	158

*Notes:* OLS regression of a binary variable, indicating whether a seed individual moved, on a treatment indicator. Outcomes missing for seven seed individuals. Standard errors are in parentheses. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H26: Impact on beliefs and attitudes

	(1) Treatment effect	(2) Mean of control search partners (SD)	(3) Max pairwise difference	(4) Obs.
Alone in charge of own life's course	0.58*** (0.13) [0.00]***	3.08 (1.44)	0.47	485
Life achievements are primarily luck	0.16 (0.13) [0.21]	2.85 (1.31)	0.07	485
Doubts own abilities during difficulties	-0.17 (0.12) [0.18]	2.72 (1.20)	0.17	485
Possibilities dependent on social circumstances	-0.08 (0.08) [0.29]	3.51 (0.99)	0.14	485
Has little control over own life	-0.37*** (0.13) [0.01]***	2.83 (1.16)	0.39	485

*Notes:* ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted *p*-values (in brackets). *p*-values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. In column 3, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015).



Table H27: Impact on beliefs and attitudes for active and inactive job-search partners

	(1)	(2)	(3)	(4)	(5)	(6)
	Treat. effect for Searchers at baseline	Treat. effect for non-Searchers at baseline	Treatment difference: (1)-(2)	Searchers at baseline (control)	Mean of control search partners (SD)	Obs.
Alone in charge of own life's course	1.10*** (0.22) [0.00]***	0.40*** (0.14) [0.01]***	0.70*** (0.25) [0.01]***	-0.47** (0.21) [0.03]**	3.08 (1.44)	485
Life achievements are primarily luck	0.48** (0.23) [0.04]**	0.05 (0.15) [0.71]	0.43 (0.27) [0.11]	-0.19 (0.20) [0.34]	2.85 (1.31)	485
Doubts own abilities during difficulties	-0.11 (0.23) [0.63]	-0.19 (0.14) [0.18]	0.08 (0.26) [0.77]	-0.09 (0.19) [0.65]	2.72 (1.20)	485
Possibilities dependent on social circumstances	-0.04 (0.14) [0.77]	-0.06 (0.10) [0.51]	0.02 (0.18) [0.90]	0.26* (0.14) [0.05]*	3.51 (0.99)	485
Has little control over own life	-0.55** (0.25) [0.03]**	-0.29** (0.13) [0.03]**	-0.26 (0.25) [0.31]	0.35** (0.18) [0.05]**	2.83 (1.16)	485

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. The index is a standardised index of all outcome variables below. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

Table H28: Impact on expected returns of travelling to the city centre for job search

	(1)	(2)	(3)	(4)	(5)
	Treated* days at boards	Days at boards	Treated seed	Difference (1) and (2)	Mean of control search partners (SD) Obs.
Offers expected (next 4m)	0.31 (0.24) [0.20]	0.26* (0.14) [0.07]*	-0.06 (0.21) [0.78]	0.05 (0.34) [0.88]	1.65 (2.12) 450

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. Regressions control for the baseline outcome as well as variables that are imbalanced at baseline. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level. In column 3, we calculate the pairwise difference between the two group means and divide this by the standard deviation of the variable, following Imbens (2015).

## H.4 LASSO tables for main results

Table H29: Impacts on main outcome indices, LASSO

	(1) Overall Treatment effect	(2) Treat. effect for Searchers at baseline	(3) Treat. effect for non-Searchers at baseline	(4) Treatment difference: (1)-(2)	(5) Mean of control search partners (SD) Obs.
Social interaction index	-0.05 (0.11) [0.63]	-0.50** (0.20) [0.01]**	0.10 (0.11) [0.37]	-0.59*** (0.20) [0.00]***	0.00 (1.00) 540
Search index	-0.16* (0.10) [0.10]*	-0.43** (0.20) [0.03]**	-0.07 (0.10) [0.48]	-0.36* (0.21) [0.09]*	-0.64 (1.09) 540
Employment index	-0.05 (0.09) [0.57]	-0.36* (0.20) [0.07]*	0.04 (0.10) [0.69]	-0.40* (0.21) [0.06]*	0.43 (1.06) 540

