



HAL
open science

Does Competition Induce Hiring Equity ?

Clémence Berson

► **To cite this version:**

| Clémence Berson. Does Competition Induce Hiring Equity ?. 2012. halshs-00718627

HAL Id: halshs-00718627

<https://shs.hal.science/halshs-00718627v1>

Submitted on 17 Jul 2012

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Does Competition Induce Hiring Equity ?

Clémence BERSON

2012.19



Does Competition Induce Hiring Equity?*

Clémence Berson

PSE, CES, University of Paris 1, 106-112 bd de l'Hôpital 75647 Paris cedex 13 FRANCE

Centre d'Etude de l'Emploi, "Le Descartes I", 29, promenade Michel Simon

93166 Noisy-le-Grand cedex, FRANCE

E-mail: clemence.berson@univ-paris1.fr

*I gratefully acknowledge financial support from the Fonds d'expérimentation pour la jeunesse of the French Ministère de l'Emploi et de la Solidarité and from the Paris School of Economics.

Abstract

This paper tests the impact of competition on the hiring process in the French retail sector. Following the Becker's theory, higher the competition, lower is discrimination. Using local Herfindhal-Hirschman indexes, a correspondence study ensures to observe how competition affects discrimination. A strong employment gap is observable between French natives and second generation immigrants. Concerning gender, women are favored as cashiers. The impact of competition depends on the target population: competition reinforces preference for women, whereas discrimination due to origin is follows the Becker's theory. However, increasing competition to fight against discrimination is not a solution, as it will enhance bad condition of women in the labor market and an increase of awareness of human resources department to equality of treatment is more efficient.

Résumé

Une large littérature s'accorde sur un effet de la concurrence sur le marché des biens sur la discrimination. Mais l'ensemble de ces études se focalisent sur les salaires et les postes, sans s'intéresser à l'embauche. Cet article teste l'impact de la concurrence sur le processus d'embauche et ses conséquences sur les écarts d'emploi. Deux types de discrimination sont étudiés : le genre et l'origine. Le secteur choisi est celui de la grande distribution. En utilisant des niveaux locaux de concurrence, un testing permet d'observer comment la concurrence affecte la discrimination. Les résultats montrent que la concurrence peut accentuer la discrimination statistique dans le cas du genre. De plus, elle n'est pas forcément un bon outil pour lutter contre la discrimination, le cas de l'origine montrant un impact plus fort de la centralisation du recrutement et de la sensibilisation des recruteurs.

JEL Codes: J71, C93

Keywords: Discrimination, hiring, competition

Mots clés: Discrimination, embauche, concurrence

1 Introduction

The presence of discrimination on the labor market is now well documented (Altonji & Blank (1999)). Studies on wage differentials, glass ceilings and employment access in many countries point out a persistent discrimination against women and ethnic minorities. Discrimination against sexual minorities or disabled is yet observed in spite of a lack of data. More attention is now paid to the mechanisms and how to disentangle different types of discrimination to lead fitted policies. In order to test the Becker's theory, researchers analyze the impact of competition on discrimination and results tend to confirm the theory. However, these studies focus on labor outcomes on the job. This article aims at filling out the literature by testing the impact of competition on hiring discrimination.

Discrimination is introduced in economics by Becker (1957). He defines discrimination as the result of a taste. Some employers, coworkers or consumers do not want to employ, work with or buy something to an individual belonging to a particular group. It induces a different treatment of these workers from the others, in spite of identical observable productive characteristics. However, in the case of employers, satisfying their taste for discrimination is costly, as it reduces the pool of applicants for the firm, and workers belonging to the group discriminated against receive a lower wage because of the psychological cost of their employer. In a competitive market, prejudiced firms are less efficient than the others and will be driven out of the market. Arguments are relatively similar in the case of prejudiced co-workers and rational employers hire only one type of workers in order to obtain the largest productivity of workers. The steady state is a perfect segregation, which is not realistic. The case of prejudiced consumers is the only stable case. Indeed, employers increase their profit when they answer to the taste of customers for discrimination. However, it concerns only jobs, which implicate a direct contact with customers. In order to explain a persistence of discrimination, Arrow (1973) and Phelps (1972) enhance this theory by developing the concept of statistical discrimination. In this case, discrimination does not result from a particular taste but from imperfect information and beliefs of employers. These former are assumed to know the true

