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**Article**

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ORIGINAL ARTICLE

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# Hiring discrimination based on national origin and religious closeness: results from a field experiment in the Paris area

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## Abstract

This study uses the findings of a test carried out by correspondence in order to assess separately the potential hiring effects of North African origin and Muslim or Catholic religious affiliation in the French real estate sector. We constructed six jobseeker profiles, each representing a particular situation with respect to national origin and religious closeness, and we sent 1800 résumés in reply to 300 job vacancies advertised from mid April to mid September 2011 in Paris and its suburbs. We find evidences of significant hiring discrimination against applicants of North African origin, regardless of their religious closenesses and against applicants signaling closeness to the Muslim religion, regardless of their national origin.

**JEL codes:** C81, C93, J15, J71

**Keywords:** Discrimination; Correspondence testing; Ethnic origin; Religion

## 1. Introduction

For a couple of decades, economists have been using field experiments in order to directly measure hiring discrimination in the labor markets. Strong evidence of origin based hiring discrimination has been detected in various developed countries<sup>1</sup> such as Australia (Riach and Rich, 1991), the USA (Bertrand and Mullainathan, 2004) and France (Duguet et al., 2010, 2011). However, one of the striking observations that can be made on most of these studies concerns the proxies that are used to signal the applicants' national origin. If it is evident that first name and surname provide a relevant signal of national origin to the recruiter, it is also possible that they provide a signal of religious closeness. This issue is widely ignored in the literature, yet there are several good reasons to believe that religion matters. Becker's aversion theory (Becker, 1957) provides an intuitively plausible explanation for the existence of hiring discrimination based on religion. A statistical component (Phelps, 1972, Arrow 1973) might also play a role. This could occur if recruiters link religious closenesses with economic outcomes in a differential manner. Many studies indeed show that religious membership does influence economic outcomes, especially economic growth (Barro and McCleary, 2003), women's position in the labor market (Algan and Cahuc, 2006), economic attitudes (Guiso et al., 2003) and employment prospects (Pattachini et al., 2012).

While this issue has recently been identified by economists, the literature proposing to evaluate hiring discrimination separately based on origin and religion is very limited. To our knowledge, two studies can be cited in this strand of the literature. Banerjee et al. (2009) seek to identify the role of caste and Muslim identity on hiring discrimination in software and call center jobs in India. For this purpose, they sent out a set of fictitious applications, differing only in applicants' names, which in India may signal Muslim religious identity or membership in a higher or lower caste group. The authors' conclusion is that there is no proof of hiring discrimination against Muslim applicants. Their results also show that belonging to a higher caste group increases the probability of obtaining a job interview, while this advantage disappears when the job requires a higher skill level.

Adida et al. (2010) are the first to note that previous research on hiring discrimination against applicants related to geographical areas associated with Islam, does not identify whether, and to what extent, ethnicity and religious closeness influence hiring discrimination in France. To detect such influence, the authors measure the difference in job access in secretarial and accounting positions between one female applicant with a French sounding name and two female applicants with Senegalese sounding names. The latter two signal closeness to Catholic and Muslim religiosity respectively through their first names and professional or volunteering activities. The results of Adida et al. (2010) indicate that the difference in the response to the French and the Senegalese Catholic applicants is significantly smaller than the difference in the response to the French and the Senegalese Muslim applicants<sup>2</sup>.

Several observations can be made. As the authors themselves note, the use of Senegalese applicants is perhaps not the most appropriate choice to detect hiring discrimination against Muslims. Sufi Islam in Senegal is quite different from the mainstream Sunni Islam practiced throughout the world. Diop (1988) shows that the habits of Muslims from sub Saharan Africa may cause them to be singled out as "not real Muslims" by French people. Moreover, Brinbaum et al. (2010) show that religion is much more frequently cited as a cause of discrimination by North African person than by persons from sub Saharan Africa. For these reasons, religious discrimination could be underestimated in the study of Adida et al. (2010). Furthermore, if the African first names used signal directly the religious closeness of their applicants, they could at the same time indicate different backgrounds<sup>3</sup>. This might matter, as Christian Senegalese as a group appears to be significantly more educated than Muslim Senegalese. Thus, there is no way to disentangle first name specific success from the effect of religious closeness. Finally, as the applicants are women, the gap observed might be impacted by *a priori* probability differences of motherhood between Catholic and Muslim applicants.

