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THE EFFECT OF PRO DIVERSITY ACTIONS ON DISCRIMINATION IN THE RECRUITMENT OF LARGE COMPANIES: A FIELD EXPERIMENT

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The effect of pro diversity actions on discrimination in the recruitment of large companies: a field experiment

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Abstract

This study presents the results of 5,256 discrimination tests in access to employment, corresponding to more than 10,000 messages sent in 2018-2019 to 103 of the biggest French companies, based on the criterion of ethnic origin. Using an instrumental variable approach, we evaluate the effect on discrimination of the signing of diversity labels that validate the implementation of pro-diversity actions. We find significant and robust discrimination based on origin against the presumed French North African candidates: the positive response rate for North African applicants is on average 27% lower than that of French applicants. We show that companies that engage in pro-diversity actions have a lower level of ethnic discrimination and that the diversity label has an effect per se on discrimination: the implementation of pro diversity actions reduces by 1.8 percentage points the probability for a firm to advantage the French origin applicant.

JEL Codes: J7, C52, C93

Keywords: Hiring Discrimination, correspondence test, pro-diversity actions, diversity label

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1. Introduction

It is now common knowledge in most of OECD countries that applicants of foreign origins or from ethnic minority face substantial barriers in accessing employment (Neumark 2018). This phenomenon of discrimination is problematic for reasons of equal treatment but also because, depending on the underlying mechanism, it has negative economic consequences, notably for the discriminating firm itself. In case of taste-based discrimination (Becker 1957), firms will hire a less productive worker rather than a candidate of foreign origin because of the recruiter's preferences. The consequence is a reduction in its profits, which under perfect competition, should even lead the firm to disappear (Bertrand and Duflo 2016). A number of studies also show that more diversified companies perform better, particularly in term of innovation, than less diverse ones (Nathan and Lee 2013; Ozgen 2021).

For these reasons, as well as for questions of brand image a growing number of companies are committed to making their hiring process less likely to generate discrimination. These actions can be validated by a label that specifies a set of requirements that the company must implement in order to obtain it. In France, the Label Diversité was created by the government, in conjunction with social partners and HR experts in 2008. It lists a series of actions to be taken in favour of diversity in order to guarantee equal opportunities in hiring. The creation of hiring labels is not specific to France. The same type of label also exists, for example, at the European level in the form of the GEEIS (Gender Equality European & International Standard) label.

By encouraging the company to engage in diversity actions through brand enhancement and profits increase, labels could be an effective and relatively inexpensive public policy to reduce discrimination. However, if the first question is whether companies that sign diversity labels are less likely to discriminate, another question that is less easy to answer is whether the label itself has an effect on the level of discrimination. It is indeed likely that less discriminatory firms are more likely to engage in labelling processes, as they can obtain the brand image premium at lower costs, which could explain a large part of the eventually low level of discrimination in firms that engage in the

label. Comparing the level of discrimination between labelled and non-labelled companies is, in consequence, not enough to conclude that labels are effective as a public policy.

In this article, we use a dataset from a large correspondence test and an instrumental variable approach to disentangle the specific effect of pro-diversity actions that involve signing a diversity label. 5,256 job access discrimination tests, corresponding to more than 10,000 messages, were conducted between 2018 and 2019 in 103 of the largest French companies, based on the criterion of ethnic origin. We also complement our dataset with a comprehensive set of firm and sector level characteristics. This allows us to compare the level of discrimination in firms that engage in labels and those that do not and to instrument the commitment to a diversity label in order to identify the specific effect of the implementation of pro-diversity actions.

The main originality of the paper is thus to evaluate the effect of a large firm-level pro-diversity action, i.e. the commitment to a diversity label. This type of action has not yet been evaluated. Bertrand and Mullainathan (2004) and Berson, Laouénan, and Valat (2020) have included the commitment to diversity variables in their estimates, but without attempting to distinguish between correlation and causality. More generally, we lack empirical evidence on actions or public policies that could reduce discrimination. Although increasing recently, there is still little evidence on which public policies might be effective in reducing ethnic discrimination in hiring. The evaluation of the Ban-the-Box policy in the United States by Agan and Starr (2017) leads to disappointing results as the removal of criminal records from applications tend to disadvantage African-American applicants without criminal records. Also, the evaluation of anonymous CV in France remains inconclusive about the effectiveness of this type of public policy (Behaghel, Crépon, and Le Barbanchon 2015). The results are more encouraging in Germany even though the study suffers from the same limitation related to the fact that the firms participating in the experiment are self-selected (Krause, Rinne, and Zimmermann 2012). Even affirmative action has been found not to necessarily reduce stereotypes about minority workers (Coate and Loury 1993). However, results are sometimes more conclusive regarding other discrimination criteria such as gender discrimination (Goldin and

Rouse 2000), residential discrimination (Chareyron et al. 2021), or other markets such as the housing market (Murchie, Pang, and Schwegman 2021; Chareyron et al. 2022b).

The study reveals significant and robust discrimination based on ethnic origin against French candidates of presumed North African origin: the positive response rate for North African applicants is on average 27% lower than that of French applicants. At the same time, we show that company level policies can help limit discrimination. We find that companies that sign the Diversity label have a lower level of ethnic discrimination; they are 3 percentage points less likely to favour the French origin applicant than firms that do not commit. We also provide evidence that part of the effect is causal and that there is conclusive evidence of an effect of implementing pro-diversity actions on discrimination. Indeed, we obtain a 1.8 percentage point reduction, due to the implementation of the actions, in the probability that a firm will favour the French origin applicant.

The second section gives some background on the French diversity label. The third section describes the experimental protocol. The characteristics of the sample and the overall discrimination results are presented in section 4. The effect of the diversity label on ethnic discrimination is presented in section 5. We conclude in the last section.

2. Background on the Label Diversité

Created in 2008 by the government in agreement with the social partners, the Label Diversité is a "voluntary and sustainable approach by an organisation to prevent discrimination and promote diversity in its human resources management[3]". Human resources management is considered in the broadest sense through recruitment, integration and career development. It also considers the organisation's environment through supplier and customer relations. All legal forms in the public or private sector can apply for this label.

