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ABSTRACT

Outsourcing Recruitment as a Solution to Prevent Discrimination: A Correspondence Study*

Many studies have proven the existence of discriminatory behavior from employers according to the origin of applicants. However, little is known about how these behaviors can be prevented. In this work, we assess how organization of recruitment in large companies affects ethnic discrimination. We consider large multi-establishment companies and distinguish two types of recruitment organization: hiring made through a human resources (HR) service at a centralized level of the company and hiring made at only the level of the establishment concerned by the position, generally by managers in charge of recruitment. To conduct our research, we rely on data from a correspondence study conducted in 2016 by the Dares (French Ministry of Labor) in large companies, which shows the existence of ethnic discrimination in hiring. This experimentation allows us to gather precise and original information on the level at which applications were selected for each of the 1,500 tests carried out. Because access to a centralized HR service is potentially endogenous, we use an instrument to assess the causal effect: whether (or not) the establishment with the job offer belongs to a company that has developed a franchise network. Our results indicate that access to a centralized HR service in the selection of applications has an important effect on the level of discrimination: This type of recruitment organization results in a 0.29-point decrease in the probability that the applicant of presumed "French" origin is selected alone.

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1   Introduction

In France, as in many countries, several experiments conducted in recent years have revealed a relatively widespread discriminatory behavior among employers (see Rich (2014), Baert (2017) and Bertrand and Duflo (2016) for literature reviews). Discrimination in hiring related to origin is among the most commonly studied because it is easier to measure from experimental schemes than other types of discrimination (e.g., age, disability, or physical appearance). In France, several correspondence studies have revealed that workers of "North African" origin are particularly concerned by the phenomenon (Foroni and Cediey (2008), Petit et al. (2015), Berson (2013), and Edo and Jacquemet (2013) among others)[1]. With similar characteristics, applicants of "French" origin are up to three times more likely to receive positive callbacks from employers than applicants of "North African" origin, depending on the characteristics of the experiment (e.g., jobs, period, or characteristics of applicants). Several recent works have studied different actions to prevent discrimination, and some have been in the French context. Behaghel et al. (2015) show that setting up an experimental anonymous resume policy for some vacancies is not efficient for ethnic minorities. Fremigacci et al. (2015) assess the potential impact of merit labeling by making the "best apprentice in France" distinction appear on the resume. However, this attempt was not effective in reducing discrimination because, although everyone benefits from this distinction, applicants of "French" origin benefit more than other groups. Edo and Jacquemet (2013) evaluate the impact of a satisfactory level of French on resumes. Their results are more encouraging than the results in the literature because such a signal makes it possible to reduce the differences observed. However, overall, few tools have proven effective in fighting discrimination in recruitment. In a 2016 literature review, Bertrand and Duflo (2016) confirm this observation and stress that more

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[1]French worker with a "North African" sounding name. Similarly, "French" origin designates a French worker with a "French" sounding name.

research on this point is worth pursuing.

In this article, we assess the effect of the organization of recruitment in large companies on the degree of hiring discrimination. More specifically, we compare the intervention of a centralized human resources (HR) department to the selection made only within the establishment concerned by the position, generally by a manager responsible for recruitment. Notably, HR professionals are better trained and more aware than other recruiters regarding discrimination. HR professionals are also less influenced by local constraints that can generate discrimination (e.g., conforming to consumer preferences or seeking to maintain homogeneous teams to facilitate their management). Finally, HR professionals also have more time to devote to the selection of applications and therefore make their choices less often on the basis of ethnic stereotypes (Chugh, 2004).

To conduct our study, we use the data from a correspondence study realized by the Ministry of Labor. The aim was to establish a dialogue with each company on their recruitment practices on the basis of experimental results and encourage them to implement policies to prevent discrimination. This dialogue was an opportunity to gather information related to the recruitment process for each job offer, in addition to those related to the experience design. Thus, we distinguished recruitment for which the selection was made through a centralized HR department of the company (e.g., at national and regional levels), by an external service provider, or by a person in charge of hiring if the recruitment was managed at only the level of the establishment the offer concerns. The data from this testing have so far been used to provide only raw results to the companies concerned. The outline of the protocol and the results by gender and level of employment (manager or employee) were published in a Dares document (Foroni et al., 2016).

We first extend their work by assessing the potential influence of composition effects likely to affect their raw results. Instead of considering two or three occupations at most such as many correspondence studies carried out in France, ten occupations have been tested. Because the same company is tested several times

4

and to avoid detection, many applicant profiles are considered in terms of, for example, age, diploma, and experience. We must consider it in our study.

In the second step, we evaluate the impact of centralized HR recruitment on the degree of discrimination in large companies. Approximately two thirds of the tested job offers are managed in this manner, the other job offers are managed solely at the establishment level. Notably, because we consider very large companies, the organization of recruitment varies across job offers and not across companies. Indeed, data show intra-firm heterogeneity in terms of recruitment organization for many companies. Next, because the organization of recruitment is potentially endogenous, we use an instrument to evaluate a causal effect. We exploit the information regarding whether the tested job offer is from a company that developed a franchise network. The belonging of the establishment (or the brand in the case of a franchise) to a company with a franchise network leads to an exogenous increase in the probability that the selection only occurs within the establishment concerned. On the one hand, the existence of franchises is linked to a culture/practice of institutional autonomy for the enterprise as a whole; on the other hand, the franchised establishments are enterprises and have full independence beside the parent company. Moreover, according to the literature (Blair and Lafontaine, 2005), the determinants of large companies' choice to develop a franchise network are essentially linked to their type of activity. No evidence of a direct link with employers' discriminatory behavior has been observed.

Our results suggests that acting on the organization of recruitment in large companies can be considered a relatively effective tool in the fight against discrimination in recruitment, at least as far as the first stage of recruitment is concerned. In both cases, there remains a gap between the return rates for the two types of applications : Centralized HR services lead to a decrease in the probability that "French" applicants will be preferred.

The study is organized as follows. Section 2 presents the context and protocol of the experiment. Section 3 focuses on the results of the correspondence study.

Section 4 discusses the influence of the organization of the recruitment process on the degree of discrimination. Section 5 concludes.

2 Experimental design

2.1 Specific features of the design

The experiment behind the data used in this article has several specific features. Unlike most experiments in which each company is generally tested only once (mainly to minimize detection), this experiment comprised responding, for 4 months, to several dozen offers per company. The ambition was to meet the Ministry of Labor's objective, namely, to carry out a sufficient number of tests to obtain exploitable results for each company. However, by contrast with the testing requested by companies, this experimentation is not concerned with being representative at the company level (Foroni and Cediey, 2008). The data also have a particularity such that they concern only large companies. Studying hiring discrimination in large companies is relatively original and results in new research questions. In particular, these companies generally have professional HR functions, independent of other services, which may affect the degree of discrimination. According to our review of the literature, no other correspondence studies have analyzed the impact of the recruitment organization on discrimination.

Finally, the correspondence study concentrated on a small number of companies, which were all subsequently met by the Ministry of Labor after the experiment. This dialogue made it possible to collect, or possibly confirm, a certain amount of information on the organization of recruitment of each company. In particular, for each application, we know whether the selection was made by a HR department at a centralized level of the company or within only the establishment concerned.

2.2 Selection of firms and occupations

The selected companies are multi-establishment companies or franchise networks with more than 1,000 employees in the trade, bank/insurance, and hotel/catering sectors. The sectors have been chosen to ensure they include several large companies with a significant number of vacant positions for a small number of occupations. The companies targeted during the design of the experiment that did not publish a sufficient number of offers were excluded from the experiment. Finally, only companies with several dozen offers published on their website in March 2016, for relatively common occupations, were selected. This sample comprises 40 companies: 30 were tested 40 times and ten were tested 30 times for ten different occupations (Table 1). Applications were sent only in response to job offers. Some characteristics also affected the selection of job offers. In particular, one objective of this study was that half of the offers should be managerial positions and the other half non-managerial positions. Moreover, permanent and fixed-term contracts were selected. More than three quarters of the positions provide permanent contracts, the remaining one quarter of the positions provide mainly fixed-term contracts.

To have a sufficient number of tests per company, job offers are located throughout France. In this analysis, we eliminated tests that concern job offers with an unknown localization. We also exclude the invalid tests due to the withdrawal of the offer by the employer between the two applications. Overall, we retain 1,433 tests among the 1,500 tests. Table 1 shows the distribution by region. Approximately one quarter of the job offers are located in the Ile-de-France region (Paris), the Auvergne-Rhône-Alpes region is also widely represented with 13.5% of the offers. Table 1 also shows that for over half of the offers tested, the company shows on its website a commitment to diversity, equal treatment and/or the fight against discriminatory risks linked to the criterion of origin. This indicator does not take into account mentions concerning other criteria (e.g., disability, professional equality between women and men).

Table 1: Descriptive statistics concerning the tested job offers

	%	# tests
Occupation		
Sales and technical sales managers	7.2	103
Retail Store Operators and Intermediaries[1]	13.8	198
Self-Service Employees	4	58
Sellers	18	259
Banking and insurance managers[2]	6.6	94
Banking and insurance employees	5.8	80
Banking and insurance technicians	8.4	121
Hotel, cafe and restaurant managers	6.3	91
Hotel and catering employees and operators	12.6	181
Cooks	17.3	248
Region		
Auvergne-Rhône-Alpes	13.5	193
Bourgogne-Franche-Comte	4.4	63
Bretagne	4	57
Centre-Val de Loire	4.1	60
Grand Est	8	115
Hauts-de-France	5.7	82
Ile-de-France	24.3	348
Normandie	5.1	73
Nouvelle-Aquitaine	8.2	117
Occitanie	7.2	103
Pays de la Loire	5.9	85
PACA	9.6	137
Management position	48.8	699
Labor contract		
CDI (permanent)	78.3	1,122
CDD (fixed-term)	18.1	360
Unknown	3.6	51
Company committed to diversity	52.8	757
Sample	100	1,433

[1] Department managers, sales consultants, customer managers, shop managers.

[2] Agency managers, customer advisors.

Scope: panel of 40 companies of 1,000 employees or more; France.

Source: ISM Corum-Dares.