productivity level of workers belonging to her group and ignore the productivity of workers belonging to another group. To set the wage of workers of the minority, they also use the expectancy of the average estimated productivity of this group. Generally, individuals of the majority believe that workers of the minority are less productive in average and the wage offered to them is lower than the wage offered to workers of the majority. However, a phenomenon of learning makes it disappear. In both theories, discrimination does not have to persist. This explains that a lot of empirical studies aim at outstanding the role of competition in the phenomenon of discrimination in the labor market.

Empirically, most of studies focus on discrimination on the job. They first compare wage gap and employment rate in differently concentrated sectors (Comanor (1973), Hellerstein *et al.* (2002)). However the comparison of distinct sectors induces biases due to their unobservable characteristics. To avoid them, Peoples & Saunders (1993), Heywood & Peoples (1994) and Black & Strahan (2001) used external shocks of competition within a sector in order to observe its consequences on wage gap, employment rate and occupations. Ashenfelter & Hannan (1986) slightly differed in their method as they determine the impact of competition on labor market output thanks to the diversity of local competition in the US banking sector. A third way to study the impact of competition is to observe variations due to globalization of trade. Black & Brainerd (2004) show that competition decreases wage differentials between men and women, improves job attainment and the rate of workers discriminated against in the sector. However, no study focuses explicitly on the hiring process, because of the lack of data concerning employment. This is an important issue, particularly, in a period of large unemployment, where discrimination will be revealed more in the hiring process than in wages. This article offers to complete the literature by leading a field experiment in areas with different level of competition. Correspondence studies underline discrimination in the hiring process against women ethnic minorities across a large set of countries and ethnicities. Existence of discrimination against this population allows me to focus on the topic of this article: the impact of competition on the discrimination due to origin and gender. In order to easily measure the level of competition, the tested sector is the French retail sector. Indeed, databases on strategic data are available and the

local competition varies sharply across regions. A correspondence study gives the data on discrimination and a matching with competition databases allow me to study how competition affects discrimination during the hiring process.

Main results are that women are favored and discrimination is observable against second generation immigrants. The impact of competition on employment varies according to the type of discrimination: A less competitive environment leads to a higher equity between men and women, showing the particular condition of women in this job, whereas the impact of competition is more standard concerning origin. Discrimination against men seems to be a statistical discrimination as when competition is sharper, employers favor women. This mirrors the study of Askenazy *et al.* (2009) on the French retail sector, where women are said more susceptible to work in bad condition. The type of discrimination against second generation immigrants is not straightforward. A part is clearly due to a taste of employers. However, the other part could be due to customers' taste or to statistical discrimination.

This paper is organized as follows. The design of the experimentation is presented in Section 2. The Section 3 gives the empirical results and robustness checks are described in Section 4. Finally, Section 5 concludes.

2 Experimental Design

A correspondence study is a field experiment aiming at measuring discrimination in the hiring process among a particular characteristic such as gender, ethnicity, nationality and so on. Two similar resumes are spontaneously sent to a large number of firms or in order to answer to an ad. The only significant difference between both resumes is the characteristic researcher wants to test. This experiment can be extended by an audit but it induces biases because of unobservable characteristics of fictitious applicants. Moreover I consider that an interview is costly for the firm and the selection due to discriminatory criteria is often done during the resume step. In order to find a more precise argumentation, see Bertrand & Mullainathan (2004). Thereafter, an econometric study of the likelihood of callback of each candidate measures discrimination.