In this study, we follow closely the intuition of Adida et al. (2010), while seeking to improve it in some ways. First, we direct our experiment at the most relevant migrant group in France: those from North Africa. To our knowledge, a study separating out the effects of North African origin from the effects of Muslim religion has never been carried out before. Several reasons can justify our choice. North Africa is the top source of migrants to France<sup>4</sup>. North Africans are also the most representative population of Muslims in France and the ones who declare that they suffer the most from religious discrimination (cf *supra*). Studies suggest that they suffer from hiring discrimination even though the discrimination may be less than against Senegalese applicants (Duguet et al., 2011). More broadly, North Africans belong to the demographic group for which it is the most difficult, and at the same time the

most appropriate, to separate origin effects from religiosity effects. North African names are correlated almost perfectly to Muslim religious identity and, differently to the Senegalese, it is not possible to differentiate North Africans into Muslims and members of other religions. In the majority of countries of the North Africa, Islam is the state religion and every newborn is considered as Muslim by default. Atheism and the proselytizing of Muslims by other religions are forbidden and suppressed. Secondly, we vary from Adida et al. (2010) by building applications that signal closeness to Catholic and Muslim religious identity respectively for French and for North African applicants. Therefore, our comparison of applicants' performances allows for a better identification of origin effect deriving from religious closeness. Thirdly, we send all the applicants to the same job offers, regardless of their religious closeness. Thus, we do not need to make any hypothesis about the equality of some potentially determining unobservable job characteristics, as it is the case for the test of Adida et al. (2010). This hypothesis is all the stronger, the smaller the samples are, and the more limited the set of variables<sup>5</sup> used to match job offers is. It follows that sample differences may lead to spurious evidences of hiring discrimination, even if job offers are randomly distributed between pairs of applicants. Fourth, to avoid picking up effects linked to gender such as differences in probability of motherhood, we use only male applicants. Finally, we investigate a profession involving far higher degree of public exposure and contact with customers than secretarial and accounting positions: real estate sales. For this reason, our results are probably more conditioned by customer feelings about North African, Muslim and Catholic people than the results of Adida et al. (2010) study. The remainder of this study is made up of two sections. The first section describes the protocol for application construction and data collection. The second section presents the results.

## 2. Data collection and protocol description

The test consists in sending a large number of dummy resumés in reply to a sample of job vacancies listed between April and September 2011. We present the data collection protocol and reasons of the choices that led us to design the test in this way.

### Nature of the experiment

#### Creation of fictitious applications

##### *Individual characteristics of applicants*

We test the effect of the signaling of two individual variables on the probability of obtaining a job interview: the signal of North African origin and the signal of closeness to the most widely represented religions in France, Catholicism and Islam. To isolate the effects of North African origin and religious closeness, we build six separate applications. The first category of application is the reference, signaling no particular religious closeness other than first and last name. The second category of application signals closeness to Catholic religiosity. The third category signals closeness to Muslim religiosity. For each category of application, two applicants are presented: one whose name signals North African origin and another whose name signals French origin. Comparisons within origin and religion are used to isolate the effects of religious closeness and North African origin *ceteris paribus*.

To indicate the origin of applicants we give them typical French and North African sounding first and last names. For our French applicants, we arbitrarily select the three first names most frequently given during their year of birth. Then, we randomly select three last

names among the ten most common last names during the year of the experiment and randomly match them with the selected first names. For our North African applicants, we randomly select three North African sounding first names among the ten most frequently given during their year of birth. Then we randomly choose North African sounding last names inspired by the names of small North African cities, and randomly match them with the first names. To ensure that these matches do not allow misidentification, we observe the number of results and their content when googling applicants' names<sup>6</sup>. We may note that by using of typical North African sounding names we send no signal about different social or cultural backgrounds of the kind sent by Catholic and Muslim Senegalese first names: North Africans first names are equally distributed among different social classes.

Revealing the religious closeness of applicants is more complex. Indeed, declaring religious closeness on a resumé is not usual. Like Adida et al. (2010), we attribute to our applicants extra professional activities directly linked to religion. However, as we make all our applicants apply to the same job offers, we cannot send signals as fully identical as those used by Adida et al. (2010)<sup>7</sup>. Thus, our applicants report volunteer experience for various secular, Catholic and Muslim organizations. So as not to capture the effect of the reputation of any existing structure, organizations are fictitious. In order to minimize the probability of detection by recruiters, we introduce some heterogeneity in the tasks performed within these organizations. Secular organizations deal with organizing outdoor activities (Sourire) and sport or cultural events (Samedi Jeunes). Catholic organizations oversee local and foreign events like vigils, travel to World Youth Day (Aumonerie de la paroisse Saint Joseph) or famous pilgrimages (Les Chemins de Compostelle). Muslim associations organize various leisure activities (Association des jeunes Musulmans de Reims) and religious events like preparing meals and entertainment in the evening during Ramadan (Ramadan ensemble). It is possible that the type of activity of the organization has an influence on the chances of an applicant obtaining a job interview. To neutralize this potential effect, we operate a rotation of this characteristic between applicants with the same religious closeness. Moreover, the extra professional activities of our applicants have in common the revelation of skill in organizing and managing events. This helps to justify the fact that the extra professional experience appears in the CV's. Table 1 summarizes the identity of applicants.