Notes: ANCOVA estimates of job-search partner variable differences by seed treatment status. Outcome variables are listed on the left. Regressions control for the baseline outcome, variables that are imbalanced at baseline, as well as control variables selected by a Belloni double LASSO procedure. Standard errors are in parentheses and are clustered by seed individual. Stars on the coefficient estimates and brackets reflect unadjusted  $p$ -values (in brackets).  $p$ -values are in brackets. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. level.

## I Additional Figures

Figure A1: Distribution of treated and untreated seeds and job-search partners in Addis Ababa

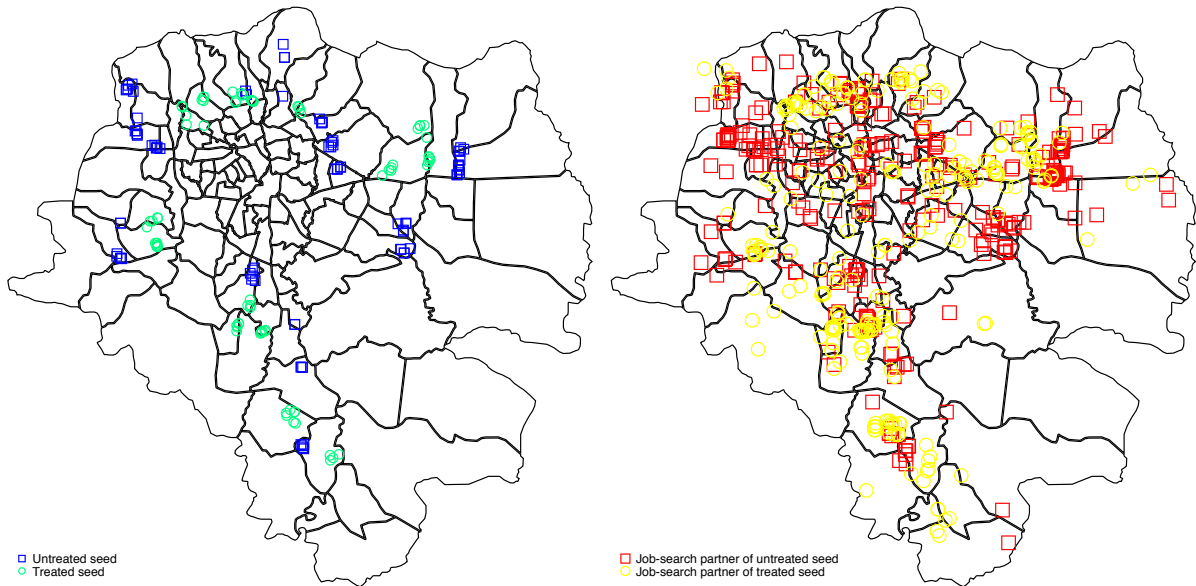


Figure A2: Kernel density estimate of the distance between job-search partners and seeds (in km), at baseline