2.3 Profiles of fictitious applicants

Each pair of applications contains one application with a so-called "North African" sounding name and another with a so-called "French" sounding name.[2] The other criteria are identical for each applicant in the same pair, including the indication of French nationality. Compared with the tests usually carried out, the experimentation on which we rely required the use of a relatively large number of profiles for two reasons. First, this correspondence study targets a greater number of occupations than the other studies in the literature. Consequently, we considered it was necessary to create profiles adapted to each occupation and each sector. Second, because several applications were potentially sent to the same recruiters, special attention also had to be paid to the increased risk of detection, which also explains some variations in terms of experience, age, or diploma. This limitation led to the use of 147 pairs of applications for 1,500 tests, where each pair consists of two resumes and two cover letters. For each application of the same pair, permutations were made from one test to another between the "North African" and "French" origins in order to avoid possible biases linked to the quality of resumes and cover letters. Permutations were also made from one test to another to ensure the application first sent evokes either a "North African" origin, or a "French" origin. Of the 1,433 tests selected for this study, resumes are almost equally distributed by gender (Table 2). Moreover, the age of the applicants is between 20 and 36 years, their level of diploma is from lower than bachelor to graduate, and they have medium experience (4 to 6 years for a little more than half of the resumes) or confirmed experience (9 to 11 years). Finally, and notably, the residential locations of the fictitious applicants are socially neutral.

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[2]Relatively common surnames and given names for each origin were chosen, for example Malika SAYED, Aurélie FAVRE, Malik BOUNA or Guillaume CLERC.

Table 2: Descriptive statistics concerning applicants

	%	# tests
Gender		
Women	50.1	718
Men	49.9	715
Age (min =20, max=36)	26.3	1433
Diploma		
Vocational training	15.9	228
Bachelor	20.9	300
Bachelor + 2 years	43.5	623
Bachelor + 3 years	9.1	131
Bachelor + 4 years	1.5	22
Bachelor + 5 years	9	129
Experience		
3 years	1.6	23
4 years	16.2	232
5 years	26	372
6 years	13.6	195
9 years	27.2	390
10 years	8.8	126
11 years	5.4	78
12 years	1.2	17
First sent application		
"French"	49.3	706
"Maghreb"	50.7	727
Sample	100	1,433

Scope: panel of 40 companies of 1,000 employees or more; France.

Source: ISM Corum-Dares.

2.4 Sending applications and measuring responses

Applications were sent between April and July 2016 with a 1-day spacing between the two applications for low-skilled job offers, which was sometimes reduced to half a day to test companies recruiting within very short deadlines; and a time limit of up to 3 working days for tests concerning the most qualified applications, or a little longer when responding to offers for which qualified applications are potentially rare. In all cases, the objective was not to risk arousing recruiters' suspicions. Both applications were always sent in the same manner, using the application form proposed on the website where the offer was published or, less frequently, by e-mail. Responses were collected until August 31, 2016. Responses are considered positive when the recruiter has expressed an interest (by telephone or e-mail) by offering a telephone or face-to-face interview or more rarely, by indicating that he/she wishes further details on the application received. Responses are considered rejections when a message has been received that indicates the application has not been accepted and/or that the offer has already been filled. Finally, for some applications, no reply was received. Automatically generated acknowledgements of receipt are not considered responses, except for those indicating that "the application will be considered rejected if no response is made before *X* weeks."

3 Results of the experiment

3.1 Positive responses by origin

Table 3 shows that 50.8% of the tests received at least a positive reply from the employer. This relatively high return rate reveals the good quality of the applications and a certain tension in the job market for at least some of the occupations we are considering. Recruiters expressed interest in both applications in approximately one-third of the cases and no response was received by either applicant in approximately another one third of the cases. The other situations, in order of

importance, that is, the situation where the "French" application was favored and the situation where the two applications were refused, represent slightly more than one quarter of the cases, and the situation where the "North African" application alone interested the recruiter is relatively rare; as are the cases where one of the two applications is refused and the other remains unresponsive.

Table 3: Responses distribution for all tests

	%	# of tests
Both applications interested the recruiter	32.9	472
Only the "French" application interested the recruiter	14.1	202
Only the "North African" app. interested the recruiter	3.8	55
Rejection of both applications	12.5	179
No reply for both applications	32.4	465
No reply for the "French" application		
& rejection of the "North African" application	2.3	33
No reply for the "North African" application		
& rejection of the "French" application	1.9	27
All tests	100	1,433

Note: An application interested the recruiter when a positive response from the employer is received by telephone or e-mail.

Scope: panel of 40 companies of 1,000 employees or more; France.

Source: ISM Corum-Dares.

3.2 Discrimination in large firms

The success rates of both applications are clearly different: 47.0% of the 1,433 "French" applications considered in this study interested the recruiters against 36.7% for the "North African" applications. Thus, there is a significant difference of 10.3 points (Table 4). In other words, "French" applicants receive approximately 1.3 times more positive responses than "North African" applicants. This result means that "French" applicants must send 2 applications to hope for one positive response, and "North African" applicants must send 3 applications to hope for one positive response. These figures are located at the lower bound of all the results

obtained so far from this type of study for applicants of North African origin in France.

According to our review of the literature, this correspondence study is novel because only large companies in different sectors are targeted. As aforementioned, the difference in positive responses between the two groups is lower than the average. This result suggests that a discriminatory risk linked to "North African" origin exists in large firms. However, and notably, no rigorous comparison can be made with the results of other experiments because circumstances vary between each experiment[3]. Results also indicate that the difference observed between the two types of applications is somewhat larger for tests based solely on male pairs. This result has been observed in other studies conducted in France (Berson (2013), Edo and Jacquemet (2013)). Nevertheless, and most important, the gap varies significantly across occupations. The largest differences are found for the three occupations considered in hotel and catering occupations, with each time a higher level of discrimination for men. For hotel/catering employees and supervisors, men of "French" origin receive up to twice as many positive responses as the men of "North African" origin. For banking and insurance professions, however, statistically significant differences are only observed for women in the employee and technical professions. No significant differences are observed for managers and technicians in this sector.

To confirm the results observed, it is necessary to consider all the characteristics of the applicants that vary from one pair to another (e.g., diploma and experience) and the characteristics of the job offers (e.g., occupations and type of contract) and of the company (geographical area, commitment to the diversity displayed by the company). All these characteristics are likely to influence outcomes in the same manner as occupation and gender. For this purpose, we estimate a probit model

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[3]In order to assert that the discriminatory risk is lower in large companies, it would have been necessary to conduct a test (identical applications, etc.) for similar jobs and in identical contexts at the same time in small and large companies.

Table 4: Success rate for "French" and "North African" applications

	% Positive responses		Response gap	t-stat	# of tests
	"French"	"North African"			
All tests	47.0	36.8	10.3***	9.45	1433
Tests by gender					
Women	46.8	38.7	8.1***	5.30	718
Men	47.3	34.8	12.4***	8.05	715
Tests by gender and occupation					
Sales & technical sales managers	41.7	40.8	1.0	0.24	103
Women	32.7	34.7	-2.0	-0.29	49
Men	50.0	46.3	3.7	0.81	54
Retail store operators & intermediaries	47.5	39.9	7.6***	2.65	198
Women	45.5	40.6	5.0*	1.39	101
Men	49.5	39.2	10.3**	2.28	97
Self-service employees	20.7	13.8	6.9**	2.05	58
Women	18.4	12.2	6.1**	1.76	49
Men	33.3	22.2	11.1	1.00	9
Sellers (retail)	38.6	26.6	12.0***	4.24	259
Women	36.1	27.8	8.3**	1.90	108
Men	40.4	25.8	14.6***	3.95	151
Banking & insurance managers	73.4	66.0	7.4**	2.15	94
Women	71.4	65.3	6.1*	1.35	49
Men	75.6	66.7	8.9*	1.66	45
Banking & insurance employees	68.8	53.8	15.0***	2.96	80
Women	75.0	52.5	22.5***	2.97	40
Men	62.5	55.0	7.0	1.14	40
Banking & insurance technicians	65.3	59.5	5.8*	1.47	121
Women	67.8	59.3	8.5*	1.40	59
Men	62.9	59.7	3.2	0.62	62
Hotel, cafe & restaurant managers	45.1	34.1	11.0***	2.77	91
Women	44.0	38.0	6.0*	1.35	50
Men	46.3	29.3	17.1***	2.47	41
Hotel/catering employees & operators	43.6	27.1	16.6***	5.55	181
Women	45.8	31.3	14.6***	3.49	96
Men	41.2	22.4	18.8***	4.41	85
Cooks	41.1	29.0	12.1***	4.60	248
Women	47.0	40.2	6.8**	1.72	117
Men	35.9	19.1	16.8***	4.86	131

Reading: Applications of French origin interested recruiters, exclusively or not, in 47.0% of cases against 36.7% for "Maghreb" applications. Student statistics were calculated using the bootstrap method on 10 000 random sampling. Asterisks indicate statistically significant deviations at thresholds of 1% ***, 5% ** and 10% *.

Scope: panel of 40 companies of 1,000 employees or more; France.

Source: ISM Corum-Dares.

Table 5: Difference in positive responses between the rates of "French" and "North African" applications (probit)

β	Difference in callbacks between "French" and "North African" applications			
All tests	10.3***	10.2***	10.3***	10.2***
# obs 2,866	(1.83)	(1.07)	(1.07)	(1.06)
By gender				
Women	8.1***	8.0***	8.0***	8.0***
# obs 1,436	(2.60)	(1.51)	(1.51)	(1.49)
Men	12.4***	12.4***	12.4***	12.4***
# obs 1,430	(2.58)	(1.50)	(1.50)	(1.49)
Controls	No	Yes	Yes	Yes
Regional FE	No	No	Yes	Yes
Company FE	No	No	No	Yes

Reading: The difference between the positive responses rates of "French" and "North African" origin is 10.3 pp. without correction and 10.2 pp. taking into account controls and fixed effects of regions and companies. Standard deviations are grouped by test. The control variables are the sex, the age, diploma and the experience of the pair, the type of contract, the level of the position (management or not), the first application sent for the test ("North African" or "French"), the occupation (except for assessments by occupation), the company's stated commitment to diversity. Standard errors are in brackets. Asterisks indicate statistically significant deviations at thresholds of 1% ***, 5% ** and 10% *.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM Corum-Dares.

such that:

$$Pos_{ij} = \mathbb{1}[\beta\, french_i + \gamma\, X_{ij} + \epsilon_{ij} > 0] \tag{1}$$

where Pos_{ij} is a variable equal to 1 when applicant i has received a positive response by the recruiter of company j and 0 otherwise, $french_i$ is worth 1 if applicant i has a "French" sounding name and 0 if the applicant is "North African", X_{ij} is a vector of characteristics of the applicant and company whose parameters vary according to the specifications retained and ϵ_{ij} is the error term. We estimate Equation 1 on the whole sample and by gender. We cannot run estimations by occupation because the sub-samples are too small.