The signal of religious closeness must be interpreted with caution. Indeed, the signals we have chosen imply greater involvement than mere religious closeness. From this perspective, we tend to overestimate religion based job on discrimination. To solve this problem, we

**Table 1 Identity of applicants**

Last name	First name	Signal	Name of the organization*	Activity of the organization	Signal
Martin	Julien	French	Sourire	Outdoor activities	Secular
Petit	Nicolas	French	Aumônerie de la paroisse St Joseph	Vigil, World Youth Day	Catholic
Moreau	Sébastien	French	Ramadan ensemble	Entertainment and meals during Ramadan	Muslim
Hassani	Rachid	North African	Samedi Jeunes	Sport and cultural events	Secular
Bouras	Farid	North African	Les Chemins de Compostelle	Pilgrimage	Catholic
Abdelkrim	Mohamed	North African	Association des jeunes Musulmans de Reims	Leisure activities	Muslim

\*Translation in English: *Sourire*, Smile; *Aumônerie de la paroisse St Joseph*, St Joseph parish chaplaincy; *Ramadan ensemble*, Ramadan together; *Samedi Jeunes*, Saturday Youths; *Les Chemins de Compostelle*, Paths of Compostella; *Association des jeunes musulmans de Reims*, Association of young Muslims of Reims.

avoid the use of some terms (e.g. “Islamic”) which might be perceived as “too strong” by recruiters and we cause the volunteer experience to appear as completed more than six years ago for all the applicants.

The credibility of our religious closeness signals and the applicant’s representativeness maybe vulnerable to some criticism. Applicants signaling no religious closeness and applicants signaling religious closeness to the usual religion of their group (applicant of French origin close to the Catholic religion, and applicant of North African origin close to the Muslim religion) are not a problem from this point of view. A French origin applicant close to the Muslim religion represents the potential situation of a French convert to Islam<sup>8</sup>. A North African origin applicant close to Catholic religion is the most distinctive combination. Indeed, the signal of religious closeness sent by his first and last names is contrary to the signal of religious closeness sent by his extra professional experience. This is unlikely but not impossible. It is estimated that less than 1% of the North African population is close to any branch of Christianity (with 0.5% of Catholics). An applicant of North African origin might be seen as representative of this population, or as representing a person of North African origin who has converted to Catholicism<sup>9</sup>. Comparison of the results allows us to examine whether this signal was interpreted in a different way from other religious closeness signals.

The other characteristics of applicants are similar. They are 27 or 28<sup>10</sup> years old, single without children and live in socio economically similar neighborhoods located in Paris (10<sup>th</sup>, 11<sup>th</sup><sup>11</sup> and 12<sup>th</sup> municipal arrondissements). To comply with French norms, the nationality of French origin applicants doesn’t appear. However, the French nationality of North African origin applicants is explicitly mentioned. In this way, we protect our study from any effects that may be induced by North African nationality (Duguet et al., 2010) in order to retain only the effect of North African origin. We assign different leisure activities to the applicants (one sport and one hobby without cultural signification) in order to diversify their applications without influencing their productivity signals. Finally, we assign mobile phone numbers and email addresses to the applicants.

#### ***Bottleneck job choice***

We assess discriminatory hiring practices in real estate jobs. Studies which aim to measure hiring discrimination generally focus on bottleneck job offers with high labor flow. Choosing bottleneck jobs maximizes the applicants’ chances of getting positive responses, and allows us to avoid the situation in which no differences are observable due to job market saturation. Choosing a job with high labor flow allows us to minimize the chances of detection by employers. A quick review of the market for real estate agent situations in the Paris area shows that the job to applicant ratio was 0.65 with a job seeker stock of about 4000 people in March 2010<sup>12</sup>. Furthermore, the portion of forecast recruitments considered as difficult was 60%. This bottleneck job choice is not without impact on the estimated results. Indeed, Baert et al. (2013) find that employers seem to discriminate less against applicants of foreign origin when jobs are difficult to fill. As a result, we probably underestimate the level of hiring discrimination against North African persons.

