Outsourcing recruitment as a solution to prevent discrimination: A correspondence study *

Clémence Berson, Morgane Laouenan, Emmanuel Valat

HAL Id: hal-03027324
https://hal.science/hal-03027324

Submitted on 27 Nov 2020

Outsourcing recruitment as a solution to prevent discrimination: A correspondence study[*]

Clémence Berson[†]   Morgane Laouénan[‡]   Emmanuel Valat[§]

Abstract

In this work, we assess how the organization of recruitment in large companies affects ethnic discrimination. We consider large multi-establishment companies and distinguish two types of organization of recruitment: hiring made through a human resources (HR) department 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. Our results indicate that access to a centralized HR department in the selection of applications has an important effect on the level of discrimination, i.e., this type of organization of recruitment results in a significant decrease in the probability that applicants with native-sounding names are solely selected.

Keywords: Hiring discrimination, large companies, organization of human resources.

JEL Classification: A13, C93, J21, J71, J78, O15.

[†]Banque de France and Sciences Po, LIEPP, clemence.berson@banque-france.fr, (Corresponding author)

[‡]CNRS - Sorbonne University, Sciences-Po LIEPP & IZA, morgane.laouenan@univ-paris1.fr

[§]ERUDITE, Université Gustave Eiffel and Dares, emmanuel.valat@travail.gouv.fr

1 Introduction

In many countries, experiments conducted in recent years have revealed a relatively widespread discriminatory behaviour among employers (see Rich (2014), Bertrand and Duflo (2017), Baert (2018) and Neumark (2018) for literature reviews). Several recent works have studied different actions to prevent this discrimination. The introduction of anonymous resumes is the most studied policy. However, the results are mixed. Behaghel et al. (2015) show that setting up an experimental anonymous resume policy is not efficient for ethnic minorities in France. In contrast, Aslund and Skans (2012) find an increase in the number of interviews for both ethnic minorities and women in Sweden. Krause et al. (2012) conclude that the method of implementation of the policy is a crucial factor in obtaining a positive impact. Some other studies focus on the content of the resumes. Fremigacci et al. (2015) assess the potential impact of merit labelling by making the "best apprentice in France" distinction appear on the resume. However, this attempt was not effective in reducing discrimination because, although all applicants benefits from this distinction, those with a native-sounding name benefit more than other groups. Edo and Jacquemet (2013) evaluate the impact of a satisfactory level of native language 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. Another type of policy is the introduction of diversity in hiring committees to reduce discrimination. Bertrand and Duflo (2017) gather the literature on this topic. They point out that the results on discrimination are not obvious and could even be negative (see, for instance, Bursell (2007), Bagues and Esteve-Volart (2010), Zinovyeva and Bagues (2011) and Bagues et al. (2017)). Overall, few tools have proven effective in fighting discrimination in recruitment and more 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. We expect a lower rate of discrimination for three reasons. 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 stereotypes (Chugh, 2004).

To conduct our analysis, we use the data from a correspondence study realized by the French Ministry of Labour (Foroni et al., 2016). We find a net discrimination rate of 20.2% against second-generation immigrants, which is the lower bound of the literature,[1] but in line with Carlsson and Rooth (2007) and Kaas and Manger (2012), who find that the net discrimination rate decreases with the size of the firm. The aim of this experiment was to establish a dialogue with some large companies about their recruitment practices on the basis of the experimental results and encourage them to implement policies to prevent discrimination. This dialogue was also an opportunity to gather information related to the recruitment process for each job offer, in addition to those related to the experimental design. Thus, we can distinguish recruitment for which the selection was made through a centralized HR department of the company (e.g., at national or regional levels), by an external service provider, or by a person in charge of hiring if the recruitment was managed at the level of the establishment the offer concerns.

In this paper, 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, while 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 only across companies. Indeed, data show intra-firm heterogeneity in terms of organization of recruitment 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 franchising network.

Our results suggest 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. Centralized HR departments lead to a significant decrease in the probability that applicants with a native-sounding name are preferred.

The study is organized as follows. Section 2 describes the experimental design of the correspondence study and compares the net discrimination rate of this experiment to the literature. Then, Section 3 presents the results depending on the organization of recruitments. Section 4 discusses the influence of the organization

---

[1]See Rich (2014) for a literature review.

of the recruitment process on the degree of discrimination. Section 5 concludes.

2 Experiment: design and discrimination rate

In this section, we first present the features of the experiment conducted by the French Ministry of Labour. Its objective was to carry out a sufficient number of tests to obtain exploitable results for each tested company. Unlike most experiments in which each company is generally tested only once, this experiment comprised responding to several dozen offers per company. All of the companies were subsequently met by the Ministry of Labour in order to debrief on their potential discriminatory behaviour. Consequently, data concern only large companies, which is relatively original and results in new research questions.

2.1 Experimental design

Selection of companies and occupations The selected companies are multi-establishment companies or franchising networks with more than 1,000 employees in the trade, bank/insurance, and hotel/catering sectors. These 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 on the targeted occupations were excluded from the experiment. Finally, only companies with several dozen offers published on their website in March 2016, for ten relatively common occupations, were selected (see Table 1). To have a sufficient number of tests per company, job offers are located throughout France.

Profiles of fictitious applicants In France, several correspondence studies have revealed that workers with a North African-sounding name are particularly concerned by discrimination (Foroni and Cediey (2008), Berson (2012), Petit et al. (2015) and Edo et al. (2019) among others). For that reason, the experiment focuses on this specific ethnic group. Each pair of applications contains one application with a North African-sounding name and another with a French-sounding name, suggesting that the former one is a second-generation immigrant. Relatively common surnames and given names for each type were chosen by ISM-Corum, the special-

4

ized firm that realized the correspondence study[2]. They based their decisions on the French Census, depending on the age category. They were careful that those names were not correlated with a particular social background.

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 targeted 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. Finally, the residential locations of the fictitious applicants are chosen to be socially neutral. In all, the experiment used 147 pairs of applications for 1,500 tests, where each pair consists of two resumes and two cover letters, one for each ethnicity. For each application of the same pair, permutations were made from one test to another between the North African- and French-sounding names in order to avoid possible biases linked to the quality of resumes and cover letters.