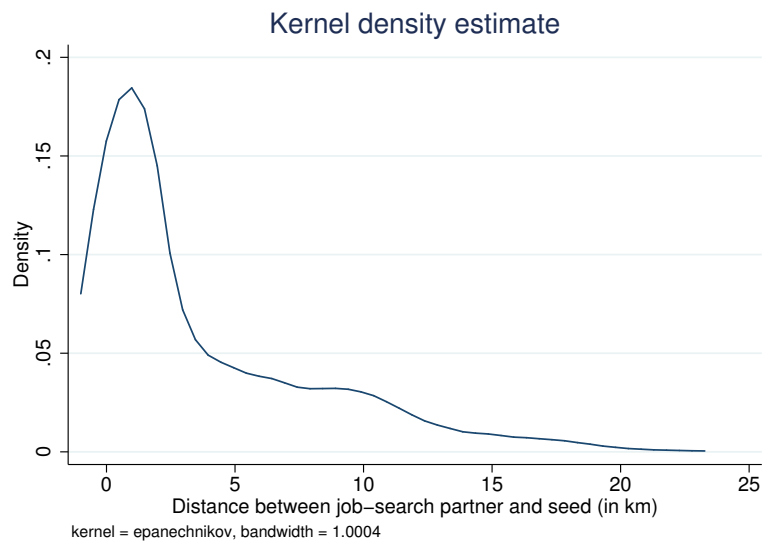


Figure A3: Complementaries between partner job search and network size

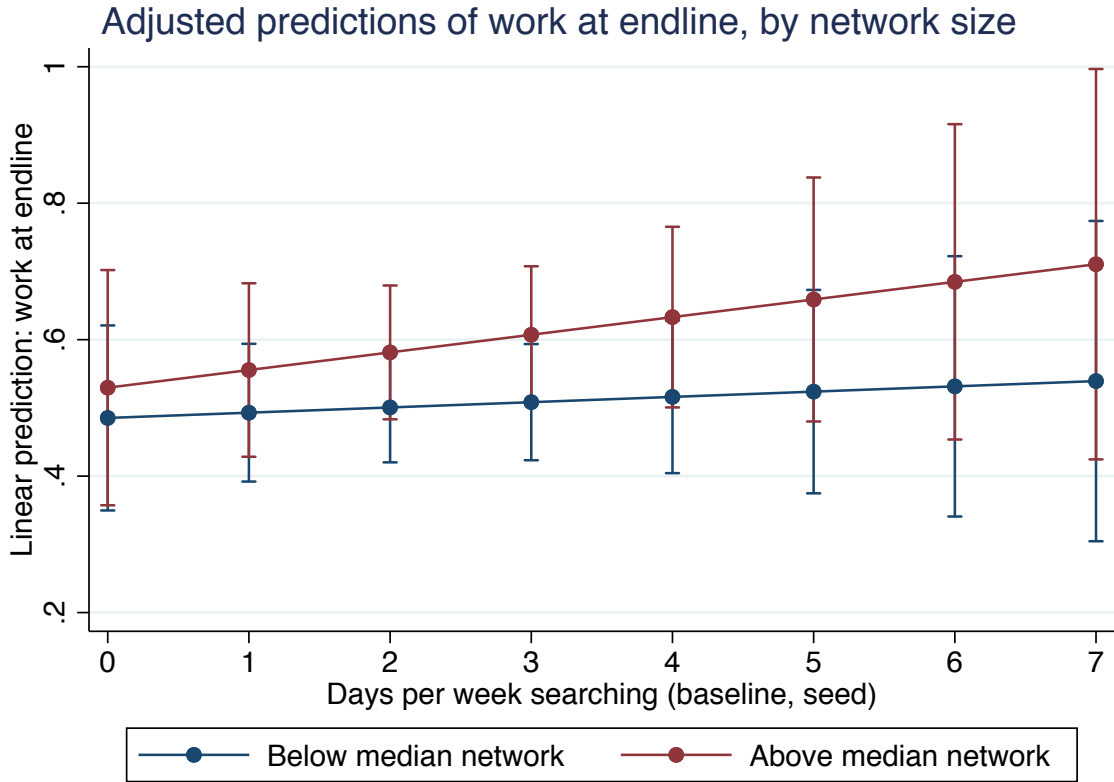


Figure A4: Subsidy amount and duration for the seed individuals