Moreover, real estate jobs involve extensive contact with customers. Hence, we should observe a higher level of hiring discrimination than what we would observe by testing jobs involving little or no contact with customers. We retrieve here Becker’s (1957) assumption on the discriminatory preferences of customers. Lastly, the choice of this profession might matter because strategic diversity could be worthwhile for firms. Real estate firms can

allocate customers with special characteristics (e.g. foreign origin) to agents who are more suitable to them (e.g. because they speak their language or because their cultural background seems closer). To try to counter this, we indicate that our North African applicants do not have a wider range of linguistic competence than other French applicants (i.e. they do not speak Arabic).

#### ***Productive characteristics of applicants***

The applications we create are exactly equivalent with respect to productivity determining characteristics. To avoid detection, however, we are forced to make them differ in some points. All the following differences are equivalent and randomly distributed. Thus, we can state with confidence that they do not influence the quality of the resumés on average.

Our six applicants hold a baccalauréat (which means they graduated from secondary school after a nationwide examination) and a two year technical degree (BTS). They all graduated in 2002 and 2004. To diversify their paths, we indicate that our applicants graduated in different provincial towns (Nantes, Clermont Ferrand, Le Mans, Dijon, Limoges and Reims). There is a possibility that the reputation of the school from which they graduated could impact the performance of some applicants. Nonetheless, as they all graduated from the same kind of establishment (a lycée or high school) located outside Paris and its suburbs and as the number of establishments providing this formation is relatively high (about 120), we should expect no effect arising from this source of heterogeneity. Applicants have about seven years<sup>13</sup> of work experience shared between five positions in different types of real estate agencies (individual, group). Hence, their employability can be considered strong. They did not have any periods of unemployment or career breaks and they are currently working in jobs similar to the ones they are applying for. Staying with the objective of introducing some heterogeneity into our applications, we make the applicants' careers start in the town where they graduated, and we have them move to the Paris area at different times. To avoid introducing a bias related to the difference in experience specific to the Paris area (signaling a better knowledge of the housing market could influence expectations of productivity), they all move to the Paris area by mid 2009 at the latest. This guarantees a minimum of two years experience specific to the Paris area. To obviate any reputational effect of agencies, the most recent work experience of all our applicants takes place in fictitious agencies. Nevertheless the previous work experiences signaled are set in real agencies.

Skills signaled in the applications are equivalent too. To ensure that we are adequately signaling the skills valued by real estate agencies, we observe the prerequisites specified repeatedly in the job offers posted before the beginning of our experiment. Then, we assign these skills to our applications modifying the order and the way we name them. We indicate a knowledge of English, Spanish, standard computer tools, and real estate software packages. Finally, our applicants have the same mobility characteristics (driving license and vehicle available).

The other differences appearing between the six applications are as follows. The type font, the font size and the layout of the resumés and of the covering letters are distinct while remaining standard. To control the similarity and the credibility of our resumés, we had them checked by an expert in real estate jobs. To ensure that characteristics other than origin and religious closeness do not influence the quality of the applications, we implement a resumé rotation system between applicants with the same religious closeness<sup>14</sup>. The French applicants use the first templates for the six first job offers. Then, they swap templates with their corresponding North African applicant who uses it for the six following

job offers and so on. Therefore, our applicants retain only their first and last names, religious closeness<sup>15</sup>, mail address, email address and mobile phone number for the whole experiment.

### **Unfolding of the experiment**

#### ***Restriction of the test to job interviews access***

We limited our experiment to job interviews access, choosing not to send applicants to the interviews in cases where they were invited. In this sense, our measure of hiring discrimination is crude, since we do not really observe job access. This methodological restriction does offer several advantages, however (Riach and Rich, 1991). First, we are able to control perfectly the unfolding of the experiment. In particular, this provision ensures the absence of physical appearance bias (our applications contain no photographs) and more generally, any bias related to unobservable characteristic. Thus, Heckman's critique concerning the equality of the average and variance of unobservable characteristics does not apply. Secondly, our data collection procedure is simplified. We are able to produce a bigger sample by restricting ourselves to job interviews access. Overall, we sent 1800 applications in response to 300 job offers over a five month period.

If job interview access provides an imperfect assessment of hiring discrimination, it should be noted that organizing interviews is costly, which encourages recruiters to interview only those applicants who actually have a real chance of obtaining the vacancy. Moreover, studies show that hiring discrimination flows directly from job interview access (Neumark et al. 1996, Kenney and Wissoker, 1994). For all these reasons, job interview access may be taken as a relevant measure of job access.

