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ORIGINAL PAPER

Wage subsidies and hiring chances for the disabled: some causal evidence

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Abstract This study evaluated the effectiveness of wage subsidies as a policy instrument to integrate disabled individuals into the labor market. To identify causal effects, a large-scale field experiment was conducted in Belgium. The results show that the likelihood of a disabled candidate receiving a positive response to a job application is not positively influenced by disclosing entitlement to the Flemish Supporting Subsidy.

Keywords Economics of health · Labor market policy evaluation · Wage subsidies · Disability · Discrimination

JEL Classification I38 · J14 · J78

Introduction

Labor market thresholds related to employee productivity and employer prejudices translate into substantially lower employment probabilities, working hours, and job stability for the disabled [4, 27, 29, 32, 40].[1] Given the costs associated with their unfavorable outcomes—costs at both the individual and societal levels—it is not surprising that integrating the disabled into the labor market is a key ambition of many Organisation for Economic Cooperation and Development (OECD) countries [29].

One instrument used by some countries to tackle the problem of high unemployment among the disabled is wage subsidies. According to classical economic assumptions, wage subsidies make disabled employment cheaper. Therefore, a positive effect of these subsidies on the hiring chances of the disabled could be expected.[2] However, at the same time, employers may perceive these subsidies as a signal of lower productivity. They may perceive disabled individuals who disclose this entitlement as "severe cases" [11].

The empirical evaluation of wage subsidies aimed at integrating the disabled into the labor market has received little attention in the economic literature. Indeed, we are aware of only two studies in this context. In the first study, Datta Gupta and Larsen [10] evaluated the Danish Flexjob scheme, which entitles employers to a subsidy of one- to two-thirds of the wage they pay to disabled workers. To this end, they used variation arising from introduction of the scheme. The labor market outcomes of the target group were compared with those of a control group comprising closely matched ineligible workers. Although Datta Gupta

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[1] In addition, hourly wages and training opportunities are also lower among disabled employees [3, 9, 13, 37, 38].

[2] Within the classical competitive framework in which wages and employment are formed by a confrontation of labor supply and labor demand, wage subsidies will shift out the labor demand curve for the targeted workers. This is the case because employers take into account the total labor costs when making their hiring decision. In case labor supply is infinitely elastic, this subsidy will expand only the employment of the targeted individuals without any impact on wages. The lower the labor supply elasticity is, the smaller the effect of the subsidy on employment will be and the larger will be its effect on wages [7, 22]. Findings demonstrate that this effect can also be expected based on models with moderate wage rigidities, labor market imperfections, or structural unemployment [18, 39]. In general, wage subsidies are aimed at compensating the disadvantage position and (thereby) the potentially (perceived) lower productivity of the targeted workers. In that respect, wage subsidies for the disabled are quite comparable with subsidies targeted at other groups, as theoretically and empirically evaluated, for example, by Bell et al. [5], Burtless [8], Gerfin et al. [16], Jaenichen and Stephan [20] and Kangasharju [21].

and Larsen [10] found a substantial positive employment effect of the scheme, they noted their uncertainty about whether this effect can be interpreted as causal because the subsidized jobs in the analyzed period may have been granted to relatively "more able" disabled persons.

In the second study, contemporaneous with our investigation, Deuchert and Kauer [11] conducted a field experiment in which disabled participants were asked to write (real) application letters to vacancies in Switzerland. Entitlement to a training grant (providing a maximum of 180 days of full wage subsidy) was randomly disclosed in these applications. Overall, their results show that this instrument is ineffective. Although the methodology applied by these authors was quite innovative, the results they present are not very insightful because only 51 individuals participated in the experiment, sending out 7.5 applications on the average, which resulted in fixed-effects estimations with very large standard errors.

In our study, we conducted a large-scale field experiment to evaluate the effectiveness of wage subsidies in terms of integrating the disabled into the labor market. More concretely, we used a correspondence experiment to test whether disclosing entitlement to a Belgian wage subsidy enhances the likelihood of disabled persons receiving a positive response to a job application. Two applications for male graduates, identical except that one disclosed a disability, were sent out to 768 vacancies in the Flemish labor market.[3] In addition, we randomized pairs in which the disabled candidate also mentioned entitlement to a wage subsidy, the Flemish Supporting Subsidy, amounting to between 20 % and 40 % of the total wage cost, and pairs in which the disabled candidate did not. Monitoring the subsequent call-back enabled us to identify heterogeneity in the unequal treatment of disabled and nondisabled applicants by wage subsidy entitlement disclosure. In addition, these data allowed us to contribute to the literature on disability discrimination in general by showing how this discrimination varies with policy-relevant variables such as education status, application extensiveness, employer characteristics, and contract modalities.[4]

This article is structured as follows. In the next section, we describe the modalities of the Flemish Supporting Subsidy. In the "Data" section, we provide some information on how the experimental data were obtained. Subsequently, in the "Results" section, we present and discuss the statistical analysis of the resulting dataset to answer our research question. A final section concludes.

Institutional context

This article aims to identify the effect of disclosing entitlement to the Flemish supporting subsidy (FSS) on the hiring chances of disabled individuals. This subsidy, granted (and paid) by the Public Employment Agency of Flanders, aims to integrate disabled persons into the labor market. Entitlement to this subsidy can be claimed by the disabled based on leaving school after special secondary education, recognition of the disability by the Belgian Federal Public Service Social Security, judgment by the Flemish Agency for the Disabled of their disability as justifying a wage subsidy, and judgment by the Public Employment Agency of their disability as justifying a wage subsidy. The FSS is then granted after a meeting with a case worker of the Public Employment Agency at which the claim is proven. Consultation with the staff of three Flemish organizations supporting disabled people in school and in the labor market (GTB Gent vzw, Cursief vzw and UBCO) shows that the FSS is in principle assigned for all serious mental, psychological, and physical disabilities. The disabilities disclosed in our experiment (blindness, deafness, and autism) therefore automatically translate into eligibility for the FSS. As a consequence, within the context of our experiment, granting of the subsidy in no way reflected the severity of the disability because all people who are blind, deaf, or autistic obtain the FSS when they claim it.

Employers who recruit a worker granted the FSS can request the wage subsidy using an online form at the website of the Public Employment Agency. This subsidy then is automatically paid throughout a 5-year period. The amount of the premium is calculated based on the salary of the employee and the time elapsed since the employee's recruitment by the employer. During the first five quarters of the contract, the subsidy is 40 % of the total wage cost (gross wage plus social security contributions), upper bounded by twice the average minimum wage in Belgium (e.g., 2 × € 1,502 in 2014). From quarter six to quarter nine, the subsidy amounts to 30 % of the total wage cost: it is 20 % thereafter.

After approval of the subsidy, the employer may claim higher percentages (up to 60 %) of wage subsidy if the employer can successfully argue that the standard subsidy does not compensate for the lower productivity of the disabled employee.[5] After 5 years, an employer can apply for an extension of another 5 years (with a subsidy, in

[3] Flanders is the northern, Dutch-speaking part of Belgium.

[4] During the last two decades, academics have provided evidence for labor market discrimination against disabled persons in the United States, Greece, Ireland, the Netherlands, Scotland, Canada, and France [2, 13, 15, 17, 25, 26, 33].

[5] As a consequence, after the employee assigned the FSS is hired, an additional part of the subsidy might relate to the seriousness of the disability, even for blind, deaf, and autistic individuals. However, because our experiment was focused on the hiring stage only, the size of the subsidy was equal for all (fictitious) candidates included in our study.

principle, comprising 20 % of the gross wage) if he can successfully argue that the disability of the employee still results in a productivity loss. As long as the employee remains employed with the employer under concern, this employer can continue to extend the premium. Both increases and extensions of the wage subsidy are approved based on the advice of an expert sent to the workplace by the Public Employment Agency.