Riach & Rich (2002) surveyed audit and correspondence studies and listed them by country and methodology. The first correspondence study was done by Jowell & Prescott-Clarke (1970) in Great Britain. This experiment concerned discrimination against non-white looking for white-collar jobs. They aimed at distinguishing between discrimination due to 'color' and discrimination due to 'foreignness' by using different origins, and they found evidence on a greater disadvantage for the colored immigrant group than for the white immigrant group. Other field experiments followed in a large set of countries like Australia, the United-States, Canada, the United-Kingdom and France. International economic reviews began to publish correspondence studies in the 1980s and this procedure is now well-known as an objective measure of discrimination in the hiring process by researchers in economics. The correspondence study of Bertrand & Mullainathan (2004) on racial discrimination in Boston and Chicago is now the reference of field experiment on discrimination. They tested the impact of a sounding African-American name in the labor market. They found a significant discrimination against African-American workers, which seems to be due to some tastes of employers because a better quality of resume does not improve the number of callbacks of this minority.

During the 1990s and 2000s decades, these experiments gain an official recognition. The International Labor Office (LBO) commissioned audit and corresponding studies in European countries to deeply observe the phenomenon of discrimination on the labor market in Europe. Studies were executed in the Nederland, Germany, Spain, Belgium and, later, Italy, Sweden and France. This commission legitimated this kind of experimentation to measure discrimination on the labor market in the political sphere. Some countries, like France in 2004, legalized this practice in order to fight against discrimination.

As regards the aim of this article, a correspondence study is well-adapted to measure discrimination in the hiring process. Local variations of competition in the selected sector allow observing their impact on discrimination. The experimental design is described in five paragraphs. The first one explains how the retail sector has been selected. The second paragraph concerns geographical areas where the correspondence study takes place. The third part points out jobs and type of applicants targeted by the experiment. The fifth section deals

with the creation of the fictitious resumes. The last one describes the timeline.

Sector selection The retail sector is highly regulated in France. The official aim of these policies is to protect traditional groceries from a sharp competition of supermarkets and megastores. A first law is voted in 1973 and made compulsory for new entrant to apply for an authorization to build a new store (or just to enlarge an existing one) if the surface area is larger than $1000m^2$ in a small city or than $1500m^2$ in a large city. The regional board charged to study the application is composed of local elected members, store owners already established and representatives of consumers. This regional zoning board created a barrier to enter the market and only few new stores have been authorized to set up. Bertrand & Kramarz (2002) studied the impact of the Royer law and found that stronger deterrence of entry by local boards increased retailer concentration. Besides, the concentration ratio in the retail sector has a negative impact on employment, in the retail sector and in the economy. On the contrary, the number of approvals by the regional zoning board has a positive effect. It suggests that the zoning regulation introduced in France in the early 1970s to restrain the development of large stores has an impact on the whole economy. Moreover, this law explains a part of geographical discrepancies in competition as some boards were more favorable than others. Askenazy *et al.* (2009) point out this heterogeneity throughout the country as stores are unequally distributed. Some stores are in a monopolistic situation, often in rural areas, and others are surrounded by stores belonging to other groups and competition is sharper.

In 1996, two other laws restricted the competition: The Galland and Raffarin laws, both applied in 1997. The Galland law consists in forbidding stores to pass on individually negotiated discounts to consumers. This is equivalent to allowing industry-wide price floors. Biscourp *et al.* (2008) and Allain *et al.* (2008) show that it induced an increase in prices and a decrease in the level of competition of the retail sector. The Raffarin law reinforced the Royer law of 1973 by generalizing the necessity of approval to enlarge or establish a large store. The new threshold dramatically decreased to $300m^2$. Both Galland and Raffarin acts strengthened the regulation of the market.

Recent laws relaxed both acts (Dutreil in 2003 and Chatel in 2008 for the Galland law and LME in 2008 for the Raffarin law). In spite of these amendments, aiming at increasing competition, the French retail sector remains highly concentrated. In a report of 2009, the French Competition Authority (Autorité de la concurrence) notes that the French retail sector is very concentrated, really similar to an oligopoly. Indeed, this sector is essentially composed of six main companies, which represent 85% of the sector in terms of market share in 2009. Companies are organized in two different ways: One half is cooperative and the other half is integrated. This distinction will be useful in order to identify discrimination due to employer taste. Indeed, on the one hand, managers are owners of their store and are only member of the brand. On the other hand, managers are wage-earning and receive a profit-share as branch store or franchise. In the second case, the employer taste for discrimination would be more difficult to express. Another useful remark concerns the way of recruitment. One of these six companies centralizes its hiring process. Stores, which search applicants for a job or receive resumes, have to contact the centralized human resources department. Then, two or three applicants are proposed to each vacant post. This policy aims at reducing costs and discrimination. The company increases workers of the human resources department awareness of diversity and equity during the hiring process. However, results show that all stores of this company do not use this procedure and recruit themselves. They probably want to choose applicants corresponding to their taste. A dummy, called *central recruitment*, captures this effect in probit estimations.

