

Job History, Work Attitude, and Employability

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Abstract

We study whether employment history can provide information about a worker's non-cognitive skills—in particular about “work attitude,” or the ability to work well and cooperatively with others. Our hypothesis is that, holding all else equal, a worker's frequent job changes can indicate poorer work attitude, and that this information can be transmitted in labor markets through employment histories. We provide support for this hypothesis across three studies that employ complementary field, lab and survey experiments. First, using a laboratory labor market in which the only valuable characteristic of workers is their reliability in cooperating with an employer's effort requests, we demonstrate that prior employment information allows employers to screen for such reliability and allows high-reliability workers to obtain better employment outcomes. Second, we conduct a field experiment in which we vary the frequency of job changes in fictitious job applicants' resumes. Those applicants with fewer job changes are more likely to receive callbacks from prospective employers. A third survey experiment with human resource professionals confirms that the resume manipulations in the field study create different perceptions of work attitude. Our work highlights the potential importance of job history as a signal of worker characteristics, and points to a cost for workers of frequent job changes.

1. Introduction

Consider two workers who are known to be identical in almost every professionally relevant characteristic, such as education, experience and vocational training. The only relevant characteristic in which they may differ is how well each worker gets along with others and

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cooperates with directives from supervisors. As an employer, you care about these qualities, but lack the ability to observe them directly. In fact, the only observable difference between the two prospective workers is in their resumes: one worker has remained at the same company for his entire career; the other has changed jobs frequently, making horizontal moves every 1 or 2 years. Based on this information, is it possible to infer which worker has a more positive work attitude—i.e., is more cooperative, loyal and reliable? Our conjecture is that employers will often view frequent job changes as potentially reflective of lower degrees of positive work attitude and will, *ceteris paribus*, find workers who change jobs frequently less desirable in contexts where work attitude is important.¹

The notion that firms rely on workers’ histories to infer their qualities forms the basis of an extensive literature on screening and signaling in labor markets (Spence 1973; Arrow 1973; Stiglitz 1975). This literature has typically focused on productive skills or human capital—often in the form of cognitive abilities reflected in ease of educational attainment—that are presumed to indicate a worker’s ability to learn and perform work-related tasks. For example, empirical studies document employers use of information regarding workers’ educational attainment in a manner consistent with models of signaling and asymmetric information on workers’ abilities (Tyler, Murnane, and Willett 2000; Bedard 2001).

However, more recent research notes the importance of alternative, non-cognitive or behavioral skills for labor market success (Bowles, Gintis, and Osborne 2001; Heckman, Stixrud, and Urzua 2006). Rather than relating to a worker’s cognitive or physical ability to perform particular tasks, these skills involve a worker’s reliability, trustworthiness, self-control, loyalty and ability to work well with others (e.g., Heckman and Rubinstein 2001; Dohmen et al. 2009; Lindqvist and Vestman 2011). For simplicity, we refer to this broad set of characteristics as “work attitude.” A central idea of this literature is that workers who exhibit more positive work attitude—i.e., are better able to control their behavior, plan and meet deadlines, and get along with others—are more desirable to employers and obtain better labor market outcomes.

Our paper explores the previously untested hypothesis that firms use employment his-

¹The popular business press often recognizes that frequent job changes can be associated with perceptions of “disloyalty, fickleness and unreliability” (Triukha 2012; Suster 2010). Others have noted that workers are heterogeneous in their propensity to remain with specific employers, and that this corresponds to stable individual characteristics (Ghiselli 1974; Blumen, Kogan, and McCarthy 1955).

tories as a signal of such desirable characteristics. While information on workers’ work attitude may be obtained through direct observation of their workplace behaviors (Bartling, Fehr, and Schmidt 2012), such opportunities are often rare and prospective employers have to rely on less direct signals contained in the typical employment application. One piece of observable and typically verifiable piece of information in most employment applications is work history—what positions an applicant has previously held, at which firms, and for how long. As reflected in the example at the beginning of this paper, the frequency with which a worker changes jobs may, *ceteris paribus*, provide information on that worker’s work attitude.²

We specifically test two hypotheses. First, we hypothesize that, at least in some settings, frequent job changes will be correlated with lower work attitude. That is, we expect employees who change jobs more frequently to be less reliable and team oriented than those who have more continuous employment histories with fewer employers. Our second hypothesis is that the differential in perceived work attitude based on frequencies of job changes will make prospective employees who have changed jobs less frequently more attractive to employers.

Why should applicants’ job histories convey information about their non-cognitive skills? Most employment relationships require a worker to take directions from supervisors, cooperate with others and exhibit self-control in pursuing long-term goals at the expense of short-term inclinations. Hence, employees who do these things, without reacting negatively or counterproductively, are often more valuable to an employer. Indeed, many employers rate workers’ “attitude” as an important determinant of hiring decisions and note “poor attitude, motivation or personality” as a reason why they forgo hiring applicants for open positions (Green, Machin, and Wilkinson 1998; Bowles, Gintis, and Osborne 2001). In turn, workers who are more likely to agree to reasonable employment requests, show up on time, show loyalty to their employer, get along well with co-workers and control their temper—i.e., who exhibit a positive work attitude—are those who are less likely to quit jobs due to personal conflicts and are also those for whom an employer is more likely to expend effort to retain. Hence, we conjecture that a worker who has remained with an

²Referrals by existing employees may provide another mechanism through which employers might obtain information about prospective worker’s abilities, including work attitude (Rees 1966; Pallais 2014; Burks et al. 2015).

employer for 10 years is, holding all else equal, likely to be one for whom interpersonal conflicts are less frequent and severe than one who has changed jobs every few years. A meta-analysis of the psychology literature provides support for this hypothesis—finding that personality traits like agreeableness and conscientiousness are negatively correlated with workers’ turnover decisions (Zimmerman 2008).

Of course, there are many other possible reasons for either a positive or negative relationship between job mobility and employability. For example, workers who switch employers more often may accumulate a larger stock of general human capital, that is, skills and knowledge that are useful across jobs, firms and industries (Mincer 1958; Becker 1962). If firms use workers’ job histories as an indicator of these general skills and knowledge, this could lead to a positive relationship between job changes and employability.³ Therefore, we do not claim to provide any sort of comprehensive interpretation of tenure-wage-employment relationships. Rather, we propose, and test, one particular mechanism through which employment history can impact subsequent labor market outcomes, using empirical evidence that attempts to control for alternative mechanisms and explanations for such a relationship as much as possible. Specifically, we provide evidence for the value of employment history as a signal of work attitude—a quality suggested to be important in many occupations—using three empirical tests that employ complementary laboratory, field, and survey experiments. While the evidence from real labor markets in the field study provides the most compelling evidence of the economic significance of our findings, the lab and survey studies provide us with the clearest insights into the precise mechanisms driving the relationship between job changes and employment outcomes.

Table 1 provides an overview of how the different approaches complement each other. We test our first hypothesis in both the laboratory, where we study whether there is a negative relationship between job changes and work attitude, and in the field, where we test whether human resource (HR) professionals perceive candidates who change jobs more frequently as having poorer work attitude. To test our second hypothesis, we study whether workers with fewer job changes do receive more job offers in the laboratory setting and more interview requests in the field experiment. We find support for both hypotheses,

³Moreover, the reasons behind job changes are undoubtedly important for subsequent labor market outcomes (Jovanovic 1979; Topel and Ward 1992), and job mobility may have differential impacts at different points in a worker’s career (Bartel 1980; Mincer and Jovanovic 1982; Farber 1999).

in the lab as well as in the field.

Table 1: Research design

	Laboratory	Field
H1: Frequent job changes are negatively correlated with work attitude	Study 1: Laboratory Experiment	Study 3: Survey Experiment
H2: Where work attitude matters, employers find fewer job changes desirable	Study 1: Laboratory Experiment	Study 2: Field Experiment

The laboratory environment allows us to isolate work attitude from other possible channels through which a relationship between past and future employment might occur. In our experiment, the only things workers do is decide whether to comply with employers’ effort requests, and the only thing employers care about is the extent to which a worker exhibits such positive work attitude. Other potentially confounding characteristics of workers and jobs—such as heterogeneous ability, firm-specific capital, training and recruitment costs—are absent from our laboratory setting. Providing effort is equally costly to all workers and is therefore independent of any idiosyncratic ability and does not vary with experience. However, workers with a greater tendency to provide voluntary effort are more valuable to firms, meaning that firms can benefit by using informative signals regarding work attitude, and should favor contracting with more reliable workers. Using such a laboratory environment, we study how job changes and observable work history interact to influence subsequent labor market outcomes. Our laboratory results show that, first, workers who switch employers less frequently are more likely to exert higher effort. Second, following an exogenous unemployment shock that requires all workers to find new employers, job histories facilitate the signaling of positive work attitude—workers with fewer job changes receive more job offers and earn 53 percent greater employment income. Finally, by turning off the ability of firms to observe work histories we show that this information is crucial in firms’ attempts to identify reliable workers. Hence, our results clearly demonstrate that frequent job changes can serve as a signal of negative work attitude and influence employability.

We then proceed by providing evidence that the phenomenon we identify in the laboratory is also relevant for real labor markets. We report a field experiment that studies whether frequent job changes make prospective employees less desirable to firms. Specifi-

cally, we sent resumes to several open positions for administrative and clerical work. The resumes varied, by random assignment, the applicants' job history.⁴ For every open position in our study, we sent two applications: one with several short periods of tenure at different firms, and one with a single similar period of tenure at one firm. We counterbalanced other aspects of the resumes. In two waves of data collection, we observe significantly higher callback rates for the applicant with fewer job changes. That is, workers who change jobs more frequently are less desirable in the field study, just as they are in our laboratory experiment.

Finally, to obtain more precise information regarding what types of inferences prospective employers make regarding the resumes from the field study, we conducted a separate survey experiment. Specifically, we surveyed professionals with experience in Human Resources management to obtain their impressions of the resumes used in the field study. The results show that HR professionals attribute a less positive work attitude to a resume with more frequent job changes than to one with a more contiguous employment history—specifically, worse evaluations for the characteristics “reliable”, “team oriented”, and “patient.” Moreover, perceived work attitude significantly predicts the HR professionals' stated preference for being more likely to invite the applicant with fewer job changes for an interview. Thus, the survey experiment provides evidence confirming that the resumes in the field study create different perceptions of applicants' work attitudes, and that these perceptions are important drivers of callbacks.

Our evidence that employers discriminate against frequent job changes may have implications that go beyond the value of work history as a signal of work attitude. Workers may be unwilling to undertake job changes out of fear of the negative impact on the prospective employers' perception of work attitude. Indeed, the popular business press regularly warns against the perils of job hopping and provides suggestions for how to manage the associated negative perceptions.⁵ This inertia or friction in job mobility may create inefficient matching between employees and employers. Labor market frictions are a key feature of modern search theory in macroeconomics because they provides potential explanations for the existence of unemployment and wage inequality (e.g., Petrongolo and Pissarides 2001;

⁴Many studies used a similar methodology to test for other aspects of job-market discrimination (Riach and Rich 2002; Bertrand and Mullainathan 2004; Carlsson and Rooth 2007; Oberholzer-Gee 2008; Kroft, Lange, and Notowidigdo 2013; Eriksson and Rooth 2014; Deming et al. 2014).