In summary, the normal process determining the wage subsidy can be thought of as five consecutive steps. First, the disabled worker claims eligibility for the FSS at the Public Employment Service of Flanders. Second, the Public Employment Service grants the FSS after a meeting with a case worker. Third, the disabled candidate sends an application to a job posting. Fourth, if the candidate is hired, the FSS is requested by the employer, and a fixed—but decreasing over time—percentage of the gross wage of the worker is automatically paid throughout a (renewable) period of 5 years. Fifth, an increase in the subsidy might be requested by the employer if he or she can argue that the FSS does not compensate for the lower productivity of the particular worker in the particular job. As an alternative to this process, a disabled worker also can claim the FSS after being hired, after which the mentioned second, fourth, and fifth steps are passed through. Given the active encouragement by the organizations supporting disabled people in school and in the labor market to claim the FSS, we learned from the contact people of the Public Employment Service of Flanders that this alternative path is less frequently taken.

Data

Measuring unequal treatment by a correspondence test

Correspondence experiments to test for hiring discrimination on such grounds as ethnicity, gender, beauty, and sexual orientation have been extensively used and refined during the last decade [1, 6, 12, 31, 36]. In these field experiments, pairs of fictitious written job applications are sent to real job openings. The two applications in each pair are similar except for the single characteristic to be tested. By monitoring the subsequent call-back (i.e., the reaction from the employer side), unequal treatment based on this characteristic can be identified.

These field experiments have been widely viewed as providing the most convincing evidence of unequal treatment in hiring decisions [34]. Without the use of such experimental data, researchers possess far less data than employers do. Employees who appear similar to researchers based on standard nonexperimental data may look very different to employers. Using a correspondence test, selection on the basis of individual unobservable characteristics is eliminated because all the information received by the employer is controlled by the researcher. In this way, strict equivalence between fictitious applicants is ensured, and employer discrimination is disentangled from alternative explanations of differential hiring rates, such as differential employee preferences and network effects.

Our experiment was conducted from October 2012 to March 2013 in Flanders. Two applications, identical except that one disclosed a disability, were sent to 768 vacancies. Blindness, deafness, and autism each represented one-third of the disabilities disclosed. We selected vacancies for which the disabled candidate could be expected, based on the vacancy information, to be as productive as his non-disabled counterpart, possibly after reasonable (and fully subsidized) adjustments in the workplace. In addition, entitlement to the Flemish Supporting Subsidy was randomly disclosed in the applications of the disabled individuals. In the following discussion, we describe the vacancy selection, the construction of the fictitious job applications, and the monitoring of employers' reactions. We end with an overview showing the limitations of our design.

Selection of the vacancies

All vacancies were taken from the database of the Public Employment Agency of Flanders, which is the major job search channel in Flanders. From this database, we randomly selected vacancies of private employers requiring no relevant work experience and for which the disabled candidates could be expected to function as productively as candidates without a disability, possibly subject to limited (and fully subsidized) adjustments to the workplace (e.g., a Braille keyboard for the computer, interpreter hours, or the accommodation of a guide dog). The occupations to which the fictitious applications were sent were chosen after consultation of the staff of the three aforementioned Flemish organizations supporting disabled people in school and in the labor market.

More concretely, for blind candidates, we selected the moderately skilled occupations of administrative clerk and teleseller as well as the highly skilled occupations of accountant and informatician. For deaf candidates, we chose the moderately skilled occupations of electrician and carpenter as well as the highly skilled occupations of chemist and informatician. Finally, for autistic candidates, we chose the moderately skilled occupations of administrative clerk and carpenter as well as the highly skilled occupations of accountant and informatician.

The vacancies found in the aforementioned occupations were screened for elements in the job that would lead to a lower productivity for the disabled candidate, even in the

case of limited adjustments to the workplace. Such vacancies were ignored because in reality, the likelihood of a disabled individual applying for these positions seemed to be rather small.[6] Moreover, had we not ignored these posted jobs, our fictitious candidates would certainly not have been comparable with nondisabled candidates in terms of productivity-related characteristics. Nevertheless, unequal treatment is expected to be more to the disadvantage of disabled candidates with the ignored posted jobs. As a result, although we could not judge this, our measure of unfavorable treatment of the disabled may be interpreted as an upper bound for comparable measures based on a completely random selection of vacancies.

Construction of fictitious applications

We created two template types (types A and B) of resumes and cover letters for each of the occupations listed in the "Selection of the Vacancies" section matching the general requirements of these occupations. The types A and B applications were, at the level of the occupation, identical in all job-relevant characteristics but different in inessential details and layout. Several example applications of the Public Employment Agency of Flanders, with different fonts and layouts, were used and calibrated for our purposes to ensure that our applications were realistic and representative.

All fictitious applicants were single males born, living, and studying in comparable suburbs of Antwerp or Ghent, the two largest cities of Flanders. The candidates applying for the moderately skilled (highly skilled) positions were 18 (21) years old. The candidates for moderately skilled (highly skilled) positions held a relevant secondary (tertiary) education certificate, which was equal within each pair. All the types A and B applicants had graduated from the same type of school, with a comparable reputation, in June 2012.

In addition, we added the following features to all the applications: Belgian nationality, Dutch mother tongue, adequate French and English language skills, computer skills, and summer employment experience. The cover letters indicated a person who was highly motivated and highly organized. For the highly skilled candidates, sports club membership and student leadership also were added. Last, we appended a fictitious postal address (based on real streets in middle-class neighborhoods) and a date of birth to all applications. The resume and cover letter templates are available upon request.

We sent two applications, one type A and one type B, to each selected vacancy. For one member of each pair, a disability was disclosed. A credible mention was composed in collaboration with the three aforementioned Flemish organizations supporting disabled people. One-third of the disabled candidates disclosed blindness by means of the following clause in their cover letter: "In view of a job interview, I want to report that I am a blind. Therefore, I am always accompanied by a guide dog. However, my disability does not make me less productive." In the resume, this clause was repeated, and the technological tools used by the disabled applicant were described.

Another third of the disabled candidates disclosed deafness by the following clause: "As you can read in my resume, I am deaf. Do not let this put you off. I am a very good lip reader, and I have learned to find creative solutions in all sorts of situations. During a job interview, I will be accompanied by an interpreter." In the resume, this clause was repeated, and fully subsidized interpreter hours were described.

A final third of the disabled candidates disclosed autism by the following clause: "In view of a job interview, I would like to report that I am a person with autism and thus someone who benefits from regularity and structure, but this certainly does not mean that I do not love challenge in my work." In the resume, this clause was repeated.

In addition, to answer our main research question, half of the disabled applicants disclosed entitlement to the Flemish Supporting Subsidy. The remaining half of the disabled candidates did not mention any subsidy. More concretely, to obtain comparable vacancy characteristics for each half, we alternated, at the level of the particular disability and occupation, between pairs in which the disabled candidate did not mention the subsidy and pairs in which the disabled candidate mentioned subsidy entitlement. The wage subsidy was disclosed using the following clause in both the candidate's cover letter and resume: "In addition, my employer is entitled to an FSS. That is, my employer receives a premium from the Public Employment Agency every 3 months. The amount of this contribution can be found here: http://www.vdab.be/arbeidshandicap/wgvop.shtml."