To obtain the label, a company must implement an action program in order to be comply with the label's specifications before applying for the label. The action program depends on the conclusions of an initial assessment. Depending on this assessment, promoting diversity may require

[3] https://travail-emploi.gouv.fr/emploi-et-insertion/label-diversite

a wide range of actions such as formalizing and revising HR processes, information, awareness-raising and training, setting up a listening unit, partnerships, etc. The company's application is then evaluated by the commission in charge of the label. If the commission agrees, an audit will be carried out within two years. The label is awarded for four years and requires interim audits when applying for renewal.

As of March 2020, 112 organisations hold the Label Diversité, corresponding to 1.3 million employees, and two-thirds of the laureates are from the private sector. These organisations are also strongly committed to other good practices, as a third of them also hold the Label Egalité (professional between women and men). It is interesting to note that there is no imbalance between large groups with a structured HR culture and departments and small and medium-sized companies (SMEs) where, in most cases, only one person is in charge of this department. Half of the private sector organisations that hold the label are SMEs.

For the companies, the advantages[4] of the Label Diversité are many. It makes it possible to "identify [the] risks of discrimination" on all the criteria listed in the law, "to enhance and recognise [the] good practices in terms of human resources management, to structure [the] recruitment process, and to promote a fluid and constructive social dialogue". More broadly, the labels are an integral part of the employer brand as a management tool and also of Corporate Social Responsibility.

3. Experimental protocol

3.1 Correspondence test methodology

The traditional approach used to assess discrimination on the labour market is based on sending fictitious applications (CV and cover letter) in response to real job offers (Riach and Rich 2002). This approach is, however, partial since it covers only a small number of professions and corresponds to a particular channel of access to employment: the open market for published offers. It does not make it possible to measure discrimination on offers provided by networks and word of mouth. In addition, it involves a high logistical cost, which consists of the cost of producing the

[4] https://certification.afnor.org/ressources-humaines/label-diversite

application and the cost of searching for the offer, multiplied by the number of tests. It is also selective since the answers given only concern bids for which applications have been prepared by the evaluator.

In this study, we use a new correspondence test approach that produces representative statistics at the company level, with large samples and without exposure to compositional biases associated with occupational mixes. The main idea is to combine different methods, each of which has its pros and cons, but whose combination makes it possible to achieve the desired objective. We combine four test methods, to include applications that do or do not respond to a job offer, and those submitted on an application form as well as those that are simply a request for employment information (Table 1).

Table 1. The combination of four testing methods

	Test for access to employment	**Job Information Access Test**
Responding to a job offer	**1-**Classical testing by sending CVs and cover letters in response to published offers	**3-** Test for requesting information on published offers
Unsolicited contact	**2-** Spontaneous application test (with sending of CV and cover letters)	**4-** Test for requesting information on the application procedure and/or on the existence of vacancies

Source: TEPP-CNRS. Testing DREAM

The conventional approach used in the labour market (1) is based on sending fictitious applications (a pair of CVs and cover letters) in response to real job offers. It is partial since it covers only a small number of occupations and corresponds to a particular channel of access to employment, that of the open market of published offers. It does not make it possible to measure discrimination in job offers filled through networks and word-of-mouth. In addition, it involves a high logistical cost, which consists of the cost of producing the application and the cost of searching for the offer, multiplied by the number of tests. It is selective because the answers given only concern offers for which applications have been prepared by the evaluator.

The first alternative strategy is to submit spontaneous applications. This method of testing through spontaneous applications is the one that has been adopted by Peter A. Riach and Rich (2010). This type of approach through direct contact with employers, without there being a job offer, reduces the cost of collecting offers. That in turn allows the scope of the search to be broadened and a large number of individuals to be included, at the cost of a lower response rate on average. Hiring employees through spontaneous application is not uncommon in France. Applicants use this channel (i.e- in 2017, 41% of companies with more than 50 employees receive more than 100 unsolicited applications per year) and companies generally take their applications into account (i.e - in 2017, 64% of employers reported using spontaneous applications)[5]. Furthermore, 68% of these applications are made by email.

Some companies have automated and centralized the hiring process by creating a single web platform for candidates to apply to job openings. This mainly concerns large companies and may limit the use of spontaneous applications. However, this does not always prevent spontaneous applications and does not prevent, in all cases, that a first contact made by spontaneous application can be redirected to a particular offer on these platforms.

The second alternative strategy is to send, not an application consisting of a CV and a cover letter, but a request for further information on the application procedures. This "application for a job" can itself be made in response to published job offers or spontaneously. A simple contact email can be sent to an employer to request information on the application selection procedure or on the existence of vacant positions in the company (for an example of implementation, see L'Horty 2016, chapter VI, pp 77-80). The production cost of the application is reduced here. This approach does not require the production of a CV and therefore has the advantage of testing a much wider range of jobs offered, without introducing selection bias in the choice of occupations. That in turn makes it possible to provide results on data representative of the flow of job offers. However, it provides only a partial indicator of access to employment, for a recruiter may respond to a request for information but then

[5] Etude Pôle emploi, « La place du numérique dans la recherche de candidats par les employeurs » (2017).

discriminate at the CV selection stage. A difference in response between two requests for information that differ only on the basis of a prohibited criterion is nevertheless discrimination. This approach is also convincing from the point of view of measuring discrimination; it is the technique used by the international academic literature on the housing market, which is simply transposed here to the labour market (for a recent overview of this literature, see Flage 2018).

Compared to traditional testing, the use of spontaneous applications makes it possible to cover a much larger number of recruiters. For example, it becomes possible to test a large number of different branches of a given company. The use of access to an information test allows a wide range of professions to be covered, without the need to produce a CV and to be exposed to the associated selection bias. We combine these four data collection techniques to produce representative statistics at the level of each company. The combination of techniques potentially maximizes the number of tests per company under detection risk constraints. The approach we take is to respond to offers by sending fictitious applications if the professions correspond to those, we have pre-selected, or to respond by requesting information on the application if they do not correspond.

We carried out the correspondence test on a selection of the 250 biggest French companies (the largest capitalizations on the Paris stock exchange). Our multi-channel approach did not require us to focus on a prior selection of companies that published enough job offers. We therefore did not select companies a priori on the basis of the volume of job offers published. We selected a sample by reasoned choice targeting large companies, diversified by sector of activity and actively recruiting. We also considered whether or not the recruitment of companies was centralized.