⁵See, for example, (Green 2013; Levinson 2009)

Rogerson, Shimer, and Wright 2005). Previous work has focused primarily on structural factors for why workers may refuse a job offer and wait for a more attractive one, such as how quickly they can sell their houses (Head and Lloyd-Ellis 2012). Our paper adds to this literature by proposing a mechanism for labor market frictions that arises endogenously through employers' preference for workers with a positive work attitude and the limited information available to employers on this characteristic.⁶

The rest of this paper is structured as follows. The next section presents the design and results of our laboratory experiment. Sections 3 and 4 present, respectively, the field study and the connected survey study of HR professionals. Finally, in Section 5 we provide a broad interpretation of the combined results and conclude.

2. Laboratory Experiment

Our laboratory experiment creates a setting in which a worker's productivity for a firm is determined entirely by her reliability and cooperativeness. Specifically, we use an experimental labor market in which incomplete contracts create incentives for inefficient shirking by workers (Brown, Falk, and Fehr 2004). Workers are valuable to firms if they act cooperatively and reliably, by voluntarily providing high effort in response to high wages. To study whether employers use employment histories as a signal of this behavioral quality, we exogenously manipulate whether employers have access to workers' job histories. We additionally induce an unemployment shock, following which all workers must search for new employers, in order to identify which types of employees firms find most desirable.

2.1. Experimental Design

Each experimental labor market consists of 17 participants, of which seven are randomly assigned the role of a firm; the remaining ten participants are assigned the role of a worker.

⁶Our study is also related to a large empirical literature studying the relationship between job mobility and wage growth. While some of these studies find that mobility and wage growth are positively related (Topel and Ward 1992; Becker and Hills 1983; Bartel 1980), others find a negative relationship (Light and McGarry 1998; Mincer and Jovanovic 1982; Borjas 1981). Our paper contributes to this literature, by studying the impacts of exogenous variations in job mobility. We provide one possible mechanism through which prior job mobility may affect future employment outcomes, though our focus is on employability rather than wages. A separate strand of literature explores how job tenure with a particular firm relates to wage profiles (Dustmann and Meghir 2005; Altonji, Smith, and Vidangos 2013; Bagger et al. 2014). This is distinct from our study, because we focus on job tenure solely for its signaling purposes when changing jobs between firms.

Each participant is identifiable through a permanent ID number. The experiment lasts 30 periods. In any given period, each firm can hire at most one worker and each worker can work for at most one firm. Because labor supply exceeds labor demand, in each period some workers are unemployed.

Every period is divided into two stages: a hiring stage and a work stage. In the hiring stage, firms can post two kinds of offers: *i*) public wage offers, which any worker can accept, and *ii*) private wage offers, which are targeted to specific workers. A private offer is thus a clear indication that a firm has a preference for one particular worker. Each offer contains a binding wage, $w \in \{1, 2, \dots, 100\}$, and a desired effort level, \hat{e} . A worker can accept any public offer or any private offer directed to her. At the end of the hiring stage, up to seven firms and workers are matched in an employment relationship.

The second stage is the work stage, in which employed workers decide on the actual effort level they provide, $e \in \{1, 2, \dots, 10\}$. This effort yields the employer a profit of $\pi_{\text{firm}} = 10e - w$. The worker’s payoff from employment is equal to the wage minus the effort costs: $\pi_{\text{worker}} = w - c(e)$. The effort cost function $c(e)$ is weakly convex (see Table 2). Unemployed workers receive $\pi_{\text{unempl}} = 5$; firms without a worker receive a payoff of zero in that period.⁷

Table 2: Workers’ effort cost

e	1	2	3	4	5	6	7	8	9	10
$c(e)$	0	1	2	4	6	8	10	12	15	18

Thus, while aggregate payoffs are maximized if workers provide maximum effort, the worker’s monetary incentive—in the absence of repeated-game incentives—is to shirk and provide minimal effort. Therefore, the motivation to provide high levels of effort must come through a mix of work attitude and reputation incentives.

To study the role of work histories as a signal of work attitude, we experimentally vary whether workers’ employment histories are available to firms. In the “History” condition, each firm sees a table listing all ten workers in the labor market, sorted by their ID number. The table indicates, for all previous periods, either the ID of the firm that hired the worker in that period or whether that worker was unemployed. However, the table does not show

⁷All payoffs are denoted in “Experimental Currency Units” (ECU) that were converted into Swiss Francs at a rate of 20 ECU = 1 CHF (\approx 1.06 USD) at the end of the experiment.

workers' effort or wages, only the firm for which they worked. This provides prospective employers with the opportunity to observe all potential workers' prior employment spells.⁸ By contrast, the job history table is absent in the "No History" condition.

Our two hypotheses are that work histories provide a signal of work attitude and that firms use this signal when deciding which workers to employ. Specifically, we expect that workers who remain longer with the same employer will tend to be those who provide higher voluntary effort. In addition, when employment histories are available, we expect that firms will use this information to make private offers preferentially to workers with fewer job changes.

To investigate whether firms use employment histories as a means to screen for high-effort workers, we implement an exogenous layoff shock that forces all firms to seek a new worker. From period 17 onwards, we remove the option for firms to make private offers to the worker they had hired in period 16, and we remove the option for workers to see or accept public offers of the firm they had worked for in period 16. This change is permanent, meaning that no market participant is allowed to interact with their partner from period 16 in any of the remaining periods. This shock introduces an exogenous layoff, which requires all workers to search for new employment opportunities.⁹ This design feature allows us to investigate which workers firms find desirable in a context where all workers have been in the market for the same amount of time and are all simultaneously searching for new employment. Yet, firms are able to evaluate prospective workers based on their employment histories only in the History condition.¹⁰

Procedures

We conducted the experiment between December 2012 and May 2013 at the Laboratory for Behavioral and Experimental Economics at the University of Zurich. Each session was randomly assigned to one of the two treatment conditions. All interactions between

⁸If the worker was unemployed in a particular period, the cell is filled with a dash. Workers could see a similar table that listed the firms by their ID number and listed which workers worked for a particular firm across periods.

⁹Participants did not know that this shock would happen in period 17. They were informed that this restriction would come into effect at some point "between period 10 and period 20." We did this to rule out that firms would strategically separate from long-term employees in period 16 just to be able to re-hire them in period 17.

¹⁰Note that, in both conditions, firms have private information about the workers they had previously employed.

participants took place via the z-Tree computer interface (Fischbacher 2007). Computer stations were separated by partition walls ensuring anonymity of the participants. The participants received detailed written instructions and then had to complete a comprehension check to make sure that they understood the rules of the experiment (see appendix). We read aloud important aspects of the instructions to establish common knowledge. We recruited a total of 289 participants using the software, Hroot (Bock, Baetge, and Nicklisch 2014). Of these, 136 (i.e., 8 markets) were in the No History condition and 153 (9 markets) were in the History condition. Sessions lasted about two hours, and participants earned an average of 51 Swiss Francs (about 54 US dollars).

2.2. Results

Are work histories an informative signal of work attitude?

Figure 1 depicts the relationship between workers' effort and their employment history during the first 16 periods of the experiment.¹¹ In the History condition, workers with a number of employers below or equal to the median in periods 1 to 16 (i.e., three or fewer previous employers) provided an average effort of 8.0, which is higher than the average effort of 5.5 of workers with more than three employers ($p = 0.005$; Mann-Whitney-U test (MWU)).¹² Similarly, workers in the No History condition with one to three employers also exerted higher average effort than those who changed jobs more frequently (7.6 *vs.* 6.2; $p = 0.012$, MWU). Hence, regardless of whether work histories are available, workers with fewer job changes are those who act more cooperatively and reliably.

We further examined the relationship between voluntary work effort and the frequency of job changes using Ordinary Least Squares (OLS) regressions. Our analysis is based on the following linear regression model:

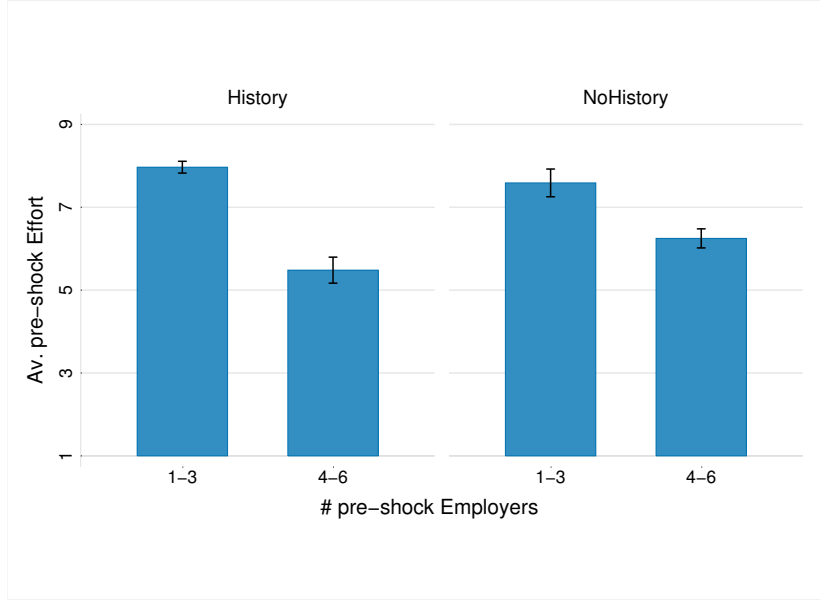
$$y_i = \alpha + \beta_1 H_i + \beta_2 H_i \times (N_i - 1) + \beta_3 H_i \times U_i + \beta_4 (N_i - 1) + \beta_5 U_i + \varepsilon_{im}. \quad (1)$$

Our dependent variable, y_i , is the average effort provided by a worker in the 16 periods

¹¹A similar relationship between work effort and job changes arises if restrict our analysis to period 1 (see Figure 7 in the appendix). This means that the relationship is not driven by workers who got demotivated after experiencing a couple of unsuccessful employment relations.

¹²Since observations are not independent within markets, we use a cluster-robust version of the Mann-Whitney-U test, see Datta and Satten 2005.

Figure 1: Effort and Number of Employers



Average effort a worker exerted in periods 1 to 16 in relation to the number of different employers that the worker had during that phase. Unit of observation: worker. Error bars calculated using 1000 bootstrap pseudo-samples, accounting for clustered standard errors on the market level. The more effort the worker exerted, the fewer employers she had in that phase.

before the turnover shock.¹³ $(N_i - 1)$ is the number of *additional* employers the worker had during the pre-shock phase,¹⁴ and U_i is the number of periods that the worker was unemployed before the shock. H_i is a dummy variable that is one if the worker was in the History condition, $H_i \times N_i$ and $H_i \times U_i$ are the respective interaction terms, capturing the differential effect of job history variables across treatment conditions. We allow the error terms, ε_{im} , to be correlated within each labor market.¹⁵

Column 1 in Table 3 reports OLS estimates of the above model. The constant of almost 10 indicates that a worker with a completely “smooth” job history (that is, 16 uninterrupted periods with the same employer) has provided full effort throughout. Having one additional employer is associated with a reduction of average effort by about 0.464 ($p = 0.002$, t-test).