When we consider the gaps corrected for potential composition effects (Table 5), we notice very few differences overall compared with the raw gaps, either at the aggregate level or in subsamples by gender. This result is valid even when location is considered, or when the company-related effect is considered[4].

The heterogeneity of applications and contexts also allows us to consider a potential bias in the assessment of this experimental study. Indeed, Heckman and Siegelman (1993) assert that the gaps measured using correspondence studies do not necessarily reflect discrimination in the sense usually understood in the theoretical literature on hiring discrimination, i.e. discrimination linked to the preferences of employers, consumers or colleagues (Becker, 1957) or discrimination linked to employers' beliefs about the average productivity of each of the two types of applicants (Phelps, 1972). No matter how complete the resumes, employers only imperfectly observe the productivity of applicants and the probability of properly evaluating the application contains a portion of unobservables from the employers' perspective. Thus, even if employers assign similar average unobservable skills to each of the two applicants in the same pair, they may assign different variances for

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[4]We consider regional fixed-effects ; because there is only a few observations in some departments, we can consider departmental fixed-effects only for the whole sample, not with sub-samples, cf. Table 11 in Appendix.

the unobservable share of skills for the two applicants. This phenomenon is called "second-order statistical discrimination".

To correct this potential bias, we rely on the method proposed by Neumark (2012). He shows that the introduction of heterogeneity in the correspondence study makes it possible to identify the variance of the unobservables (the level of diploma and the experience of the applicants are identifying variables). Thus, this method allows us to isolate the gaps linked to the discriminatory behavior of employers stemming from their preferences or beliefs about the average productive characteristics of the applicants. The method comprises evaluating the differences by using a heteroscedastic probit model, and not using a simple probit model. Carlsson et al. (2013) and Neumark and Rich (2016) show that some experiments have strongly over/under estimated discrimination when a conventional probit is used. The results from Table 10 in the Appendix indicate that the differences between applicants of "North African" and "French origin" are similar between the simple probit and heteroscedastic probit models, and the variances of unobservables are not significantly different, except for male applicants. For the latter, a difference is observed between the variances of unobservables between the two types of applications, but this seems to have very little influence on the observed differences because the differences corrected from a heteroscedastic probit model are almost similar to those observed from a simple probit model. In our case, "second-order statistical discrimination" is therefore a priori either nonexistent or small (for men) compared with other potential sources of discrimination (e.g., statistical and taste).

4 Discrimination and HR organization

In this work, we are interested in the link between the organization of the recruitment and the degree of hiring discrimination. Recruitment in large companies is either carried out by HR professionals (through a centralized HR department) or managed solely within the establishment (through managers in charge of recruit-

ment). This process could affect the level of discrimination for several reasons:

(i) Members of HR departments are more aware of discrimination and its prevention, unlike managers in charge of recruitment within the establishment. In recent years, an increasing number of companies, usually large companies, have become involved. Notably, this involvement is because companies want to comply with the legislation on discrimination, in the fight against discrimination in recruitment. The company's HR departments are probably more systematically involved than others in these actions. In addition to drawing up charters or pacts for equal treatment, these may include the dissemination of guides aimed at overturning stereotypes, the financing of requested tests aimed at evaluating and rethinking recruitment practices, the creation of tools for tracking recruitment processes (to provide recruiters with greater incentives to motivate their choices), or the implementation of training campaigns on non-discrimination. Large companies are more concerned about non-discrimination training, insofar as the "Equality and Citizenship" law obliges, since January 2017, all personnel in charge of recruitment in large companies to receive training in non-discrimination at least every 5 years.

(ii) The second reason is that HR services have more time dedicated to HR tasks and therefore to recruitment, unlike operational staff whose primary function is not recruitment. Giving more time to the selection of applicants reduces the risk that choices are based on automatisms or stereotypes (Bartoš et al. (2016), Chugh (2004)).

(iii) Finally, professional HR services are probably less subject to field constraints than managers in charge of recruitment. For example, managers are more tempted to adapt to consumer preferences than HR professionals (Combes et al., 2016), or to seek to maintain a certain homogeneity of teams to facilitate their management.[5] Thus, some of these constraints can generate discrimina-

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[5]More diverse teams may be more difficult to manage, particularly because of the preferences of

tory behavior.

Does the involvement of a centralized HR department affect the level of discrimination in hiring? In this section, we first describe our recruitment organization indicator. Next, we reconsider the results of the previous section for this indicator. Then, we discuss the question of the impact of the organization of recruitment on the level of discrimination in recruitment.

4.1 Level of discrimination depends on HR organization

The atypical nature of this correspondence study made it possible to collect information on the recruitment process, i.e. whether for each offer recruitment was carried out solely at the level of the establishment concerned or through a centralized HR department of the company.[6] Selections made through a centralized HR department concern slightly less than two-thirds of the tests (Table 6). Moreover, they are non-existent for six of the 40 companies in our sample (Table 12 in Appendix), whereas they are systematic for 18 of them, particularly in the banking/insurance sector. However, the organization of recruitment is heterogeneous in 16 companies: The organization of recruitment varies across firms and, for almost half of firms, across offers within firms.

In addition to the distribution by sector and company of the recruitment organization, it is notable that this figure is identical for female and male pairs. This result supports the idea that female and male pairs are identically distributed according to the characteristics of the applicants and offers. However, significant variations

current employees (Becker, 1957), which may have an effect on productivity (Hamilton et al., 2004), while Kurtulus (2011) shows that the impact of origin or gender does not raise any issues within firms.

[6]We consider HR department of the company or "entity" - subsidiary, brand, company, etc. - centralized at national, regional, etc. level. However, in 3% of the cases, the selection of applications was made by an external service provider. Insofar as, as for centralized HR services, these are professional HR services external to the establishment concerned by the offer and insofar as the case is infrequent, we associate this method of selecting applications with selections made by a centralized HR service. For simplicity, we then refer only to the notion of centralized HR services.

Table 6: Share of tests for which selection is carried out via a centralized HR service

	%	# of tests
All tests	61.7	1,433
By sex		
Women	61.7	718
Men	61.7	715
Diploma		
Vocational training	45.6	228
Bachelor	51.0	300
Bachelor + 2 years	57.3	623
Bachelor + 3 years	71.0	131
Bachelor + 4 years	77.3	22
Bachelor + 5 years	93.0	129
Experience		
3 years	56.5	23
4 years	70.7	232
5 years	57.5	372
6 years	50.8	195
9 years	65.4	390
10 years	54.0	126
11 years	69.2	78
12 years	100.0	17
Management position	71.8	699
Labor contract		
Permanent	64.1	1,122
Fixed-term	50.4	260
Unknown	66.7	51
Occupations		
Sales and technical sales managers	86.4	103
Retail store operators and intermediaries	59.6	198
Self-service employees	48.3	58
Sellers	34.8	259
Banking and insurance managers	100.0	94
Banking and insurance employees	99.9	80
Banking and insurance technicians	93.4	121
Hotel, cafe and restaurant managers	74.7	91
Hotel and catering employees and operators	30.4	181
Cooks	60.5	248
Company involved in diversity	71.1	757

Reading: Out of 1433 tests carried out, 61.7% of the pairs of applications are selected by a centralized HR department within the company.
Scope: panel of 40 companies of 1,000 employees or more; France.
Source: ISM Corum-Dares.

are observed depending on the level of education of the applicants and the characteristics of the position. Recruitment made through a centralized HR service more often concern positions involving management functions and permanent positions. Significant variations are also observed depending on the occupation. Within each sector, applications for the most senior positions in the hierarchy generally involve a more centralized HR department. Moreover, and notably, the bank/insurance sector is strongly marked by the centralization of recruitment, because few applications are selected at the establishment level. Finally, offers from companies showing their commitment to diversity are more often those for which a centralized HR department is involved. This result suggests that the centralization of the HR function is not neutral from a discrimination perspective. However, we do not know whether the correlation between these two variables reflects a relatively high discriminatory risk in certain enterprises (or for certain occupations common in the enterprise) involving measures to fight against the phenomenon, or that certain enterprises are particularly regarding discrimination.

Although we observe that response rates are generally higher in the case of a centralized HR service, Table 7 shows that hires made solely at the establishment level generate a higher level of discrimination than hires involving a centralized HR service. In hires involving a centralized HR service, "North African" applications are of interest to recruiters in 43.8% of cases compared with 50.6% of the "French" applications, but where the selection is managed solely within the establishment, the rate decreased to 25.5% for "North African" applications and remains relatively high for "French" applications (41.3%). The difference in the positive response rate between the two types of applications is 15.8 points for recruitment made only at establishment level compared with 6.8 points when a centralized HR service is involved. The observed gaps remain after controlling for observable characteristics. Differences in characteristics of job offers and applications are therefore not sufficient to explain the difference observed. This result means that the organization of recruitment affects the level of discrimination. However, measuring this

21

Table 7: Differences in success rates between "French" and "North African" app. according to the type of recruitment organization (probit)

β	Differences in success rates between "French" and "North African" applications			
All tests	10.3***	10.2***	10.3***	10.2***
# obs 2,866	(1.83)	(1.07)	(1.07)	(1.06)
By recruitment organization				
At the etab. level	15.8***	15.7***	15.6***	15.4***
# obs 1,098	(2.81)	(1.85)	(1.82)	(1.82)
Centralized RH	6.8**	6.8***	6.8***	6.9***
# obs 1,768	(2.37)	(1.26)	(1.26)	(1.26)
Controls	No	Yes	Yes	Yes
Regional FE	No	No	Yes	Yes
Company FE	No	No	No	Yes

Reading: The difference between the application rates of "French" and "North African" origin that interested the recruiters is 10.3 pp. without controls and 10.2 pp. taking into account the effects of structures and fixed effects of regions and companies. The correction is based on the estimation of a probit model (see equation (1)) and, to account for the difference, the calculation of a marginal effect for the $french_i$ variable. Standard deviations are grouped by test. Variables to correct for "composition effects" include age, gender, degree level, experience and gender of the pair, type of contract, position level (managerial or non-managerial), first application sent for the test ("North African" or "French"), occupation concerned by the test and company commitment to diversity. Standard errors are in brackets. Asterisks indicate statistically significant deviations at thresholds of 1% ***, 5% ** and 10% *.