#### ***Source of job offers***

Ideally, all the real estate agent job offers posted in the Paris area should have the same probability of being tested. However, this requirement is physically impossible to meet. In this study, we focus only on job offers available in the website of Pole Emploi<sup>16</sup>. This website centralizes most of the job offers for real estate agents. By taking this step, we introduce a possible bias into our results. Indeed, we cannot be sure that recruiters using the Pole Emploi website behave in the same way as recruiters prospecting on others channels for job search<sup>17</sup>. More broadly, our results are biased in view of the fact that we test only one channel for job search. From this perspective, our study probably tends to underestimate hiring discrimination. However, the Pole Emploi website is still one of the most frequently used websites for job search, and it has the advantage of providing job offers with very detailed characteristics (wage offered, work experience required, etc.), which is not the case with others websites<sup>18</sup>. Thus, we privileged the testing of job offers whose characteristics are identified (in particular the work experience requirement) rather than testing job offers whose characteristics are unknown and for which we are not sure that at least one of our applicants has the opportunity of being called back.

#### ***Sending the applications***

Applications were sent between mid April and mid September 2011 to the job offers available on the Pole Emploi website. We replied to the job offers by sending an email with the resumé and the covering letter attached and a short message explaining that the applicant is interested in the offer. As we send our six applications to the same job offer, we take special precautions in doing so. To avoid detection by recruiters, we apply on two different days

(three applications are sent the first day and the three others the second day). This procedure runs the risk of promoting the first application sent. In order to obviate this, we operate a perfect rotation in the order of applications sent, so that the effect must be null on average.

We replied to all the job offers that matched the qualification and experience of the applications and that also satisfied the following criteria:

- Full time job.
- Fixed term or indefinite term contract (this excludes temporary jobs).
- Positions located throughout Paris Area.

#### ***Processing the responses by recruiters***

A response is considered to be positive when the recruiter asks the applicant to attend an interview or when he or she asks for more information on the applicant's current situation or qualifications. Conversely, a response is considered to be negative if the recruiter formally rejects the application or if he or she does not respond to it.

### **3. Results**

#### **Average differentials in the call back rates over all the vacancies**

Table 2 presents the call back rates of our applicants.

Our reference, the French secular has been positively called back nearly one time out of three. This result traduces the lack of workers (or the high turnover) in real estate jobs but also the good adequacy between our applicant's productive characteristics and the job offers tested. Nearly one offer out of two brings at least one positive answer. This result indicates that the reference applicant has been discriminated against among other applicants in nearly 15% of the cases. A possible explanation is that characteristics such as foreign origin or religious closeness may sometimes be in demand among recruiters and that strategic diversity may be sought in some cases. We note that the applicants did not face the same success in term of access to job interviews. The French secular applicant and French applicant close to the Catholic religion receive on average one positive call back out of three applications sent. The French applicant close to the Muslim religion receives one positive call back out of five applications. The North African secular applicant and the North African applicant close to the Catholic religion receive one positive call back out of six applications. The North African applicant close to the Muslim religion receives one positive call back out

**Table 2 Average call back rates**

Religious closeness	French applicants	North African applicants
Secular	32,00%	16,67%
Catholic	31,67%	17,67%
Muslim	20,33%	11,33%
<b>Global call back rate</b>	45,33%	

Number of job offers for all applicants: 300. Global call back rate:% of job offers having provided at least one positive call back.  
Source: calculations by the author.

of ten applications sent. These results seem to indicate the presence of significant hiring discrimination based on both North African origin and closeness to Islam.

### Estimation of discrimination

While these results provide initial presumptive elements that indicate hiring discrimination, they can be given greater depth by carrying out further comparisons between applicants' performances. For this purpose, we examine the significance of callback gaps by pairs of applicants. Table 3 presents the main potentially observable effects.

Comparisons by pairs of applicants allow us to isolate and assess the effect of North African origin on hiring discrimination. In order to achieve this, we observe the first three pairs of Table 3. If the effect of North African origin remains the same regardless of religious closeness, then we can conclude that the effect of North African origin on hiring discrimination appears to be independent of religious closeness.

According to our results (Table 4), the effect of North African origin is strongly significant regardless of the religious closeness signaled by the applicants. The difference between the callback rate of applicants signaling only French and North African origins is about 15 percentage points. It is similar for applicants signaling closeness to Catholic religion and it reaches nine percentage points for the applicants signaling closeness to Muslim religion. Recruiters seem always to prefer an applicant signaling a French origin rather than applicants signaling a North African origin. It is interesting to note that the difference in the callback rates decreases when the applicants signal a religious closeness, in particular to Islam. This result suggests that closeness to Islam has a stronger negative impact on the applicant with French origins rather than it does on the one with North African origins. To observe whether the signal of origin differs significantly from one religious closeness to another, we run difference in difference analysis. It emerges clearly that closeness to Islam modifies the effect of North African origin. Hence, the origin effect seems to be dependent on the applicants' religious closeness.