In practice, the vast majority of these companies' recruitment organization can be described as centralized. Vacancies are listed on the company's website and candidates must complete an application form to respond to them. It is very likely that a single HR unit will systematically make an initial selection of responses to all these offers for the company. We identified very few of these companies that seemed to depart from this basic mode of operation. We selected some companies

that seemed to have organized decentralized recruitment, in order to have sufficiently varied findings by recruitment procedure.

Another advantage of this combination of approaches is that it allows us to perform a very large number of tests on a wide variety of professions. We managed to more than 10,000 applications, which is far superior to the tests carried out so far on the French labour market.

3.2 One criterion of discrimination: ethnic origin

We measured discrimination according to the criterion of ethnic origin, for candidates of French nationality. We considered only two ethnic origins: a French candidate whose first name and surname indicated French origins, and a French candidate whose first name and surname indicated North African origins. Widespread surnames have been chosen that clearly indicate an origin from a North African country. Table A2 in Appendix presents the ranking of the first names and surnames used in our test. The ranking is based on the total number of female and male first names given in France in 1985 and in the total number of surnames given in 1981-1990. All of the last names and all of the first names used in the test are in the first quartile of names for the period under consideration.

These two fictitious candidates were male or female; their gender varied according to the job offers they respond to, so that our candidates were of modal gender. To limit the risk of detection, we used a large number of identities that differed, depending on the testing approach chosen, the employment pool tested, or the profession tested. The two fictitious candidates were located in the largest urban areas of metropolitan France. We selected 6 experimental territories, among the largest urban areas in France. We produced duets of fictitious candidate profiles located in each of these territories and we used these duets alternately, depending on the location of the potential workplace. The job search perimeter corresponded to the entire urban area, which gave maximum spatial coverage with a minimum number of locations. These 6 territories provide a total of more than 8 million jobs for 18.4 million inhabitants. They constitute a sample of the national territory corresponding to 28% of the population and 32% of jobs.

To ensure that the style or content of a particular application did not systematically influence the choice of companies for a particular candidate (despite the harmonization precautions taken when building applications), we randomly assigned the two application forms to the two fictitious candidates. For each test, another draw also determined the order in which the fictitious candidates would contact the recruiter (more details on the content of the tests are given in Appendix 1).

4. Summary Statistics and Overall Discrimination

4.1 Summary

In the case of responses to job offers, the number of tests that could be carried out depended on the number of offers published, the number of fictitious candidate profiles that had been constructed by the evaluator, and the length of the test period. At the level of a particular company, the number of tests that can be carried out is further limited by the precautions taken as protection against the risk of detection. As these are spontaneous requests, the limits are no longer the same, but the risk of detection remains a strong constraint that structures both the method and the extent of the testing. We sought to maximize the number of tests performed over the collection period. For tests in response to offers, we systematically responded to all published offers, as long as the address of the recipient of the answers had not already been used in an earlier test. For spontaneous requests, we used a wide range of addresses to contact potential recruiters in the different branches of the companies.

We considered a test to be valid when two messages had been sent to the same single recipient, one by the reference candidate and the other by the potentially discriminated candidate. We did not consider emails that had been returned as an error message. We performed only one test per recipient. We performed a total of 5,256 tests on the 103 companies, corresponding to 10,512 applications or requests for information sent.

Table 2 presents descriptive statistics on the characteristics of the application, the company and the location of the offer. We see that most of the applications were unsolicited applications sent in November 2018 and January 2019. Most of the companies were among the 120 largest on the Paris

stock exchange, from the industrial sector. A total of 39% of the offers were located in the Paris region.

Table 2: Characteristics of applications, offers and companies

	Mean	S.D.
Male	51	
% Unsolicited application	90	
% sending with a curriculum vitae	31	
Sending date:		
% October 2018	1	
% November 2018	44	
% December 2018	8	
% January 2019	47	
Firm characteristics:		
% belonging to the 120 largest capitalization	67	
Number of employees (in millions)	0.11	0.25
Sales revenue (in billions)	19.31	26.53
Gini index	0.27	0.15
% exposed to international competition	59	
Employment area:		
% Nice region	3	
% Toulouse region	6	
% Bordeaux region	4	
% Nantes region	7	
% Lyon region	10	
% Paris region	39	
% Unknown	31	
Sector of activity:		
% Consumer goods	10	
% Industry	31	
% Basic materials	5	
% Oil and gas	1	
% Health	6	
% Community services	7	
% Consumer services	19	
% Financial institutions	7	
% TIC	13	
% Telecoms	1	
Observations		10,512

Source: TEPP-CNRS. Testing DREAM

Table 3 presents the distribution of employers responses. It shows that 82.1% of the employers give no positive response to any of the two applicants. This relatively high rate of non-response is due to the unsolicited nature of some of the applications, which are generally less likely to receive a response. 7.9% respond only to the applicant of French origin applicant and 4.5% only to the applicant of North African origin. This gives a positive response rate of 13.4% for the applicant of French origin and of 10.8% for the applicant of North African origin.

Table 3: Responses distribution

	%	Number of tests
No positive response	82.1	4,316
Positive response only to the French origin applicant	7.9	368
Positive response only to the North African origin applicant	4.5	235
Positive response to both applicants	6.4	337
Total	100.0	5,256