Data collection   Applications were only sent in response to job offers 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; this limit could be slightly 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

---

[2]For example, Malika SAYED, Aurélie FAVRE, Malik BOUNA or Guillaume CLERC.

filled. We exclude the invalid tests due to the withdrawal of the offer by the employer between the two applications. Finally, for some applications, no reply was received.[3]

Human resources organization   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.

Second, the dialogue with the Ministry of Labour made it possible to collect a certain amount of information on the organization of recruitment of each company and to know that the experiment was not detected. In particular, for each application, we know whether recruitment was carried out at the level of the establishment concerned or through a centralized HR department of the company.[4] In particular, the organization of the human resources management, local or centralized, may affect the degree of discrimination. According to our review of the literature, no other correspondence studies have analysed the impact of the recruitment organization on discrimination.

2.2   Descriptive statistics

Table 1 summarizes the characteristics of the job offers. One objective of this study was that half of the offers should be managerial positions and the other half non-managerial positions (48.8% of the tests). Moreover, the type of contract offered was not selective. More than three-quarters of the positions provide permanent

---

[3]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."

[4]We consider the HR department of the company or "entity" - subsidiary, brand, company, etc. - centralized at the national, regional, etc., level. However, in 3% of the cases, the selection of applications was made by an external service provider. Insofar as, similar to centralized HR departments, these are professional HR departments external to the establishment concerned by the offer, we associate this method of selecting applications with selections made by a centralized HR department. For simplicity, we then refer only to the notion of centralized HR departments. The results are robust when we simply drop those observations.

contracts and the remaining one-quarter of the positions provide mainly fixed-term contracts.

In this analysis, we eliminated tests that concern job offers with an unknown location. Approximately one-quarter of the job offers are located in the Île-de-France region (Paris). The Auvergne-Rhône-Alpes region is also widely represented with 13.5% of the offers. 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). Overall, we retain 1,433 tests among the 1,500 tests covering 40 companies and 1,208 establishments. Table 2 shows that 30 companies were tested approximately 40 times and 10 were tested approximately 30 times. Each company possesses between 15 and 38 tested establishments.

Of the 1,433 tests, the resumes are almost equally distributed by gender. The average age of the applicants is 26 years old, their level of diploma is from lower than bachelor to graduate, and they have either medium experience (4 to 6 years for slightly more than half of the resumes) or confirmed experience (9 to 11 years).[5]

2.3   Discrimination in large companies

Overall, 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 French-sounding name applicants in approximately one-half of the cases (47%) and in North African-sounding name applicants, in slightly more than one-third of the cases (36.8%).

Using a probit model, we estimate the callback rates taking into account the composition effects (age, gender, degree level, experience and gender of the pair, type of contract, position level (managerial or non-managerial), order of application, occupation considered by the test and the company commitment to diversity) and fixed effects of regions and companies (see Appendix B.1). The dummy *French − sounding name* highlights the gap between both types of applicants. The estimated coefficient is 10.2, meaning that everything else equal, French-sounding name applications receive 10 pp more callbacks than North African-sounding name

---

[5]See Table A1 in the Appendix for more descriptive statistics on applicants' characteristics.

Table 1: Descriptive statistics concerning the tested job offers

	Full sample		Share of centralized HR
	%	# tests	%
Occupation			
Sales and technical sales managers	7.2	103	86.4
Retail store operators & intermediaries[1]	13.8	198	59.6
Self-service employees	4	58	48.3
Sellers	18	259	34.8
Banking and insurance managers[2]	6.6	94	100.0
Banking and insurance employees	5.8	80	98.7
Banking and insurance technicians	8.4	121	93.4
Hotel, cafe and restaurant managers	6.3	91	74.7
Hotel & catering employees & operators	12.6	181	30.4
Cooks	17.3	248	60.5
Region			
Auvergne-Rhône-Alpes	13.5	193	63.7
Bourgogne-Franche-Comte	4.4	63	73.0
Bretagne	4	57	61.4
Centre-Val de Loire	4.1	60	66.7
Grand Est	8	115	60.0
Hauts-de-France	5.7	82	74.4
Île-de-France	24.3	348	64.7
Normandie	5.1	73	56.2
Nouvelle-Aquitaine	8.2	117	54.7
Occitanie	7.2	103	61.2
Pays de la Loire	5.9	85	54.1
PACA	9.6	137	51.8
Management position	48.8	699	71.8
Labour contract			
Permanent (CDI)	78.3	1,122	64.1
Fixed-term (CDI)	18.1	360	50.4
Unknown	3.6	51	66.7
Company committed to diversity	52.8	757	71.1
Sample	100	1,433	61.7

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

[2] Agency managers, customer advisers.

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

Source: ISM Corum-Dares.

Table 2: Share of tests for which a centralized HR department is involved per company

Company	# of establishments	# of tests	Centralized HR %
AA	37	39	0 .0
AB	24	30	70.0
AC	26	29	100.0
AD	28	38	0.0
AE	33	38	100.0
AF	34	34	100.0
AG	37	40	50.0
AH	33	39	100.0
AI	38	39	100.0
AJ	35	39	100.0
AK	38	38	100.0
AL	29	35	100.0
AM	36	40	37.5
AN	26	29	100.0
AO	30	36	0.0
AP	34	40	100.0
AQ	23	34	44.1
AR	37	40	60.0
AS	27	30	100.0
AT	22	38	47.4
AU	31	38	47.4
AV	35	40	22.5
AW	29	30	50.0
AX	28	39	2.6
AY	15	30	100.0
AZ	19	29	69.0
BA	30	34	100.0
BB	15	30	53.3
BC	34	40	0.0
BD	32	38	47.4
BE	32	39	0.0
BF	21	26	65.4
BG	31	40	100.0
BH	30	38	100.0
BI	35	38	100.0
BJ	24	28	46.4
BK	29	33	100.0
BL	37	38	100.0
BM	38	40	0.0
BN	36	40	7.5
Total	1,208	1,433	61.7

Scope: panel of 40 companies of 1,000 employees or more; France.
Source: ISM CORUM-Dares.

applications.[6] This result is robust if we estimate a heteroscedastic probit to answer to the Heckman and Siegelman (1993) critics (see Appendix B.2).