Areas selection and competition The second step of this experiment is to locate favorable places to do the test and to measure competition. The Herfindahl-Hirschmann Index (HHI) is an adequate measure of competition in our context. Indeed, the index has a large scale and disentangle uncompetitive areas even if there are only few stores in the area. HHI is the sum of the squares of the market shares of each chain of retail. The data base I use contains an exhaustive list of the retail stores in March 2011, with precise information on location, phone number, surface area and number of cash desks. Consequently, it is possible to precisely calculate HHI at a local level.

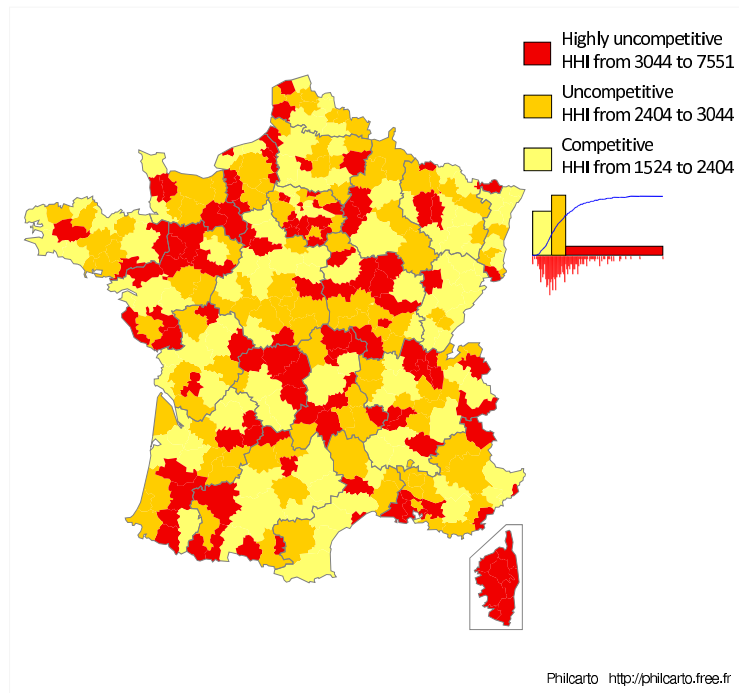


Figure 1: Herfindal-Hirschmann Index by employment area

Areas are selected in two steps. First, I focus on local labor markets with similar demographic characteristics. The employment areas or *zones d'emploi* fit this definition as this geographic scale is determined by the French National Institute of Statistics (INSEE) as a territory, where most of people, who live inside, work inside. HHI is calculated in each employment area, considering that the local labor market roughly fit the customer catchment areas (Figure 1). Thereafter, measures will be more precise, using a smaller geographical scale. Employment areas are break down in three categories: competitive, uncompetitive and highly uncompetitive. The index goes from less than 1000 to more than 6000. An industry is usually considered as competitive when the HHI is less than 1000, uncompetitive between 1000 and 2000 and highly uncompetitive for more than 2000. The local retail sectors are highly uncompetitive and the bounds used in the article are slightly different. Each category contains one

third of the total of employment areas without Corsica, which is very particular. An area is considered as competitive under 2404, uncompetitive between 2404 and 3045 and highly uncompetitive above. Figure 4 shows that the density of HHI of the selected zones is similar to the whole employment areas.

A merge with data from INSEE of 2007, on characteristics of employment areas and competition data enables to summarize their characteristics. The selected areas try to be representative of each category but could be various in term of demographic characteristics like the concentration of immigrants (Figure 3) or population density. A special attention is paid to equilibrate these characteristics in each competition category. Table 1 summarizes the characteristics of the selected employment areas.