To assess the impact of religious closeness according to applicants' origins, we use pairs four to nine of Table 3. To compare Catholic and Muslim applicants readers are

**Table 3 Main detectable effects**

Comparison by pairs on the same job offers	Potential effect
French secular/North African secular	Usual result of a field experiment
French Catholic/North African Catholic	Origin for Catholics
French Muslim/North African Muslim	Origin for Muslims
French secular/French Catholic	Signaling of closeness to Catholic religion for a French origin applicant
French secular/French Muslim	Signaling of closeness to Muslim religion for a French origin applicant
North African secular/North African Catholic	Signaling of closeness to Catholic religion for a North African origin applicant
North African secular/ North African Muslim	Signaling of closeness to Muslim religion for a North African origin applicant
French Catholic/French Muslim	Religious closeness for a French origin applicant
North African Catholic/ North African Muslim	Religious closeness for a North African origin applicant

**Table 4 Effect of North African origin according to the religious closeness signaled and difference in difference estimations**

Comparison by pair on the same job offers	Difference between the callback rates (in % points)	T-statistic
Secular French/North African	15.33***	6.00
Catholic French/North African	14.00***	5.53
Muslim French/North African	9.00***	4.59
Comparison of differences between the pairs of applicants	Difference in difference between the pairs of applicants (in % points)	T-statistic
Secular applicants/Catholic applicants	1.33	0.41
Secular applicants/Muslim applicants	6.33**	2.04
Catholic applicants/Muslim applicants	5.00*	1.67

The student test statistics have been computed by the Bootstrap method on 10000 repetitions.

\*\*\*: Significant at 1%\*\*Significant at 5% \*:Significant at 10%.

Source: calculations by the author.

reminded that we have to make the assumption that the signals of religious closeness have been perceived in the same way (in term of degree of religious involvement) by the recruiters. For instance, if the applicant signaling closeness to the Muslim religion was perceived as being more religious than the applicant signaling closeness to the Catholic religion, then our comparison is biased. However, the particular precautions we have taken during the design of the experiment permit us to suppose that the signals of religiosity we have sent are of equal strength.

Signaling closeness to the Catholic religion does not have the same impact on the probability of being called back as does signaling closeness to the Muslim religion (Table 5). In the case of the French applicants, closeness to the Catholic religion has no impact on the chances of getting a job interview whereas closeness to Muslim religion decreases it significantly. The same statement applies for North African applicants. As the results in Table 5 suggest, the penalty incurred by closeness to the Muslim religion appears to be stronger for French applicants. Recruiters prefer applicants close to the Catholic religion rather than those close to the Muslim religion regardless of their origin. In the case of the French applicants, the difference between the call back rates of Catholic and Muslim is 11.33 percentage points in favor of the Catholic. In the case of the North African applicants, the gap is 6.33 points in favor of the Catholic and in both cases the difference is strongly significant.

**Table 5 Effects of religious closeness according to the origin**

Comparison by pair on the same job offers	Difference between the callback rates (in % points)	Student
<b>French</b>		
Secular/Catholic	0.33	0.13
Secular/Muslim	11.67***	4.49
Catholic/Muslim	11.33***	4.40
<b>North African</b>		
Secular/Catholic	- 1	0.52
Secular/Muslim	5.33***	3.06
Catholic/Muslim	6.33***	3.47

The student test statistics have been computed by the Bootstrap method on 10000 repetitions. \*\*\* : Significant at 1%.

Source: calculations by the author.

Another way to observe how the effects of origin, religious closenesses and their interactions articulate themselves in our experiment is to run OLS regression analysis. We specify the following relation:

$$C_{ij} = \alpha_0 + \alpha_1 x_i + \alpha_2 y_j + \alpha_3 z_{ij} + \mu_{ij}$$

Where  $C_{ij}$  is a dummy for whether applicant  $i$  received call back from job ad  $j$ .  $x_i$  is a vector of dummy variables expressing applicant  $i$ 's properties.  $y_j$  is a vector of dummy variables representing job ads  $j$ 's properties detailed in the description of the job offers.  $z_{ij}$  is a vector of dummy variables representing matches between properties of applicant  $i$  and job ad  $j$ . It measures the specific interaction effect of applicant's origin or religion with the jobs' characteristics. From the estimated coefficients, we can check the relevancy of origin, religious affiliation and their interactions directly. Results are presented in Table 6.