Compared to the literature, the success rate gap between native-sounding name applicants and North African-sounding name applicants is slightly higher. We find 10.2 pp vs. 6.9 pp in Duguet et al. (2010), 9.3 pp in Berson (2012) and 7.4 pp in Edo et al. (2019) for the same populations in France. Carlsson and Rooth (2007) find 9.6 pp. in Sweden concerning second-generation immigrants from the Middle East. This higher gap should be put in perspective with the high rate of positive responses received by candidates, which is ten times higher than in Duguet et al. (2010), for example. Most of studies are using a net discrimination rate, which takes this point into account. This is the number of situations where the applicant of the majority is preferred minus those when the applicant of the minority is preferred, divided by the number of cases where at least one of the applicants receive a positive answer. The net discrimination rate of our study is 20.2%, which is much lower than most of the studies we are aware of, except Carlsson and Rooth (2007) who find 29.4%. For example, Bertrand and Mullainathan (2004) find 41.1% for the US, Foroni and Cediey (2008) 46.0% and Berson (2012) 59.8% for France. This lower net discrimination rate is mainly explained by our sample of large firms. It is consistent with Carlsson and Rooth (2007) and Kaas and Manger (2012) that find a negative correlation between the size of the firm and hiring discrimination.

3 Discrimination by HR organization

In this section, we analyse the results by HR organization and identify endogeneity issues.

3.1 Level of discrimination differs by HR organization

Table 2 shows that selections made through a centralized HR department concern slightly less than two-thirds of the tests (61.7%). Moreover, they are non-existent for six of the 40 companies in our sample, whereas they are systematic for 18 of them,

---

[6]Some audit studies on ethnic discrimination by the International Labour Organization (ILO) distinguish discrimination at the selection for interview and job offer stage, and find that approximately 90% of the discrimination occurs at the first stage (see Rich (2014); Foroni and Cediey (2008)). Therefore, this suggests that callbacks for interviews represent the key part of the hiring process.

particularly in the banking/insurance sector. In 16 companies, the organization of recruitment varies across establishments and offers.

A cost-benefit trade-off is inherent in the choice of using a centralized recruitment system. It depends on the structural organization of the company, the sector and the position of the occupation that has to be filled. A centralized recruitment model allows a company to pursue a coherent strategy concerning hiring in taking advantage of certain economies of scale. It is widely known that HR professionals (working for a centralized recruitment team) will likely have a good knowledge about best hiring practices, in order to reduce the risk of both staffing issues and higher turnover. However, the HR professionals may lack more specific knowledge about the position they are filling. A centralized recruitment system works well if the company's recruitment needs are simple and do not change often. If it is not the case, a centralized system might not be flexible enough. With a decentralized model, the recruiting process is more flexible in nature because it is managed locally and is therefore tailored to local circumstances. Decentralizing recruitment within each establishment can increase responsiveness (less administrative intermediaries) and adaptation to the local context. Moreover, establishment managers in charge of the recruitment work with a specific team and can learn about its working culture and unique hiring needs.

In our sample, there are significant variations in terms of HR organization depending on the level of education of the applicants and the characteristics of the position. Recruitment made through a centralized HR department more often concerns positions involving management functions and permanent positions (Table 1). 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. Additionally, the share of tests for which selection via a centralized HR department is involved is identical for female and male pairs (Table A1 in Appendix). 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.

Table 3 provides the raw results. Where the selection is managed solely within the establishment, the rate decreases from 36.8% to 25.5% for North African-sounding name applications and remains relatively high for French-sounding name appli-

cations (47.0% vs 41.3%). When a centralized HR department is involved, North African-sounding name applications are selected in 43.8% of cases compared with 50.6% of the French-sounding name applications. It shows that hires made solely at the establishment level generate a higher level of discrimination than hires involving a centralized HR department. The difference in the positive response rate between North African- and French-sounding name applications is 15.8 pp. for recruitment made only at the establishment level compared with 6.8 pp. when a centralized HR department is involved.[7]

Table 3: Success rate and preferences for French- and North African-sounding name applications

	% Positive responses		% Preferences		Equality	
	French name	North African name	French name	North African name	of Treatment	# of tests
All tests	47.0	36.8	14.1	3.8	32.9	1,433
Tests by recruitment organization						
At the est. level	41.3	25.5	19.5	3.6	21.9	549
Centralized HR	50.6	43.8	10.7	4.0	39.8	884

Reading: applications with a French-sounding name interested recruiters, exclusively or not, in 47.0% of cases against 36.8% for North African name applications.
Scope: panel of 40 companies of 1,000 employees or more; France.
Source: ISM Corum-Dares.

We can split the share of positive responses between favouritism for one origin versus another (either the French-sounding name application has been favoured compared to the North African-sounding name application or the other way around) and equality of treatment (both applications have been either accepted or rejected).[8] Overall, it shows that favouritism towards French-sounding name applicants is much higher than that towards North African-sounding name applicants. When we distinguish by organization of recruitment, we observe that favouritism towards North African-sounding name applicants remains the same whatever the type of

---

[7]We do not have any data on subsequent interviews and the fact that they are conducted at a centralized level or at the establishment level. However, one can assume that in our framework, as in others, the interview stage often involves members of the establishment that are more directly concerned by the job.

[8]The probability of receiving a response is not significantly correlated with the organization of the HR department.

HR organization (3.6% versus 4%), whereas it decreases dramatically for French-sounding name applicants when the HR organization is centralized. This is because both types of applicants receive positive responses more often in this case (39.8% vs. 21.9%). Therefore, it means that the organization of recruitment affects the level of discrimination. We can identify several reasons:

(i) Members of HR departments are more aware of discrimination and its prevention, unlike managers in charge of recruitment within the establishment. An increasing number of companies have become more involved in order to comply with the legislation in the fight against discrimination in recruitment. The company's HR departments are likely 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.[9] Moreover, 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 departments 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 automatism or stereotypes (Chugh, 2004; Bartoš et al., 2016).