Table 1: Average characteristics of selected employment areas

	Competitive	Uncompetitive	Highly uncompetitive
# observations	12	21	21
Population	384,465 (331,571)	248,367 (257,579)	127,583 (86,993)
Density (inhab./km ²)	0.28 (0.02)	0.28 (0.05)	0.28 (0.07)
Immigration rate	0.07 (0.02)	0.06 (0.03)	0.08 (0.05)
Unemployment rate	11.3 (2.11)	10.8 (2.20)	9.15 (2.99)
Surface area (km ²)	103,490 (84,734)	63,124 (52,143)	36,164 (23,555)
HHI	2,148 (156.98)	2,705 (205.2)	3,987 (1061.1)

For each category, the first line is the mean and in brackets are the standard deviation coefficients.

Employment areas are too large to approximately fit customer catchment areas of stores. A second zoning is necessary to better approximate the local level of competition. Population catchment areas (PCA), "bassin de vie" in the INSEE nomenclature, are the smallest areas, where inhabitants can access to current facilities and employment. The aggregate measure of facilities contains an index on competitive facilities (retail, stores, bank...), non-competitive

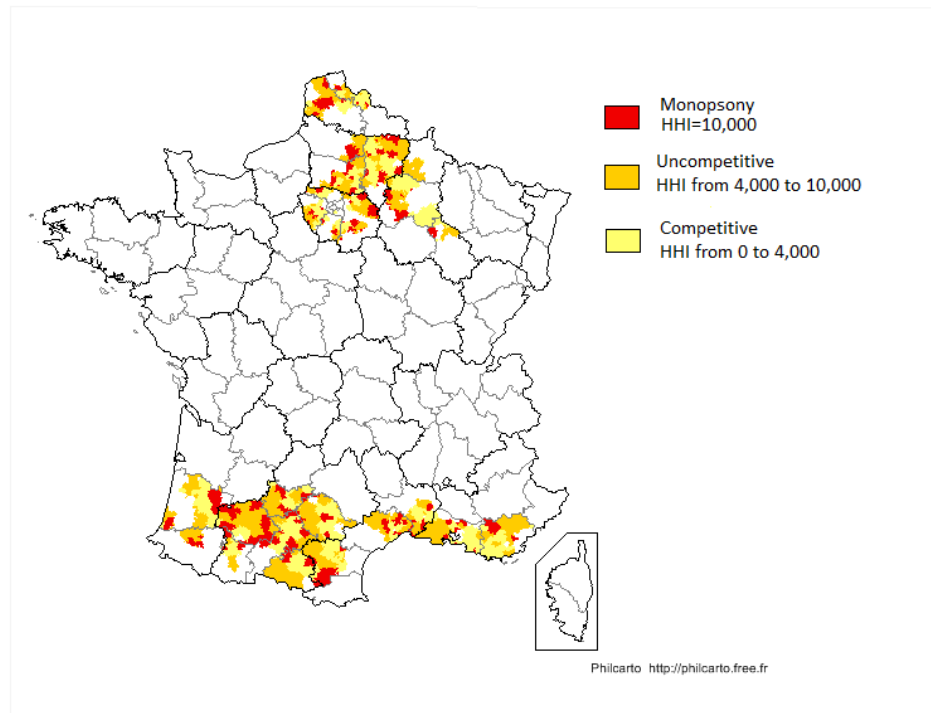


Figure 2: Herfindal-Hirschmann Index by life pool

facilities (post office, gendarmerie, notary public, swimming pool, cinemas...), health facilities (doctors, pharmacy, dentist, maternity hospital, casualty department, hospital...) and education institutions (primary school, high school). The French territory is break down in more than 2,000 PCA, urban and rural. By construction, PCA are relatively similar to customer catchment areas of retail stores, as number of retail stores is a large weight of the competitive facilities index. Table 2 summarizes, their characteristics depending on their situation: HHI less than 4,000, HHI between 4,000 and 10,000 and PCA in monopoly. 125 PCA contain only one retail store. Degree of competition is various and