Scope: panel of 40 companies of 1,000 employees or more; France.

Source: ISM Corum-Dares.

impact is not straightforward and requires the implementation of an appropriate econometric strategy.

The organization of recruitment is not necessarily linked to discrimination. Hence, the implication of a centralized HR service potentially contains an endogeneity issue. A cost-benefit trade-off is inherent in the choice of using a centralized HR service: Centralizing recruitment can, through standardization, reduce costs, but decentralizing recruitment within each establishment can increase responsiveness (less administrative intermediaries) and adaptation to the local context. However, if the centralization of the recruitment process is primarily linked to the cost of the recruitment function and the development of a company strategy in terms of HR (Fondeur, 2014), the management of discrimination might be included in this strategy. Unobservables can influence the probability that the selection is managed by a centralized HR service and the existence of discrimination. Based on company monographs, the qualitative work of Fondeur (2013) shows that the centralization of HR services is generally linked in part to a strategy of better control of recruitment combined with the ambition of protecting oneself from the risks of discrimination. This phenomenon can bias the analysis in either direction. On the one hand, companies with a proactive anti-discrimination culture (which cannot be observed in our data) could be less likely to discriminate and more likely to rely on a centralized HR service. The negative correlation observed between using a centralized HR service and the level of discrimination would then partly reflect this unobservable element. Thus, the impact of the involvement of centralized HR services on discrimination would lead to an overestimation. On the other hand, companies would favor the use of a centralized HR service for job offers most at risk in terms of discrimination (e.g., if strong pressure is linked to consumer preferences or to maintain teams of homogeneous workers to not disrupt management). Such a bias in the "use of a centralized HR service" treatment would lead to an underestimation of the impact of the involvement of centralized HR services on the degree of discrimination.

4.2 Impact of HR organization on hiring

We propose an evaluation of the causal link between the implication of a centralized HR service and the probability that the "French" application will be favored based on the use of an instrumental strategy and a recursive bivariate probit model (cf. Wooldridge (2010) and Maddala (1983)).

4.2.1 Instrumental strategy

Our instrumental variable is the existence (or not) of a franchise network for the company (or brand) to which the establishment concerned by the job offer belongs. Approximately two thirds of the companies in our sample have developed a franchise network, i.e. they consent to establishments using their brand and expertise and receive support in exchange for a fee (or entrance fee).[7] This information was easily collected for each company. This instrument is a appropriate for two reasons. First, this variable is highly correlated with the probability that the firm's (or brand's) establishments operate with some autonomy. At least three explanations are available for this. First, companies that have developed a franchise network do not a priori disagree with the principle of a certain autonomy for their establishments because they agree to the use by other entrepreneurs, under certain conditions, of their brand and their expertise. Second, by developing a franchise network, companies are likely to acquire a certain culture and possibly better knowledge of the advantages due to the autonomy of their establishments (e.g., better adaptation to the local context, greater responsiveness, and shorter recruitment times). Thus, it is possible that companies that have developed franchises entrust their establishments with more tasks, including in terms of recruitment. Finally, some of the units assimilated to establishments of each enterprise are franchised enterprises and therefore by definition have a certain independence. Although this independence is primarily financial, this independence also likely concerns other

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[7]See Appendix for more details on franchises.

aspects of company management, including recruitment. Indeed, even if certain agreements with the parent company may be restrictive for the franchisee in terms of recruitment, imposing in particular a right of supervision or participation in the recruitment of the company that owns the brand (Truss, 2004), franchisees more frequently control their hiring than non-franchise establishments. Our results clearly indicate that the use of a centralized HR service is less frequent (a 0.37 point less probability) when the establishment concerned by the offer belongs to a company (or brand) that has developed a franchise network (Table 9 in the Appendix). Second, this variable does not affect the likelihood that the employer, that is, the parent company or franchise owner, will adopt a discriminatory attitude.

- What is the link between the existence (or not) of a franchise network for the company and recruitment practices? According to the literature, the existence of a franchise network is essentially linked to commercial purposes (see Appendix B) and the type of activity. Blair and Lafontaine (2005) suggest, in particular, that large companies have an overall economic and financial interest in developing a franchise network. Above all, however, if not all of companies (approximately one third of the companies in our sample) do so, it is essentially because their main activity does not allow it. As Blair and Lafontaine (2005) indicate, two essential conditions must be fulfill. First, products must be made relatively uniform between establishments. Second, the risks and costs associated with a possible deterioration of the brand image by a franchisee must be and are easily limited, which is again essentially due to the nature of the production. The determinants of the existence of a franchise network are therefore not linked to the existence of discriminatory behavior from recruiters. Indeed, employers' discriminatory behavior is, according to the literature, the result of elements of a completely different nature. In particular, they may be motivated by the unconscious prejudices of employers (see Bertrand et al. (2005) and Rooth (2007)): in this case, by definition, there is no

link with the existence or not of a franchise network. Discriminatory behavior can also be linked to recruiters' beliefs about the productivity of certain demographic groups (statistical discrimination; see Phelps (1972)). Because all entrepreneurs manage the same uncertainties and hope to recruit the best possible applicants by reducing the risk of errors, there is no reason why this type of behavior should be more developed among franchisees than among non-franchisees. Finally, discrimination may also result from the preferences of employers, employees or consumers (Becker (1957); Combes et al. (2016) for consumer preferences). One criticism against our instrumental strategy could then be that, if certain activities are more confronted with the question of consumer preference towards the company's employees, the existence of a franchise network and the level of discrimination are both linked to the type of activity. However even if this were the case, it would have to concern the same activities, which are not obvious. Above all, the occupation is one of our control variables in our estimates. The results in Table 8 reinforce our intuitions because, when we distinguish the two types of recruitment organization, we observe no correlation between the probability that the "French" applicant is favored and the existence of a franchise network.

- Also important to consider is the case where the employer is a franchisee. Are there any specific hiring behaviors for franchisees? According to the literature (Appendix B), the main characteristics of franchisees are their desire for financial independence and their expectations in terms of the franchisor's support and experience in order to ensure the smooth running of the business. Thus, in some cases, hiring is likely to be highly supervised by the franchisor (Truss, 2004) and in other cases, franchisors grant a certain autonomy to their franchisees to ensure franchisees are free to adapt to the context in which they work (Brander and Croonen, 2010). Again, there is therefore a priori no reason why the recruitment practices of franchised companies should be

more or less discriminatory than those of other employers, because the determinants of discrimination are of a completely different nature. A possible argument could be that franchisees are partly independent; thus, franchisees are better able to express preferences for types of applicants or stereotypes or beliefs leading to discriminatory recruitment. Two counterarguments must to be mentioned. Franchisees are not totally independent entrepreneurs but independent "under control" (Feldstead, 1993b). Entrepreneurs who want complete autonomy would probably not have chosen to open a franchise. Moreover, another possibility is that recruiters in non franchised institutions also express, to some extent, preferences, stereotypes or beliefs. The results in Table 8 also confirm our intuitions because, when we separate the type of recruitment, they do not show any sign of significantly greater discrimination when there are franchisees.No direct effect of franchise on hiring discrimination is observed; thus, there merely might be an indirect effect through the organization of recruitment (franchisees more often recruit at the establishment level).

Differentiating establishments according to whether they belong to a company that has developed a franchise network allows us to separate establishments that have a high probability of operating relatively independently from the other establishments in terms of recruitment. We estimate the following bivariate recursive probit model:

$$Pos\_french_{ij} = \mathbb{1}[\delta \; RH_{ij} + \gamma \; X_{ij} + \mu_{ij} > 0] \tag{2}$$

where Pos_french_{ij} is a variable equals to 1, for application pair i, if the applicant of "French" origin has interested the recruiter of company j and 0 otherwise; X_{ij} is a vector of characteristics of application pair i and company j, whose content varies according to the specifications adopted; μ_{ij} is the error term; and RH_{ij} is a dummy indicating the level of recruitment, centralized or not, that the applicant

27

Table 8: Probability that the French application is favored for each type of recruitment organization and according to the existence or not of a franchise network (probit model)

	Centralized RH		Selection at the etablishment level	
Franchisees network	0.01	0.02	0.04	0.03
	(0.02)	(0.02)	(0.08)	(0.08)
Controls	No	Yes	No	Yes
# of obs	1,768	1,768	1,098	1,098

Reading: the difference between the application rates of "French" and "North African" origin that interested recruiters increases by 0.04 pp. when there is a franchise network and in the case where the selection of applications is made only within the establishment; but this difference is not significant. Standard errors are in brackets. Asterisks indicate statistically significant deviations at thresholds of 1% ***, 5% ** and 10% *.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM Corum-Dares.

in pair i faces when applying for a post in company j, this variable is endogenous and estimated from the probit model.

$$RH_{ij} = \mathbb{1}[\zeta \ Franchise_{ij} + \phi \chi_{ij} + v_{ij} > 0] \tag{3}$$

where $Franchise_{ij}$ is an indicator of the existence (or not) of a franchise network in company j (our instrumental variable), and v_{ij} is the error term. The vector X_{ij} and χ_{ij} include all variables available on the applicants and companies tested. We also include "region" fixed effects to control for local economic context. However, we do not include a "company" fixed effect. Because some companies use a centralized HR service for all their recruitments (Table 12 in Appendix), the concomitant introduction of the recruitment organization type indicator and a "company" fixed effect would involve collinearity and would be likely to disrupt evaluation. To improve the evaluation of the interest of considering an instrument on measuring the impact of using a centralized HR service, we compare the results of the recursive

bivariate probit model (Equations 2 and 3) with those of a simple probit model including the variable "use of a centralized HR service".

4.2.2 Results

The results reported in Table 9 indicate that the impact of using a centralized HR service in the selection of applications is higher than it appears when the variable is instrumented. This result shows that the evaluation considering endogeneity (Column 1) reveals a probability that the "French" applicant is favored by 0.29 points less when the selection is made at only the establishment level, whereas it is 0.10 points higher in the case of a naive estimate (Column 2). The significance of the negative correlation between the unexplained elements of our two variables of interest (cf. the terms *atrho* and ρ) also confirms the validity of our estimation strategy: unobservable characteristics simultaneously influence the probability that the recruiter has a discriminatory attitude and that a centralized HR service is involved in recruitment. In other words, perhaps, the companies for which a centralized HR department is involved are places in which the discriminatory risk is the greatest and for which the effect of using the centralized HR department is lower (leading to an underestimation of the effect by means of an uncorrected estimate). Our econometric strategy allows us to correct this bias. Moreover, we know the franchise status for 985 establishments (over 1,208) and, as a robustness check, we can exploit this information to use the instrument "establishment is a franchise" on a sub-sample of 1,160 tests (instead of 1,433) and find similar results (Table 16 in Appendix).