(iii) Finally, professional HR departments are likely less subject to field constraints than managers in charge of recruitment. Consequently, their objective function is different from line managers that are more focused on productivity. 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.[10] Thus, some of these constraints can generate discriminatory behaviour.

---

[9]For example, Kamakami et al. (2000) show that training lab subjects in negating specific stereotypical thinking reduces the stereotypical activation.

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

3.2 Endogeneity issue

The implication of a centralized HR department potentially contains an endogeneity issue. Unobservables can influence the probability that the selection is managed by a centralized HR department and the existence of discrimination. Based on company monographs, the qualitative work of Fondeur (2013, 2014) shows that the centralization of HR departments 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 department. The negative correlation observed between using a centralized HR department and the level of discrimination would then partly reflect this unobservable element. Thus, the impact of the involvement of centralized HR departments on discrimination would lead to an overestimation. On the other hand, companies would favour the use of a centralized HR department 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 avoid disrupting management). Such a bias in the "use of a centralized HR department" treatment would lead to an underestimation of the impact of the involvement of centralized HR departments on the degree of discrimination. However, measuring this impact is not straightforward and requires the implementation of an appropriate econometric strategy.

4 Impact of HR organization on hiring discrimination

We propose an evaluation of the causal link between the implication of a centralized HR department and the probability that the French-sounding name application will be favoured based on the use of an instrumental strategy and a recursive bivariate probit model (cf. Maddala (1983) and Wooldridge (2010)).[11]

---

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 companies.

[11]These authors show that the bivariate recursive probit model is typically specified when there are two binary responses. However, a two-step least squares estimation is also often used in this case. It yields similar results in our study, see Table B5 in Appendix.

4.1 Instrumental strategy

We need an instrumental variable that is correlated with the HR organization but not linked to hiring discrimination. To achieve this goal, we propose an instrumental variable that is not correlated with a discriminatory behaviour: "the company is a franchisor". In Appendix, Table B6, we test a second instrument, which is "the establishment is a franchise." This second one is more precise, but we do not have this status for all establishments and consequently lose some observations. The results are similar in both cases.

Franchising is a commercial relationship between a franchise and a franchisor. This relationship is broadly described in the literature as a low-cost expansion strategy for the franchisor and a means for the franchise to run its business with logistical and strategic support from the franchisor (Williams, 1999; Hoy et al., 2019). Some of the literature has studied the specificities of franchisees in terms of human resources management. Castrogiovanni and Kidwell (2010) show that the differences between the manager of the unit, who is an employee of the franchisor, and the owner of the unit are based on entrepreneurial orientation capabilities, the application of franchise characteristics and the lesser adverse selection effects for owners. Truss (2004) points out that, in the franchising network he studied, franchisors have a right to control hiring and human resource management, and in particular the most experienced employees.

The franchisor that has developed a franchising network consents to establishments using their brand and gives support and expertise to franchisees in exchange for a fee. However, all establishments of a franchisor are not necessarily franchisees even if they generally operate with some autonomy. By developing a franchising network, franchisors acquire a 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 franchisees entrust both franchisees and non-franchisees establishments with more tasks, including in terms of recruitment. Our results clearly indicate that the use of a centralized HR department is less frequent (a 0.36 point less probability) when the establishment concerned by the offer belongs to a franchising company.

Concerning franchisees, they have by definition a certain independence, primarily financial. However, it also likely concerns other aspects of company management, including recruitment. Even if certain agreements with the franchisor impose a

right of supervision in the recruitment (Truss, 2004), franchisees more frequently control their hiring than non-franchise establishments.

Furthermore, our instrumental variable "the company is a franchisor" does not affect the likelihood that the employer will adopt a discriminatory attitude. According to the literature on discrimination, employers' discriminatory behaviour may be driven by three different motives. First, it could be the unconscious prejudices of employers (see Bertrand et al. (2005) and Rooth (2010)). Discriminatory behaviour can also be linked to recruiters' beliefs about the productivity of certain demographic groups (statistical discrimination; see Phelps (1972)). Finally, discrimination may also result from the preferences of employers, employees or consumers (Becker (1957); Combes et al. (2016) for consumer preferences).

According to the literature on franchising, there is no link between franchisors and discrimination. Being a franchisor is essentially linked to commercial purposes 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 franchising 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 the authors indicate, two essential conditions must be fulfilled. 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 franchise must be limited, which is again essentially due to the nature of the production. Nevertheless, if certain activities are more confronted with the question of consumer preference towards the company's employees, franchising and the level of discrimination are both linked to the type of activity. However, being a franchisor and occupations in contact with the public are not correlated in our experimental data. The coefficient of correlation is 0.03. Moreover, we control for occupations in our estimates. Consequently, the determinants of franchising are not linked to the existence of discriminatory behaviour from recruiters.

Regarding the case where the employer is a franchise, the literature shows that their main characteristics 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). There is therefore a priori no reason why the recruitment practices of franchisees 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 be mentioned. Franchisees are not totally independent entrepreneurs but rather independent "under control" (Feldstead, 1993). Entrepreneurs who want complete autonomy would likely 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 4 confirm our intuitions as, when we separate the type of recruitment, there is no direct effect of franchise on hiring discrimination; thus, there merely might be an indirect effect through the organization of recruitment (franchisees more often recruit at the establishment level).

Another concern is the non-response behaviour. Using a centralized HR department increases the probability of receiving a response, positive or not. To be sure that our results are not due to a selection issue, we verify that the correlation between the probability of non-response and the centralized HR department is not correlated. We find that the coefficient, controlling for the companies characteristics, is not significant.

Table 4: Likelihood that the French-sounding name application is favoured for each type of recruitment organization (probit model)

	Centralized HR		Selection at the est. level	
The company is a franchisor	0.01	0.02	0.04	0.03
	(0.02)	(0.02)	(0.05)	(0.04)
Controls	No	Yes	No	Yes
# of tests	1,768	1,768	1,098	1,098

Reading: the probability that the French-sounding name application is favoured increases by 0.04 pp. when the company is a franchisor in the case where the selection of applications is made only within the establishment, but this difference is not significant. Standard errors are clustered by company and are in brackets. Asterisks indicate statistically significant at 1% ***, 5% ** and 10% *.
Scope: panel of 40 companies of 1,000 employees or more; France.
Source: ISM Corum-Dares.