For greater clarity, we feature only coefficients related to applicant properties and significant coefficients relative to job properties and interactions among applicants and job properties. Islam and North African origin are associated to strongly significant penalties. Interestingly, interactions between North African origin and religions are not significant. However, interaction between North African origin and Islam is close to being positively significant. This can explain why the effect of origin is different for Muslim applicants. The probability of being called back is smaller for indefinite term and fixed term contracts. Surprisingly, the interaction between Islam and indefinite term contract is slightly positively significant. Interaction between North African origin and the desired experience is positively significant too. Finally, the best wage offers impact the call back rate positively.

It is possible that the characteristics of the job offers we tested had an impact on the level of hiring discrimination observed. In order to control for these effects, we regress the differences between the callback rates of the applicants on the same set of variables used in OLS regressions. We find significant positive (professional experience desired and extras offered) and negative (degree desired, woman involved in the hiring process) effects on origin based discrimination and significant positive (type of contract offered) and negative (woman

**Table 6 Ordinary least square regression used to estimate the impact of origin, religious closeness, job properties and their interactions**

Variables	Coeff.	T statistic	Variables	Coeff	T statistic
1st intercept	0.43	8.37	Catholic	-0.01	0.09
North African	-0.15**	2.62	Islam	-0.17**	2.57
Catholic* North African	0.01	0.29	Islam*North African	0.06	1.38
Resumé template : 2	-0.01	0.31	Resumé template 2*North African	-0.01	0.26
Resumé template 2*Catholic	0.04	0.87	Resumé template 2*Islam	0.01	0.28
Contract : fixed term	-0.21**	2.40	Indefinite term*Islam	0.13*	1.85
Contract : Indefinite term	-0.16***	2.92	Experience desired*North African	0.10**	2.09
Wage > 2200	0.12**	2.26			

Explained variable: 0: No or negative call back, 1: Positive call back. The following dummy variables had been introduced into the regression: Origin, Religions, resumé template used, type of contract (fixed term, indefinite term), experience requirement (experience "desired", experience "required"), degree requirement (minimal degree "desired", minimal degree "required"), degree level (Baccalauréat, Bachelor), wage offered, others extras offered, sex of the recruiter, interactions among origin and religions, resumé template and origin, resumé template and religions, characteristics of the jobs and origin, characteristics of the job and religion. For more clarity in the following table, only the coefficients related to applicants' properties and their interactions, significant coefficients related to job ads properties and significant interactions between job and applicant properties are presented. \*: Significant at 10% \*\*: Significant at 5% \*\*\*: Significant at 1%.  
Source: calculations by the author.

involved in the hiring process, extras offered) effects on religion based discrimination. Detailed results are available from the author on request.

### Summary of the results and potential limits

This field experiment teaches us two things. First, it seems that hiring discrimination based on North African origin is present in real estate jobs located in the Paris area regardless of religious closeness. This result confirms the findings of previous studies. One of the reasons why the population of North African origin experiences worse hiring performances than those of the population of French origin is the existence of origin based hiring discrimination. Religious closeness does not modify this finding but it does introduce some significant disparities. The effect of ethnicity seems to depend very much on religious closeness. Secondly, there is hiring discrimination based on closeness to Islam and its signaling regardless of the origin of the applicants. Thus, we reach findings similar to those of Adida et al. (2010) with a different design. People exhibiting closeness to the Muslim religion would constitute a demographic group with specific hiring performances.

In view of our particular design and more precisely because we give our applicants fictitious last workplaces and associations, it may legitimately be asked if our applications have not been perceived as fictitious by recruiters. In response, we can state at the outset that our results do not suggest that this has been the case. Notably, the fact that the Catholic North African applicant was called back significantly more often than the Muslim North African applicant is reassuring. Detection can occur in two modes. In the first mode, all the applicants are detected. This mode cannot lead to spurious evidence of discrimination as, the expected behavior of recruiters falls into three categories: announcing to the experiment designers that the experiment has been detected, calling all the applicants or calling no applicants. In the second mode, only some applicants are considered as fictitious. This might have been the case with applicants signaling religious closeness. However, it is unlikely that only Muslim or only Catholic applicants have been detected. When recruiters detect one of the two kinds of religiously slanted application, they will in reality probably detect the other kind of religiously slanted application as well, and their expected behavior will be identical to the first case. One may note that the use of fictitious signal is common in field experiment literature<sup>19</sup>.