Table 9: Likelihood that the "French" application will be favored

	(1) Recursive bivariate probit		(2) Probit
	"French" app favored	Centralized RH dep.	"French" app favored
Centralized HR department	-0.29*** (0.09)		-0.10*** (0.02)
Existence of a franchise network		-0.36*** (0.03)	
Occupations			
Retail store operators and intermediaries	-0.02 (0.05)	-0.22*** (0.04)	0.01 (0.04)
Self-service employees	-0.12** (0.06)	-0.23*** (0.07)	-0.08 (0.05)
Sellers (retail)	-0.06 (0.06)	-0.37*** (0.06)	0.01 (0.05)
Banking and insurance managers	0.03 (0.07)	0.14*** (0.05)	0.02 (0.08)
Banking and insurance employees	0.22*** (0.08)	0.10* (0.05)	0.18* (0.08)
Banking and insurance technicians	0.08 (0.07)	-0.19** (0.08)	0.05 (0.06)
Hotel, cafe and restaurant managers	0.04 (0.06)	-0.11** (0.05)	0.04 (0.06)
Hotel/catering employees and operators	-0.06 (0.06)	-0.38*** (0.05)	0.01 (0.05)
Cooks	-0.05 (0.05)	-0.25*** (0.05)	-0.02 (0.05)
Pseudo R2		0.06	
atrho	0.64 (p-value=0,05)		
rho	0.57		
LR test of $rho = 0$	$Prob > chi2 = 0.05$		
Log pseudolikelihood	-1194,225		-549,575
# of obs	1,433		1,433

Note: This estimation is controlled for age, age squared, sex, diploma, labor contract, management position, experience, diversity label, order of application, regions. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Reading: the difference between the "French" and "North African" application rates that interested recruiters decreases by 0.29 pp. when a centralized HR department is involved (column (1)).

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM Corum-Dares.

Finally, when we compare Columns (1) with a simple probit model that does not

include the "use of a centralized HR service" variable (Column (3) in Table 15), we observe that the introduction of the variable related to the organization of recruitments does not much change the coefficients associated with the other control variables, except for the occupations. This result is also confirmed by the estimations on subsamples (Appendix, Table 13 by gender; Table 14 without the banking/insurance sector, where applications are mostly selected by a centralized HR department). The effect of the organization of recruitment on discrimination is therefore a priori relatively homogeneous, except for the occupations. In particular, considering the organization of recruitment reduces the level of discrimination compared with the reference group for the retail and hotel and catering sectors, and it tends to increase for the banking and insurance sectors, for which the centralization of the HR function is strongest (Table 6). These observations indicate a downward effect of the centralization of recruitment on the level of discrimination.

5 Conclusion

Based on a correspondence study, our results show a significant risk of hiring discrimination for workers with a North African origin in large companies in France. The results confirm the raw results observed by Foroni et al. (2016), even when we control for observable characteristics. One of the original features of this result is that the discriminatory risk is lower than the one detected by most of the experiments conducted in France on the same origins. Unlike other experiments, this study concerns only large companies in different sectors. We show that the use of centralized HR services in the recruitment of applicants, instead of recruitments made only within the establishment (often by operational staff and not HR professional) plays an important role in the degree of discrimination for "North-African" applicants: the process results in a 0.29 point decrease in the probability that "North African" applicants are discriminated against compared with "French" applicants.

This result suggests that acting on the organization of recruitment in large companies can be considered an effective tool in the fight against discrimination in recruitment, at least for the first stage of recruitment, i.e. before interviews. The professionalization of the recruitment position is therefore a potential solution in the fight against discrimination in recruitment, and this aspect, according to our review of the literature, has never been highlighted by a study of this type.

Notably, further exploration of the mechanisms at work is crucial. Indeed, we do not know to what extent this effect is linked to the following: (i) HR professionals are better trained and more aware of discrimination than managers, (ii) HR professionals are further away from field issues (considering customer preferences or team management issues can generate discriminatory hiring behavior to which managers are probably more sensitive), or (iii) HR professionals have more time they can dedicate to recruitment, which allows them to make their selection more on the basis of assessing applicants' skills and less on the basis of stereotypes.

References

BAERT, S. (2017): "Hiring Discrimination: An Overview of (Almost) All Correspondence Experiments Since 2005," IZA-DP n10738.

BARTOŠ, V., M. BAUER, J. CHYTILOV, AND F. MATJKA (2016): "Attention Discrimination: Theory and Field Experiments with Monitoring Information Acquisition," *American Economic Review*, 106, 1437–1475.

BECKER, G. (1957): *The Economics of Discrimination*, University of Chicago Press.

BEHAGHEL, L., B. CRÉPON, AND T. L. BARBANCHON (2015): "Unintended Effects of Anonymous Résumés," *American Economic Journal: Applied Economics*, 7, 1–27.

BERSON, C. (2013): "Testing : les difficultés de l'interprétation des discriminations l'embauche," *Travail et Emploi*, 135, 27–40.

BERTRAND, M., D. CHUGH, AND S. MULLAINATHAN (2005): "Implicit Discrimination," *American Economic Review*, 95, 94–98.

BERTRAND, M. AND E. DUFLO (2016): "Field Experiments on Discrimination," CEPR Discussion Papers 11123, C.E.P.R. Discussion Papers.

BLAIR, R. AND F. LAFONTAINE (2005): *The Economics of Franchising*, Cambridge University Press.

BRANDER, M. AND E. CROONEN (2010): "Franchised and small, the most beautiful of all: HRM and performance in plural systems," *Journal of Small Business Management*, 48, 225–239.

CARLSSON, M., L. FUMARCO, AND D.-O. ROOTH (2013): "Artifactual evidence of discrimination in correspondence studies? A replication of the Neumark method," POLIS Working Papers 172, Institute of Public Policy and Public Choice - POLIS.

CASTROGIOVANNI, G. AND R. KIDWELL (2010): "Resource Management practices affecting Affecting Unit Managers in Franchise Networks," *Human Ressources Resource Management*, 49, 225–239.

CHUGH, D. (2004): "Why Milliseconds Matter: Societal and Managerial Implications of Implicit Social Cognition," *Social Justice Research*, 17, 20322.

COMBES, P.-P., B. DECREUSE, M. LAOUÉNAN, AND A. TRANNOY (2016): "Customer Discrimination and Employment Outcomes: Theory and Evidence from the French Labor Market," *Journal of Labor Economics*, 34, 107–160.

EDO, A. AND N. JACQUEMET (2013): "Discrimination l'embauche selon l'origine et le genre : défiance indifférenciée ou ciblée sur certains groupes ?" *Économie et Statistique*, 464, 155–172.

FELDSTEAD, A. (1993a): *The Corporate Paradox: Power and Control in the Business Franchise*, Ed Routledge.

——— (1993b): "The Social Organization of Franchise: A Case of Controlled Self-Employment," *Work, Employment & Society*, 5, 37–57.

FONDEUR, Y. (2013): "Systèmes d'emploi et pratiques de recrutement," *La revue de l'Ires*, 76, 31–43.

——— (2014): "La "professionalisation du recrutement" au prisme des dispositifs de sélection," *Revue Franaise d'Économie*, 14, 135–153.

FORONI, F. AND E. CEDIEY (2008): "Résultats du testing sollicité par le groupe Casino," ISM-CORUM.

FORONI, F., M. RUAULT, AND E. VALAT (2016): "Discrimination l'embauche selon l'origine : que nous apprend le testing auprès des grandes entreprises ?" *Dares Analyse*, 076, iSM-CORUM.

FREMIGACCI, F., L. D. PARQUET, P. PETIT, AND G. PIERNÉ (2015): "Le mérite : un rempart contre les discriminations ?" *Revue française d'Économie*, 0, 155–182.

HAMILTON, B., J. NICKERSON, AND H. OWAN (2004): "Diversity and Productivity in Production Teams," Washington University in St. Louis Olin School of Business.

HECKMAN, J. AND P. SIEGELMAN (1993): *The Urban Institute Audit Studies: Their Methods and Findings.*, Washington D.C.: The Urban Institute Press, 187–258, fix and struyk ed.

HOFFMAN, R. AND J. PREBLE (2004): "Global Franchising: Current status and future challenges," *Journal of Services Marketing*, 18, 101–113.

HOY, F., R. PERRIGOT, AND A. TERRY (2017): *Research contributions to understanding franchising.*, Washington D.C.: Collection Business, chap. 1, frank hoy, rozenn perrigot and andrew terry ed.

KAUFMANN, P. (1999): "Franchising and the choice of self-employment," *Journal of Business Venturing*, 14, 345–362.

KAUFMANN, P. AND J. STANWORTH (1995): "The decision to purchase a franchise: A study of prospective franchisees," *Journal of Small Business Management*, 33, 22–33.

KURTULUS, F. A. (2011): "What Types of Diversity Benefit Workers? Empirical Evidence on the Effects of Co-Worker Dissimilarity on the Performance of Employees," UMASS Amherst Economics Working Papers 2011-11, University of Massachusetts Amherst, Department of Economics.

MADDALA, G. (1983): *Limited dependent and qualitative variables in econometrics*, Cambridge University Press.

MENDELSOHN, M. (2006): *The guide to franchising*, Cengage Learning EMEA.

NEUMARK, D. (2012): "Detecting Discrimination in Audit and Correspondence Studies," *Journal of Human Resources*, 47, 1128–1157.

NEUMARK, D. AND J. RICH (2016): "Do Field Experiments on Labor and Housing Markets Overstate Discrimination? A Re-examination of the Evidence," NBER Working Papers 22278, National Bureau of Economic Research, Inc.

PETERSON, A. AND R. DANT (1990): "Perceived advantages of the franchise option from the franchisee perspective: Empirical insights from a service franchise," *Journal of Small Business Management*, 28, 46–61.

PETIT, P., E. DUGUET, AND Y. L'HORTY (2015): "Discrimination résidentielle et origine ethnique : une étude expérimentale sur les serveurs en le-de-France," *Economie & Prévision*, 206-207, 55–69.