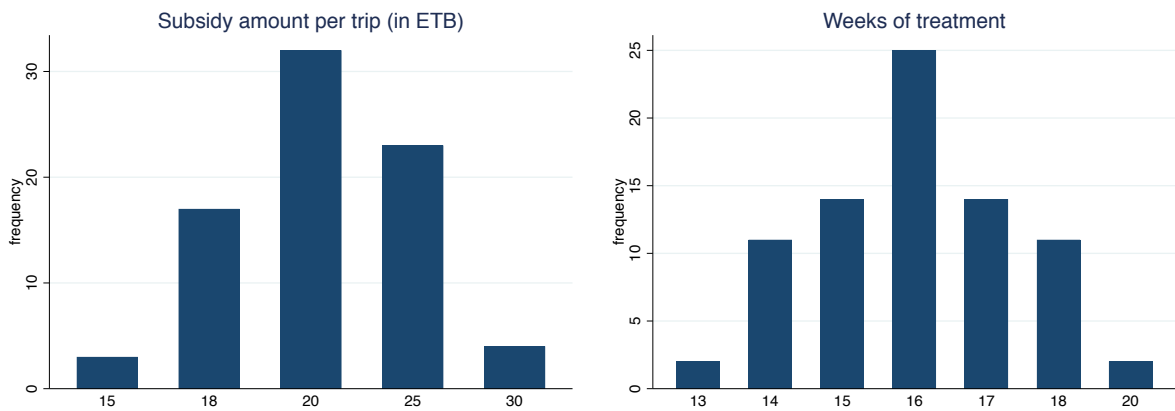
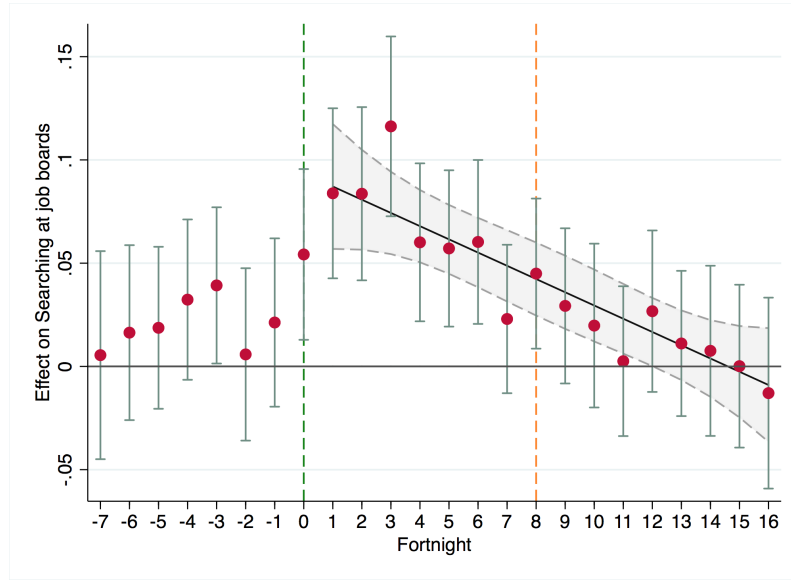


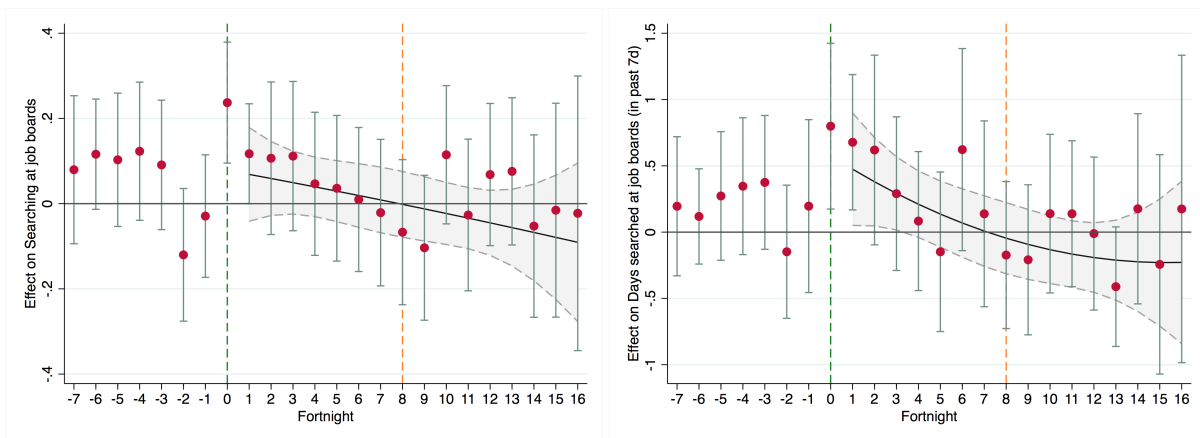
Figure A5: Impact trajectory of the transport treatment: impact on searching at the job boards