It might be noted that as another option, three applications could have been sent to each vacancy (from a nondisabled candidate, a disabled candidate not disclosing wage subsidy entitlement, and a disabled candidate disclosing subsidy entitlement). In this way, we could have compared the impact of disclosing entitlement to the Flemish Supporting Subsidy at the individual vacancy level. However, we believe that sending three matched

[6] For instance, the job characteristics that for all three disabilities led to ignoring the vacancy were (1) high requirements concerning communication skills (e.g., a great deal of selling contacts with customer), (2) safety risks being more prominent given the disability (e.g., working with toxic fluids for blind people), and (3) high mobility requirements (e.g., regular visits during the day to customers outside the firm). In addition, for the autistic candidates, job postings in which flexibility was disclosed as a key quality were ignored.

applications, two of which would have been from disabled candidates, to the same employer would have substantially increased the risk for detection of the experiment. Moreover, if the vacancy characteristics were comparable between the cases in which the disabled candidate disclosed entitlement to the subsidy and those in which no subsidy was mentioned, which is by construction the case for an infinite sample, we can draw the same conclusions based on our design. We come back to this issue at the start of the "Regression Analysis" section.

Measurement of call-back

We registered two email addresses and mobile phone numbers: one for the nondisabled individuals and one for the disabled individuals. All applications were sent to the employer by email. To avoid detection, we applied to no more than one vacancy from the same employer.

Call-backs were received by telephone voicemail or email. The content of the responses is available upon request. Because we included postal addresses with nonexistent street numbers in the applications, we could not measure call-back by regular mail. However, several human resource managers confirmed that employers rarely, if ever, invite job candidates to selection interviews by regular mail.

To minimize inconvenience to the employers, we immediately declined invitations to job interviews. All call-backs received more than 30 days after send-out of the applications were discounted (however, this turned out to be an unnecessary restriction because we did not receive any positive call-back after 30 days).

In our analysis, we distinguished between two definitions of positive call-back. Positive call-back *sensu stricto* meant the applicant was invited for an interview concerning the job for which he applied. Positive call-back *sensu lato* included, in addition to the former definition, the receipt of an alternative job proposal and the request to provide more information or to contact the recruiter.

Research limitations

Before reporting and discussing the results of our research, we mention four limitations of our research design. For an in-depth discussion of the strengths, weaknesses, and ethical aspects of correspondence tests, we refer to former contributions by Bertrand and Mullainathan [6], Pager [30], and Riach and Rich [34, 35].

First, our design could be effective only in demonstrating unequal treatment in the initial stage of the selection process. Because we simply measured call-backs for first interviews, our research results could not be translated into divergences in job offers, let alone divergences in wages.[7] However, Bertrand and Mullainathan [6] argue that to the extent that the selection process has even moderate friction, it would be expected that reduced interview rates would translate into reduced job offers and lower earnings. Moreover, several human resource managers confirmed that for employers it is rational to invite only candidates with a substantial probability of being offered the posted job.

Second, we tested for unequal treatment only within the chosen occupations and only within the vacancies posted on the VDAB database. It is possible that unequal treatment based on disability and wage subsidy entitlement is more (or less) apparent in sectors other than those covered and more (or less) apparent among employers who rely on other channels (such as social networks) for filling their vacancies.

Third, although we aimed to select vacancies for which the disabled candidates could be expected to function as productively as candidates without a disability, the jobs for which these vacancies were posted may still have featured tasks for which the disabled candidates would have been less productive. Therefore, unequal treatment of disabled candidates might have been due to productivity-related factors instead of discrimination. However, it is important to keep in mind that we were especially interested in the relationship between discrimination against the disabled candidates and wage subsidy entitlement. Because this limitation caused, by construction, a similar shift in the discrimination measures for applications with and without a mentioned subsidy, our main research conclusions remain valid. The same is true for the second research limitation.

Fourth, on the candidate side, we restricted ourselves to young male individuals. It is possible that unequal treatment based on disability is more apparent for candidates of a particular gender. Moreover, the notification of disability or disability combined with a wage subsidy may work differently for different generations. One would expect that the potential signal of lower productivity by mention of a wage subsidy would be lower for older candidates (because they can mention successful employment experiences).

Fifth, in line with the literature, we gave no direct indication of the nondisabled candidate's ability.

[7] The only method to our knowledge that could be used to obtain causal measures of unequal treatment at later stages was audit testing. Audit tests go one step further than correspondence tests by sending matched pairs of actors to job invitations. However, in the economics literature, this methodology currently is only seldom used because it has been criticized on various grounds [19, 34]. The main critique is that audit tests suffer from the problem that it might be impossible to find and successfully train real-life job applicants so that they really represent a perfect match. In addition, auditors might consciously or subconsciously be motivated to prove discrimination and might therefore adjust their behavior accordingly in an interview.

Therefore, the nondisabled applicant in our experiment could also have been a disabled applicant not disclosing his disability. The comparison of "disabled" candidates with "nondisabled" candidates in our framework was therefore actually a comparison of "openly disabled" candidates and candidates with an undisclosed ability level. As a result, this comparison in fact captured the costs associated with disclosing disability. The same reasoning is valid in comparing disabled candidates who do and do not mention their entitlement to the Flemish Supporting Subsidy. Moreover, as mentioned at the end of the "Institutional context" section, a disabled worker also can claim the FSS after being hired. Some employers may be aware of this possibility when receiving an application from a disabled worker. For these employers, mention of the FSS by the disabled worker might not have an important effect. As a consequence, the "treatment" for which we identify the effect is not FSS eligibility but approval of the FSS at the start of the recruitment process. However, as mentioned previously, the alternative path for claiming the FSS after being hired is not frequently followed. Moreover, due to the application procedure that must be passed through, letting the disabled worker claim the FSS after he or she is hired will, even if the subsidy is granted at that point, result in no access to the wage subsidy for the first months of the contract, and therefore, there will be a financial loss as opposed to the situation in which the FSS was assigned before the disabled worker was hired.

Results

In this section, we describe our experimentally gathered data, providing the reader with some general statistics about unfavorable treatment of the fictitious disabled candidates. We then answer our main research question by means of a statistical examination of these data. We present positive call-back rates by disability and subsidy entitlement status for the total sample and for some relevant subsamples. We also report a regression analysis to identify the independent effect of disclosing a wage subsidy on the probability of positive call-back. The latter analysis allowed us to control for application type and vacancy fixed effects on the one hand and variables that may correlate with the disability and subsidy entitlement status of the fictitious candidates on the other hand due to the finite size of our dataset.

Data description

Table 1 describes our dataset. Panel A shows that, overall, for 210 of the 768 vacancies, at least one candidate received a positive call-back *sensu lato* (i.e., any positive reaction). In total, 76 cases resulted in an invitation for both the nondisabled and disabled candidates, 114 cases resulted in a positive call-back for only the nondisabled candidate, and 20 cases had positive call-back for only the disabled candidate.

The net discrimination rate then was calculated by subtracting the number of applications for which the disabled candidate was preferred from the number of applications for which the nondisabled candidate was preferred and dividing by the number of application pairs in which at least one candidate received a positive call-back. The result was a net measure of the number of discriminatory acts a disabled applicant could expect to encounter per application for which at least one candidate received a positive call-back. Overall, the net discrimination rate was 0.45 when the broad definition of positive call-back was adopted. A standard chi-square test of the hypothesis that the nondisabled and disabled candidates were treated unfavorably equally often was rejected at the 1 % significance level. The corresponding statistic for the *sensu stricto* definition of positive call-back (i.e., an invitation to a job interview) as presented in panel B was 0.47 (also significantly different from 0 at the 1 % level).