PHELPS, E. (1972): "The Statistical Theory of Racism and Sexism," *American Economic Review*, 62, 639–651.

RICH, J. (2014): "What Do Field Experiments of Discrimination in Markets Tell Us?

A Meta Analysis of Studies Conducted since 2000," IZA Discussion Papers 8584, Institute for the Study of Labor (IZA).

ROOTH, D.-O. (2007): "Implicit Discrimination in Hiring: Real World Evidence," IZA Discussion Papers 2764, Institute for the Study of Labor (IZA).

SHANE, S. A. AND F. HOY (1996): "Franchising: A gateway to cooperative entrepreneurship," *Journal of Business Venturing*, 11, 325–327.

SHERMAN, A. (2004): *Franchising and licensing: Two powerful ways to grow your business in any economy*, New York: American Management Association.

SRINIVASAN, R. (2006): "Dual distribution and intangible firm value: Franchising in restaurant chains," *Journal of Marketing*, 70, 120–135.

TRUSS, C. (2004): "Who's in the driving seat? Managin human resources in a franchise firm," *Human Resources Management Journal*, 14, 57–75.

WILLIAMS, D. L. (1999): "Why do entrepreneurs become franchisees? An empirical analysis of organizational choice," *Journal of Business Venturing*, 14, 103–124.

WOOLDRIDGE, J. M. (2010): *Solutions Manual and Supplementary Materials for Econometric Analysis of Cross Section and Panel Data*, vol. 1 of *MIT Press Books*, The MIT Press.

A   Data collection

Information on the organization of recruitment was collected in two steps. First, during the elaboration of the experiment, several types of information were crossed. Information on the identity and/or function of the recruiter may have been collected from the information provided for some of the job advertisements. Where appropriate, this information has been cross-checked with information appearing on company websites regarding how recruitment is organized. The identity and/or function of the person who sent the reply message or acknowledgement was also considered. In a second stage, this information was cross-checked with that gathered during meetings with representatives of each company at the Ministry of Labour. This second stage made it possible to either validate or specify the organization of recruitment for each offer, i.e. whether an HR department external to the establishment was involved.

B   Franchising

Franchising is a commercial relationship between a franchisee and a franchisor. But the franchise remains difficult to define because it varies considerably by country and there is no global definition of the phenomenon. In the literature, franchising has been defined as a pure sales method (Mendelsohn (2006), Srinivasan (2006)) or as a means of entrepreneurial cooperation (Shane and Hoy, 1996). Sherman (2004) presents franchising primarily as a strategic relationship between individuals, bounded by laws specific to the countries in which they operate (Hoffman and Preble, 2004). The French Franchise Federation defines franchising as a mode of collaboration between two legally and financially independent companies. The franchisor makes available the signs of customer rallying (brand and banner, architectural concept, visual identity system), the expertise of its brand and technical and commercial assistance. The franchisee must develop and maintain the brand

image, improve expertise and respect the brand concept. A franchise therefore enables a self-employed person to start up more quickly by optimizing chances of success and a franchisor to base commercial development on a network of business managers involved in the local market. The relationship between a franchisor and a franchisee is broadly described as a low-cost expansion strategy for the franchisor and a means for the franchisee to run its business with logistical and strategic support from the franchisor. The management research literature has focused on the relationship between franchisee and franchisor and the benefits for each in that relationship. In particular, for the franchisor, a strategy is to replicate its business model and management system (Hoy et al., 2017). An individual's decision to become a franchisee generally stems from a desire to become independent (Feldstead (1993a), Kaufmann and Stanworth (1995), Peterson and Dant (1990)). As franchising allows individuals seeking greater autonomy and independence, with little or no prior experience (Kaufmann, 1999) or technical knowledge (Williams, 1999) to enter the market, there is an expectation on the part of franchisees that the franchisor will provide the necessary support for the business to be successful (Hoy et al., 2017). Some of the literature has studied the specificities of franchises in terms of human resources management. Castrogiovanni and Kidwell (2010) investigated at management differences between the manager of the unit being an employee of the franchisor and the owner of the unit. They show that the differences are based on entrepreneurial orientation capabilities, the application of franchise characteristics and the lesser adverse selection effects for owners. Truss (2004) shows that, in the franchise network he studied, franchisors have a right to control hiring and human resource management, and in particular the most experienced employees.

38

C Heteroscedastic Probit

Heckman and Siegelman (1993) suggest that the differences measured by the testing method between two identical candidates (except for the criterion tested) do not necessarily reflect discrimination linked to employers' preferences (Becker, 1957) or "classical" statistical discrimination (Phelps, 1972) linked to the attribution by employers of different levels of productivity to two candidates of the same pair. These differences may also be related to productivity being imperfectly observed by employers. Even if employers assign similar levels of productivity to two candidates in the same pair, there is no reason why the variances should be the same. Thus, there is uncertainty about the candidates' skills, which may vary in either direction, that may lead to differences in treatment of similar resumes and perceived average productivity levels between the two candidates. Some refer to this as "second-order statistical discrimination".

The heteroscedastic probit works as follows. No matter how complete the resumes, the productivity of candidates is imperfectly observed by employers and the probability of accurately evaluating the application contains a portion of unobservables from the employers' perspective. Thus, even if employers assign similar average unobservable skills to each of the two applicants in the same pair, they may assign different variances for the unobservable share of skills for the two applicants. These differences in terms of variances in the unobservable share of skills may lead recruiters to make different choices regarding the two candidates in the same pair when these are similar from the perspective of the designers of the experience and employers do not express differences in taste and think that the two types of candidates are on average equally competent. Either candidate may be favored depending on the circumstances. For example, depending on whether the candidates have high or low average skill levels, the candidate with the greatest variance in unobservable skills may be rejected or preferred.

Table 10: Differences between the "French" and "North African" application rates that interested recruiters corrected for structural effects and fixed effects for region and company (probit and heteroscedastic probit)

	All tests	Women	Men
Probit	10.2***	8.0***	12.4***
	(1.06)	(1.49)	(1.49)
Heteroscedastic Probit	10.2***	8.1***	12.2***
Wald test (p-value): there is a difference between the standard deviations of non-observables influencing the success rates of "French" and "North African" applications	(1.06)	(1.51)	(1.47)
Controls	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
Company FE	Yes	Yes	Yes
# applications	2,866	1,436	1,430

Reading: the difference between the "French" and "North African" application rates that interested recruiters is 10.2 percentage points, taking into account the effects of structures and the fixed effects of regions and companies. The correction is based on the estimation, as appropriate, of a probit model (see equation (1)) or a heteroskedastic probit model and, to account for the difference, the calculation of a marginal effect for the $French_i$ variable. Standard deviations are grouped by test. The variables used to correct for "structural effects" include the age of the pair of applications, the degree level of the pair, the experience of the pair, the type of contract, the level of the position (management or not), the first application sent for the test ("North African" or "French"), the occupation concerned by the test (except for assessments by occupation), the company's commitment to diversity and the gender of the pair of applications (except for assessments by gender). Standard errors are in brackets. Asterisks indicate statistically significant deviations at thresholds of 1% ***, 5% ** and 10% *.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM CORUM-Dares.

D Additional Results

Table 11: Differences between the "French" and "North African" application rates that interested recruiters, uncorrected and corrected for structural effects and fixed effects departments and companies (probit)

	Differences between the "French" and "North African" application rates that interested recruiters			
All tests	10.3***	10.2***	10.3***	10.2***
	(1.83)	(1.07)	(1.07)	(1.06)
Controls	No	Yes	Yes	Yes
Departemental FE	No	No	Yes	Yes
Company FE	No	No	No	Yes
# applications	2,866			

Note: Due to a low number of observations in some departments, adjacent departments (only 2 in each case) were merged. We have completed 8 mergers. 16 departments are therefore concerned.

Reading: The difference between the application rates of "French" and "North African" origin that interested the recruiters is 10.3 percentage points without correction and 10.2 points taking into account the effects of structures and the fixed effects of departments and companies. The correction is based on the estimation of a probit model (see equation (1)) and, to account for the difference, the calculation of a marginal effect for the $French_i$ variable. The variables used to correct for "structural effects" include the age, level of qualification, experience and gender of the pair of applications, the type of contract, the level of the position (management or not), the first application sent for the test ("North African" or "French"), the occupation concerned by the test), the company's commitment to diversity. Standard errors are in brackets. Asterisks indicate statistically significant deviations at thresholds of 1% ***, 5% ** and 10% *.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM CORUM-Dares.

Table 12: Share of tests for which a centralized HR department is involved per company

Company	Share (%)	# of tests
1	0.0	39
2	70.0	30
3	100.0	29
4	0.0	38
5	100.0	38
6	100.0	34
7	50.0	40
8	100.0	39
9	100.0	39
10	100.0	39
11	100.0	38
12	100.0	35
13	37.5	40
14	100.0	29
15	0.0	36
16	100.0	40
17	44.1	34
18	60.0	40
19	100.0	30
20	47.4	38
21	47.4	38
22	22.5	40
23	50.0	30
24	2.6	39
25	100.0	30
26	69.0	29
27	100.0	34
28	53.3	30
29	0.0	40
30	47.4	38
31	0.0	39
32	65.4	26
33	100.0	40
34	100.0	38
35	100.0	38
36	46.4	28
37	100.0	33
38	100.0	38
39	0.0	40
40	7.5	40
Total	61.7	1,433

Scope: panel of 40 companies of 1000 employees or more; France.
Source: ISM CORUM-Dares.