Periods of unemployment are also associated with lower effort ($p = 0.002$, t-test). This

¹³Periods in which a worker was unemployed—and therefore, could not provide any effort—were not included in the calculation of workers’ average effort.

¹⁴ $(N_i - 1)$ is the number of pre-shock employers *minus one*, so that the constant can be interpreted as the baseline of one pre-shock employer. Every participant had at least one employer before the shock.

¹⁵We adjust the standard errors for clustering at the labor market level using the Wild cluster-bootstrap percentile-t procedure (Cameron, Gelbach, and Miller 2008).

supports our prediction that workers who change jobs frequently tend to be less cooperative with respect to voluntary effort provision.¹⁶ The History dummy and its interactions are all small and insignificant, indicating that the relation between effort and job history holds in both treatment conditions.

Result 1 (Employment history and effort)

Frequent job changes are indicative of lower effort provision. This relationship holds for workers in the History as well as in the No History condition.

Table 3: Regression analysis of effort and employment offers

Dep. Var.	(1) Pre-Shock Effort	(2) Priv. Offers, P. 17
History	-0.061 (0.715)	0.947** (0.416)
History \times # Employers	-0.170 (0.154)	-0.284** (0.137)
History \times # Periods Unempl.	0.060 (0.059)	-0.034 (0.057)
# Employers	-0.464*** (0.116)	0.114 (0.094)
# Periods Unemployed	-0.388*** (0.124)	-0.091* (0.052)
Constant	9.979*** (0.444)	0.933*** (0.320)
R^2	0.541	0.230
N	170	170
Clusters	17	17

OLS regressions, standard errors in parentheses, bootstrapped (1'000 replications) and adjusted for clustering at the session level, using the Wild cluster-bootstrap percentile-t procedure (Cameron, Gelbach, and Miller 2008). Unit of observation: worker.

Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variables: (1) average effort of worker before shock (periods 1 to 16); (2) number of private offers to worker directly after the shock (period 17).

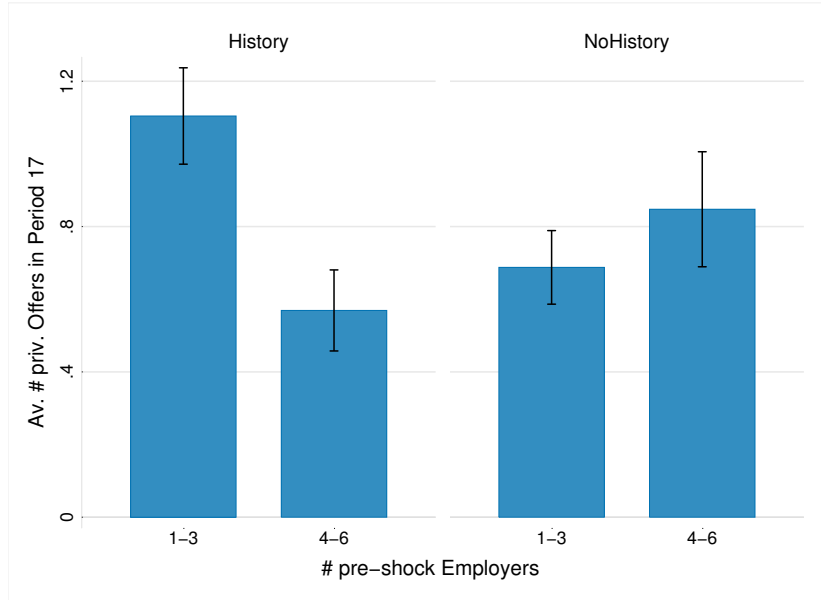
Independent variables: Constant: the baseline is a worker in the No History condition who was continuously employed by the same firm for all 16 periods before the shock. "History:" dummy for History treatment condition; "# Employers:" number of additional pre-shock employers; "# Periods Unempl.:" number of pre-shock periods the worker was unemployed; "History \times # Employers:" interaction between History dummy and additional employers; "History \times # Periods Unempl.:" interaction between History dummy and periods unemployed.

¹⁶This relationship alone does not tell us the reasons behind job changes—that is, whether the worker left for a better outside offer or whether the firm did not re-offer the job to the worker. Our data indicate that job changes tend to be driven by employers. Specifically, in 87% of the cases workers changed jobs because they did not receive a private offer from their old firm. On the other hand, 90% of private offers from the worker's previous employer are accepted.

Do firms prefer workers with stable employment?

As we show above, job histories provide valuable information about the reliability of workers in providing voluntary effort. Do firms take this information into account when making job offers? Figure 2 suggests that firms indeed use workers' employment history to screen for high-effort workers. Workers with one to three pre-shock employers in the History condition receive about twice as many private offers in Period 17 compared to those with four or more employers ($p = 0.024$, MWU). By contrast, in the No History condition we do not find that workers with more contiguous work histories are in higher demand. If anything, workers with a higher number of pre-shock employers tend to get more private offers, though the difference is statistically insignificant ($p = 0.523$, MWU).

Figure 2: Private Offers in Period 17



Number of private employment offers that a worker receives from firms at the beginning of period 17 (directly after the shock), as a function of the number of different employers that the worker had before the shock (periods 1 to 16). Unit of observation: worker. Error bars calculated using 1000 bootstrap pseudo-samples, accounting for clustered standard errors on the market level. Left Panel: In the No History condition, where firms have to rely solely on own information from their previous employment relations with workers, there is a slight positive effect of number of employers. Right Panel: In the History condition, where firms can observe all workers' employment history before the shock, there is a pronounced negative effect of number of previous employers. Those workers who had less than three employers before the shock are most sought after.

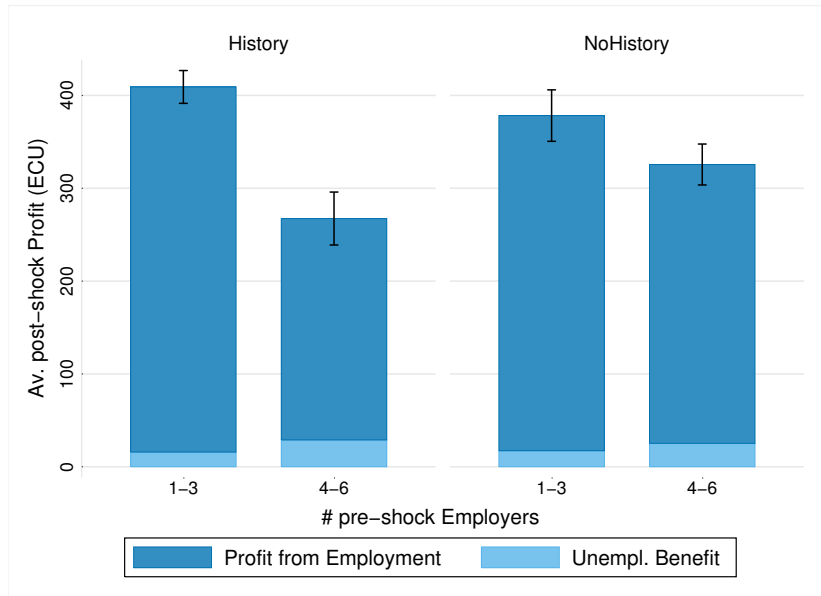
The preceding analysis neglects the possibility that those workers with frequent job changes are less in demand because they are more likely to have been unemployed, which also provides signals of their effort, as we saw before. Indeed, the number of pre-shock employers is positively correlated with periods spent in unemployment (Pearson’s $r = 0.36$). We therefore perform a similar regression analysis as earlier, in Table 3, but now using the number of private offers received by an employee in Period 17 as the dependent variable (Column 2). We use this to test the hypothesis that employers will make use of information about prior employment changes (larger N_i) if this information is available (i.e., in the History condition, $H_i = 1$). Therefore, the variables of primary interest are H_i , whose coefficient measures how much the outcome for our baseline worker (continuously employed by the same firm for 16 periods) differs in History, compared to No History; and $H_i \times N_i$, whose coefficient measures how much changing employers affects the outcome in History, compared to our No History control condition. In addition, we control for number of periods unemployed, which is the other, potentially important, information that firms can glean from the employment history table provided in the History condition.

Column 2 shows the impact of work history on job offers when controlling for unemployment spells. The coefficient of the History dummy indicates that workers in the History condition who remained with the same employer throughout all pre-shock periods—i.e., for whom the number of employers is 1 and the number of periods unemployed is 0—receive twice as many private offers in period 17 than comparable workers in the No History condition, identified by the constant ($p = 0.024$, t-test). Moreover, having had more employers before the shock reduces the likelihood of getting private offers after the shock in the History condition. Each additional employer reduces the number of offers by 0.284 compared to No History ($p = 0.040$, t-test). For comparison, having a work history with an additional period of unemployment decreases the number of private offers by only 0.034 ($p = 0.546$, t-test). This coefficient is not significant; that is, while the two experimental conditions differ in the effect of number of previous employers, they do not differ in the effect of unemployment.¹⁷

¹⁷In both conditions, an additional period of unemployment reduces the number of private offers by 0.091 ($p = 0.082$, t-test). Our best interpretation is that, in short, firms do not extend private offers to workers they “fired” in earlier periods. Although firms cannot make private offers to workers they employed in Period 16, they can make offers to other workers they had employed *before* that worker. Whether they want to make an offer to any of these previous workers depends on how satisfied they were with them (this information is of course available in both conditions). Thus, the coefficient on unemployment seems to pick up the fact that workers

Our experimental design allows us to follow up on workers for the remaining 14 periods after the unemployment shock (i.e., in periods 17 to 30). The “life-time” loss in earnings for workers with unsteady pre-shock job histories in the History condition is quite sizable (Figure 3). Workers with four or more pre-shock employers earn, on average, only 267 ECU. By contrast, workers with one to three pre-shock employers earn, on average, 409 ECU. By contrast, workers with one to three pre-shock employers earn, on average, 409 ECU after the layoff shock, or 53 percent more ($p = 0.012$, MWU). In the No History condition, the difference in earnings between employees with more than three different pre-shock employers and one to three pre-shock employers is much smaller and statistically insignificant (378 ECU vs. 326 ECU, $p = 0.302$, MWU).

Figure 3: Post-Shock Worker Profits



Average profit, in ECU, after the shock (Periods 17 to 30), as a function of the number of different employers that the worker had before the shock (periods 1 to 16). Unit of observation: worker. Error bars calculated using 1000 bootstrap pseudo-samples, accounting for clustered standard errors on the market level. Left Panel: In the No History condition, the number of pre-shock employers has virtually no effect on post-shock profits. Right Panel: In the History condition, workers who had less than three employers before the shock earn on average 88 percent more than those who had more than four.

Result 2 (Employment history and job outcomes)

When employment histories are available, workers who were employed by fewer firms

whose employment with a firm ended badly (and resulted in unemployment) are less likely to get another offer from that firm.

receive more private job offers and achieve significantly higher profits. These relationships do not hold when employment histories are not available.