Differentiating establishments according to whether they belong to a franchisor

allows us to separate establishments that have a high probability of operating relatively independently in terms of recruitment from the other establishments. We estimate the following bivariate recursive probit model:

$$Pref\_french_{ij} = \mathbb{1}[\delta\ HR_{ij} + \gamma\ X_{ij} + \mu_{ij} > 0] \tag{1}$$

where $Pref\_french_{ij}$ is a variable equal to 1 for application pair i if the applicant with a French-sounding name has interested the recruiter of company j and 0 otherwise; X_{ij} is a vector of characteristics of application pair i and company j; μ_{ij} is the error term, clustered by company; and HR_{ij} is a dummy indicating the level of recruitment, centralized or not, that the applicant in pair i faces when applying for a post in company j. This variable is endogenous and estimated from the probit model:

$$HR_{ij} = \mathbb{1}[\zeta\ Franchise_{ij} + \phi\chi_{ij} + \nu_{ij} > 0] \tag{2}$$

where $Franchise_{ij}$ is an indicator of the existence (or not) of a franchising network in company j (our instrumental variable), and ν_{ij} is the error term. In both equations, the vector X_{ij} and χ_{ij} include all variables available on the applicants and companies tested (occupation, age, age squared, sex, diploma, labour contract, management position, experience, diversity label, order of application). 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 department for all of their recruitments (Table 2), the concomitant introduction of the recruitment organization type indicator and a "company" fixed effect would involve collinearity and would be likely to disrupt evaluation.

4.2 Results

Table 5 summarizes the empirical results. Column (1) shows the coefficients of the simple probit model. Column (2) reports the estimates of the recursive bivariate probit using "the company is a franchisor" as the instrumental variable. All controls are available in the Appendix, Table B3. The probit estimation (column (1)) shows that using a centralized HR department decreases in 10 pp the probability that the French-sounding name application is favoured. As this application is favoured in 14% of cases, it means that it reduces the coefficient to 4%, which is relatively similar to the share of cases where the North African-sounding name

application is favoured. The net discrimination rate becomes roughly zero.

The impact of involving a centralized HR department is even larger when we instrument. Indeed, when we correct for endogeneity (Column (2)), the probability that the French-sounding name applicant is favoured is approximately 0.30 points less when the selection involves a centralized HR department.[12] 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 department is involved in recruitment. In other words, the companies that use a centralized HR department are places for 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 B6 in the Appendix).

This finding is also confirmed by the estimations on sub-samples (Appendix, Table B7 by gender; Table B8 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, it tends to increase for the banking and insurance sectors, for which the centralization of the HR function is higher (Table 2). These observations indicate a downward effect of the centralization of recruitment on the level of discrimination. The magnitude of the estimated coefficients is large, meaning that using a centralized HR department eliminates favouritism towards candidates with French-sounding names. Consequently, this kind of organization has to be encouraged to reduce discrimination against second-generation immigrants.

---

[12]Table B4 in the Appendix shows that the HR organization has no impact on favouritism for North African-sounding name applicants, as suggested by descriptive statistics in Table 3.

Table 5: Likelihood that the French-sounding name application is favoured (marginal effects)

	(1) Probit	(2) Recursive bivariate probit	
	French name favoured	French name favoured	Centralized HR
Centralized HR department	-0.10*** (0.02)	-0.29*** (0.09)	
The company is a franchisor			-0.36*** (0.10)
Occupations			
Retail store operators and intermediaries	0.01 (0.04)	-0.02 (0.05)	-0.22** (0.10)
Self-service employees	-0.08* (0.04)	-0.12* (0.06)	-0.23 (0.15)
Sellers (retail)	0.01 (0.05)	-0.06 (0.06)	-0.37*** (0.12)
Banking and insurance managers	0.02 (0.07)	0.03 (0.09)	0.14 (0.09)
Banking and insurance employees	0.18** (0.08)	0.22*** (0.08)	0.10 (0.11)
Banking and insurance technicians	0.05 (0.05)	0.08 (0.06)	-0.19 (0.20)
Hotel, cafe and restaurant managers	0.04 (0.05)	0.04 (0.06)	-0.11 (0.12)
Hotel/catering employees and operators	0.01 (0.05)	-0.06 (0.06)	-0.38*** (0.14)
Cooks	-0.02 (0.04)	-0.05 (0.06)	-0.25* (0.14)
Mean of the dependent variable	.14	.14	.62
Pseudo R^2	0.06		
atrho		0.64 (p-value=0.04)	
rho		0.57	
LR test of $rho = 0$		$Prob > chi^2 = 0.04$	
Log pseudolikelihood	-549.575	-1194.225	
# of tests	1,433	1,433	

Note: this estimation is controlled for age, age squared, sex, diploma, labour contract, management position, experience, diversity label, order of application and a regional fixed effect. Standard errors are clustered by company and are in brackets. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Reading: the probability that the French-sounding name application is favoured decreases by 29 pp. when a centralized HR department is involved (Column (2)).

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

Source: ISM Corum-Dares.

5 Conclusion

Based on a correspondence study, our results show a significant risk of hiring discrimination for workers with a North African-sounding name 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 finding is that the discriminatory risk is lower than the one detected by most of the experiments conducted in France on the same population. Unlike other experiments, this study examines only large companies in different sectors, which explains the lower discrimination rate. We show that the use of centralized HR departments in the recruitment of applicants, instead of recruitments made only within the establishment (often by operational staff and not HR professionals) plays an important role in the degree of discrimination for North-African-sounding name applicants: the process results in approximately a 29 points decrease in the probability that native-sounding name applicants are favoured.