Notes: The green dotted line indicates the fortnight when the treatment begins. The orange dotted line indicates the week when the treatment ends. From Abebe et al. (2020).

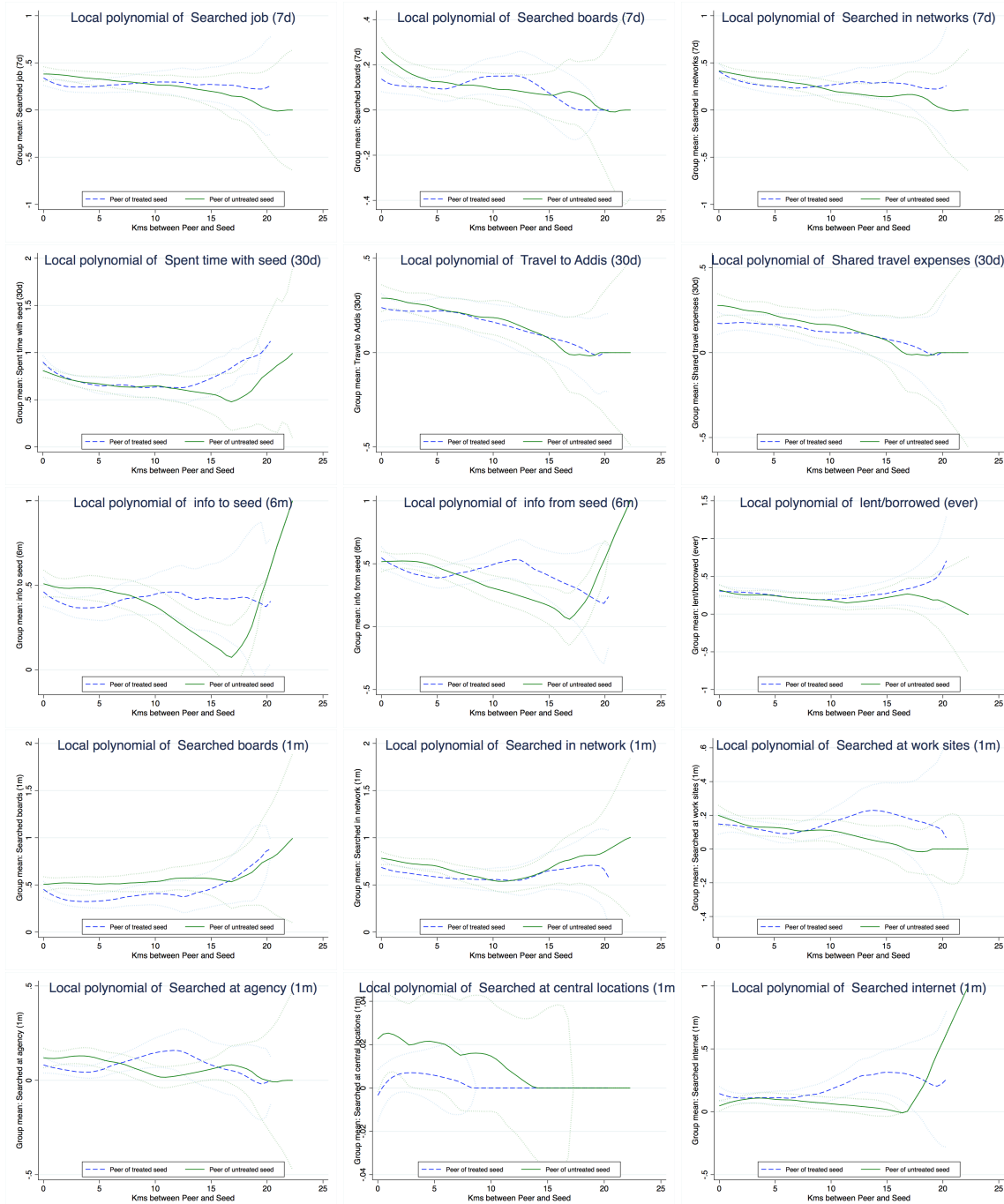
Figure A6: Impact trajectory of the transport treatment for the seed individuals