Aside from the significant earnings loss associated with frequent employer changes, firms' screening for workers with stable job histories has broader labor market implications.¹⁸ For instance, the availability of employment histories influences labor market dynamics (Figure 4). On average, employment relations last longer when job histories are available (2.3 vs. 3.0 periods, $p = 0.038$, MWU), and unemployed workers remain without jobs for longer time spans (1.9 vs. 2.2 periods, $p = 0.054$, MWU). Our data suggests that this is driven by both sides of the market.¹⁹

Result 3 (Labor market frictions)

Employment relationships and unemployment spells last longer when job histories are publicly observable.

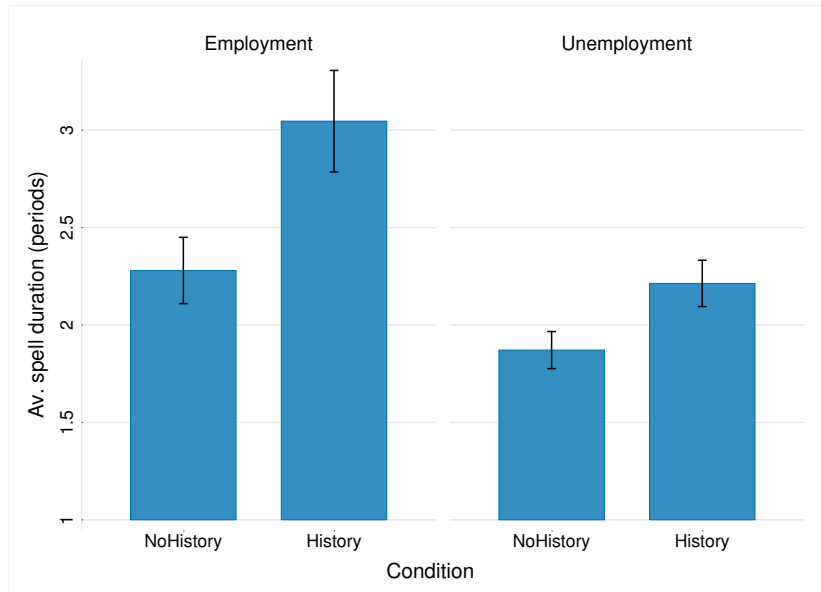
3. Field Experiment

The results of our laboratory experiment indicate that frequent job changes can provide a negative signal of workers' non-cognitive skills like work attitude. The experiment also shows that laboratory employers use this information, when it is available, in determining which workers to seek out for employment. We further conducted a field experiment to examine whether workers with fewer job changes in their resume are similarly more desirable to employers in real labor markets.

¹⁸We further find that observable job histories make private reputation portable: Firms in the History condition are more willing to hire workers they had not employed previously. In period 17, only 39% of employed workers had previously worked for that firm in the History condition, while in the No History condition firms hired workers that they had employed before in 62% of cases. OLS regressions confirm that this difference is statistically significant ($p = 0.02X$, t-test).

¹⁹Firms are significantly more likely to renew job offers to their current workers in the History than in the No History conditions ($p = 0.016$, t-test). Moreover, workers also tend to be more likely to accept a renewed job offer from their current employer, that is, they tend to stay longer with the same employer in the History treatment ($p = 0.065$, t-test). The p-values are based on OLS regressions of the respective variables on a treatment dummy with bootstrapped cluster-robust standard errors at the labor market level.

Figure 4: Hysteresis



Average duration of employment and unemployment spells, in number of periods, across treatment conditions and pre- and post-shock phases. Unit of observation: market. Left Panel: Before the shock, the average (un-) employment spell is slightly longer in History than in No History (ns). Right Panel: After the shock, the availability of employment histories increases employment spells by 42 percent and unemployment spells by 28 percent.

3.1. Experimental design

Our field experiment employs the well-established correspondence method typically used to study discrimination in the hiring process (e.g., Riach and Rich 2002; Bertrand and Mullainathan 2004; Carlsson and Rooth 2007; Pager, Western, and Bonikowski 2009; Oreopoulos 2011). The method consists of applying to job openings with carefully designed, fictitious applications and then to measure whether the prospective employers call back the applicants for a job interview. In our study, for every open position we sent two applications that were closely matched in terms of educational background, observable skills, and total length of tenure, but varied in the applicants' job history.

We conducted the field experiment in two waves. The first wave took place between May and June 2012, and the second wave one year later, from April to June 2013. During these periods we sent out a total of 1680 email applications in response to job ads in the German-speaking part of Switzerland (680 in the first wave and 1000 in the second wave).

To ensure a sufficient number of job vacancies with similar skill requirements, we follow the majority of correspondence studies and focus on commercial jobs (i.e., administrative and clerical work). Employees in such jobs constitute about 11 percent of Switzerland’s total workforce (Swiss Federal Statistical Office 2008).

Creating the applications

For each wave, we created two male and two female identities for the fictitious job applicants. Each identity was assigned a unique name and portrait photo. To avoid ethnic discrimination, we created names based on a list of the most common Swiss first and family names. The photos were borrowed from students who gave us their permission to use them for the study. To track firms’ responses, we assigned each identity a home address, an email address, and a cell phone that automatically redirected calls to a voice mail box.²⁰ We took great care to ensure that the resumes were realistic and appealing. To achieve this, we used templates from the Swiss professional association for commercial employees and related websites and also consulted Human Resources professionals.

Because we always sent two applications per open position, we created two resumes describing virtually identical applicants in all observable characteristics, except for the frequency of job changes (see Appendix). Both applicants were 26 years old and well-qualified, as they had a diploma in commercial studies with high grades. They both had eight years of work experience in exactly the same job functions. To differentiate the two resumes, we described the job functions using different terms (e.g., human resource vs. personnel management) and also changed the order in which the functions appeared on the resumes. Both applicants were currently employed when we sent out the applications. We further gave both applicants a set of complementary qualities that employers typically desire for commercial workers, such as relevant computer skills, as well as good knowledge of the Swiss national languages and English. In order not to raise any suspicions from the employers, we used a different formatting and layout for the two resumes. We counterbalanced the two formatting schemes with treatment assignment.

²⁰We used real postal addresses and tagged the letter boxes with the corresponding names in order to collect responses by postal mail. We used different phone lines and different email providers for the two candidates.

Treatments

Each resume had a male and a female identity. For each identity we implemented a version with continuous employment at a single firm (“One Employer”) and a version with comparable experience but multiple employers (“Four Employers”). The Four Employers resume signals that the job applicant had moved rather frequently from one employer to the next. After a degree in commercial education, the applicant worked in four different firms for twenty to twenty-four months each. In contrast, the job applicant with the One Employer resume had spent his or her entire post-education career at the same company, performing the same functions as the Four Employers applicant.

Although short breaks between jobs are not unusual, they could affect callback rates because employers may consider them as unemployment spells that could signal low productivity (Oberholzer-Gee 2008; Kroft, Lange, and Notowidigdo 2013; Eriksson and Rooth 2014). We removed the gaps from the Four Employers employment history in the second wave. Thus, for a given job opening, the only relevant difference between the two applicants was the number of previous employers.

Responding to job ads and measuring callbacks

Over the two waves of data collection, we surveyed all administrative and clerical job ads posted on four large job search websites. To obtain reasonably high callback rates, we restricted ourselves to job postings that were no older than 10 days and that offered a job in the broader area of Zurich or adjacent cantons (i.e., reasonably close to the applicants’ home). Our sample of job postings covers a broad spectrum of commercial jobs, including jobs in customer services, sales support, or management assistance.

For each job ad, we sent out two applications, one with a Four Employers resume and the other with a One Employer resume. We randomized which of the two applicants was assigned the Four and One Employer resume, respectively, and then submitted both resumes, in randomized order, a couple of hours apart. Both applicants always had the same gender, which was determined at random, unless an employer explicitly asked for candidates of a specific gender.

We recorded all incoming responses within seven weeks after the submission of the applications, although in practice the majority of the employers contacted the applicants

in the first two weeks. Because we are interested in whether the employers exhibit a preference for an applicant, we define a callback as an explicit request for an interview or a message stating that one of the applicants is shortlisted for interview.²¹ Two research assistants who were blind to the experimental conditions coded the responses according to these pre-defined rules. To minimize the inconvenience caused to the employers, we declined interview invitations within 24 hours.²²

3.2. Results

In total, we sent 1680 applications to 840 job vacancies in a broad range of industries (see Table 6 in the Appendix). Most ads were for jobs in private limited liability companies (87.7%), followed by state owned firms or NGOs (8.8%), and organizations of other legal forms (3.5%, e.g., single proprietors or cooperatives). 75.4 percent of the job ads were for full-time jobs (i.e., at least four days per week).²³ We received callbacks for 17.1 percent of the applications; 57.9 percent of the applications were immediately rejected, 14.6 percent got no answer at all, and 10.4 percent were informed that more documents would be needed (without receiving an interview request or being short-listed).²⁴ The average response time was 8.3 days. The majority of the responses came in by email (85%), followed by phone call (13%), and postal mail (2%).

The results from the first wave show that the Four Employers profile led to a substantially lower callback rate (see Panel A in Figure 5). While the probability of a callback was 23.2 percent for the One Employer condition, the Four Employers resume resulted in an almost 30 percent lower callback rate (16.8%). The treatment effect is statistically significant according to a non-parametric McNemar test for paired observations (see Siegel and Castellan 1988) that compares how often one profile is preferred over the other ($p = 0.003$).

In the 2012 wave, the Four Employers resume contained short employment gaps between

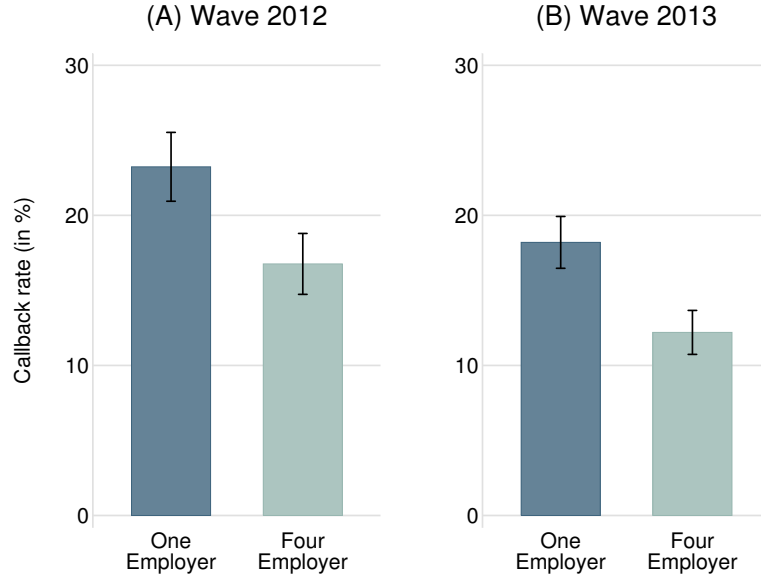
²¹Like other correspondence studies (e.g., (e.g., Bertrand and Mullainathan 2004; Eriksson and Rooth 2014; Kroft, Lange, and Notowidigdo 2013), we do not observe whether an applicant ends up getting the job, but simply whether a prospective employer contacts the applicant for a job interview. It seems reasonable that an invitation for a job interview reflects an employer’s hiring preference. We would thus expect that differences in interview rates also translate into differences in hiring rates.