Based on the information provided in the first columns of Table 1, we also could compute an alternative measure for unequal treatment (i.e., the positive call-back ratio). This ratio was calculated by dividing the percentage of applications for which nondisabled candidates received a positive call-back (24.74 % following the *sensu lato* definition,[8] 14.71 % following the *sensu stricto* definition) by the corresponding percentage for disabled candidates (12.50 and 6.90 %, respectively). The resulting *sensu lato* positive call-back ratio was 1.98, indicating that the nondisabled candidates in our experiment received approximately twice as many positive reactions as their disabled counterparts. The *sensu stricto* positive call-back ratio was 2.13. Both ratios differed significantly from 1 at the 1 % significance level.

Based on these statistics, we concluded that the evidence showed unequal treatment of disabled job candidates in the Flemish labor market. However, it was unclear whether this unequal treatment could be labeled as discrimination. This would be the case if the unequal treatment were not based on productivity-related arguments to the detriment of the individual disabled candidates. Although we selected only vacancies for which, based on the content of the vacancy, disabled candidates could be expected to function as productively as nondisabled candidates, it still is possible that because not all information about the job was posted in the vacancy, the disabled candidates were in fact still less productive than

[8] 24.74 % = (76 + 114)/768.

Table 1 Data description[a]

Observations	Jobs (*n*)	Neither candidate positive call-back (*n*)	Both candidates positive call-back (*n*)	Only nondisabled candidate positive call-back (*n*)	Only disabled candidate positive call-back (*n*)	Net discrimination rate	χ^2	Positive call-back ratio: nondisabled vs disabled	*t* Value
A. Positive call-back *sensu lato:* all observations									
All observations	768	558	76	114	20	0.448[b]	65.94	1.979[b]	8.485
B. Positive call-back *sensu stricto:* all observations									
All observations	768	640	38	75	15	0.469[b]	40.00	2.132[b]	6.490
C. Positive call-back *sensu lato:* heterogeneity by wage subsidy mention by disabled candidate									
No wage subsidy	384	283	40	53	8	0.446[b]	31.20	1.938[b]	6.016
Wage subsidy	384	275	36	61	12	0.450[b]	32.89	2.021[b]	5.986
D. Positive call-back *sensu stricto:* heterogeneity by wage subsidy mention by disabled candidate									
No wage subsidy	384	321	22	33	8	0.397[b]	15.24	1.832[b]	3.976
Wage subsidy	384	319	16	42	7	0.538[b]	25.00	2.522[b]	5.161

[a] The net discrimination rate was calculated by subtracting the number of applications for which the disabled candidate was preferred from the number of applications for which the nondisabled candidate was preferred and dividing by the number of application pairs in which at least one candidate received a positive call-back. The chi-square test for the net discrimination rate tested the null hypothesis that both candidates were treated unfavorably with equal frequency. The positive call-back ratio was calculated by dividing the percentage of applications for which the nondisabled candidates received a positive call-back by the corresponding percentage for the disabled candidates. The *t* test for the positive call-back ratio tested the null hypothesis that the probability of a positive answer was the same for the candidates in both groups. Because two applicants contacted the same firm, the probability of the nondisabled applicant receiving an invitation was correlated with the probability of the disabled applicant receiving an invitation. Therefore, the standard errors were corrected for the clustering of the observations at the vacancy level

[b] 1 % significance level

their nondisabled counterparts. However, in this case, it could be expected that employers would be honest about this. To check this, we looked into the raw data for the reasons employers gave when the nondisabled candidate received a positive call-back (in the broad sense) and the disabled candidate did not. We saw that only in approximately 9 % of these situations did the employer act as we would expect in the case of no discrimination, namely, mentioning the disability as causing lower productivity in the posted job and (therefore) as an argument for non-invitation. In 64 % of the cases in which the nondisabled was invited and the disabled candidate was not, there was no reaction at all. In 3 % of the cases, there was a reaction but no explanation. Other reasons mentioned were a mismatch with the job profile (10 % of the cases), a lack of experience (9 %), a vacancy that was already filled (4 %), and the distance between the candidate's residence and the workplace (1 %). It is clear that the latter reasons were not honest because by construction, the disabled and the nondisabled candidates had the same characteristics.

In panels C and D of Table 1, the dataset is broken up by whether the disabled candidate in the pair of fictitious applications disclosed entitlement to a wage subsidy. Following either the *sensu lato* or the *sensu stricto* definition of positive call-back, we obtained net discrimination rates and positive call-back ratios (slightly) more to the detriment of the disabled when they disclose entitlement to a wage subsidy. These descriptive statistics provide a first indication of a nonpositive effect for the disabled candidate from disclosure of a wage subsidy when applying for a job. Whether this effect is significantly less than zero was the focus of our main analyses, which are discussed in the next two subsections.

Positive call-back by disability and subsidy entitlement disclosure

Tables 2 and 3 present our main research results. These tables compare the positive call-back rates (*sensu lato* and *sensu stricto,* respectively) for nondisabled candidates, disabled candidates not mentioning a wage subsidy, and disabled candidates mentioning a wage subsidy. We do this using both the total dataset and various breakdowns of the dataset by relevant employee and employer characteristics.

The second column of Tables 2 and 3 present the positive call-back ratio comparing the nondisabled and disabled candidates regardless of their subsidy entitlement disclosure. Based on this column, we conclude that unequal

Table 2 Positive call-back by disability and subsidy entitlement disclosure (positive call-back ratio [PCR] *sensu lato*)[a]

Observations	PCR: nondis. vs disabled	*t* Value	PCR: nondis. vs disabled without wage subs.	*t* Value	PCR: nondis. vs disabled with wage subs.	*t* Value	PCR: disabled without wage subs. vs disabled with wage subs.	*t* Value
A. All observations								
All observations	1.979[b]	8.485	1.979[b]	6.682	1.979[b]	6.396	1.000	0.000
B. Breakdown by the specific disability disclosed by the disabled candidate								
Blindness	2.286[b]	4.607	2.667[b]	4.225	2.000[b]	3.169	0.750	0.681
Deafness	1.816[b]	5.248	1.648[b]	3.507	2.023[b]	4.582	1.227	0.792
Autism	2.038[b]	4.903	2.208[b]	4.204	1.893[b]	3.225	0.857	0.412
C. Breakdown by the education status of both candidates								
Moderately educated	2.407[b]	4.970	2.955[b]	4.715	2.031[b]	3.600	0.688	0.997
Highly educated	1.812[b]	6.995	1.689[b]	4.834	1.953[b]	5.346	1.156	0.663
D. Breakdown by the extensiveness of the application								
Limited	2.000[b]	6.200	2.043[b]	4.927	1.958[b]	4.534	0.958	0.155
Extensive	1.959[b]	5.807	1.920[b]	4.524	2.000[b]	4.506	1.042	0.153
E. Breakdown by the job-posting agent								
Firm	1.984[b]	7.876	1.921[b]	6.041	2.051[b]	6.049	1.068	0.313
Interim office	1.925[b]	2.994	2.313[b]	2.647	1.667[c]	2.155	0.721	0.692
F. Breakdown by the contract type of the posted job								
Permanent	2.041[b]	7.849	2.085[b]	6.432	1.999[b]	5.705	0.959	0.191
Temporary	1.773[b]	3.290	1.685[c]	2.288	1.878[b]	2.856	1.114	0.281
G. Breakdown by the gender of the contact person mentioned in the posted job								
Male	1.905[b]	5.372	2.620[b]	5.621	1.507[b]	2.746	0.575[d]	1.867
Female	2.043[b]	6.112	1.755[b]	4.077	2.492[b]	5.511	1.420	1.258
H. Breakdown by the distance (in minutes when driving by car) between the candidate's living place and the workplace								
30′ or less	1.877[b]	5.840	1.985[b]	4.928	1.780[b]	4.024	0.897	0.429
More than 30′	2.114[b]	5.850	1.970[b]	4.393	2.281[b]	4.920	1.158	0.506