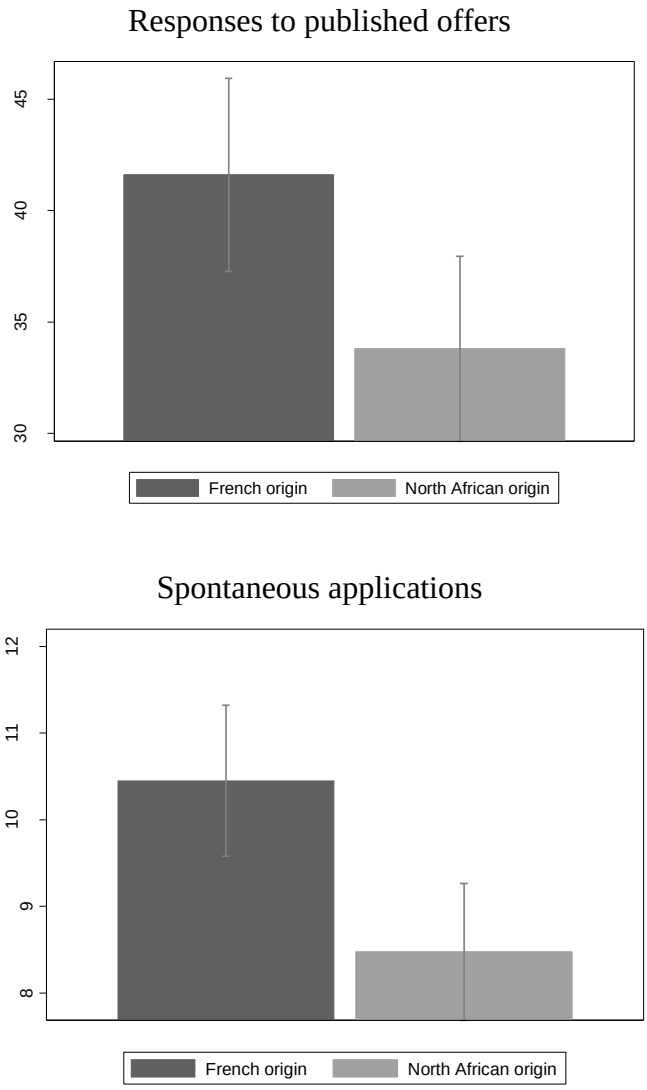
4.2 Graphical results

Since the two applicants send their requests to each recruiter and the order in which applicants were sent was randomly swapped for each mailing, a good overall representation of the results can be obtained by simply comparing the positive response rate of different applicants. The call back rates of the two fictitious candidates are shown with their confidence intervals in Figure 1. The responses are separated between those that correspond to responses to published offers and those that correspond to spontaneous applications. We first notice that the overall positive response rate is very low for all the applicants in the case of spontaneous applications[6]. We nevertheless verified whether the hierarchies of success rates between candidates are similar in the spontaneous request test and in the test in response to published offers. Our findings show that the overall response rate is almost 30 percentage points higher for the test in response to published offers than for the spontaneous request tests. Absolute differences in response rates between candidates are therefore smaller in the latter case, but the relative differences remain similar in the two types of tests. In the two situations, we

[6] We consider as positive responses all responses that are not negative. This means that we consider all responses as positive, unless the message closes the exchange (i.e No opportunity at the moment; application out of profile given the activity of the company; questions on how the applicant got the email address without following up; the correspondent indicates that he is not the right correspondent, without giving any other possible contact; automatic absence mail; other negative responses).

note that the response rate of the applicant with a French origin is significantly higher than the response rate of the North African applicant.

Figure 1: Positive response rates by ethnic origin
(spontaneous applications vs responses to published offers)



Notes: confidence intervals at the 95% level.
Source: TEPP-CNRS. Testing DREAM

4.3 Regression estimates of discrimination

We now want to confirm econometrically our graphical results by estimating the effect of the origin and disability on the probability of obtaining a positive response. To this aim, we estimate probit models in the form:

$$REP_{ij} = 1 \qquad if\ \alpha + \beta\ NorthAfr_{ij} + \gamma\ X_{ij} + \varepsilon_{ij} > 0$$

$$= 0\ otherwise$$

With REP_{ij} is a dummy variable indicating whether or not recruiter j gives a positive response to applicant i. X_{ij} is a vector of characteristics of the offer which varies according to the specification and ε_{ij} is the error term. $NorthAfr_{ij}$ is a dummy variable indicating whether the applicant is of North African origin or not.

The results are presented in Table 4. The mean marginal effects of probit effects models are presented. All type of tests are pooled in the same estimate and the type of test is controlled for in each columns of the table. In column (2), the date and order of sending are included. In column (3), regional fixed effects are included and company fixed effects are included in column (4).

There is significant discrimination against the French candidate presumed to be of North African origin in each specification[7]. The magnitude of the estimated differences are influenced by the inclusion of the order of sending. In the last column, the estimated difference in response rate between the French and North African Applicant is 3.6 percentage points (about 27% in relative terms since the positive response rate of the reference applicant is 13.4%). This result is in line with that of Berson, Laouénan, and Valat (2020) who found a 22%, also on large firms in France, difference between applicants of French and North African origin. Although it is not possible to directly compare the results of different experiments, we can note that our results are in the range of those obtained by studies that do no specifically target large companies. For example, Bertrand and Mullainathan (2004) found a 33% penalty in relative term to the black applicant compared to the white applicant in the

[7] The results from linear probability models presented in Table A3 in appendix are similar. Our estimates are based on all offers, which is the most common way to proceed in the literature (Bertrand and Mullainathan 2004). However it is also possible to argue that the offers for which we have not received any response for either of the applicants should not be taken into account in the estimations because they do not reveal information about discrimination (the recruiter may not have received the applications, or may have already hire someone for the position, etc). In consequence, we carry out estimates on the subsample of offers for which we have at least one response. The results presented in Table A4 are similar to those of Table 4: the North African origin applicant has a significantly lower response rate than the French origin applicant. The magnitude of the effect is higher in absolute term but, because the positive response rate of the reference applicant is much higher, rather similar in relative term (21% instead of 27%).

U.S. In France, Chareyron et al. (2022a) obtained a penalty of about 30% towards the applicant of North African origin compared to the applicant of French origin.