²²The experiments were approved by the Human Subjects Committee of the Faculty of Economics, Business Administration, and Information Technology of the University of Zurich.

²³The sample includes job openings placed by employment agencies (16.2%); the results do not change if we exclude these observations from the analysis.

²⁴Our results are qualitatively the same if we treat requests for additional documents as callbacks (see Table 7 in the Appendix).

Figure 5: Treatment effects



Error bars indicate standard error of the mean. Panel A displays average callback rates by treatment condition for the 2012 wave. Panel B shows the results for wave 2013, where the Four Employers resume did not contain employment gaps between the job changes.

job changes. If employers used these gaps as a negative productivity signal (see Eriksson and Rooth 2014; Kroft, Lange, and Notowidigdo 2013; Oberholzer-Gee 2008), we would not know whether the treatment difference in callbacks is due to the frequent job changes, the employment gaps, or both. We therefore adapted the resumes in the 2013 wave and removed all gaps between job changes. Panel B in Figure 5 shows that the results replicate when the Four Employers resume has no gaps between jobs. The effect in the 2013 wave is remarkably similar in magnitude: we observe a roughly 30 percent reduction in callback rates, from 18.2% in the One Employer treatment to 12.2% in the Four Employers treatment ($p = 0.001$, McNemar test).²⁵

Additional regression analysis corroborates the preceding non-parametric results. Specif-

²⁵Overall, the callback rate in both treatments was lower in 2013 than in 2012 ($p < 0.001$, MWU). One possible reason is that the applicants faced tougher labor market conditions in 2013. Monthly regional labor market statistics (SECO 2013) show that the average number of applicants per job increased from 8.8 to 10.4, and that the local unemployment rate rose from 2.7 to 2.8 between the first and the second wave. An occupation-specific but less direct indicator of labor market conditions is the average response time in our field experiment, which we can use as a proxy for the number of applications the HR recruiters had to assess at that time. In line with the aggregate labor market data we find a significant increase in response time from 7.7 work days in 2012 to 8.7 work days in 2013 ($p = 0.025$ MWU). As shown in the regression analysis, the effect of multiple previous employers is neither more nor less important when workers have to compete more fiercely for jobs.

ically, we estimate the following linear probability model:

$$y_{ij} = \alpha + \beta_1 * N_{ij}^c + \beta_2 * \mathbf{X}_{ij} + \beta_3 * \mathbf{Z}_j + \epsilon_{ij}. \quad (2)$$

The dependent variable y_{ij} , indicating whether applicant i received a callback for job vacancy j , is regressed on a dummy variable N_{ij}^c indicating the Four Employers treatment. We control for month, gender of the applicant, gender of the HR contact person, and gender match between the two. Furthermore, we include dummies for employment agencies and part-time jobs, as well as the firms' industry and legal form. Finally, we also consider the (log) driving distance to the work place and monthly local labor market conditions (i.e., the number of applicants per open position and the employment rate on a cantonal level). The control variables that vary within vacancies are represented by the vector \mathbf{X}_{ij} , and those measured at the vacancy level are included in the vector \mathbf{Z}_j . We allow for idiosyncratic variation with the error term, ϵ_{ik} . We estimated our regression model using OLS and corrected standard errors for clustering at the vacancy level. The results remain the same if we use a Probit model instead.

Column 1 in Table 4 shows the regression results without control variables. We find a significant 6.2 percentage point reduction in the average callback rate in the Four Employers treatment ($p < 0.001$, t-test). In Column 2 we test whether the treatment effect is significantly different between the two waves by including a dummy for the 2012 wave and its interaction with the treatment. The interaction effect is small and statistically insignificant ($p = 0.867$, t-test), suggesting that the employment gaps in the 2012 resumes cannot explain the treatment effect. Columns 3 through 6 illustrate that the Four Employers effect is robust in magnitude and significance if we control for a variety of background variables.

Result 4 (Multiple employers and employability in the field)

Applicants with more employment changes are significantly less likely to receive callbacks. This effect is similar in magnitude and significance irrespective of whether resumes include short employment gaps between jobs.

At this point we want to emphasize that our results do not imply that more frequent job changes will always reduce employability. A higher frequency of job changes can, in

Table 4: Regression analysis

Dependent variable	Callback = 1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Four Employers	-0.062 *** (0.014)	-0.060 *** (0.018)	-0.060 *** (0.018)	-0.061 *** (0.018)	-0.061 *** (0.018)	-0.060 *** (0.018)	-0.074 *** (0.019)
Four Emp. X wave 2012		-0.005 (0.028)	-0.005 (0.028)	-0.005 (0.028)	-0.005 (0.028)	-0.005 (0.028)	0.002 (0.029)
Wave 2012		0.050 * (0.029)	0.038 (0.030)	0.042 (0.029)	0.032 (0.030)	0.039 (0.031)	0.043 (0.031)
Industry experience							0.063 ** (0.031)
Constant	0.202 *** (0.014)	0.182 *** (0.017)	0.192 *** (0.032)	0.487 *** (0.156)	0.268 (0.192)	0.154 (0.246)	0.142 (0.246)
Additional controls?							
Month			Yes		Yes	Yes	Yes
Gender / gender match			Yes			Yes	Yes
Firm / job characteristics				Yes		Yes	Yes
Ln(driving distance)				Yes	Yes	Yes	Yes
Labor market conditions					Yes	Yes	Yes
Observations	1680	1680	1680	1680	1680	1680	1680
F	20.328	8.271	6.200	6.913	5.488	5.110	4.642
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000

OLS regressions, cluster-robust standard errors at the job ad level.

Dependent variable: dummy indicating a callback.

Independent variables: “Four Employers:” dummy for Four Employers profile; “Wave 2012:” dummy for first wave of study (in 2012); “Industry experience:” dummy whether applicant has had previous work experience in the corresponding industry; “Month:” dummies for month when application was sent; “Gender / gender match:” dummies for gender of applicant and HR person, and corresponding interaction term; “Firm / job characteristics:” industry dummies, legal form dummies, employment agency dummy, and part-time job dummy; “ln(driving distance):” log of distance in meters by car (using Google Maps); “Labor market:” monthly local unemployment rate and number of applicants per open position (statistics from State Secretariat for Economic Affairs (SECO)).

Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

principle, also signal desirable qualities, such as that a worker gained more transferable human capital due to more diverse work experiences (Mincer 1958; Becker 1962). For example, the probability that our applicants had work experience in the industry of the prospective employer was naturally higher for the worker with more diverse experience (Four Employers) than for the worker with One Employer (50 vs. 32.6 percent, $p = 0.000$, χ^2 -test). To explore the extent to which more diverse industry experience had a compensating positive effect on employability we additionally included a dummy variable, “Industry experience,” in our regression model. This variable takes a value of one if the applicant has ever worked in the industry of the prospective employer and zero otherwise. Column 7 of Table 4 illustrates that industry experience significantly increases the probability of a callback by 6.3 percent ($p = 0.040$). This confirms that job changes can have positive effects on employability—for example by providing an applicant with more relevant experience. At the same time, the coefficient for the Four Employers treatment

is approximately 23 percent more negative than in Column 6, where we do not control for industry experience. Hence, if the One and the Four Employers candidates were to have similar levels of industry experience, employers would discriminate even more strongly against the Four Employers candidate.

We additionally examined possible sources of heterogeneity in the treatment effect, including the applicants' gender, job vacancies placed by employment agencies, full-time job openings, driving distances to the work place as well as monthly regional labor market conditions. However, none of the interactions reaches statistical significance at conventional levels.²⁶

4. Survey Experiment

Returning to Table 1, we have thus far found evidence supporting Hypothesis 2 in both a laboratory environment and in a non-laboratory labor market. The remaining open question is whether workers in natural labor markets who change jobs more frequently also tend to have, or are perceived to have, lower work attitude. Answering this question can help address if the effect of employment history that we find in the field experiment is at least partly due to employers' perceptions of work attitude. To obtain a measure of such perceptions, we conducted an additional survey experiment with Human Resources professionals.

4.1. Survey Experiment: Environment and Design

We used a job fair for university graduates in Zurich to recruit a large sample of HR professionals. At this fair, about 130 mostly large companies from a variety of industries (e.g., engineering, electronics, telecommunications and consulting) present themselves to job seekers.²⁷ Each company had its own booth, at which company representatives, including recruiters, were available for questions about what kind of employees the firm is looking for or how the application process works. We approached each company and ask whether the most experienced HR representative would be willing to participate in a short

²⁶We also find that the point estimates of the treatment effect are negative for all but one of the eight applicant identities. All of these additional tests are available from the authors upon request.

²⁷See Table 8 in the appendix for descriptive statistics of our survey sample.

survey. The surveys were administered by four research assistants in April 2014. A total of 83 HR professionals completed the survey.

Given the smaller sample size than in our field experiment, we selected two male candidates from those used in the field experiment. Each survey participant was shown a “Four Employers” and a “One Employer” resume, side by side. We randomized which of the two candidates would be the one with the greater number of job changes and counterbalanced the order (left or right) in which the candidates were presented.

In the survey, participants rated both candidates on ten characteristics using 7-point Likert scales, ranging from 1 “does not apply at all” to 7 “applies fully”.²⁸ The characteristics can be broadly divided into skills or experience (captured by the items “skilled”, “experienced in commerce”, and “multi-talented”) and work attitude (i.e., “able to work in teams”, “willing to adapt”, “patient”, “honest”, “reliable”, “self-directed”, and “goal-oriented”). We further asked participants how likely they would be to call back a candidate for a job interview, on a scale from 1 “very unlikely” to 7 “very likely,” had the applicant applied for a job at their firm.

The survey responses allow us to examine which qualities HR professionals associate more strongly with the different resumes from the field experiment, and which of these qualities are likely responsible for the difference in callback rates in the field experiment between candidates with more frequent relative to those with fewer job changes.