(a) Searching at the job boards (extensive margin)      (b) Days searched at boards (intensive margin)



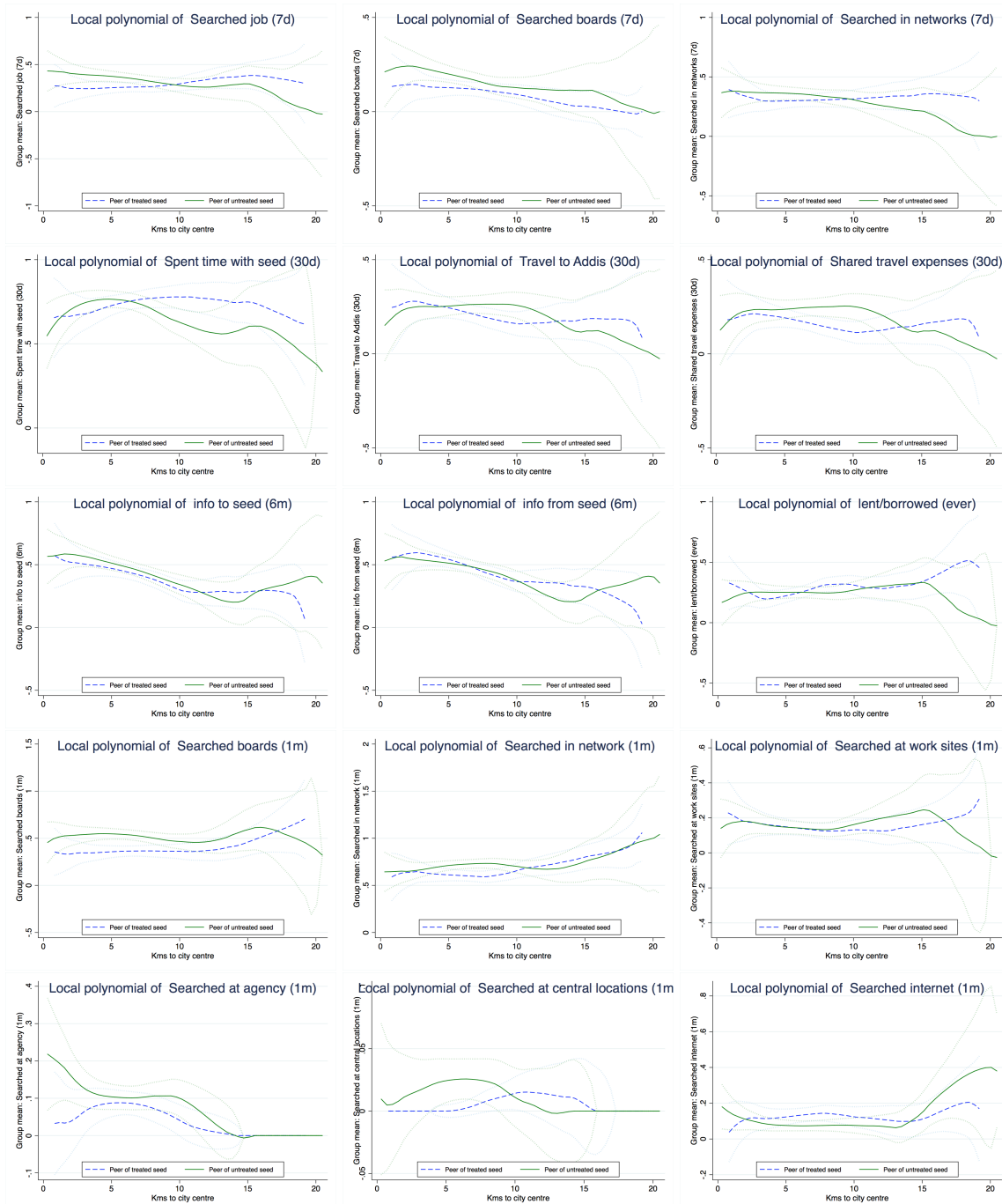
Notes: The green dotted line indicates the fortnight when the treatment begins. The orange dotted line indicates the week when the treatment ends. Own calculations, using the 165 seed individuals. The results are very similar when using the complete control group sample ( $N \simeq 800$ ).