Table 4: Difference in positive responses rates between the applicants of French and North African origins (probit)

	(1)	(2)	(3)	(4)
North African	-0.024***	-0.038***	-0.036***	-0.036***
	(0.005)	(0.005)	(0.005)	(0.006)
Type of test	YES	YES	YES	YES
Date and order of sending	NO	YES	YES	YES
Regional F.E.	NO	NO	YES	YES
Company F.E.	NO	NO	NO	YES
AIC	7176.979	7121.548	7111.678	6755.663
Observations	10,512	10,512	10,512	10,226

*Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. Standard errors clustered at the offer level in brackets. Average marginal effects from probit estimates are presented.*
Source: TEPP-CNRS. Testing DREAM

5. The effect of pro-diversity actions

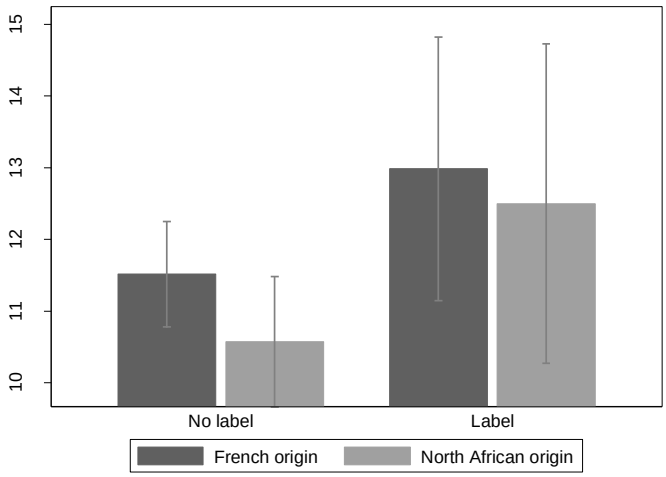
5.1 Endogeneity of the label commitment

In this sub-section, we evaluate causally the effect of company-level pro-diversity action: the signing of a diversity label[8]. The label validates the company's commitment to the prevention of discrimination, respect for equal opportunities and the promotion of diversity. It certifies that the company's processes of recruitment, integration and career development are not likely to cause discrimination. We believe that the commitment to this process may have an effect per se on the discriminatory behaviour of the company because it implies for the company to engage in pro-diversity actions. However, the companies that engage in this process may have a particular sensitivity to these questions and may have a lower preliminary level of ethnic discrimination than others that do not engage in the process.

In our dataset, 12 companies out of 103 had signed this type of label, which accounts for almost 16% of the observations. Figure 2 shows that the gap in response rates between applicants of French origin and applicants of North African origin seems to be smaller in firm that have signed a diversity label.

[8] We consider here the AFNOR and GEEIS diversity labels, which are, respectively, the main French and European labels.

Figure 2: Positive response rates by label



Notes: confidence intervals at the 95% level.
Source: TEPP-CNRS. Testing DREAM

Companies that have embarked on the labelling process are likely to have particular unobservable characteristics that explain their lower level of discrimination. While it appears that the possession of a diversity label by a firm is a guarantee of low levels of discrimination, it is not possible to say at this stage whether it is the implementation of pro-diversity actions that has reduced discrimination.

5.2 Instrumental strategy

To eliminate the endogeneity of the variable, the company's workforce is used as an instrument. The instrument must explain the endogenous variable without being correlated with the error term of the main regression.

Regarding the first point, it is expected that the larger the size of a company, the more likely it is to engage in a labelling process, for at least two reasons. First, it is relatively less costly for a large firm to create a department in charge of applying for the label and establishing and enforcing procedures to ensure equal treatment, than it is for a smaller firm. Second, it is more important for large company to have a positive public image than it is for smaller and more anonymous ones. The results presented in Table A5 in appendix indicate that companies with a high number of employees, are significantly more likely to sign a diversity label.

The second condition for the variable to be a good instrument is that it does not influence the level of discrimination, except through its influence on the likelihood of obtaining a label. There is no clear evidence from previous studies that the size of a company directly influences the level of discrimination. For example, Bertrand and Mullainathan (2004), who conducted the same type of research as ours, found no effect of firm size or type of firm on the level of ethnic discrimination. This is also confirmed by Table A6 in appendix. This table presents the effects of firm characteristics on discrimination. We can observe that the number of employees is not significantly related to the behaviour the firm in term of hiring discrimination.

We are interested in the effect of the diversity label on three possible test results: the candidate of French origin is at an advantage, or the candidate of North African origin is at an advantage, or both candidates received a similar response (no response or two positive responses). We estimate probit and bivariate probit models on these outcomes. Bivariate probit explicitly models endogeneity through the correlation between the residuals of the two equations. The following equations are estimated:

$$Y_{ij} = 1 \qquad if\ \alpha + \beta\, Label_{ij} + \delta\, X_{ij} + \mu_{ij} > 0$$

$$= 0\ otherwise$$

With Y_{ij} the outcome under consideration (advantage to the French, advantage to the North African and similar response) of offer *i* in company *j*. X_{ij} is a vector of characteristics of the offer and μ_{ij} is the error term. $Label_{ij}$ is a dummy variable indicating whether the firm has signed a disability label. This variable is estimated in the first stage equation:

$$Label_{ij} = 1 \quad if\ \gamma + \lambda\, Size_{ij} + \phi\, X_{ij} + \varepsilon_{ij} > 0$$
$$= 0\ otherwise$$

With $Size_{ij}$ the instrumental variable, i.e – the size of the company and ε_{ij} the error term.

5.3 Results

The marginal effects of the probit and bivariate probit models are presented in Table 5, which shows that the diversity label significantly reduces the probability of the candidate of French origin being favoured. The result is more significant when the fact of having the label is instrumented, but the magnitude of the effect is smaller. Thus, having the diversity label reduces the probability of answering only to French applicants without an instrument by 3 percentage points, and with an instrument by 1.8 percentage points. These results suggest that companies that obtain the diversity label have a lower prior level of discrimination than others, but that the label also has an effect, *per se*, on discrimination. Regarding the probability that both candidates receive similar responses, the instrument likewise reduces the magnitude of the coefficient, but the significance is higher. The label increases by 1.4 percentage points the probability that a company answers both candidates similarly.[9]

Table 5: Effect of the label on company responses (Probit and bivariate Probit)

	Advantage French		Advantage North African		Similar responses	
	Probit	Bi-probit	Probit	Bi-probit	Probit	Bi-probit
Diversity label	-0.030**	-0.018***	0.009	0.003	0.022	0.014**
	(0.015)	(0.005)	(0.012)	(0.004)	(0.019)	(0.006)
Observations	4908	4908	4861	4908	4908	4908

*Notes: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Robust standard errors in brackets. Average marginal effects are presented. Control variables: firm turnover, wage inequality, average wage and industry exposure, industry sector, gender of applicant, sending pool, type of application (CV or information).*

The diversity label is thus associated with less discrimination on the part of the company. Our results also suggest that this effect is causal and that engagement in the labelling process and the implementation of pro diversity actions lead to a reduction of discrimination. The labelling of companies therefore appears to be a relevant instrument for reducing discrimination.