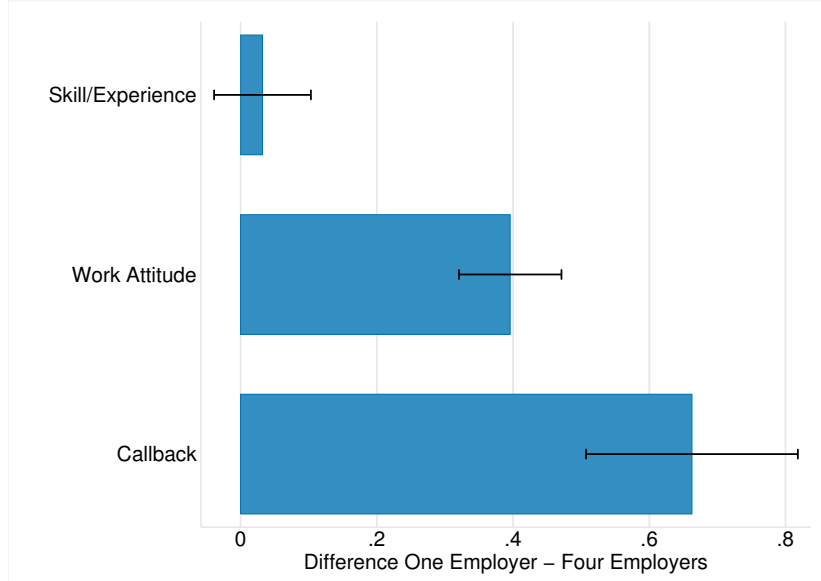
4.2. Results

To distinguish between skills/experience and work attitude, we created an index for each dimension by averaging the ratings for a respondent’s perceptions of the individual qualities in each dimension. Figure 6 reveals that, relative to the candidates with fewer previous employers, the Four Employers candidates score 0.40 points lower on Work Attitude ($p < 0.001$, Wilcoxon signed rank test (WSR)). By contrast, the difference in the Skills/Experience score between the two candidate profiles is smaller (0.03 points) and statistically insignificant ($p = 0.651$, WSR). Table 10 lists the treatment difference separately for each of the ten items. We observe the strongest treatment effects on three dimensions of work attitude—“patient,” “reliable,” and “teamwork”—and the weakest on two of the

²⁸The survey is provided in the Appendix.

three dimensions of Skills/Experience—“multi-talented” and “experienced.”

Figure 6: Rating Differences between One Employer and Four Employers Resumes



Average difference in ratings, on a 7-point Likert scale, One Employer minus Four Employers. Error bars indicate standard error of the mean.

Moreover, the HR professionals indicate that they would be more likely to call back the One Employer than the Four Employers candidate for a job interview ($p < 0.001$, WSR). Hence, we replicate that employers are more likely to invite those candidates for a job interview who change jobs less frequently, confirming the results from our laboratory and field experiment. Hence, our key result from the field experiment also emerges in this separate sample of HR professionals.

Result 5 (Different Ratings of Resumes with One and Four Employers)

We replicate our previous result that firms prefer candidates with fewer job changes. Moreover, recruiters perceive candidates with more frequent job changes to have a lower work attitude than candidates with fewer job changes. We observe no such difference with respect to skills and experience.

To assess the extent to which the perceived quality differences can account for differences in callbacks, we estimate the following model:

$$y_{ij} = \alpha + \beta_1 * N_{ij} + \beta_2 * A_{ij} + \beta_3 * S_{ij} + \epsilon_{ij}. \quad (3)$$

Table 5: Regression analysis survey responses: Skill/Experience and Work Attitude

	(1)	(2)	(3)	(4)
Four Employers	-0.663*** (0.156)	-0.282** (0.123)	-0.643*** (0.142)	-0.292** (0.124)
Work Attitude		0.962*** (0.185)		0.932*** (0.205)
Skill/Experience			0.617*** (0.188)	0.043 (0.219)
Constant	5.518*** (0.129)	0.626 (0.978)	2.237** (1.032)	0.547 (1.160)
adj. R^2	0.053	0.275	0.152	0.271
N	166	166	166	166
% explained	—	57.5	3.0	55.9

OLS regressions, cluster-robust standard errors in parentheses, clustered on recruiter level. Unit of observation: recruiter-resume (2 resumes per recruiter).

Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: Callback rating for a resume (7-point Likert scale).

Independent variables: “One Employer:” dummy variable for resume with only one employer; “Skill/Experience:” unweighted average of ratings on “skilled,” “experienced in commerce,” and “multi-talented;” “Work Attitude:” unweighted average of ratings on “able to work in teams,” “willing to adapt,” “patient,” “honest,” “reliable,” “self-directed,” and “goal-oriented.”

% explained: Result of Oaxaca-Blinder decomposition of Four Employers effect: how much of the 0.663 point treatment difference in invitation ratings is explained by the difference in the respective regressors?

The dependent variable y_{ij} is the likelihood of callback a recruiter j assigns to a candidate i . N_{ij} is a dummy variable indicating treatment Four Employers. We additionally include the applicants’ score for work attitude (A_{ij}) and skills/experience (S_{ij}). We estimate the model using OLS and correct standard errors to account for dependence in the error term ϵ_{ij} at the recruiter level. Column 1 in Table 5 reports the unconditional effect of the Four Employers treatment: Callback likelihood ratings are, on average, 0.66 points lower in the Four Employers than in the One Employer treatment ($p < 0.001$, t-test). In column 2, we add the work attitude score and find that the coefficient is close to one and highly significant ($p < 0.001$, t-test). That is, an increase in work attitude by one point increases the callback rating by roughly one point. Crucially, the Four Employers treatment effect shrinks from -0.663 to -0.282 , a reduction by 57.5%. This suggests that almost two-thirds of the treatment effect can be explained by the fact that recruiters rate “Four Employers” candidates lower on work attitude than those with One Employer.²⁹

By contrast, although the skill/experience score is positively associated with the likelihood of callbacks, it does not explain much of the treatment effect (see column 3). While an increase in skills/experience by one point increases the callback rating by about 0.6

²⁹This is the result of a pooled Blinder-Oaxaca decomposition (Blinder 1973; Oaxaca 1973).

points ($p = 0.002$, t-test), the Four Employers coefficient decreases by only 3%. Hence, perceptions of skills and experience are predictive of callback likelihood, but they do not help explain why Four Employers candidates achieve, on average, lower callback rates than One Employer applicants.

Finally, column 4 includes both scores simultaneously as regressors. The coefficients of the Four Employers dummy and work attitude remain practically unchanged compared to column 2, whereas the skills/experience coefficient is close to zero and statistically insignificant. This means that perceived work attitude is more strongly related to callback ratings than perceived skills/experience.

Result 6 (Work Attitude Explains why Recruiters Prefer One Employer)

Recruiters report they are less likely to call back candidates with more prior employers in large part because they perceive them to have a poorer work attitude than those with fewer prior employers. Perceptions of skills and experience do not explain the treatment effect.

5. Discussion and Conclusion

This paper puts forth a novel interpretation of the relationship between job changes and employability. We argue that job changes can provide a signal of a worker’s non-cognitive skills, such as cooperativeness, reliability and ability to work well with others—which we describe broadly as “work attitude.” Our motivating hypothesis is that workers who are less cooperative, reliable, team-oriented, and generally more difficult to get along will often be, holding all else equal, the ones who change jobs more frequently. As a consequence, we expect such employees to be less desirable to firms.

We provide several pieces of complementary evidence corroborating these hypotheses. First, we conducted a laboratory experiment and find that employment history provides a signal of work attitude. Workers who switch employers less frequently are more likely to fulfill employers’ effort requests. Firms recognize this and exhibit a preference for hiring workers with fewer job changes when this information is available. Second, we conducted a field experiment in which we sent out pairs of two resumes for several open job listings—one in which the applicant changed jobs frequently and another in which the

applicant remained with a single employer. As in the laboratory experiment, we find that employers exhibit a preference for job applicants with fewer job changes: Frequent job changes result in substantially lower callback rates. Third, to verify that the differential demand for the candidates from the field experiment is due to employers' perceptions of the candidates' work attitude, we conducted a survey with HR professionals. The results confirm that a primary inference that arises from the resumes used in the field experiment is that recruiters perceive workers who change jobs more frequently as lower on dimensions related to work attitude—particularly patience, reliability and ability to work in teams. This provides corroborative evidence that the mechanism driving the results in our field experiment is similar to that in our laboratory experiment.

Hence, from all of our studies in combination, two central results emerge. First, in the contexts we study, firms have a preference for workers who change jobs less frequently. Second, changing jobs less frequently is correlated—or at least perceived to be correlated—with greater reliability and more positive work attitude.

Several further interesting observations arise from our studies. First, in the laboratory experiment, when firms can observe work histories, those workers with fewer job changes earn considerably more following a shock in which everyone has to search for new employment. Second, we also observe greater history dependence in labor market outcomes when job histories are available: Workers tend to stay either employed or unemployed for longer periods. In combination, these findings suggest that concerns about appearing to have poor work attitude may, in some cases, create labor market inefficiencies. Perhaps most importantly, they suggest a possible friction in labor market mobility—workers may fear changing jobs due to the impact on their perceived work attitude.

Finally, we want to stress that we do not believe that workers who change jobs less frequently will always be more attractive to employers. There may be many contexts in which frequent job changes convey desirable qualities, such as varied experience, larger professional networks, and greater ambition. Any of these things may mitigate or entirely counteract the effects we observe in our studies. Indeed, in our field experiment we find that industry experience—which is more likely for an applicant with more frequent job changes—increases the likelihood of a favorable response from a prospective employer. Thus, even in our data there are ways in which employment changes can be beneficial.

Our point, however, is that where work attitude and reliability are important relative to concerns like those above, the market may interpret frequent job changes as a negative signal of this quality, and workers' job market prospects may be harmed by frequently changing jobs. We leave for future work to identify the important boundaries on our finding.

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Appendices

A. Laboratory Experiment: Subject Instructions

We present the complete instructions for the History condition. The highlighted section ("History Table") was removed for the No History condition. Comprehension questions,

exit questionnaire, and ztree files are available upon request from the authors.

Initial Instructions

Thank you for participating in today's experiment.

I will read through a script to explain to you the nature of today's experiment as well as how to navigate the computer interface with which you will be working. I will use this script to make sure that the information given in all sessions of this experiment is the same. Please follow the instructions carefully.

In addition to a 10 CHF payment that you receive for your participation, you will be paid an amount of money that you accumulate from the decision task that will be described to you in a moment. The exact amount you receive will be determined during the experiment and will depend on your decisions and the decisions of others. You will be paid privately, in cash, at the conclusion of the experiment.

All monetary amounts you will see in this experiment will be denominated in ECUs or Experimental Currency Units. We will convert ECUs into CHF at the rate of

1 ECU = 0.05 CHF.

If you have any questions during the experiment, please raise your hand and wait for an experimenter to come to you.

Please do not talk, exclaim, or try to communicate with other participants during the experiment.

Do not use the computer in a way not specified by these instructions or by the experimenters.

Participants intentionally violating the rules may be asked to leave the experiment with only their participation payment.

Basic Information

Number of Periods:

The experiment is divided into periods. In each period you have to make decisions, which you will enter in a computer. There are **30 periods** in total.

Buyers and Sellers:

In this room there are 17 participants. These 17 participants have been randomly divided into 2 groups: buyers and sellers. These roles are fixed, that means each buyer will remain a buyer, and each seller will remain a seller for the entire experiment. Whether you are a buyer or a seller is displayed on the computer screen. Please raise your hand if you do not see where the screen tells you whether you are a buyer or a seller. **There are 7 buyers and 10 sellers.**

Identification Number:

All participants have received an **identification number (ID)**, which they will keep for the entire experiment. Your identification number is displayed on the computer screen.

An Overview of the Experiment Procedures

In each period of the experiment every buyer can trade a product with one seller. The seller earns a profit through the trade when he sells the product at a price that exceeds his production costs. The buyer earns a profit through the trade when the price he pays for the product is less than what it is worth to him. How high the production costs are for the traded product, and how much the product is worth to the buyer both depend on the quality of the product. We will describe below how the quality of a product is determined.