[a] The PCR was calculated by dividing the percentage of applications receiving a positive call-back for the first group of candidates by the corresponding percentage for the second group of candidates. The *t* test for the PCR tested the null hypothesis that the probability of a positive answer was the same for the candidates from both groups. Standard errors are corrected for clustering at the vacancy level. The distance between the candidate's living place and the workplace announced in the vacancy was calculated using the online routing tool Mappy.be

[b] 1 % significance level

[c] 5 % significance level

[d] 10 % significance level

treatment to the detriment of disabled candidates is prevalent regardless of the candidates' specific disclosed disability, their education status, or the extensiveness of their application. Furthermore, we find highly significant evidence for unequal treatment in all categories if we break down the experimentally gathered data by the job-posting agent, the contract type of the posted job, the gender of the contact person mentioned in the posted job, and the distance between the candidate's residence and the workplace.

To investigate whether the positive call-back ratios comparing nondisabled and disabled candidates significantly differed within panel B up to panel H of Tables 2 and 3, we also conducted regression analyses. In these analyses (one for each panel), (1) we regressed positive call-back on indicators for the subpopulations presented in Tables 2 and 3, and (2) these indicators interacted with an indicator of disabled candidates.[9] According to F-statistics, the positive call-back ratios were significantly higher ($p < 0.05$) when the distance between the candidate's residence and the workplace was substantial compared with the situation in which this was not the case. Moreover, we obtained weakly significant evidence ($p < 0.10$) for more unequal treatment among the moderately educated than among the highly educated candidates. However, these findings may not be interpreted as causal because the sets of indicators included in the regressions may be

[9] For instance, to test whether positive call-back ratios differ by education level, we regressed positive call-back on a dummy "highly educated," an interaction dummy "disability × highly educated," and an interaction dummy "disability × moderately educated."

Table 3 Positive call-back by disability and subsidy entitlement disclosure (positive call-back ratio [PCR] *sensu stricto*)[a]

Observations	PCR: nondis. vs disabled	*t* Value	PCR: nondis. vs disabled without wage subs.	*t* Value	PCR: nondis. vs disabled with wage subs.	*t* Value	PCR: disabled without wage subs. vs disabled with wage subs.	*t* Value
A. All observations								
All observations	2.132[b]	6.490	1.883[b]	4.537	2.457[b]	5.809	1.304	0.996
B. Breakdown by the specific disability disclosed by the disabled candidate								
Blindness	2.444[b]	3.207	3.667[b]	3.229	1.833[d]	1.955	0.500	1.016
Deafness	2.036[b]	4.101	1.676[b]	2.634	2.591[b]	4.070	1.545	1.200
Autism	2.125[b]	4.146	1.700[c]	2.326	2.833[b]	3.916	1.667	1.031
C. Breakdown by the education status of both candidates								
Moderately educated	2.467[b]	3.440	2.643[b]	3.203	2.313[b]	2.730	0.875	0.263
Highly educated	2.000[b]	5.702	1.652[b]	3.292	2.533[b]	5.369	1.533	1.367
D. Breakdown by the extensiveness of the application								
Limited	2.261[b]	4.531	2.167[b]	3.500	2.364[b]	3.830	1.091	0.215
Extensive	2.033[b]	4.638	1.694[b]	2.929	2.542[b]	4.364	1.500	1.140
E. Breakdown by the job-posting agent								
Firm	1.969[b]	5.740	1.739[b]	3.896	2.273[b]	5.081	1.307	0.986
Interim office	6.256[b]	3.175	6.013[b]	2.660	6.500[b]	3.226	1.081	0.055
F. Breakdown by the contract type of the posted job								
Permanent	2.000[b]	5.540	1.905[b]	4.172	2.104[b]	4.522	1.104	0.348
Temporary	3.000[b]	3.456	1.815[d]	1.815	10.11[b]	4.461	5.571[d]	1.914
G. Breakdown by the gender of the contact person mentioned in the posted job								
Male	1.923[b]	3.973	2.047[b]	3.236	1.817[b]	2.926	0.887	0.315
Female	2.200[b]	4.651	1.692[b]	2.811	3.280[b]	4.772	1.939[d]	1.656
H. Breakdown by the distance (in minutes when driving by car) between the candidate's living place and the workplace								
30′ or less	1.870[b]	4.004	1.754[b]	2.827	2.004[b]	3.389	1.143	0.376
More than 30′	2.469[b]	5.099	2.028[b]	3.486	3.155[b]	4.945	1.556	1.087

[a] The PCR was calculated by dividing the percentage of applications receiving a positive call-back for the first group of candidates by the corresponding percentage for the second group of candidates. The *t* test for the PCR tested the null hypothesis that the probability of a positive answer was the same for the candidates from both groups. Standard errors are corrected for clustering at the vacancy level. The distance between the candidate's living place and the workplace announced in the vacancy was calculated using the online routing tool Mappy.be

[b] 1 % significance level

[c] 5 % significance level

[d] 10 % significance level

correlated across the set level (e.g., education level may be correlated with contract status).

In the "Regression Analysis" section and "Appendix A", we report on a more thorough regression analysis in which we included all these dimensions together.

In the fourth and sixth columns of Tables 2 and 3, we provide the reader with the positive call-back ratios based on the call-back rates for the nondisabled candidates on one hand and the disabled candidates with and without a wage subsidy, respectively, on the other hand. The fourth column shows highly significant evidence for unequal treatment between nondisabled and disabled candidates without a wage subsidy for almost all breakdowns of the dataset. Furthermore, the sixth column shows the same pattern in the comparison of nondisabled and disabled candidates disclosing their entitlement to a wage subsidy.[10] A first exception to this pattern was the only weakly significantly positive call-back ratio *sensu stricto* comparing the nondisabled and the disabled candidates with a wage subsidy for the sub-dataset of observations gathered from fictitious application pairs in which the disabled candidate disclosed blindness as a disability. The explanation for no finding of a positive call-back ratio greatly differing from 1 for this group is that for this

[10] The reader might be puzzled by the fact that the statistics presented in the fourth and sixth columns in panel A of Tables 2 and 3 are not the same as those presented in the ninth column of panels C and D of Table 1. This is because the former statistics were obtained by comparing the disabled candidates with or without a wage subsidy with all the nondisabled candidates (768 individuals), whereas the latter statistics were obtained by accounting only for the nondisabled candidates who applied for the same vacancies as the disabled candidates under concern (384 individuals).

subset, the probability of a positive call-back *sensu stricto* was very low for both the nondisabled (0.09) and disabled candidates (0.02 for those disclosing no wage subsidy and 0.05 for those disclosing a subsidy).[11] Thus, the standard errors for the related positive call-back ratios were quite high. Second, because the fraction of vacancies that announced a temporary contract was rather small (14.06 %), we obtained higher standard errors and *ipso facto* lower levels of significance for the positive call-back ratios comparing disabled and nondisabled candidates (with or without wage subsidy entitlement disclosure) for this type of vacancy.