Table 2: Characteristics of selected population catchment areas

	Competitive	Uncompetitive	Monopolistic
# observations	14	161	121
Population	447,801 (469,553)	29,249 (37,809)	8,680 (3,772)
Surface area (km ²)	1,142 (691)	330 (310)	138 (114)
Density (inhab./km ²)	438 (490)	330 (310)	138 (318)
Immigration rate	0.07 (0.02)	0.06 (0.03)	0.05 (0.03)
Unemployment rate	10.7 (1.8)	10.0 (2.2)	10.1 (2.5)
# stores	38.9 (35.4)	3.5 (3.0)	1.0 (0)
HHI	2,393 (377)	4,947 (983)	10,000 (0)

For each category, the first line is the mean and in brackets are the standard deviation coefficients.

population and surface area are both variables, which vary with HHI. However, their correlation with HHI is weak (-0.21 and -0.14 respectively).

Types of job and applicants The target job is cashier in retail stores. The study of Askenazy *et al.* (2009) show a large turnover of almost 80% between 2003 and 2005 in the sector and it seems that this particular job is only a spell before a better one. The main modes of application are network, ad in the store or spontaneous applications. It does not need particular abilities even if a vocational education in trade practice is welcome. The training last two days when the worker has no experience but only half a day if she already worked as cashier. It is predominantly a women's job in France. As note Askenazy *et al.* (2009), cashiers are not unionized (only 2%), are often part time workers and are mainly vulnerable individuals. Employers admit that they favor single mothers because they need to keep their job in spite of low wages and the severity of working condition. Moreover, they recognize to hire less foreigners and colored people, supposedly to answer to consumers' taste.

The third step of this correspondence study is to choose the target popula-

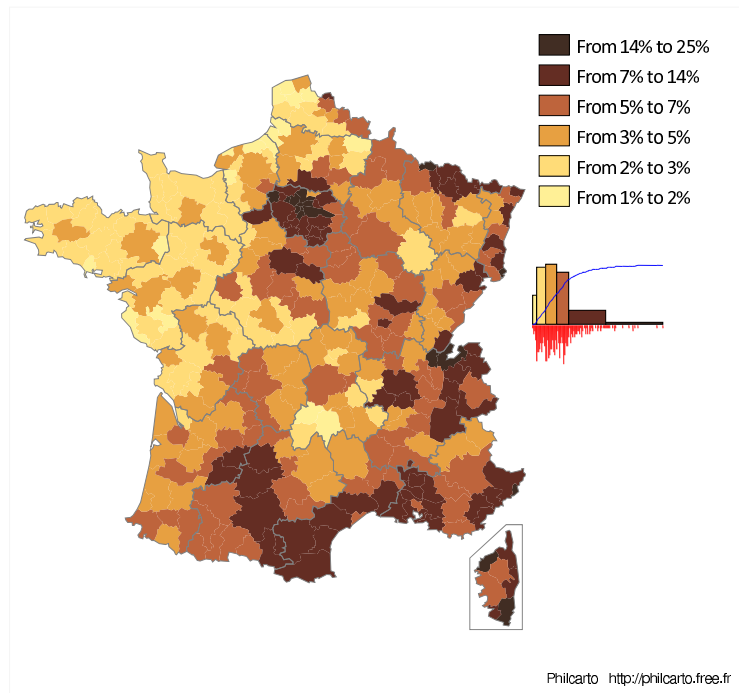


Figure 3: Proportion of immigrants in the total population by employment area in 2007

Source : INSEE

tion. Since this experiment aims at testing the impact of competition on the hiring discrimination, the target population has to be discriminated against. In France, evidence of discrimination against the second generation immigrants is well-established, notably by the correspondence study of Duguet *et al.* (2010). They had shown that French young workers with Moroccan origin are clearly discriminated against in sectors of accounting and hotel business. A large part of them have North-African parents and obtained the French nationality at their legal majority. Their French nationality is not sufficient to obtain the same chance on the labor market than young French people with native origin and name. The second generation immigrants is also the first target population of the experiment. In this case, the referent population to estimate the level of discrimination is young workers with French origin. Moreover, as cashier is a

women job, both genders are tested in order to detect a self-selection of women or a discrimination against men in this sector.