[9] We find similar results when the non-responses to both candidates are removed (Table A7 in the appendix).

Conclusion

In this study we produce experimental data on ethnic discrimination, for a sample of 103 large companies that are members of the CAC All-tradable. We measure discrimination using the pair-wise correspondence test method. The originality in the methodology is that it combines four test methods: application in response to an offer, request for information on a published offer, spontaneous application, and spontaneous request for information on recruitment. Whereas a traditional testing procedure selects a small number of professions and assesses discrimination with different professional compositions from one company to another, this multi-channel testing procedure enables us to produce both discrimination statistics representative of recruitment in a given company and statistics that are strictly comparable from one company to another. Furthermore, the automation of the test yields a sufficient number of findings to study the firm-level determinants of discrimination.

Between October 2018 and January 2019, we conducted a total of 5,256 tests on 103 companies. To carry out these tests, we sent 10,512 applications and requests for information. The exploitation of the results of these tests makes it possible to highlight significant and robust discrimination according to the criterion of ethnic origin, against the presumed North African candidate, in almost all the test territories.

The results show that large companies are therefore a sample of companies not unaffected by discrimination. This suggests that size is not a main determinant of discrimination, which is in line with previous results reported by Baert (2015) and Baert et al. (2018). As firm size is not a determinant of discrimination, it can give us an instrument to evaluate the effect of pro-diversity actions, which are most often carried out by large companies. We have found that the companies that commit themselves to the label discriminate less than others. We also have evidence that the effect is causal, which means that the implementation of pro-diversity actions necessary to obtain the label has an effect per se on discrimination. In this sense, it appears that it is not only the most virtuous companies that engage in this process, but that the process itself tends to reduce discrimination.

This study has limitations. Most importantly, regarding the analysis of determinants, it is an observational study; we are not able to discern causality and test all potential determinants of discrimination. Secondly, and more usually, we test discrimination in the first stage of the hiring process only, and do not cover all potential recruitment channels, such as the internal recruitment web platforms that some companies have developed.

References

Baert, Stijn, Bart Cockx, Niels Gheyle et Cora Vandamme. (2015). « Is there less discrimination in occupations where recruitment is difficult? ». Industrial and Labor Relations Review, vol. 68, no 3, p. 467-500.

Baert S. & E. Omey, (2015). "Hiring Discrimination Against Pro-union Applicants: The Role of Union Density and Firm Size," De Economist, Springer, vol. 163(3), pages 263-280, September.

Baert, S., De Meyer, A. S., Moerman, Y., & Omey, E. (2018). Does size matter? Hiring discrimination and firm size. International Journal of Manpower. Vol 39, Issue 4, pp. 550-566.

Agan, Amanda, and Sonja Starr. 2017. 'Ban the Box, Criminal Records, and Racial Discrimination: A Field Experiment*'. *The Quarterly Journal of Economics* 133 (1): 191–235. https://doi.org/10.1093/qje/qjx028.

Becker, Gary S. 1957. *The Economics of Discrimination*. The University of Chicago Press.

Behaghel, Luc, Bruno Crépon, and Thomas Le Barbanchon. 2015. 'Unintended Effects of Anonymous Résumés'. *American Economic Journal: Applied Economics* 7 (3): 1–27. https://doi.org/10.1257/app.20140185.

Berson, Clémence, Morgane Laouénan, and Emmanuel Valat. 2020. 'Outsourcing Recruitment as a Solution to Prevent Discrimination: A Correspondence Study'. *Labour Economics*, March, 101838. https://doi.org/10.1016/j.labeco.2020.101838.

Bertrand, Marianne, and Esther Duflo. 2016. 'Field Experiments on Discrimination'. w22014. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w22014.

Bertrand, Marianne, and Sendhil Mullainathan. 2004. 'Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination'. *The American Economic Review* 94 (4): 991–1013.

Chareyron, Sylvain, Laetitia Challe, Yannick L'Horty, and Pascale Petit. 2021. 'Can Subsidies Paid Directly to Employers Reduce Residential Discrimination in Employment? An Assessment Based on Serial Field Experiments'. *Urban Studies*, May, 004209802110060. https://doi.org/10.1177/00420980211006033.

Chareyron, Sylvain, Yannick L'Horty, Philomène Mbaye, and Pascale Petit. 2022a. 'Impacts of Quota Policy and Employer Obligation to Adapt Workstations on Discrimination against People with Disabilities: Lessons from an Experiment'. 17. TEPP Working Papers. TEPP.

Chareyron, Sylvain, Yannick L'Horty, Souleymane Mbaye, and Pascale Petit. 2022b. 'Reducing Ethnic Discrimination through Formal Warning: Evidence from Two Combined Field Experiments'. 3. TEPP Working Papers. TEPP.

Coate, Stephen, and Glenn C. Loury. 1993. 'Will Affirmative-Action Policies Eliminate Negative Stereotypes?' *The American Economic Review* 83 (5): 1220–40.

Flage, Alexandre. 2018. 'Ethnic and Gender Discrimination in the Rental Housing Market: Evidence from a Meta-Analysis of Correspondence Tests, 2006–2017'. *Journal of Housing Economics* 41 (September): 251–73. https://doi.org/10.1016/j.jhe.2018.07.003.

Goldin, Claudia, and Cecilia Rouse. 2000. 'Orchestrating Impartiality: The Impact of "Blind" Auditions on Female Musicians'. *The American Economic Review* 90 (4): 715–41.

Krause, Annabelle, Ulf Rinne, and Klaus F. Zimmermann. 2012. 'Anonymous Job Applications in Europe'. *IZA Journal of European Labor Studies* 1 (1): 5. https://doi.org/10.1186/2193-9012-1-5.

L'Horty, Yannick. 2016. 'Les Discriminations Dans l'accès à l'emploi Public'. Rapport pour le Premier Ministre. La Documentation Française.