In the same vein, the fact that we did not follow a perfect rotation scheme among all our applicants may have introduced some bias in the results. Although all the productive characteristics of the experiments were built with a strong effort to achieve equivalence and were distributed randomly, this fact does represent a slight flaw in our design. The reasons for not following a perfect rotation scheme are related to simplicity and convenience above all. Some reassuring indirect evidence lead us to think that there is no bias of this kind in our experiment, for example, the fact that all the French origin applicants outperform all the North African origin applicants regardless of the template used and the non significance of the template dummy in our regressions. Still for all these reasons, our results have to be interpreted with additional care.

### Conclusion

In order to assess hiring discriminations based on North African origin and on closeness to the Catholic or the Muslim religion in Paris area real estate jobs, we built a

correspondence test. The test consists in the creation of six applications strictly equivalent in productivity sent in response to the same 300 job offers between mid April and mid September 2011.

A first conclusion regards the extent of hiring discrimination based on North African origin. This discrimination is always significant, regardless of whether or not applicants signal religious closeness. A second conclusion concerns hiring discrimination based on religious closeness. Only closeness and signaling closeness, to the Muslim religion appears to be penalized, regardless of the applicant's origin.

Given that our measures of hiring discrimination are only partial, punctual and localized, it makes sense to remain cautious in generalizing the results. In so far as they confirm intuitions already found in other field experiments, it might be thought that they do not represent a specific feature of our chosen field. However it would be interesting to transfer this experiment to other job sectors and to other localities in order to check for its robustness.

## Endnotes

<sup>1</sup>For a detailed review of the literature, see Riach and Rich (2002).

<sup>2</sup>To avoid detection, the Senegalese applicants do not apply to the same job offers. Instead, job offers are matched according to some observable characteristics, then randomly assigned to the pairs French/Catholic Senegalese applicants or French/Muslim Senegalese applicants.

<sup>3</sup>Bertrand and Mullainathan (2004) find significant differences in the call back of applicants with various African-American sounding names.

<sup>4</sup>According to the INSEE, 1.6 million of immigrants and nearly 2 millions descendants of immigrants had North African origins, whereas 0.67 million of immigrants and 0.57 million of descendants of immigrants originated from sub Saharan Africa in France in 2008.

<sup>5</sup>In their study, job offers are matched by the following characteristics: region, sector, company size and position.

<sup>6</sup>The North African first names we chose are Mohamed (in position 53 among the most frequently given first names in France during 1984), Rachid (position 113) and Farid (position 122). The number of births ranges between 500 (Farid) and 1800 (Mohamed) for each first name. The North African sounding last names we chose are Hassani (in position 8133 among the most common last names in 2011, Bouras (position 8263) and Abdelkrim (position 45778). The number of births ranges between 150 (Abdelkrim) and 900 (Hassani) since 1966 (INSEE). The number of results when googling the North African names is between 3500 and 12500.

<sup>7</sup>In their study, Adida et al. (2010) signal religious closeness through the first name and by professional and extra professional activities for Secours Catholique and scouts et guides de France (for Catholics) and Secours Islamique and scouts Musulmans de France (for Muslims).

<sup>8</sup>According to Patrick Simon (INED) among the French population aged 18–50 in 2008, nearly 100,000 people were converts to Islam out of a total of 2 millions Muslims.

<sup>9</sup>According to the sociologist of religion Loïc Lepape (EHESS) about 150 North African people request Christian baptism each year in France.

<sup>10</sup>We operate a rotation of this characteristic between applicants with the same religious closeness.

<sup>11</sup>Note that applicants close of the Muslim religion never report living in the 11th municipal arrondissement.

<sup>12</sup>Source : Fichier Historique Statistique of Pôle Emploi 1st quarter 2010.

<sup>13</sup>A company internship is required in BTS and doesn't appear on CV's since applicants have sufficient work experience to make it the case.

<sup>14</sup>For simplicity, we do not implement the rotation system between applicants of different religious closeness.

<sup>15</sup>The global religious closeness signal remains but the specific religious closeness signal (type of association) is swapped.

<sup>16</sup>Pôle Emploi is the French public employment agency.

<sup>17</sup>If searching on the Pole Emploi website is perceived as more risky in term of detection by discriminating recruiters, then it is likely that there is less job discrimination from Pole Emploi job offers.

<sup>18</sup>For technical reasons, we have excluded websites requiring pre-registration.

<sup>19</sup>This is for instance the case in the study of Riach and Rich (2010), as the use of real signal is prohibited in England. It is also the case in the study of Adida et al. (2010).

#### Competing interest

The IZA Journal of Labor Economics is committed to the IZA Guiding Principles of Research Integrity. The author declares that he has observed these principles.

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