Resumes creation The fourth step of the design is to create appropriated resumes. In order to make credible templates, a human resources manager of a retail store has given some accepted CVs. The characteristics of applicants are inspired from these true CVs. To keep a usual framework, biographies are designed with templates of the word processor. Four different one are used to be sure that a firm does not received resumes with an identical shape.

The applicants are 20, obtained a vocational high school degree in trade practice and have some work experience by trainings and student job during holydays. Student job is cashier in discounted retail establishments in order to have an experience in the job. Trainings concern other trade sector, like clothing salesperson or salesperson in a DIY shop. She has basic computer skills and practices sport. The resumes are adapted to the location and firms used for training are national firms present in all regions.

Each applicant has an e-mail address, a phone number and a postal address. Fictious e-mail addresses are created for each applicant, made up of her name and surname. Applicants in each origin/gender cell have the same phone number. The phone lines have only a voice mailbox attached to them. A similar outgoing message is recorded on each of the voice mailbox but each message is recorded by someone of the appropriate gender and without any accent, which can indicate a foreign origin. Since the same phone number is allocated for applicants with different names, the outgoing message contains only the phone number and no person name. Concerning postal addresses, fictious addresses are determined in burgs when the employment area is rural and in the center of the city when the employment area is urban. This strategy allows avoiding districts with bad connotations.

Origins are suggested by the name and surname of the candidate. The French nationality is clearly written on resumes and typical Moroccan-sounding or French-sounding name and surname informs of the origin of the applicant. Each tested type has four possible names to be sure that one of the chosen names does not affect the results. In order to select names of candidates, the

Table 3: Names used in experiment by gender and origin

		Gender	
		Women	Men
Origin	Moroccan	Naïma Jlassi	Ahmed Charbit
		Aïda Djalouzi	Mounir Benzekri
		Fadela Khalis	Mehdi Brahimi
		Soraya Haddad	Selim Belkacem
Origin	French	Gaëlle Dupuis	Pascal Martin
		Justine Bonnet	Nicolas Leroux
		Claire Dufour	Sébastien Rivière
		Stéphanie Masson	Vincent Dubois

correspondence study of Duguet *et al.* (2010) is used. They choose usual Moroccan surnames and first names are Moroccan usual names of this generation. Concerning French-sounding names, first names are the most common in the eighties and family names are the most current ones in France (Table 3). In both cases, names unambiguously sound Moroccan or French. Applicants' gender is clearly indicated on resumes and cover letters by the name of applicants and adjectives and nouns agreements.

Timeline The experiment was carried out from April to July and from September to November 2011. The one-month break is due to annual closing of administrative service in August. An applicant name of each type is associated with a random chosen type of resume. By origin and gender, a resume with a motivation letter is sent to each store of the employment area. The sending order is random and two applications are sent with an interval of 15 days. 1250 supermarkets and large stores have been targeted in 54 employment areas, which is equivalent to 5000 resumes sent.

3 Results

This section summarizes results of the correspondence study. The first paragraph shows that there is some discrimination in the hiring process. As its presence is established, the second part studies if results are different depending

on the level of competition. Finally, the last paragraph estimates the likelihood to be called back and points out the impact of competition. In this article, I consider that there is discrimination when the rate of positive return for a type of candidate is higher than another type. A positive return is a call back or an e-mail asking more information on the candidate or offering an interview. Moreover, the sample is bootstrapped in order to have robust results. The number of replications is 10,000 in the t tests and in the probit estimations.

Is there a gender/origin gap in callbacks?