This finding 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 being better trained and more aware of discrimination than managers, (ii) HR professionals being farther away from field issues and having a different objective function (considering customer preferences or team management issues can generate discriminatory hiring behaviour to which managers are likely more sensitive), or (iii) HR professionals having more time that 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

Aslund, O. and O. N. Skans (2012): "Do Anonymous Job Application Procedures Level the Playing Field?" *ILR Review*, 65, 82–107.

Baert, S. (2018): "Hiring Discrimination: An Overview of (Almost) All Correspondence Experiments Since 2005," in *Audit Studies: Behind the Scenes with Theory, Method, and Nuance*, ed. by S. Gaddis, Springer, Cham, vol. 14.

Bagues, M., M. Sylos-Labini, and N. Zinovyeva (2017): "Does the Gender Composition of Scientific Committees Matter?" *American Economic Review*, 107, 1207–1238.

Bagues, M. F. and B. Esteve-Volart (2010): "Can Gender Parity Break the Glass Ceiling? Evidence from a Repeated Randomized Experiment," *Review of Economic Studies*, 77, 1301–1328.

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. (2012): "Does Competition Induce Hiring Equity?" Documents de travail du Centre d'Economie de la Sorbonne 12019, Université Panthéon-Sorbonne (Paris 1), Centre d'Economie de la Sorbonne.

Bertrand, M., D. Chugh, and S. Mullainathan (2005): "Implicit Discrimination," *American Economic Review*, 95, 94–98.

Bertrand, M. and E. Duflo (2017): "Field Experiments on Discrimination," *Handbook of Field Experiments*, 1, 309–393.

Bertrand, M. and S. Mullainathan (2004): "Are Emily and Greg More Employable Than Lakisha and Jamal ? A Field Experiment on Labor Market Discrimination," *American Economic Review*, 94, 991–1013.

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.

Bursell, M. (2007): "What's in a name? A field experiment test for the existence of ethnic discrimination in the hiring process," SULCIS Working Papers 2007:7, Stockholm University, Linnaeus Center for Integration Studies - SULCIS.

Carlsson, M. and D.-O. Rooth (2007): "Evidence of ethnic discrimination in the Swedish labor market using experimental data," *Labour Economics*, 14, 716–729.

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.

Duguet, E., N. Leandri, Y. L'horty, and P. Petit (2010): "Are Young French Jobseekers of Ethnic Immigrant Origin Discriminated Against? A Controlled Experiment in the Paris Area," *Annals of Economics and Statistics*, 187–215.

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.

Edo, A., N. Jacquemet, and C. Yannelis (2019): "Language skills and homophilous hiring discrimination: Evidence from gender and racially differentiated applications," *Review of Economics of the Household*, 17, 349–376.

Feldstead, A. (1993): "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 Française 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 Analyses*.

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*, Bingley: Emerald Group Publishing Limited, 99–138.

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.

HOY, F., R. PERRIGOT, AND A. TERRY (2019): *Research contributions to understanding franchising*, Washington D.C.: Collection Business, chap. 1, edward elgar publishing ltd ed.

KAAS, L. AND C. MANGER (2012): "Ethnic Discrimination in Germany's Labour Market: A Field Experiment," *German Economic Review*, 13, 1–20.

KAMAKAMI, K., J. F. DOVIDIO, J. MOLL, S. HERMSEN, AND A. RUSSIN (2000): "Just Say No (to Stereotyping): Effects of Training in the Negation of Stereotypic Associations on Stereotype Activation," *Journal of Personality and Social Psychology*, 75, 817.

KRAUSE, A., U. RINNE, AND K. ZIMMERMANN (2012): "Anonymous job applications in Europe," *IZA Journal of European Labor Studies*, 1.

KURTULUS, F. (2011): "What Types of Diversity Benefit Workers? Empirical Evidence on the Effects of Co-Worker Dissimilarity on the Performance of Employees," *Industrial Relations: A Journal of Economy and Society*, 50, 678 – 712.

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

NEUMARK, D. (2018): "Experimental Research on Labor Market Discrimination," *Journal of Economic Literature*, 56, 799–866.

PETIT, P., E. DUGUET, AND Y. L'HORTY (2015): "Discrimination résidentielle et origine ethnique : une étude expérimentale sur les serveurs en Île-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. (2010): "Automatic associations and discrimination in hiring: Real world evidence," *Labour Economics*, 17, 523–534.

TRUSS, C. (2004): "Who's in the driving seat? Managing 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.

ZINOVYEVA, N. AND M. BAGUES (2011): "Does Gender Matter for Academic Promotion? Evidence from a Randomized Natural Experiment," IZA Discussion Papers 5537, Institute of Labor Economics (IZA).

A   Supplementary descriptive statistics

Table A1: Descriptive statistics concerning applicants

	Full sample		Share of centralized HR
	%	# tests	%
Gender			
Women	50.1	718	61.7
Men	49.9	715	61.7
Age (min =20, max=36)	26.3	1,433	
Diploma			
Vocational training	15.9	228	45.6
Bachelor	20.9	300	51.0
Bachelor + 2 years	43.5	623	57.3
Bachelor + 3 years	9.1	131	71.0
Bachelor + 4 years	1.5	22	77.3
Bachelor + 5 years	9	129	93.0
Experience			
3 years	1.6	23	56.3
4 years	16.2	232	70.7
5 years	26	372	57.5
6 years	13.6	195	50.8
9 years	27.2	390	65.4
10 years	8.8	126	54.0
11 years	5.4	78	69.2
12 years	1.2	17	100.0
First sent application			
French name	49.3	706	61.6
North African name	50.7	727	61.8
Sample	100	1,433	61.7

Scope: panel of 40 companies of 1,000 employees or more; France.
Source: ISM Corum-Dares.

B Online Appendix

B.1 Estimation of success rate by ethnicity

Using a probit model, we control for company and individual characteristics:

$$Callback_{ij} = \mathbb{1}[\beta \, French_i + \gamma \, X_{ij} + \mu_{ij} > 0] \tag{3}$$

where $Callback_{ij}$ is a variable equal to 1 if the applicant has interested the recruiter of company j and 0 otherwise; $French_i$ equals 1 if the applicant has a French-sounding name; 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, clustered by company. The estimate of β is summarized in Table B1 depending on different specifications of the model.