Murchie, Judson, Jindong Pang, and David J. Schwegman. 2021. 'Can Information Help Lakisha and Jamal Find Housing? Evidence from a Low-Cost Online Experiment of Landlords'. *Regional Science and Urban Economics* 90 (September): 103712. https://doi.org/10.1016/j.regsciurbeco.2021.103712.

Nathan, Max, and Neil Lee. 2013. ‘Cultural Diversity, Innovation, and Entrepreneurship: Firm-Level Evidence from London’. *Economic Geography* 89 (4): 367–94. https://doi.org/10.1111/ecge.12016.

Neumark, David. 2018. ‘Experimental Research on Labor Market Discrimination’. *Journal of Economic Literature* 56 (3): 799–866. https://doi.org/10.1257/jel.20161309.

Ozgen, Ceren. 2021. ‘The Economics of Diversity: Innovation, Productivity and the Labour Market’. *Journal of Economic Surveys* 35 (4): 1168–1216. https://doi.org/10.1111/joes.12433.

Riach, Peter A., and Judith Rich. 2010. ‘An Experimental Investigation of Age Discrimination in the English Labor Market’. *Annals of Economics and Statistics*, no. 99/100: 169–85. https://doi.org/10.2307/41219164.

Appendix

Appendix 1: Content of the tests

In this appendix, we detail the content of the messages that were sent to recruiters by our fictitious candidates. As we have already mentioned, two complementary approaches were used to test companies on the basis of the job offers they published: the classic testing approach, consisting in sending CVs and cover letters in response to job advertisements; and the approach consisting of requests for additional information. For each of these two approaches, unsolicited applications were also sent. The messages corresponding to each of these four data collection methods are presented below.

Classical tests: sending applications in response to job offers

The first method of testing was to fabricate two fictitious applications (CVs and cover letters) for each of the 7 occupations detailed in Table A1.

[Here Table A1]

The professions chosen are professions under stress. They are characterized by a high probability of exiting unemployment within 12 months. Selecting an occupation with a large number of jobseekers helps to limit the probability of being tested. Choosing an occupation under stress also makes it possible to limit the number of refusals by employers, independently of any discrimination.

The two fictitious applications that were sent in response to the same job offers are perfectly similar in terms of individual characteristics. The applicants are similar in terms of qualifications, professional background, experience (both quantitative and qualitative), and computer and language skills. None of them report a period of unemployment; they are in employment when they apply. Candidates explicitly mention their French nationality, age, mobility (driving licence and personal vehicle) and family situation (single, no children). Since these applications were sent simultaneously in response to the same job offers, they had to include elements of differentiation. These differences

related to the presentation of CVs: type of font, font size, and layout, while remaining standard. Candidates displayed experience gained in real companies that were different but comparable (in terms of activity, size, market power). Candidates' hobbies also differed, while being very standard and impersonal (sports, cinema, reading, music, etc.).

A job offer was systematically tested by sending two fictitious applications when it simultaneously met the following conditions: it came from one of the 40 selected companies; it mentioned a job located in one of the 6 chosen territories; it corresponded to the standard profiles in our CVs; and it indicated the contact details of a contact person whose email address had not yet been tested by us.

Applications in response to job offers were made between 15 November 2018 and 25 January 2019. The various possible sources of job offers were consulted on a daily basis (job sites such as Pôle Emploi, Indeed, Linkedin, Le bon coin, APEC, etc., as well as the employment section of the companies' websites).

The response was considered positive when the recruiter invited the candidate to an interview or when she or he came forward to obtain more information about his/her current situation or qualifications. On the other hand, the response was considered negative if the recruiter formally rejected the application.

Sending a request for information in response to job offers

When a job offer did not match the CVs we produced, we systematically tested it by sending a request for additional information. Depending on the information contained in the job offer, the additional information requested related either to the date of taking up the position or to the availability of the position. Below is an example of two messages for a job offer located in the Nice area. The gender of the two candidates depends on the modal sex in the profession corresponding to the job offer.

Good morning, sir,
I'm writing to ask you for information about the XXX job you are proposing (reference XXX on the XXX website). Can you tell me when the contract would start?
Thanking you in advance,
Yours sincerely, Frédéric Moreau

Hello, I am interested in your job offer from XXX (ref. XXX) published on the XXX website and would like information on when it would be available. Thank you for your attention to my request.
Best regards.
Mounir MEDAHOUI

Requests for additional information in response to job offers were sent out between 31 October 2018 and 25 January 2019. The two messages in response to the same job offer were sent on two consecutive days. It was then possible to examine whether the two fictitious candidates received a response, and if so, the reply to each one could be compared.

Unsolicited applications with CV and cover letters

For unsolicited applications, we used the e-mail addresses of potential recruiters operating in one of the targeted employment pools, for each of the 40 companies tested. We chose two professions that are very common in all types of large companies, one with women as the modal sex (receptionist), the other with men (maintenance technician). By using generic occupations, we neutralized the biases associated with differences in the composition of the tested occupations across companies.

For each of the two selected occupations (receptionist and maintenance technician), we drew up two complete CVs. Both candidates had the same qualifications and experience (a professional baccalaureate in customer and user relations and 8 years of experience for receptionists; a DUT in civil engineering and 13 years of experience for maintenance technicians). The CV was attached to the candidate's application message. Two examples of messages are presented below.

Subject of the email "Application"

Hello, I am sending you my CV because I am currently looking for a job as a maintenance technician. I am available for any further information. Thank you in advance for your attention to my application. Yours sincerely,
Bachir CHERKAOUI

Subject of the email: Recruitment request

Hello, I would like to apply for a job in maintenance in your company. I am sending you my CV as an attachment. I could answer any request for additional information if necessary. Thank you in advance for your attention to my application.
Best regards,
Benjamin Morin

Unsolicited inquiries about job opportunities

This type of solicitation is very similar to the previous one. It targets the same profession, but candidates deliberately did not attach their CV to their application. An example for the profession of hostess is presented below.