Table 13: Likelihood that the "French" application will be favored by gender

	(1) Women		(2) Men	
	"French" app favored	Centralized RH dep.	"French" app favored	Centralized RH dep.
Use of a centralized HR department	-0.19***		-0.40***	
	(0.11)		(0.06)	
Existence of a franchise network		-0.35***		-0.35***
		(0.04)		(0.04)
Age	-0.03	-0.04	-0.02	0.01
	(0.06)	(0.08)	(0.08)	(0.07)
Age squared	0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Diploma				
Vocational training	-0.03	-0.06	0.04	0.00
	(0.05)	(0.06)	(0.05)	(0.05)
Bachelor	Ref	Ref	Ref	Ref
Bachelor + 2 years	0.06	-0.05	0.11**	0.01
	(0.05)	(0.05)	(0.05)	(0.05)
Bachelor + 3 years	0.09	0.10	-0.07	0.04
	(0.06)	(0.10)	(0.06)	(0.06)
Bachelor + 4 years	0.26**	0.05	-0.08	0.05
	(0.11)	(0.17)	(0.15)	(0.14)
Bachelor + 5 years	0.17*	0.03	-0.18*	0.12
	(0.09)	(0.12)	(0.11)	(0.13)
Experience				
3 years	-0.12	0.05	0.10	0.18
	(0.14)	(0.17)	(0.16)	(0.18)
4 years	-0.13*	0.05	0.05	0.07
	(0.08)	(0.09)	(0.07)	(0.09)
5 years	-0.12	0.02	-0.10*	-0.01
	(0.06)	(0.08)	(0.06)	(0.07)
6 years	-0.06	-0.02	-0.05	-0.02
	(0.05)	(0.06)	(0.05)	(0.06)
9 years	Ref	Ref	Ref	Ref
10 years	-0.07	-0.06	-0.07	-0.05
	(0.06)	(0.07)	(0.05)	(0.06)
11 years	0.09	-0.02	-0.01	0.04
	(0.07)	(0.08)	(0.07)	(0.07)
12 years	0.23	1.52***	-1.08***	1.57***
	(0.15)	(0.11)	(0.09)	(0.10)
Occupations				

Continued on next page

43

	(1)		(2)	
Sales and technical sales managers	Ref	Ref	Ref	Ref
Retail store operators and intermediaries	-0.03	-0.27***	-0.03	-0.018***
	(0.05)	(0.04)	(0.04)	(0.04)
Self-service employees	-0.07	-0.25***	-0.22*	-0.30**
	(0.09)	(0.10)	(0.13)	(0.14)
Sellers	-0.03	-0.37***	-0.14	-0.32***
	(0.08)	(0.09)	(0.09)	(0.08)
Banking and insurance managers	-0.01	1.17***	0.08	1.15***
	(0.08)	(0.11)	(0.10)	(0.13)
Banking and insurance employees	0.18**	1.31***	0.15	0.18
	(0.09)	(0.11)	(0.10)	(0.14)
Banking and insurance technicians	0.06	-0.21**	0.06	-0.18*
	(0.07)	(0.11)	(0.09)	(0.10)
Hotel, cafe and restaurant managers	-0.04	-0.16*	0.10	-0.05
	(0.07)	(0.08)	(0.08)	(0.08)
Hotel and catering employees and operators	-0.02	-0.39***	-0.12	-0.32***
	(0.08)	(0.08)	(0.08)	(0.08)
Cooks	-0.01	-0.27***	0.11	-0.21***
	(0.07)	(0.08)	(0.08)	(0.08)
Management position	-0.00	0.04	-0.00	0.04
	(0.04)	(0.05)	(0.04)	(0.05)
Labor contract				
Fixed-term	Ref	Ref	Ref	Ref
Permanent	-0.01	0.03	0.05*	0.03
	(0.03)	(0.04)	(0.03)	(0.04)
Unknown	0.04	0.08	0.02	0.01
	(0.06)	(0.06)	(0.05)	(0.05)
First sent application "North African"	0.03	-0.01	0.05*	0.02
	(0.02)	(0.03)	(0.02)	(0.03)
Region				
Auvergne-Rhne-Alpes	Ref	Ref	Ref	Ref
Bourgogne-Franche-Comte	0.08	0.01	-0.02	-0.02
	(0.06)	(0.07)	(0.07)	(0.08)
Bretagne	-0.10	-0.07	0.04	0.04
	(0.09)	(0.09)	(0.05)	(0.07)
Centre-Val de Loire	0.06	-0.04	-0.02	-0.01

	(1)		(2)	
	(0.07)	(0.07)	(0.06)	(0.08)
Grand Est	0.05	-0.12*	-0.06	-0.03
	(0.06)	(0.07)	(0.05)	(0.06)
Hauts-de-France	0.11*	0.04	-0.01	0.14*
	(0.06)	(0.07)	(0.07)	(0.08)
Ile-de-France	0.06	0.03	-0.04	0.02
	(0.04)	(0.05)	(0.04)	(0.05)
Normandie	-0.05	-0.03	-0.03	-0.10
	(0.08)	(0.08)	(0.06)	(0.08)
Nouvelle-Aquitaine	-0.09	-0.07	-0.09*	-0.11**
	(0.07)	(0.08)	(0.05)	(0.06)
Occitanie	0.03	-0.03	-0.02	-0.04
	(0.05)	(0.07)	(0.05)	(0.06)
Pays de la Loire	0.02	0.03	-0.04	-0.20***
	(0.07)	(0.07)	(0.06)	(0.07)
PACA	0.03	0.01	-0.02	-0.10
	(0.05)	(0.06)	(0.05)	(0.06)
Company involved in diversity	0.06**	0.06*	0.01	-0.00
	(0.03)	(0.03)	(0.03)	(0.03)
atrho	0.36 (p-value=0.31)		1.25 (p-value=0.03)	
rho	0.35		0.85	
LR test of $rho = 0$	$Prob > chi2 = 0.31$		$Prob > chi2 = 0.03$	
Log pseudolikelihood	-565.138		-588.986	
# of tests	718		715	

Reading: the difference between the "French" and "North African" application rates that interested recruiters decreases by 0.29 probability point when a centralized HR department is involved (column (1)). Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM CORUM-Dares.

Table 14: Likelihood that the "French" application will be favored without the Bank and insurance sector

	(1)	
	Recursive bivariate probit	
	"French"	Centralized
	app favored	RH dep.
Use of a centralized HR department	-0.29***	
	(0.09)	
Existence of a franchise network		-0.47***
		(0.04)
Age	-0.02	-0.02
	(0.05)	(0.07)
Age squared	0.00	0.00
	(0.00)	(0.00)
Men	0.04**	0.01
	(0.02)	(0.03)
Diploma		
Vocational training	0.02	-0.01
	(0.04)	(0.05)
Bachelor	Ref	Ref
Bachelor + 2 years	-0.03	-0.00
	(0.03)	(0.05)
Bachelor + 3 years	-0.02	0.12**
	(0.05)	(0.06)
Bachelor + 4 years	0.17	0.0.14
	(0.13)	(0.13)
Bachelor + 5 years	0.13	0.23**
	(0.10)	(0.09)
Experience		
3 years	0.02	0.03
	(0.12)	(0.15)
4 years	-0.04	-0.00
	(0.06)	(0.08)
5 years	-0.13**	-0.06
	(0.05)	(0.06)
6 years	-0.05	-0.07
	(0.04)	(0.05)
9 years	Ref	Ref
10 years	-0.06	-0.08
	(0.04)	(0.06)
11 years	0.03	0.03
	(0.05)	(0.07)
12 years	-0.01	1.85***
	(0.12)	(0.08)

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	(1)	
Occupations		
Sales and technical sales managers	Ref	Ref
Retail store operators and intermediaries	-0.00	-0.27***
	(0.05)	(0.05)
Self-service employees	-0.12**	-0.19**
	(0.07)	(0.08)
Sellers	-0.05	-0.35***
	(0.07)	(0.07)
Hotel, cafe and restaurant managers	0.06	-0.13**
	(0.07)	(0.06)
Hotel and catering employees and operators	-0.05	-0.39***
	(0.07)	(0.06)
Cooks	-0.05	-0.39***
	(0.07)	(0.06)
Management position	-0.01	0.11**
	(0.04)	(0.05)
Labor contract		
Fixed-term	Ref	Ref
Permanent	0.04	0.06*
	(0.03)	(0.03)
Unknown	0.10*	0.13*
	(0.06)	(0.08)
First sent application "North African"	0.04**	0.02
	(0.02)	(0.03)
Region		
Auvergne-Rhne-Alpes	Ref	Ref
Bourgogne-Franche-Comte	0.06	-0.01
	(0.07)	(0.08)
Bretagne	0.01	0.05
	(0.05)	(0.07)
Centre-Val de Loire	-0.03	-0.05
	(0.06)	(0.07)
Grand Est	-0.01	-0.09
	(0.05)	(0.06)
Hauts-de-France	0.04	0.11
	(0.06)	(0.07)
Ile-de-France	-0.01	0.03
	(0.04)	(0.04)
Normandie	-0.04	-0.08
	(0.05)	(0.07)
Nouvelle-Aquitaine	-0.08*	-0.11**
	(0.04)	(0.06)

Continued on next page

47

	(1)	
Occitanie	-0.01	0.00
	(0.05)	(0.06)
Pays de la Loire	0.03	-0.06
	(0.05)	(0.06)
PACA	0.00	0.04*
	(0.02)	(0.03)
Company involved in diversity	0.06**	0.04*
	(0.02)	(0.03)
atrho	0.60 (p-value=0,06)	
rho	0.54	
LR test of $rho = 0$	$Prob > chi2 = 0.06$	
Log pseudolikelihood	-1030,554	
# of tests	1,138	

Reading: the difference between the "French" and "North African" application rates that interested recruiters decreases by 0.29 probability point when a centralized HR department is involved (column (1)). Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.
Scope: panel of 40 companies of 1000 employees or more; France.
Source: ISM CORUM-Dares.