Finally, and most importantly, the eighth column of Tables 2 and 3 compares the call-back chances of a disabled candidate not mentioning a wage subsidy and a disabled candidate mentioning a wage subsidy. A positive call-back ratio lower (higher) than 1 indicates that those disclosing (no) entitlement to the Flemish Supporting Subsidy are treated favorably. Panel A of both tables shows that the positive call-back ratio was 1.00 when the broad definition of positive call-back was used and 1.30 when the narrow definition was used. Neither ratio differs significantly from 1, leading us to conclude that neither profile is preferred over the other.[12]

We found the same pattern when inspecting the same statistic for the sub-datasets except for two observations. First, we obtained statistics weakly significantly more to the detriment of the disabled candidates (not) disclosing their entitlement to the wage subsidy if the contact person mentioned in the posted job was female (male). Second, we found that those mentioning a wage subsidy had weakly significantly lower job interview invitation rates for jobs offering a temporary contract. This finding can be explained by the fact that these contracts were on the average rather short, such that beginning the administrative process to receive the wage subsidy was not appealing to employers. However, it is clear that this statistic was driven by the low number of vacancies posted by an interim office in our dataset (10.22 % of the vacancies).

A possible explanation for our main result, as described by Deuchert and Kauer [11], is that the financial incentive implied by the Flemish Supporting Subsidy was at least offset by the fact that mentioning this subsidy focused additional employer attention on (the severity of) the disability. In other words, the wage subsidy may thus have led to a perception of lower productivity.[13] Another explanation, suggested by policymakers confronted with our research results, is employers' fear of red tape. Third, and related to the fifth research limitation mentioned in the "Research Limitations" section, employers recognizing the possibility of letting their disabled workers claim the FSS after being hired may not not have been impressed by the revelation of the subsidy in the application. A final explanation is that the labor market might be dominated by two types of employers: a first type ready to consider the hiring of a disabled worker regardless of his or her wage subsidy entitlement and a second type not ready to do this. This brings us back to the first research limitation mentioned in the "Research Limitations" section because the first type of employer might take the potential wage subsidy into account during a later stage of the hiring process.

Regression analysis

Because we by construction randomized over the disclosure of the entitlement to the Flemish Supporting Subsidy by the disabled applicants, regressing positive call-back at the individual application level on disability and subsidy disclosure on the one hand and on employer and employee characteristics on the other hand should have led to the same conclusion for a sample size approaching infinity.[14] However, our sample size was finite. Thus, some variables that may have determined the level of unequal treatment of disabled and nondisabled candidates may have happened to correlate with the subsidy entitlement status of the disabled fictitious candidates. Therefore, we performed a regression analysis. However, this analysis, reported in "Appendix A", led to the same conclusions as those made in the previous subsection.

[11] As should be clear based on the "Data" section, we did not randomize over the particular disability disclosed due to our aim of selecting occupations for which the disabled candidates could be expected to function as productively as the nondisabled candidates. Thus, the low positive call-back rates for both the fictitious disabled and nondisabled candidates in the pairs comprising a blind candidate seem only to be a reflection of the lower positive call-back rates in the occupations (in general or for our profiles of graduates in particular) we selected when applying with these pairs (accountant, informatician, administrative clerk, and teleseller).

[12] The fact that 1.30 is not significantly different from 1 is related to the low interview invitation rate among the disabled candidates (6.90 %).

[13] The reader will notice that this perception is, in fact, a misperception because wage subsidy entitlement is not related to the severity of the disability, at least for blind, deaf, and autistic people (see the "Institutional Context" section).

[14] The same is true for an infinite sample if the vacancy characteristics are comparable for those vacancies to which we sent a disabled candidate not mentioning a wage subsidy and those to which we sent a disabled candidate disclosing wage subsidy entitlement. In our case, *t* tests showed that we could not reject that the composition of the vacancies was equal across these two groups in terms of job-posting agent, contract type, gender of the contact person mentioned in the vacancy, and distance between working place and residence.

Conclusion

This report describes the results of the field experiment we conducted to evaluate the effect of wage subsidy entitlement on the hiring chances for the disabled. Two applications of graduates, identical except that one disclosed a disability, were sent out to 768 vacancies in the Flemish (Belgian) labor market. In addition, we randomly disclosed the entitlement to a substantial wage subsidy in the applications of the disabled candidates.

Statistical analyses of our experimentally gathered dataset indicate the following. First, when not disclosing wage subsidy entitlement, the disabled candidates had a 47 % lower chance to receive a positive reaction from the employer side than the nondisabled candidates. Second, when disclosing wage subsidy entitlement, the disabled candidates had a 49 % lower chance to receive a positive reaction. The difference between the two statistics does not differ significantly from zero. Therefore, our results show that the likelihood of a disabled candidate receiving a positive response to a job application is not influenced by disclosure of wage subsidy entitlement in Belgium. Consequently, at least in this stage of the recruitment process, this wage subsidy instrument does not sort the desired effect. Apparently, the positive financial stimulus implied by the subsidy is compensated by signaling effects (subsidies as a signal for lower productivity) and the fear of red tape (excessive regulation and formality potentially hindering productive action and decision making). However, given that all the disabled candidates in our experiment could, based on their particular disability, apply for the subsidy on the one hand and that administration duties related to the subsidy are very limited, from a policy perspective, we believe that investments in better communication of the limited administrative burden of the Flemish Supporting Subsidy are needed.

An important limitation of our results, as mentioned in the "Research Limitations" section, is that these results relate only to the first stage of the hiring process. Conditional on an invitation for a job interview, disabled candidates who disclose their entitlement to a wage subsidy may be better off in later stages of the hiring process than disabled candidates who are not granted a subsidy because financial considerations might carry more weight at that point. Therefore, we suggest future research on the effectiveness of wage subsidies in enhancing the hiring chances for the disabled throughout the total recruitment process. In addition, we recommend future research on the impact of wage subsidies on mid- and long-term labor market outcomes (e.g., wages and employment duration) for the disabled. However, identifying good control and treatment groups for these purposes seems possible only on the basis of natural experiments.

Our results complement the recent literature evaluating the causal impact of labor market instruments aimed at integrating the disabled into the labor market. For instance, Lalive et al. [23] recently tested the effectiveness of Austria's instrument of employment quota. On the other hand, Lopez Frutos and Vall Castello [24] evaluated the impact of disability benefit entitlement in Spain. To reach thought-out policy advice, it would be beneficial to have some of these studies replicated in other countries. In addition, there is a need for an in-depth synthesis of the (cost) effectiveness of the different instruments evaluated in this recent literature.

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Ethical standards The reported research was reviewed and approved by the Ethical Affairs Committee of the Faculty of Economics and Business Administration of Ghent University.

Appendix A: Regression analysis

Table 4 presents our benchmark regression results. In the benchmark models, we regressed the probability of positive call-back *sensu lato* on various sets of key and control variables by means of a linear probability model with resume type fixed effects. The control variables were adopted in interaction both with the disability status of the candidate and without interaction (except for variables constant at the resume type level and therefore controlled by our fixed-effects estimations and for variables relevant only for the disabled candidate, such as disability type and wage subsidy entitlement disclosure). For comparison of the regression results, except for "disability," all variables were normalized by subtracting their mean among the subpopulation of disabled candidates.

First, in regression 1, we included only the disability status as an explanatory variable. We found that disclosing a disability lowered the chance of a positive reaction by approximately 12 percentage points. This outcome agreed with the difference in the positive call-back rates between the disabled and nondisabled candidates mentioned in the "Data Description" section.