Table B1: Likelihood to receive a callback (probit)

	Callback			
French-sounding name	10.3***	10.2***	10.3***	10.2***
	(1.83)	(1.43)	(1.43)	(1.38)
# applications	2,866	2,866	2,866	2,866
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-sounding names 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. 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 and clustered by company. 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.

These results are consistent with the literature. As a robustness check, we verified that the level of discrimination we find at the regional level is correlated with the figures we can compute with the Labour Force Survey (LFS). We identify French

people with at least one North African parent and those with two French parents. Then, we considered the correlation between the response gap found in our experiment and the main outcomes from the LFS at the regional level. The response gap is the difference in percentage points between the success rate of applicants with a French-sounding name and those with a North African one. We compute an employment gap, which is the difference of both groups in terms of the employment and wage gap between both groups, of which the correlations are 0.20 and 0.58, respectively. We also estimate the probability of being employed and a Mincer equation using a sample of the LFS containing only French individuals with French parents and French individuals with at least one North African parent and the coefficient of the dummy at least one North African parent is correlated with our response gap (0.56 and 0.36, respectively). These findings reinforce the representativeness of our data.

B.2   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. Employers do not express differences in taste and think that the two types of candidates are on average equally competent. Either candidate may be favoured 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 B2 summarizes the results of the estimation of Equation 3 using a heteroscedastic probit. The coefficients are very similar to those of the probit estimation, showing that our data are not biased.

Table B2: Likelihood to receive a callback corrected for structural effects and fixed effects for region and company (probit and heteroscedastic probit)

	Callback		
French-sounding name	All tests	Women	Men
Probit	10.2***	8.0***	12.4***
	(1.38)	(1.35)	(2.00)
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-sounding name applications	(1.38)	(1.34)	(1.94)
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-sounding names applications 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 variables used to correct for "structural effects" include sexe, age, education, experience, the type of contract, the level of the position (management or not), the first application sent for the test (North African- or French-sounding name), the occupation concerned by the test, the company's commitment to diversity. Standard errors are in brackets and clustered by company. 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.

B.3 Additional Results

Table B3: Likelihood that the French name application will be favoured (marginal effects)

	(1) Probit	(2) Recursive bivariate probit	
	French name app favoured	French name app favoured	Centralized HR
Centralized HR department	-0.10***	-0.29***	
	(0.02)	(0.09)	
The company is a franchisor			-0.36***
			(0.10)
Age	-0.03	-0.04	-0.02
	(0.04)	(0.04)	(0.04)
Age squared	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Men	0.02	0.02	0.00
	(0.02)	(0.02)	(0.01)
Diploma			
Vocational training	0.04	0.02	-0.03
	(0.04)	(0.04)	(0.05)
Bachelor + 2 years	-0.04	-0.04	-0.01
	(0.04)	(0.04)	(0.04)
Bachelor + 3 years	-0.01	0.01	0.05
	(0.05)	(0.06)	(0.05)
Bachelor + 4 years	0.07	0.11	0.06
	(0.13)	(0.14)	(0.12)
Bachelor + 5 years	-0.01	0.01	0.10
	(0.08)	(0.08)	(0.09)
Experience			
3 years	-0.00	-0.01	0.09
	(0.10)	(0.10)	(0.11)
4 years	-0.06	-0.06	0.03
	(0.05)	(0.05)	(0.07)
5 years	-0.10**	-0.11**	-0.02
	(0.05)	(0.05)	(0.06)
6 years	-0.04	-0.05	-0.04
	(0.04)	(0.04)	(0.04)
10 years	-0.06	-0.06*	-0.06
	(0.03)	(0.04)	(0.05)
11 years	0.01	0.02	0.02
	(0.04)	(0.04)	(0.05)
12 years	-0.08	-0.02	1.65***
	(0.11)	(0.11)	(0.18)

Continued on next page

	(1) Probit	(2) Recursive bivariate probit	
Occupations			
Retail store operators and intermediaries	0.01 (0.04)	-0.02 (0.05)	-0.22** (0.10)
Self-service employees	-0.08* (0.04)	-0.12* (0.06)	-0.23 (0.15)
Sellers	0.01 (0.05)	-0.06 (0.06)	-0.37*** (0.12)
Banking and insurance managers	0.02 (0.07)	0.03 (0.09)	0.14 (0.09)
Banking and insurance em- ployees	0.18** (0.08)	0.22*** (0.11)	0.10 (0.08)
Banking and insurance tech- nicians	0.05 (0.06)	0.08 (0.06)	-0.19 (0.20)
Hotel, cafe and restaurant managers	0.04 (0.05)	0.04 (0.06)	-0.11 (0.12)
Hotel/catering employees and operators	0.01 (0.05)	-0.06 (0.07)	-0.38*** (0.14)
Cooks	-0.02 (0.04)	-0.05 (0.06)	-0.25* (0.14)
Management position	-0.00 (0.03)	0.00 (0.07)	0.04 (0.04)
Labour contract			
Permanent	0.01 (0.02)	0.03 (0.03)	0.03 (0.04)
Unknown	0.02 (0.07)	0.04 (0.09)	0.08 (0.14)
First sent application "North African"	0.03* (0.02)	0.04** (0.02)	0.01 (0.01)
Region			
Bourgogne-Franche-Comte	0.05 (0.06)	0.05 (0.06)	0.00 (0.06)
Bretagne	-0.01 (0.04)	-0.01 (0.04)	-0.00 (0.06)
Centre-Val de Loire	0.02 (0.04)	0.01 (0.04)	-0.03 (0.05)
Grand Est	0.01 (0.04)	-0.01 (0.04)	-0.08* (0.04)
Hauts-de-France	0.04 (0.04)	0.05 (0.04)	0.08* (0.05)
Ile-de-France	0.01	0.01	0.02