Table 15: Likelihood that the "French" application will be favored

	(1) Recursive bivariate probit		(2) Probit	(3) Probit
	"French" app favored	Centralized RH dep.	"French" app favored	"French" app favored
Centralized HR department	-0.29***		-0.10***	
	(0.09)		(0.02)	
Existence of a franchise network		-0.36***		
		(0.03)		
Age	-0.04	-0.02	-0.03	-0.02
	(0.05)	(0.05)	(0.05)	(0.05)
Age squared	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Men	0.02	0.00	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Diploma				
Vocational training	0.02	-0.03	0.04	0.05

Continued on next page

	(1)		(2)	(3)
	Recursive bivariate probit		Probit	Probit
	(0.04)	(0.04)	(0.04)	(0.04)
Bachelor + 2 years	-0.04	-0.01	-0.04	-0.04
	(0.03)	(0.04)	(0.03)	(0.03)
Bachelor + 3 years	0.01	0.05	-0.01	-0.01
	(0.04)	(0.05)	(0.04)	(0.04)
Bachelor + 4 years	0.11	0.06	0.07	0.07
	(0.12)	(0.11)	(0.12)	(0.12)
Bachelor + 5 years	0.01	0.10	-0.01	-0.02
	(0.08)	(0.08)	(0.08)	(0.07)
Experience				
3 years	-0.01	0.09	-0.00	-0.01
	(0.11)	(0.12)	(0.11)	(0.11)
4 years	-0.06	0.03	-0.06	-0.07
	(0.06)	(0.06)	(0.05)	(0.05)
5 years	-0.11**	-0.02	-0.10**	-0.10**
	(0.05)	(0.05)	(0.04)	(0.04)
6 years	-0.05	-0.04	-0.04	-0.03
	(0.04)	(0.04)	(0.04)	(0.04)
9 years	Ref	Ref	Ref	Ref
10 years	-0.06*	-0.06	-0.06	-0.06
	(0.04)	(0.05)	(0.04)	(0.04)
11 years	0.02	0.02	0.01	0.00
	(0.05)	(0.05)	(0.05)	(0.05)
12 years	-0.02	1.65***	-0.08	-0.13
	(0.12)	(0.08)	(0.11)	(0.11)
Occupations				
Retail store operators and intermediaries	-0.02	-0.22***	0.01	0.03
	(0.05)	(0.04)	(0.04)	(0.04)
Self-service employees	-0.12**	-0.23***	-0.08	-0.04
	(0.06)	(0.07)	(0.05)	(0.05)
Sellers	-0.06	-0.37***	0.01	0.06
	(0.06)	(0.06)	(0.05)	(0.05)
Banking and insurance managers	0.03	0.14***	0.02	0.01
	(0.07)	(0.05)	(0.08)	(0.07)
Banking and insurance employees	0.22***	0.10*	0.18*	0.15**
	(0.08)	(0.05)	(0.08)	(0.07)
Banking and insurance technicians	0.08	-0.19**	0.05	0.04
	(0.07)	(0.08)	(0.06)	(0.05)
Hotel, cafe and restaurant managers	0.04	-0.11**	0.04	0.05
	(0.06)	(0.05)	(0.06)	(0.05)
Hotel/catering employees and operators	-0.06	-0.38***	0.01	0.07
	(0.06)	(0.05)	(0.05)	(0.05)
Cooks	-0.05	-0.25***	-0.02	0.00

	(1) Recursive bivariate probit		(2) Probit	(3) Probit
	(0.05)	(0.05)	(0.05)	(0.04)
Management position	0.00	0.04	-0.00	-0.00
	(0.03)	(0.04)	(0.03)	(0.03)
Labor contract				
Permanent	0.03	0.03	0.01	0.01
	(0.02)	(0.03)	(0.02)	(0.02)
Unknown	0.04	0.08	0.02	0.01
	(0.06)	(0.06)	(0.05)	(0.05)
First sent application "North African"	0.04**	0.01	0.03*	0.03*
	(0.02)	(0.02)	(0.02)	(0.02)
Region				
Bourgogne-Franche-Comte	0.05	0.00	0.05	0.06
	(0.06)	(0.06)	(0.05)	(0.05)
Bretagne	-0.01	-0.00	-0.01	-0.00
	(0.05)	(0.06)	(0.05)	(0.05)
Centre-Val de Loire	0.01	-0.03	0.02	0.03
	(0.05)	(0.06)	(0.05)	(0.05)
Grand Est	-0.01	-0.08*	0.01	0.02
	(0.04)	(0.04)	(0.04)	(0.04)
Hauts-de-France	0.05	0.08	0.04	0.03
	(0.05)	(0.05)	(0.05)	(0.05)
Ile-de-France	0.01	0.02	0.01	0.01
	(0.03)	(0.03)	(0.03)	(0.03)
Normandie	-0.01	-0.07	0.01	0.02
	(0.05)	(0.06)	(0.05)	(0.06)
Nouvelle-Aquitaine	-0.06*	-0.10**	-0.04	-0.03
	(0.04)	(0.05)	(0.03)	(0.03)
Occitanie	0.03	-0.03	0.03	0.04
	(0.04)	(0.05)	(0.04)	(0.04)
Pays de la Loire	0.02	-0.09*	0.04	0.06
	(0.05)	(0.05)	(0.04)	(0.04)
PACA	0.01	-0.04	0.02	0.03
	(0.04)	(0.04)	(0.04)	(0.04)
Company involved in diversity	0.05**	0.03	0.03*	0.03
	(0.02)	(0.02)	(0.02)	(0.02)
Pseudo R2		0.06	0.04	
atrho	0.64 (p-value=0,05)			
rho	0.57			
LR test of $rho = 0$	$Prob > chi2 = 0.05$			
Log pseudolikelihood	-1194,225		-549,575	-559,556
# of tests	1,433		1,433	1,433

Continued on next page

50

	(1) Recursive bivariate probit	(2) Probit	(3) Probit

Reading: the difference between the "French" and "North African" application rates that interested recruiters decreases by 0.29 probability point when a centralized HR department is involved (column (1)). Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM Corum-Dares.

Table 16: Likelihood that the "French" application will be favored - with the alternative instrument

	(1) Recursive bivariate probit		(2) Probit	(3) Probit
	"French" app favored	Centralized RH dep.	"French" app favored	"French" app favored
Centralized HR department	-0.32*** (0.09)		-0.09*** (0.02)	
The establishment is a franchise		-0.21*** (0.02)		
Age	-0.04 (0.06)	-0.03 (0.06)	-0.03 (0.06)	-0.02 (0.06)
Age squared	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Men	0.02 (0.02)	-0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Diploma				
Vocational training	-0.02 (0.04)	-0.01 (0.04)	-0.01 (0.04)	-0.00 (0.04)
Bachelor + 2 years	-0.06 (0.04)	-0.03 (0.04)	-0.05 (0.04)	-0.05 (0.04)
Bachelor + 3 years	-0.02 (0.05)	0.04 (0.05)	-0.01 (0.05)	-0.01 (0.05)
Bachelor + 4 years	0.19 (0.17)	0.15 (0.11)	0.14 (0.18)	0.12 (0.17)
Bachelor + 5 years	-0.02 (0.09)	-0.02 (0.08)	-0.02 (0.09)	-0.02 (0.09)
Experience				
3 years	-0.06 (0.12)	-0.00 (0.13)	-0.06 (0.12)	-0.07 (0.12)

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	(1) Recursive bivariate probit		(2) Probit	(3) Probit
4 years	-0.07	0.04	-0.08	-0.09
	(0.06)	(0.06)	(0.05)	(0.05)
5 years	-0.10**	-0.02	-0.09**	-0.09**
	(0.05)	(0.05)	(0.05)	(0.05)
6 years	-0.05	-0.08*	-0.03	-0.02
	(0.04)	(0.04)	(0.04)	(0.04)
9 years	Ref	Ref	Ref	Ref
10 years	-0.04*	-0.01	-0.04	-0.04
	(0.04)	(0.05)	(0.04)	(0.04)
11 years	0.03	0.09	0.01	-0.00
	(0.06)	(0.06)	(0.06)	(0.06)
12 years	0.11	1.44***	-0.03	-0.02
	(0.13)	(0.08)	(0.12)	(0.12)
Occupations				
Retail store operators	-0.05	-0.27***	0.00	0.03
and intermediaries	(0.06)	(0.05)	(0.05)	(0.05)
Self-service employees	-0.17**	-0.48***	-0.08	-0.03
	(0.08)	(0.09)	(0.06)	(0.06)
Sellers	-0.12	-0.66***	0.00	0.07
	(0.08)	(0.05)	(0.07)	(0.06)
Banking and insurance managers	0.03	0.04*	0.03	0.02
	(0.09)	(0.02)	(0.07)	(0.06)
Banking and insurance employees	0.18**	0.03	0.18**	0.16**
	(0.09)	(0.03)	(0.09)	(0.08)
Banking and insurance technicians	0.07	-0.07*	0.06	0.06
	(0.08)	(0.04)	(0.07)	(0.06)
Hotel, cafe and restaurant managers	0.01	-0.23***	0.03	0.05
	(0.07)	(0.05)	(0.07)	(0.06)
Hotel/catering employees	-0.12	-0.73***	0.02	0.10*
and operators	(0.08)	(0.05)	(0.06)	(0.06)
Cooks	-0.12*	-0.43***	-0.05	-0.01
	(0.07)	(0.05)	(0.06)	(0.05)
Management position	-0.03	-0.02	-0.01	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)
Labor contract				
Permanent	0.02	0.02	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)
Unknown	0.04	-0.01	0.03	0.02
	(0.06)	(0.07)	(0.06)	(0.06)
First sent application "North African"	0.04*	0.00	0.04*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)

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	(1) Recursive bivariate probit		(2) Probit	(3) Probit
Region				
Bourgogne-Franche-Comte	0.02	0.01	0.03	0.03
	(0.06)	(0.06)	(0.06)	(0.06)
Bretagne	-0.02	-0.03	-0.00	0.00
	(0.05)	(0.06)	(0.05)	(0.05)
Centre-Val de Loire	0.02	-0.05	0.03	0.04
	(0.06)	(0.05)	(0.06)	(0.06)
Grand Est	-0.04	-0.06*	0.02	-0.01
	(0.04)	(0.05)	(0.04)	(0.04)
Hauts-de-France	0.03	0.05	0.02	0.01
	(0.05)	(0.05)	(0.05)	(0.05)
Ile-de-France	-0.02	-0.06	-0.01	-0.01
	(0.04)	(0.03)	(0.03)	(0.03)
Normandie	-0.01	-0.10	0.01	0.02
	(0.05)	(0.06)	(0.05)	(0.05)
Nouvelle-Aquitaine	-0.09**	-0.09**	-0.07*	-0.06
	(0.04)	(0.05)	(0.04)	(0.04)
Occitanie	-0.03	-0.13**	-0.01	0.00
	(0.05)	(0.05)	(0.04)	(0.04)
Pays de la Loire	0.01	-0.12**	0.04	0.05
	(0.05)	(0.05)	(0.05)	(0.05)
PACA	0.01	-0.09**	0.02	0.03
	(0.05)	(0.04)	(0.05)	(0.05)
Company involved in diversity	0.03	0.01	0.02	0.01
	(0.02)	(0.02)	(0.02)	(0.02)
Pseudo R2		0.06	0.04	
atrho	0.79 (p-value=0.03)			
rho	0.66			
LR test of $rho = 0$	$Prob > chi2 = 0.03$			
Log pseudolikelihood	-903.319		-438.429	-444.896
# of tests	1,160		1,160	1,160

Reading: the difference between the "French" and "North African" application rates that interested recruiters decreases by 0.32 probability point when a centralized HR department is involved (column (1)). Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Scope: panel of 40 companies of 1000 employees or more; France.

Source: ISM Corum-Dares.