Each of the 30 periods is structured as follows:

1. Trading Phase

Each period commences with a **trading phase**, which lasts 2 minutes. During this phase buyers can submit trade offers that can be accepted by sellers.

When submitting an offer a buyer has to specify **three things**:

- Which **price** he offers to pay
- Which product **quality** he desires
- To which **seller** he wants to submit the offer.

Buyers can submit two types of offers: private offers and public offers.

- **Private offers** are submitted to one seller only and can only be accepted by that seller.
- **Public offers** are submitted to all sellers and can be accepted by any seller.

A buyer can submit as many offers as he likes in each period. Sellers can accept submitted offers at any point. **Each buyer and each seller can only enter one trade agreement in each period.** As there are 7 buyers and 10 sellers, in each period there will be some sellers who will not trade.

2. Quality Choice

Following the trading phase each seller who has entered a trade agreement then determines which quality of product he will supply to his buyer. **The seller is not obligated to supply the product quality desired by his buyer.** Once every seller has chosen which product quality to supply, the ECUs gained by each participant in that period have been determined. After this the next period begins.

The ECUs gained in all 30 periods are summed up at the end of the experiment, exchanged into CHF and paid together with the initial 10 CHF in cash.

The Experiment Procedures in Detail

There are 7 buyers and 10 sellers in the experiment. Your role is fixed throughout the experiment. During the experiment you will enter your decisions on a computer screen. In the following we describe in detail how you can make your decisions in each period.

The Trading Phase

Each period commences with a trading phase. During the trading phase each buyer can enter into a trading agreement with one seller. In order to do this **each buyer can submit as many trade offers as he wishes.**

Buyer's Screen

In each trading phase, buyers will see the following screen:

Period	1 of 1	Remaining Time [sec] 10
--------	--------	-------------------------

History Table

Public Offers			Your private offers									
Buyer	Price	Req. quality	Price	Req. quality	to Seller							
<h3>Public Offers Table</h3>			<h3>Private Offers Table</h3>			<p>Your Identification Number -1</p> <p style="margin-left: 40px;">Make your offers here</p> <div style="text-align: right;"> <input type="checkbox"/> public <input checked="" type="checkbox"/> private </div> <p>If private, to which Seller? <input style="width: 100px;" type="text"/></p> <div style="text-align: right;"> Your price <input style="width: 100px;" type="text"/> Requested quality <input style="width: 100px;" type="text"/> </div> <div style="text-align: right; margin-top: 20px;"> OK </div>						
						<div style="display: flex; justify-content: space-between; font-size: small;"> <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 </div>						
						<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th style="width: 33%;">Your Seller</th> <th style="width: 33%;">Your price</th> <th style="width: 33%;">Your req. quality</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Your Seller	Your price	Your req. quality			
Your Seller	Your price	Your req. quality										

In the top left corner of the screen is the current period of the experiment. In the top right corner of the screen is the time remaining in this trading phase, displayed in seconds. **The trading phase in each period lasts 2 minutes** (= 120 seconds). When this time is up the trading phase is over. Subsequently, no further offers can be submitted or accepted for the period.

Buyer's Screen: Making an Offer

Once the buyers see the above screen displayed the trading phase commences. Each buyer now has the opportunity to submit trade offers to the sellers. In order to do so they have to enter three things on the right hand side of the

screen:

1. Offer Type
2. Price
3. Desired Quality

1. Offer Type

First the buyer has to specify whether he wants to submit a public or private offer:

- **Public trade offers** will be communicated to all participants in the market. All sellers see all public offers on their screens. A public offer can therefore be accepted by **any seller**. Each buyer will also see all public offers submitted by other buyers. To submit a public offer, a buyer clicks on the field „public“ when making an offer, **and enters “0” in the field “to which Seller”**.
- **Private trade offers** are submitted to **one seller only**. Only this seller will be informed of this offer and only this seller can accept that trade offer. No other seller or buyer will be informed about that offer. To submit a private offer, a buyer clicks in the field „private” when making an offer and then specifies **to which seller** he wants to submit the offer in the field below. Each of the 10 sellers has an identification number (seller 1, seller 2, ... , seller 10). Each seller keeps his identification number for the entire course of the experiment. To submit an offer to a specific seller, the buyer enters the number of that seller (e.g. „5“ for seller 5).

2. Price

Once the buyer has specified to whom he wants to submit an offer, he must determine **which price to offer**. He enters this in the field „your price“. The price must be an integer and cannot be below 0 or above 100:

$$0 \leq \text{price offered} \leq 100$$

3. Desired Quality

Finally, a buyer has to specify which product quality he desires. He enters this in the field „desired quality“. The **desired quality** must be an integer and cannot be lower than 1 or higher than 10.

$$1 \leq \text{desired quality} \leq 10$$

After a buyer has completely specified a trade offer, he must click on the „ok“ button to submit it. As long as he has not clicked „ok“, he can change the trade offer. After he has clicked „ok“, the offer will be displayed to all sellers to whom the buyer has submitted the offer.

Buyer's Screen: Open Offers

On the left side of the buyer's screen are the „**public offers**“. All public offers in the current trading phase are displayed here. Every buyer can see which buyer submitted the offer, which price he offered and which quality he desired. All buyers also have an identification number, which they keep for the whole course of the experiment.

In the middle of the buyer's screen, under „**your private offers**“, each buyer will see all his private offers he has submitted in the current trading phase. He can see to which seller he submitted an offer, which price he offered and which quality he desired.

Each buyer can submit as many private and public offers as he wishes in each period. Each offer that he submits can be accepted at any time during the trading phase.

Each buyer can enter only one trade agreement in each period. Once one of his offers has been accepted he will be notified which seller accepted which of his offers. In the bottom right corner of the screen the identification number of the seller will be displayed as well as the buyer's offered price and desired quality. Because each buyer can enter only one trade agreement in each period, all his other offers will be automatically cancelled. Also, he will not be able to submit any further offers.

No seller can enter more than one trade agreement in each period. Buyers will be constantly informed which sellers have not yet accepted a trade offer. In the bottom right corner, they will see 10 fields. Once a seller has accepted an offer, an „x“ will appear in the field next to his identification number. Buyers cannot submit private offers to a seller who has already entered a trade agreement.

Once all buyers have entered a trade agreement or after the 2 minutes are up, the trading phase is closed by the computer.

No buyer is obligated to submit trade offers, and no seller is obligated to accept a trade offer.

Seller's Screen

During the Trading Phase, sellers will see the following screen:

Period	1 of 20	Remaining Time [sec] 114
--------	---------	--------------------------

History Table

Your Identification Number	1
----------------------------	---

Private offers to you		
from Buyer	Price	Req. quality
<h3 style="margin: 0;">Private Offers Table</h3>		
<input type="button" value="accept"/>		

Public Offers		
From Buyer	Price	Req. quality
<h3 style="margin: 0;">Public Offers Table</h3>		
<input type="button" value="accept"/>		

Your Buyer	Your price	Req. quality

This screen is similar to the buyer's screen and contains information about the current period, remaining time for trading, and currently open public offers from all buyers. The screen also shows all private offers that are made to this particular seller. A seller cannot see private offers that are made to other sellers. Every offer that is shown on the screen contains the buyer's ID, the offered price, and the desired quality.

Each seller can accept at most one offer. To accept a private offer, the seller clicks the row of the offer he wants to accept and confirms by clicking the **“accept”** button under the list with the private offers. To accept a public offer, the seller clicks the row of the offer he wants to accept and confirms by clicking **“accept”** under the list with the public offers.

As long as the seller does not click “accept”, he can change his decision by clicking on a different offer. As soon as the seller has pressed the „accept“ button he will see which offer he has accepted in the bottom row of the screen.

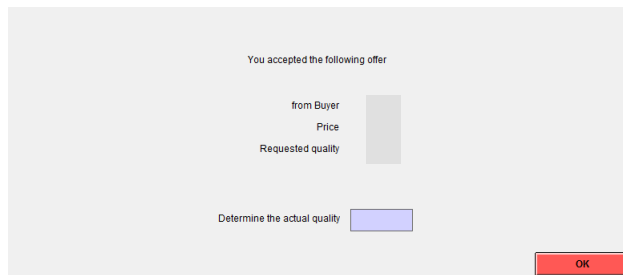
Each seller can enter only one trade agreement in each period. Once a seller has accepted one offer he cannot accept any further offers.

Choice of Product Quality

Following the trading phase, all sellers who have entered a trade agreement then determine which product quality they will supply to their respective buyers. **The product quality that the buyer desired in his trade offer is not binding for his seller.** His seller can choose the exact quality the buyer desired, but he can also choose a higher or lower product quality.

Seller's Screen

The seller's screen looks like this:



The screenshot shows a light gray rectangular window. At the top, it says "You accepted the following offer". Below this, there are three labels: "from Buyer", "Price", and "Requested quality". To the right of these labels is a gray rectangular box. Below the "Requested quality" label, there is a label "Determine the actual quality" followed by a blue rectangular input field. In the bottom right corner of the window, there is a red rectangular button with the text "OK" in white.

The seller enters the quality and clicks "ok". The product quality the seller chooses has to be an integer between 1 and 10.

$$1 \leq \text{product quality} \leq 10$$

Buyer's Screen

While the seller determines the actual product quality, we ask the buyer to specify which quality he expects the seller to supply on a separate screen. In addition we ask him to state how sure he is of this expectation.

How are the incomes calculated?

The incomes of all buyers are determined in the same way and the incomes of all sellers are also determined in the same way. **Each buyer can therefore calculate the income of his seller and each seller can calculate the income of his buyer.** Further, each buyer and seller is informed of the identification number of his trading partner in each period.

Please note that buyers and sellers can incur losses in each period. Any loss you incur has to be paid from your initial sum of money or from earnings in other periods.

Buyer Income:

If a buyer does not enter a trade agreement during a trading phase he gains an income of 0 ECUs for that period.

If one of a buyer's trade offers is accepted, his income depends on which price he offered and which product quality his seller supplied to him. His income will be determined as follows:

Buyer's Income = 10*Product Quality – Price
--

As can be seen from the above formula the buyer's income is higher, the higher the product quality actually supplied by his seller. At the same time his income is higher, the lower the price he paid for the product.

Seller Income:

If a seller has not entered a trade agreement during a trading phase he gains an income of 5 ECUs for that period.

If a seller has accepted a trade offer, his income will be equal to the price he receives minus the production costs he incurs for the product quality supplied. The income of the seller is determined as follows:

Seller's Income = Price – Production Costs

The production costs of a seller are higher, the higher the quality of the product he chooses. The production costs for each product quality are displayed in the table below:

Product Quality	1	2	3	4	5	6	7	8	9	10
Production Costs	0	1	2	4	6	8	10	12	15	18

As can be seen from the above information the seller's income is higher, the higher the price that he accepted. Further, his income is higher, the lower the product quality he supplies to the buyer.

Income Screen:

You will be informed of your income and the income of your respective buyer/seller on an „**income screen**“. On this screen the following information will be displayed:

- Which buyer/seller you traded with
- Which price you offered/accepted
- The desired quality by the buyer
- The product quality supplied by the seller
- The income of the buyer and the seller in this period

After the income screen has been displayed, the respective period is concluded, and the trading phase of the following period begins. Once you have finished studying the income screen please click on the „next“ button.