Second, in regression 2, we interacted the indicator for the disabled individuals with an indicator for wage subsidy entitlement disclosure. We found that the regression coefficient for this interaction term was a nonsignificant 0.00, indicating that the fictitious disabled applicants who disclosed their wage subsidy entitlement were as likely to

Table 4 The probability of positive call-back *sensu lato:* linear probability model with resume type fixed effects[a]

	(1)	(2)	(3)	(4)
Disability	−0.122[b] (0.014)	−0.122[b] (0.014)	−0.122[b] (0.014)	−0.122[b] (0.014)
Disability × wage subsidy entitlement disclosure		**0.000 (0.023)**	**0.000 (0.023)**	**0.003 (0.023)**
Disability × gender of contact person: female				−0.023 (0.031)
Disability × gender of contact person: unknown				−0.004 (0.052)
Disability × job-posting agent: interim office				−0.120 (0.110)
Disability × contract type: temporary				0.042 (0.083)
Disability × distance between living place and workplace				0.032[c] (0.015)
Disability × blind candidate applying for accountant			−0.047 (0.045)	−0.057 (0.047)
Disability × blind candidate applying for informatician			−0.109[d] (0.058)	−0.110[d] (0.058)
Disability × blind candidate applying for administrative clerk			−0.047 (0.050)	−0.032 (0.051)
Disability × blind candidate applying for teleseller			−0.031 (0.056)	−0.012 (0.057)
Disability × deaf candidate applying for chemist			−0.094 (0.065)	−0.101 (0.065)
Disability × deaf candidate applying for informatician			−0.156[c] (0.062)	−0.167[b] (0.062)
Disability × deaf candidate applying for carpenter			−0.047 (0.063)	−0.057 (0.064)
Disability × deaf candidate applying for electrician			−0.141[d] (0.072)	−0.113 (0.071)
Disability × autistic candidate applying for accountant			−0.141[c] (0.055)	−0.160[b] (0.056)
Disability × autistic candidate applying for informatician			−0.047 (0.059)	−0.055 (0.060)
Disability × autistic candidate applying for administrative clerk			−0.047 (0.045)	−0.062 (0.047)
Gender of contact person: female				0.017 (0.033)
Gender of contact person: unknown				−0.036 (0.055)
Job-posting agent: interim office				0.069 (0.102)
Contract type: temporary				0.102 (0.085)
Distance between living place and workplace				−0.051[b] (0.015)
Resume type fixed effects	Yes	Yes	Yes	Yes
Observations	1,536	1,536	1,536	1,536

Bold values indicate the most important results of the table

[a] The presented results are linear probability model estimates, with standard errors corrected for clustering at the vacancy level in parentheses. Except for "disability," all the variables have been normalized by subtraction of their mean among the subpopulation of disabled candidates. The continuous variable "distance between living place and workplace" has been further normalized by dividing by the standard deviation among the subpopulation of disabled candidates. The distance between the candidate's living place and the workplace announced in the vacancy was calculated using the online routing tool Mappy.be

[b] 1 % significance level

[c] 5 % significance level

[d] 10 % significance level

receive a positive reaction from the employer side as the disabled applicants who did not mention the wage subsidy.

Third, from regression 3 onward, we included variables over which wage subsidy disclosure was, by construction, perfectly randomized: interaction dummies between the particular disability type and occupation for which the candidate applied. As a result, the regression coefficients for disability and wage subsidy entitlement disclosure were identical to those of regression 2. In addition, we observed that unequal treatment was most to the detriment of deaf candidates applying for the occupation of informatician and the occupation of electrician and of autistic candidates applying for the occupation of accountant.

Fourth, in regression 4, we included variables that due to the finite size of our sample could correlate with subsidy disclosure: the indicator variables "gender of contact person: female," "gender of contact person: unknown," and "contract type: temporary" on the one hand and the continuous variable "distance between living place and workplace" on the other hand. However, this barely affected the parameter estimate for the variable of primary interest: the interaction between disability and wage subsidy entitlement disclosure. In addition, based on this regression, we found that living at a distance from the workplace was less penalizing for the disabled candidates.[15]

[15] Further analysis, which is referred to when a heteroskedastic probit model is used (see further), indicates that this finding is, at least empirically, driven by the blind candidates. For them, mobility might always be an issue, for both small and long distances, so that living close to the workplace is less rewarded.

Table 5 The probability of positive call-back *sensu stricto:* linear probability model with resume type fixed effects[a]

	(1)	(2)	(3)	(4)
Disability	−0.078[b] (0.012)	−0.078[b] (0.012)	−0.078[b] (0.012)	−0.079[b] (0.012)
Disability × wage subsidy entitlement disclosure		**−0.018 (0.018)**	**−0.018 (0.018)**	**−0.014 (0.018)**
Disability × gender of contact person: female				−0.012 (0.027)
Disability × gender of contact person: unknown				−0.020 (0.043)
Disability × job-posting agent: interim office				−0.027 (0.096)
Disability × contract type: temporary				−0.052 (0.079)
Disability × distance between living place and workplace				0.027[c] (0.013)
Disability × blind candidate applying for accountant			−0.016 (0.041)	−0.029 (0.042)
Disability × blind candidate applying for informatician			−0.047 (0.051)	−0.043 (0.050)
Disability × blind candidate applying for administrative clerk			0.031 (0.031)	0.046 (0.033)
Disability × blind candidate applying for teleseller			0.016 (0.041)	0.035 (0.040)
Disability × deaf candidate applying for chemist			−0.063 (0.061)	−0.060 (0.062)
Disability × deaf candidate applying for informatician			−0.078 (0.054)	−0.083 (0.054)
Disability × deaf candidate applying for carpenter			−0.031 (0.059)	−0.040 (0.058)
Disability × deaf candidate applying for electrician			−0.094 (0.072)	−0.069 (0.072)
Disability × autistic candidate applying for accountant			−0.047 (0.046)	−0.057 (0.047)
Disability × autistic candidate applying for informatician			−0.063 (0.047)	−0.070 (0.048)
Disability × autistic candidate applying for administrative clerk			0.016 (0.041)	0.014 (0.044)
Gender of contact person: female				0.015 (0.027)
Gender of contact person: unknown				−0.033 (0.043)
Job-posting agent: interim office				−0.123 (0.093)
Contract type: temporary				0.158[d] (0.082)
Distance between living place and workplace				−0.040[b] (0.013)
Resume type fixed effects	Yes	Yes	Yes	Yes
Observations	1,536	1,536	1,536	1,536

Bold values indicate the most important results of the table

[a] The presented results are linear probability model estimates, with standard errors corrected for clustering at the vacancy level in parentheses. Except for "disability," all the variables have been normalized by subtraction of their mean among the subpopulation of disabled candidates. The continuous variable "distance between living place and workplace" have been further normalized by dividing by the standard deviation among the subpopulation of disabled candidates. The distance between the candidate's living place and the workplace announced in the vacancy was calculated using the online routing tool Mappy.be

[b] 1 % significance level

[c] 5 % significance level

[d] 10 % significance level

Table 5 presents the corresponding results using positive call-back *sensu stricto* as an outcome variable. Tables 6 and 7 replicate Tables 4 and 5 but introduce vacancy fixed effects. The same pattern of results is observed in these three tables concerning the parameters of main interest.