Subject of the email: "Recruitment information"
Good morning, sir,
I would like to apply for a job in your company in the hospitality industry. Can you tell me about the possibilities and the person to contact?
Thank you in advance for any information you can give me.
Best regards,
Justine ROCHE
9 rue Gaston Monmousseau (Les Minguettes, Bât C, Appt 45) 69200 Vénissieux
06.XX.XX.XX.XX

Subject of the mail: "Job information request.
Hello, I'm looking for a job as a hostesse. Can you tell me if there are any opportunities in your company and if so, to whom I could send my application?
Thank you in advance.
Yours sincerely,
Léa Durand

The risk of detection was higher than for job advertisement testing. This was because the employer did not solicit an application. Even if real jobseekers were likely to apply, it would usually be for various job profiles. We therefore took two precautions to limit the risk of detection. The order in which the two applications were sent was also determined by drawing lots, which ensured that the reference applicant and the potentially discriminated applicant applied to the recruiter first a comparable number of times. Therefore, if there were cases of detection that we did not identify, it was likely to be upon receipt of the second solicitation because of its similarity to the first. Thus, no fictitious candidate profile was penalized, since they were alternately sent first Finally, to further reduce this risk, we spaced the two solicitations several weeks apart, including the year-end holidays. The first solicitation was sent in the first half of December 2018, while the second was sent in the second half of January 2019.

In total, for each e-mail address tested, four draws were systematically carried out: the first draw related to the profession (hostess or maintenance technician); the second determined whether an application would be sent (including the candidate's CV) or a request for information on job opportunities. The third draw determined the allocation of the two types of application between the two fictitious candidates. Finally, the fourth draw established the order in which the two candidates would address their message to the recruiter.

Appendix 2: Supplementary Tables

Table A1. Professions tested by sending applications in response to job offers

	Gender and age of fictitious candidates	**Level of qualification**
Sales Assistant	Male, 32	Bac+2
Banking and insurance account manager	Male, 29	Bac+2
Account manager (other sectors)	Male, 29	Bac+2
IT Developer	Male, 32	Bac+5
Accountant	Female, 32	Bac+2
Administrative Manager	Female, 30	Bac+5
Servers in catering	Female, 27	Bac pro

Table A2. Popularity of first names and last names used in the test

First name	Ranking in the total number of female first names in 1985	Last name	Ranking in the total number of last names in 1981-1990
Men			
North African origin		**North African origin**	
Fouad	230	Cherkaoui	15,381
Bachir	578	M'Barek	13,080
French origin		Belkacem	2,660
Benjamin	22	Najar	9,864
Damien	12		
Mathieu	14	**French origin**	
Quentin	83	Morin	44
		Legendre	348
Women		Roche	98
North African origin		Durand	11
Rachida	275	Morel	21
Khadija	216	Prunier	997
French origin		Roux	30
Justine	127	Monnier	177
Léa	109		
Marine	44		
Océane	388		

Notes: Ranking on 3,531 woman first names given in France in 1985 and 3,059 man first names and 218,983 last names given in France in 1981-1990.
Source: INSEE

Table A3: Difference in positive response rates (linear probability models)

Variables	(1)	(2)	(3)	(4)
North African	-0.025***	-0.042***	-0.039***	-0.038***
	(0.005)	(0.006)	(0.006)	(0.006)
Type of test	YES	YES	YES	YES
Date and order of sending	NO	YES	YES	YES
Regional F.E.	NO	NO	YES	YES
Company F.E.	NO	NO	NO	YES
Observations	10,512	10,512	10,512	10,512
R-squared	0.073	0.090	0.092	0.144

*Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. Standard errors clustered at the offer level in brackets. Control variables: type of application, presence of a curriculum vitae, sending order, gender of the candidate, sending date (day and month, sending pool, type of request (CV or information).*
Source: TEPP-CNRS. Testing DREAM

Table A4: Difference in positive responses rates between the applicants of French and North African origins for employers that respond at least to one of the applicant (probit)

	(1)	(2)	(3)	(4)
North African	-0.141***	-0.164***	-0.162***	-0.160***
	(0.025)	(0.026)	(0.026)	(0.026)
Type of test	YES	YES	YES	YES
Date and order of sending	NO	YES	YES	YES
Regional F.E.	NO	NO	YES	YES
Company F.E.	NO	NO	NO	YES
AIC	2288.093	2287.377	2292.921	2390.379
Observations	1,880	1,873	1,873	1,867

*Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. Standard errors clustered at the offer level in brackets. Average marginal effects from probit estimates are presented.*
Source: TEPP-CNRS. Testing DREAM

Table A5: Determinants of diversity labelling

Variables	(1) Diversity label
Workforce (in millions)	0.406***
	(0.082)
Sales revenue (in billions)	0.003*
	(0.002)
Gini Index	0.311
	(0.367)
% executives	0.010
	(0.006)
% tradesmen	0.006
	(0.006)
% middle professions	0.001
	(0.003)
% employees	0.005
	(0.005)
Exposed	-0.107

	(0.116)
Average wage	-0.011
	(0.010)
Belonging to the 120 largest capitalization	0.062
	(0.140)
Intercept	-0.461
	(0.478)
Observations	95
R2	0.612

*Notes: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Robust standard errors in brackets. Results obtained from OLS regressions. Sector and regional fixed effects included.*

Table A6: Link between workforce and discrimination

	(1)	(2)	(3)
Variables	Advantage French	Advantage North African	Similar responses
Workforce (in millions)	-0.015	-0.013	0.029
	(0.017)	(0.012)	(0.020)
Observations	4,908	4,908	4,908
R2	0.028	0.012	0.034

*Notes: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Robust standard errors in brackets. Results obtained from OLS regressions. Control variables: diversity label, company turnover, wage inequality, average wage and sector exposure, sector of activity, gender of applicant, sending pool, type of application (CV or information).*

Table A7: Effect of the label on company responses excluding non-responses (Probit and bivariate Probit)

	Advantage French		Advantage North African		Similar responses	
	Probit	Bi-probit	Probit	Bi-probit	Probit	Bi-probit
Diversity label	-0.138*	-0.053**	0.091	0.056	0.040	0.011
	(0.074)	(0.023)	(0.063)	(0.034)	(0.068)	(0.023)
Observations	818	818	814	818	818	818

*Notes: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Robust standard errors in brackets. Average marginal effects are presented. Control variables: firm turnover, wage inequality, average wage and industry exposure, industry sector, gender of applicant, sending pool, type of application (CV or information).*

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