Continued on next page

31

	(1) Probit	(2) Recursive bivariate probit	
	(0.04)	(0.04)	(0.04)
Normandie	0.01	-0.01	-0.07
	(0.04)	(0.04)	(0.05)
Nouvelle-Aquitaine	-0.04	-0.06*	-0.10*
	(0.03)	(0.04)	(0.06)
Occitanie	0.03	0.03	-0.03
	(0.04)	(0.04)	(0.05)
Pays de la Loire	0.04	0.02	-0.09
	(0.05)	(0.05)	(0.06)
PACA	0.02	0.01	-0.04
	(0.03)	(0.03)	(0.04)
Company involved in diversity	0.03	0.05	0.03
	(0.03)	(0.03)	(0.10)
Pseudo R2	0.06		
atrho		0.64 (p-value=0,04)	
rho		0.57	
LR test of $rho = 0$		$Prob > chi2 = 0.04$	
Log pseudolikelihood	-549,575	-1194,225	
# of tests	1,433	1,433	

Reading: The probability that the French-sounding name application is favoured decreases by 29 pp. when a centralized HR department is involved (column (2)). Standard errors are clustered by company and are into brackets. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

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

Source: ISM Corum-Dares.

Table B4: Likelihood that the North African-sounding name application will be favoured (marginal effects)

	(1) Probit	(2) Recursive bivariate probit	
	N Afr name app. favoured	N Afr name app. favoured	Centralized HR
Centralized HR department	-0.01 (0.01)	-0.03 (0.03)	
The company is a franchisor			-0.36*** (0.10)
Occupations			
Retail store operators and intermediaries	-0.04* (0.02)	-0.04 (0.03)	-0.22** (0.10)
Self-service employees	0.00 (0.00)	-0.09*** (0.04)	-0.23 (0.15)
Sellers (retail)	-0.03 (0.05)	-0.04 (0.05)	-0.37*** (0.12)
Banking and insurance managers	-0.04 (0.04)	-0.04 (0.05)	0.14 (0.09)
Banking and insurance employees	-0.05 (0.04)	-0.05 (0.04)	0.10 (0.11)
Banking and insurance technicians	-0.02 (0.04)	-0.01 (0.04)	-0.19 (0.20)
Hotel, cafe and restaurant managers	-0.06* (0.03)	-0.06* (0.04)	-0.11 (0.12)
Hotel/catering employees and operators	-0.08** (0.03)	-0.09** (0.04)	-0.38*** (0.14)
Cooks	-0.42*** (0.03)	-0.07* (0.04)	-0.25* (0.14)
Pseudo R^2	0.10		
atrho		0.14 (p-value=0.50)	
rho		0.14	
LR test of $rho = 0$		$Prob > chi2 = 0.50$	
Log pseudolikelihood	-210,672	-855,416	
# of tests	1,433	1,433	

Note: This estimation is controlled for age, age squared, sex, diploma, labour contract, management position, experience, diversity label, order of application, regions. Standard errors are in brackets and clustered by company. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Reading: The probability that the French-sounding name application is favoured decreases by 1 pp. when a centralized HR department is involved (column (1)).

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

Source: ISM Corum-Dares.

Table B5: Likelihood that the French-sounding name application will be favoured - linear model

	(1) OLS	(2) 2SLS	
	French name app favoured	French name app favoured	Centralized HR
Centralized HR department	-0.10*** (0.03)	-0.25*** (0.07)	
The company is a franchisor			-0.35*** (0.10)
R^2	0.05	0.01	
Wu-Hausmann test (p-value)		0.02	
# of tests	1,433	1,433	

Note: This estimation is controlled for age, age squared, sex, diploma, labour contract, occupation, management position, experience, diversity label, order of application and a regional fixed-effect. Standard errors are in brackets and clustered by company. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

Reading: The probability that the "French" application is favoured decreases by 10 pp. when a centralized HR department is involved (column (1)).

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

Source: ISM Corum-Dares.

Table B6: Likelihood that the French-sounding name application will be favoured - Alternative IV (the establishment is a franchise) (marginal effects)

	(1) Probit	(2) Recursive bivariate probit	
	French name app favoured	French name app favoured	Centralized HR
Centralized HR department	-0.09*** (0.03)	-0.32** (0.15)	
The establishment is a franchise			-0.21** (0.09)
Pseudo R2	0.06		
atrho		0.79 (p-value=0.21)	
rho		0.66	
LR test of $rho = 0$		$Prob > chi2 = 0.21$	
Log pseudolikelihood	-438.429	-903.319	
# of tests	1,160	1,160	

Note: standard errors are in brackets and clustered by company. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

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

Source: ISM Corum-Dares.

Table B7: Likelihood that the French name application will be favoured by gender (marginal effects)

	(1) Women		(2) Men	
	French name app favoured	Centralized HR	French name app favoured	Centralized HR
Centralized HR department	-0.19***		-0.40***	
	(0.09)		(0.07)	
The company is a franchisor		-0.35***		-0.35***
		(0.10)		(0.10)
atrho	0.36 (p-value=0.17)		1.25 (p-value=0.03)	
rho	0.35		0.85	
LR test of $rho = 0$	$Prob > chi2 = 0.17$		$Prob > chi2 = 0.03$	
Log pseudolikelihood	-565.138		-588.986	
# of tests	718		715	

Note: The probability that the French sounding name application is favoured decreases by 19 pp. when a centralized HR department is involved (column (1)) Standard errors are in brackets and clustered by company. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

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

Source: ISM CORUM-Dares.

Table B8: Likelihood that the French name application will be favoured without the Bank and insurance sector (marginal effects)

| | (1) Recursive bivariate probit | |
	French name app favoured	Centralized HR
Centralized HR department	-0.29*** (0.08)	
Existence of a franchising network		-0.47*** (0.13)
atrho	0.60 (p-value=0,01)	
rho	0.54	
LR test of $rho = 0$	$Prob > chi2 = 0.01$	
Log pseudolikelihood	-1030.554	
# of tests	1,138	

Note: The probability that the French sounding name application is favoured decreases by 29 pp. when a centralized HR department is involved (column (1)). Standard errors are in brackets and clustered by company. Asterisks indicate statistically significant differences at the 1% ***, 5% ** and 10% * thresholds.

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

Source: ISM CORUM-Dares.