We also tested the robustness of our results using a heteroskedastic probit model. We did this given Heckman and Siegelman's [19] critique of previous correspondence studies. This critique boils down to the fact that not controlling for group differences in the varied unobservable determinants of positive call-back can lead to substantial bias.[16] The solution to this problem is, as recently proposed by Neumark [28], to adopt a heteroskedastic probit model, in which the variance of the error term is allowed to vary

[16] To see this more clearly, assume that both the average observed and unobserved determinants of productivity were the same for the

Footnote 16 continued
nondisabled candidates, disabled candidates mentioning entitlement to a wage subsidy, and disabled candidates not mentioning a wage subsidy but that the variance of unobservable job-relevant characteristics was the lowest for the nondisabled candidates. In addition, suppose that the employer considered the observed determinants of productivity, inferred from the CV and the motivation letter, as relatively low compared with the job requirement. In that case, it was rational for the employer to invite the disabled candidate because given that the variance of unobservable job-relevant characteristics was higher for disabled candidates, it was more likely that the sum of observed and unobserved productivity was higher for these workers. A correspondence test that detects discrimination against disabled candidates could then underestimate the extent of discrimination.

Table 6 The probability of positive call-back *sensu lato:* linear probability model with vacancy fixed effects[a]

	(1)	(2)	(3)	(4)
Disability	−0.122[b] (0.014)	−0.122[b] (0.014)	−0.122[b] (0.014)	−0.122[b] (0.014)
Disability × wage subsidy entitlement disclosure		**−0.004 (0.021)**	**−0.004 (0.021)**	**−0.003 (0.021)**
Disability × gender of contact person: female				−0.013 (0.022)
Disability × gender of contact person: unknown				−0.028 (0.038)
Disability × job-posting agent: interim office				−0.070 (0.080)
Disability × contract type: temporary				0.095 (0.061)
Disability × distance between living place and workplace				0.031[c] (0.015)
Disability × blind candidate applying for accountant			−0.047 (0.045)	−0.049 (0.046)
Disability × blind candidate applying for informatician			−0.109[d] (0.058)	−0.102[d] (0.057)
Disability × blind candidate applying for administrative clerk			−0.047 (0.050)	−0.036 (0.051)
Disability × blind candidate applying for teleseller			−0.031 (0.056)	−0.024 (0.056)
Disability × deaf candidate applying for chemist			−0.094 (0.065)	−0.120[d] (0.065)
Disability × deaf candidate applying for informatician			−0.156[c] (0.062)	−0.158[c] (0.062)
Disability × deaf candidate applying for carpenter			−0.047 (0.063)	−0.047 (0.063)
Disability × deaf candidate applying for electrician			−0.141[d] (0.072)	−0.123[d] (0.072)
Disability × autistic candidate applying for accountant			−0.141[c] (0.055)	−0.157[b] (0.055)
Disability × autistic candidate applying for informatician			−0.047 (0.059)	−0.042 (0.060)
Disability × autistic candidate applying for administrative clerk			−0.047 (0.045)	−0.058 (0.047)
Distance between living place and workplace				−0.049[b] (0.015)
Vacancy fixed effects	Yes	Yes	Yes	Yes
Observations	1,536	1,536	1,536	1,536

Bold values indicate the most important results of the table

[a] The presented results are linear probability model estimates, with standard errors corrected for clustering at the vacancy level in parentheses. Except for "disability," all the variables have been normalized by subtraction of their mean among the subpopulation of disabled candidates. The continuous variable "distance between living place and workplace" have been further normalized by dividing by the standard deviation among the subpopulation of disabled candidates. The distance between the candidate's living place and the workplace announced in the vacancy was calculated using the online routing tool Mappy.be

[b] 1 % significance level

[c] 5 % significance level

[d] 10 % significance level

with the minority status of the fictitious applicants. We applied this framework in two ways. In a first application of Neumark's [28] econometric framework, we allowed the variance of the error term to vary with the disability status of the candidates. In a second application, the variance of the error term was allowed to vary among three groups: the nondisabled candidates, the disabled candidates not mentioning a wage subsidy, and the disabled candidates mentioning a wage subsidy. We identified these models by assuming that the distance between the residence and the workplace had the same effect on the call-back of nondisabled, deaf, and autistic candidates, leaving the observations for blind candidates out of the estimation because deafness and autism do not cause substantial mobility problems (compared with being nondisabled), as indicated by the aforementioned Flemish organizations supporting disabled people in school and the labor market. The hypothesis that the coefficient for this variable is equal across all three groups could not be rejected on the basis of a likelihood ratio test (p values of 0.20 and 0.38 for positive call-back *sensu lato* and *sensu stricto,* respectively).[17] Doing this, however, we found no significant difference in the variance of the error term between the two groups classified by disability status (p value of the likelihood ratio test using positive call-back *sensu lato* [*sensu stricto*] as an outcome variable: 0.67 [0.63]) or between the three groups classified by disability and wage subsidy status (p values of 0.82 and 0.69, respectively). Therefore, this analysis led to the same conclusions.

[17] In addition, if we re-estimate the model (4) of Tables 4 to 7 after leaving out the observations for blind candidates, we find no statistically significant effect of the interaction between the candidate's disability status and the distance between the working place and his residence on his probability of positive call-back.

Table 7 The probability of positive call-back *sensu stricto:* linear probability model with vacancy fixed effects[a]

	(1)	(2)	(3)	(4)
Disability	−0.078[b] (0.012)	−0.078[b] (0.012)	−0.078[b] (0.012)	−0.078[b] (0.012)
Disability × wage subsidy entitlement disclosure		**−0.021 (0.017)**	**−0.021 (0.017)**	**−0.019 (0.017)**
Disability × gender of contact person: female				−0.003 (0.019)
Disability × gender of contact person: unknown				−0.040 (0.026)
Disability × job-posting agent: interim office				−0.111[d] (0.067)
Disability × contract type: temporary				0.054 (0.057)
Disability × distance between living place and workplace				0.026[c] (0.012)
Disability × blind candidate applying for accountant			−0.016 (0.041)	−0.025 (0.041)
Disability × blind candidate applying for informatician			−0.047 (0.051)	−0.045 (0.050)
Disability × blind candidate applying for administrative clerk			0.031 (0.031)	0.041 (0.032)
Disability × blind candidate applying for teleseller			0.016 (0.041)	0.035 (0.039)
Disability × deaf candidate applying for chemist			−0.063 (0.061)	−0.071 (0.061)
Disability × deaf candidate applying for informatician			−0.078 (0.054)	−0.084 (0.054)
Disability × deaf candidate applying for carpenter			−0.031 (0.059)	−0.037 (0.058)
Disability × deaf candidate applying for electrician			−0.094 (0.072)	−0.074 (0.072)
Disability × autistic candidate applying for accountant			−0.047 (0.046)	−0.062 (0.046)
Disability × autistic candidate applying for informatician			−0.063 (0.047)	−0.066 (0.047)
Disability × autistic candidate applying for administrative clerk			0.016 (0.041)	−0.001 (0.043)
Distance between living place and workplace				−0.038[b] (0.013)
Vacancy fixed effects	Yes	Yes	Yes	Yes
Observations	1,536	1,536	1,536	1,536

Bold values indicate the most important results of the table

[a] The presented results are linear probability model estimates, with standard errors corrected for clustering at the vacancy level in parentheses. Except for "disability," all the variables have been normalized by subtraction of their mean among the subpopulation of disabled candidates. The continuous variable "distance between living place and workplace" have been further normalized by dividing by the standard deviation among the subpopulation of disabled candidates. The distance between the candidate's living place and the workplace announced in the vacancy was calculated using the online routing tool Mappy.be

[b] 1 % significance level

[c] 5 % significance level

[d] 10 % significance level

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