History Table

Period	Seller 1	Seller 2	Seller 3	Seller 4	Seller 5	Seller 6	Seller 7	Seller 8	Seller 9	Seller 10
1	2	-	1	4	-	5	7	3	-	6
2	3	7	-	-	2	5	6	-	1	4
3	-	7	-	6	2	-	1	3	4	5

At any time during the experiment, you will be able to see a history table. This table lists the trade partners for every trade that has occurred in the past. You can see the first few rows of a buyer's table above. Each row of this table corresponds to a period of the experiment. The number of the period can be seen in the leftmost column. Each column of the table represents a seller. The IDs of the sellers are shown in the top row. The cells of table for a particular seller show the buyer with whom that particular seller traded in the respective period. For example, in the sample table, seller 5 traded with buyer 2 in period 3. Remember that there are more sellers than buyers, so that in each period, some sellers will not trade. In the history table, this is indicated by a dash (“-”).

The seller's history table looks identical, but the columns here represent the buyers.

Trade Restriction

At a randomly determined period, which will be between period 10 and period 20, a “**trade restriction**” will come into action. This restriction prevents any buyer from making private offers to the seller with whom he traded in the period before the restriction came into action. Likewise, any seller will be prevented from accepting public offers from the buyer with whom he traded in the previous period. For example, if buyer X traded with seller Y in period 14, and the trade restriction starts in period 15, then buyer X and seller Y will not be able to trade any longer after this period. The following rules apply:

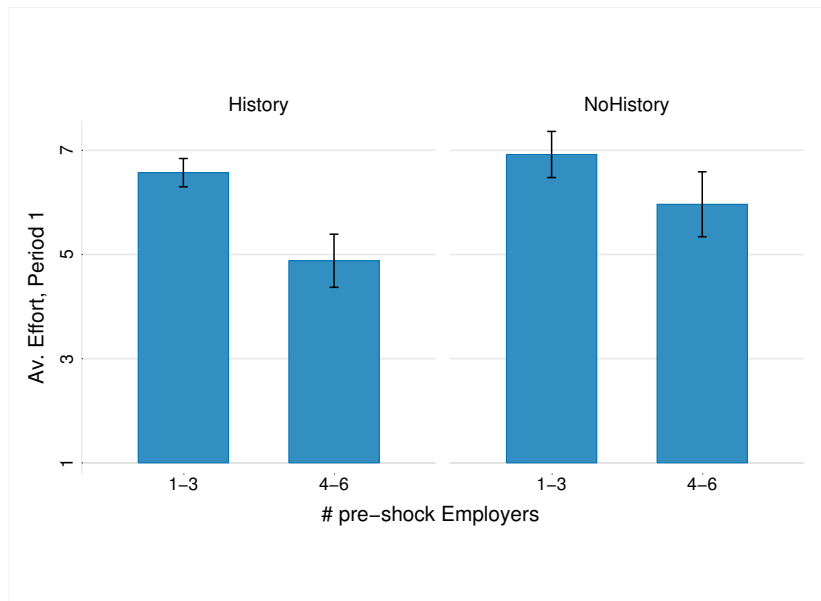
- The period when the trade restriction comes into action is **not known in advance**
- The trade restriction applies only to the buyer/seller with whom you traded in the **period immediately before** the trade restriction came into action; all other buyers/sellers will still be available
- Once the trade restriction comes into effect, you will not be able to trade with this buyer/seller for **all remaining periods** of the experiment
- A buyer cannot select his “restricted” seller for a private offer
- A seller cannot see or accept any public offers from his “restricted” buyer

The experiment will not commence until all participants are completely

familiar with all procedures. In order to make sure that this is the case we ask you to answer a couple of questions that will be displayed on the computer screen. Following these questions we will begin the experiment, which will last for 30 periods.

Do you have any questions?

Figure 7: Effort and Number of Employers, Period 1 only



Average effort a worker exerted in period 1 in relation to the number of different employers that the worker had during that phase. Unit of observation: worker. The more effort the worker exerted, the fewer employers she had in that phase, but more pronounced in History.

B. Field Experiment: Appendix

Table 6: Descriptive statistics

	Mean	Sd
May	0.673	0.470
June	0.199	0.399
Industry: cars	0.026	0.160
Industry: bank	0.019	0.137
Industry: chemical	0.023	0.149
Industry: service and admin	0.235	0.424
Industry: trade	0.115	0.320
Industry: tourism	0.007	0.084
Industry: construction/housing	0.086	0.280
Industry: logistics	0.031	0.173
Industry: communication	0.036	0.186
Industry: electro/metal industry	0.151	0.358
Industry: food industry	0.014	0.119
Industry: legal	0.036	0.186
Industry: public administration	0.031	0.173
Industry: insurance	0.012	0.109
Industry: travel agency	0.005	0.069
Industry: health service	0.023	0.149
Industry: hospital	0.031	0.173
Industry: transport	0.007	0.084
Industry: fiduciary	0.096	0.295
Industry: other	0.017	0.128
Legal: public or ngo	0.088	0.284
Legal: LLC	0.877	0.328
Legal: other	0.035	0.183
Employment agency	0.170	0.376
Part-time job	0.175	0.380
Avg. ln(driving distance)	9.704	1.322
Male HR person	0.321	0.467
Male applicant	0.487	0.500
Applicants per vacancy	9.709	5.013
Local unemployment rate	2.781	0.406

Table 7: Regression analysis: alternative callback definition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Four Employers	-0.033 ** (0.014)	-0.032 * (0.017)	-0.032 * (0.017)	-0.032 * (0.017)	-0.033 * (0.017)	-0.032 * (0.017)	-0.055 *** (0.019)
Four Employers X wave 2012		-0.003 (0.028)	-0.003 (0.029)	-0.004 (0.029)	-0.005 (0.029)	-0.004 (0.029)	0.007 (0.029)
Wave 2012		0.068 ** (0.032)	0.051 (0.034)	0.059 * (0.033)	0.031 (0.036)	0.046 (0.035)	0.052 (0.035)
Industry experience							0.106 *** (0.037)
Constant	0.292 *** (0.016)	0.264 *** (0.020)	0.280 *** (0.040)	0.723 *** (0.180)	0.660 *** (0.237)	0.469 * (0.284)	0.458 (0.283)
Additional controls?							
Month FE			Yes		Yes	Yes	Yes
Gender match FE			Yes			Yes	Yes
Firm / job charact. FE				Yes		Yes	Yes
ln(driving distance)				Yes	Yes	Yes	Yes
Labor market					Yes	Yes	Yes
Observations	1680	1680	1680	1680	1680	1680	1680
F	5.881	3.829	5.165	9.672	4.570	6.923	5.979
Prob> F	0.016	0.010	0.000	0.000	0.000	0.000	0.000

This table shows OLS coefficient estimates (standard errors adjusted for clustering at the job advertisement level are reported in parentheses). The dependent variable is a dummy indicating a callback (alternative definition, including requests for additional documents). “Four Employers” is a dummy for treatment Four Employers. “Wave 2012” is a dummy for the first wave of the experiment in 2012. “Industry experience” is a dummy indicating whether the applicant has had some previous work experience in the corresponding industry. “Month FE” contains dummies for the month when the application was sent. “Gender match FE” includes dummies for gender of the applicant and the HR person and the corresponding interaction term. “Firm/job charact. FE” includes industry dummies, legal form dummies, employment agency dummy and part-time job dummy. “ln(driving distance)” is the log of the distance in meter by car, calculated with Google Maps. “Labor market” contains the monthly local unemployment rate and number of applicants per open position, based on the statistics from the State Secretariat for Economic Affairs (SECO). Significance levels are denoted as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

C. Appendix for Survey Experiment

Table 8: Descriptive statistics for the participants who stated they were actively involved in the assessment of job candidates.

Variable	Mean	Median	Industry	#
Firm size (employees)	24'892	1'300	Plant Engineering/-Construction	14
Staff at booth	3.5	3	Electrical Ind./Electronics	12
# resumes/month	54.5	30	IT / Telecom	10
Years HR experience	6.7	5	Consulting	12
% female	59	—	Mechanical Engineering	8
Age (10-year bracket)	—	25–35	Chemical Ind./Pharma	5
Sample size	83		Medical Technology	3
			Financial Services/Banking	3
			Optomechanics	2
			Consumer Goods	2
			Other	12
			Total	83

Table 10: Difference in ratings of the 10 different characteristics (One Employer Rating rating minus Four Employers rating), mean and p-value of paired t-test. $N = 83$.

Characteristic	Mean Diff.	p-value	Signif. (corr.)
patient	1.24	<0.001	***
reliable	0.77	<0.001	***
teamwork	0.40	<0.001	***
honest	0.27	0.028	
skilled	0.19	0.038	
willing to adapt	0.34	0.060	
goal-oriented	-0.17	0.232	
self-directed	-0.07	0.495	
multi-talented	-0.05	0.665	
experienced	-0.05	0.728	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Holm-Bonferroni correction.

Table 11: Regression analysis survey responses: Recruiter characteristics

	(1)	(2)
One Employer	0.663*** (0.156)	1.623** (0.635)
Company size (1'000s)		-0.005** (0.002)
Staff at booth		0.165 (0.127)
Not active		1.098** (0.418)
# resumes/month		-0.003** (0.002)
Years HR experience		0.022 (0.046)
Female		0.501 (0.394)
Age bracket		0.130 (0.289)
IT/Telecom		-0.731 (0.670)
Consulting		-0.093 (0.540)
One Employer X Company size (1'000s)		0.001 (0.002)
One Employer X Staff at booth		-0.154 (0.109)
One Employer X Not active		-1.295*** (0.474)
One Employer X # resumes/month		-0.000 (0.001)
One Employer X Years HR experience		-0.021 (0.041)
One Employer X Female		-0.028 (0.334)
One Employer X Age bracket		-0.197 (0.288)
One Employer X IT		0.664 (0.712)
One Employer X Consulting		0.707 (0.452)
Constant	4.855*** (0.163)	3.865*** (0.687)
adj. R ²	0.053	0.141
N	166	154

OLS regressions, cluster-robust standard errors in parentheses, clustered on recruiter level. Unit of observation: recruiter-resume (2 resumes per recruiter).

Significance levels: * p<0.1, ** p<0.05, *** p<0.01.

Dependent variable: Callback rating for a resume (7-point Likert scale).

Independent variables: “One Employer:” dummy variable for resume with only one employer; “Company size (1'000s):” number of employees in the firm of the survey participant, in 1'000s; “Staff at booth:” number of recruiters at booth of participant at time of survey; “Not active:” participant is not actively involved in the selection of job candidates (11 participants); “# resumes/month:” number of candidate resumes that the participant sees in a typical month; “Years HR experience:” number of years that the participant has spent in recruiting; “Female:” sex dummy; “Age bracket:” age of participant (0 = below 25, 1 =25–35, 2 =36–45, 3 =46–55, 4 = above 55); “IT:” industry dummy for IT/telecommunications company; “Consulting:” industry dummy for consulting firm; “One Employer X . . . :” interaction term between One Employer dummy and variable.