Figure A7: Local polynomials of the intervention effects, by the distance between the job-search partner and the seed



Notes: Kernel-weighted (epanechnikov) local polynomial regression of the variable on the y-axis on distance between job-search partner and seed, by seed treatment status. Thin lines display 95 percent confidence intervals.

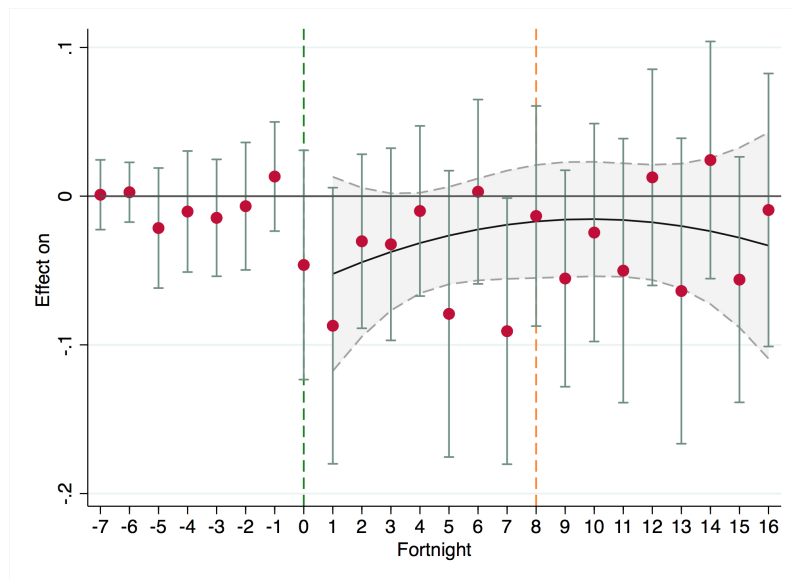
Figure A8: Local polynomials of the intervention effects, by the distance between the job-search partner's residence and the city centre



Notes: Kernel-weighted (epanechnikov) local polynomial regression of the variable on the y-axis on distance between job-search partner residence and city centre, by seed treatment status. Thin lines display 95 percent confidence intervals.



Figure A9: Impact trajectory of the transport treatment for seeds: impact on whether seed talked to friends



Notes: The green dotted line indicates the fortnight when the treatment begins. The orange dotted line indicates the week when the treatment ends. Own calculations, using the 165 seed individuals. The results are very similar when using the complete control group sample ( $N \approx 800$ ).