First, Table 4 summarizes the callbacks for interview by origin and gender. 391 applicants received a callback from 274 stores. Women have 8.80 percent chance

Table 4: Callbacks by origin and gender

	Moroccan	French	Total
	[79]	[312]	[391]
Women	3.92	13.68	8.80
[220]			
Men	2.40	11.28	6.84
[171]			
Total	3.16	12.48	7.82
[391]			
H_0 : Men=Women			$p=0.0098$
By origin:	Moroccan		$p=0.0298$
	French		$p=0.0695$
H_0 : Moroccan=French			$p=0.0000$
By gender:	Women		$p=0.0000$
	Men		$p=0.0000$

For each category, the first line is the percentage of callbacks and in brackets is the number of callbacks. Each applicant sent 1250 resumes and motivation letters.

of being called back. Equivalent resumes of male applicants have a 6.84 percent chance of receiving a callback. This represents a difference in callback rate of 1.96 percentage points, which is significant at 99%. Whereas this is a women's job in France, it seems to be partly due to a self-selection of women, the other part coming from discrimination. Indeed, men receive a significant number of callbacks when they apply. Breaking results by origin, the difference by

gender is higher and more significant amongst workers with a Moroccan origin than workers with a French-sounding name.

Concerning origin, resumes with French sounding names have a 12.48 percent chance of having an interview. Equivalent resumes with Moroccan sounding names only have 3.16 percent chance of having a callback. The probability that a worker with Moroccan origin receives a callback is almost 4 times less than the probability for an applicant with a French sounding name. This difference of 9.32 percentage points is highly significant. Since names are randomly assigned during the experimental design, this difference can only be attributed to the name manipulation. This result is consistent with the findings of Duguet *et al.* (2010) that a significant discrimination against workers of Moroccan origin during the hiring process is observed in France. Dividing the sample by gender, a larger gap is observed for men than for women. In both cases, the null hypothesis of an equality of means is rejected.

Table 5: Distribution of callbacks by store and gender

Men Favored:	0Wo+1Me	0Wo+2Me	1Wo+2Me
6.6	6.2	0.2	0.2
[83]			
Women Favored:	1Wo+0Me	2Wo+0Me	2Wo+1Me
9.9	8.3	0.9	0.7
[124]			
Equal treatment:	1Wo+1Me	2Wo+2Me	
5.4	4.8	0.6	
[67]			
# stores	1250		
H_0 : Men=Women	$p=0.002$		

Me stands for *Men* and *Wo* for *Women*. For each category, the first line is the percentage of stores corresponding to the title and in brackets is the number of store. For instance, $2Wo+1Me$ means that both women and one man received a callback.

Rather than studying the number of callbacks by applicant type, one can use the distribution of callback at the store level. This allows observing a preference for one type of applicant or another, which better fit discrimination definition. Tables 5 and 6 reports three different treatments of applicants by employers. The first two lines count when there is a preference. The type *A*

is favored in three cases: when an A applicant and none B applicant receive a callback, when both A applicants and none B applicant are called back and when both A applicants and only one B applicant receive a callback. In the last line, both types of applicants (Moroccan/French origin, men/women) are equally treated. It occurs when no applicant is called back, or one applicant of each type receives a callback, or all four applicants are asked for an interview. Keeping this definition induces that equal treatment is essentially composed of no callback. In order to better analyse results, this category is dropped of tables. As it will be discussed in the Section 4, taking them into account induces an under-estimation of discrimination. First, Table 5 shows that women and men are not treated even if a man slightly receives less callbacks in average. The t test points out that the averages of stores favoring men and women are significantly different at 99%. In other words, it means that women are preferred by employers. It reinforces assessments of Askenazy *et al.* (2009) that employers want to hire women more than men because of a statistical discrimination: women are said to better accept bad condition than men, which should decrease the large turnover. Table 6 shows a preference for French origin applicants.

Table 6: Distribution of callbacks by store and origin

French Favored:	0Mo+1Fr	0Mo+2Fr	1Mo+2Fr
17.2	12.3	4.1	0.8
[215]			
Moroccan Favored:	1Mo+0Fr	2Mo+0Fr	2Mo+1Fr
2.5	2.2	0.2	0.1
[31]			
Equal treatment:	1Mo+1Fr	2Mo+2Fr	
2.2	1.7	0.6	
[28]			
# stores	1250		
H_0 : Moroccan=French	$p=0.000$		

Mo stands for *Moroccan* and Fr for *French*. For each category, the first line is the percentage of stores corresponding to the title and in brackets is the number of store. For instance, $2Mo + 1Fr$ means that both applicants with a Moroccan sounding name and one applicant with a French sounding name received a callback.

They are favored by 17.2 percentage points of employers whereas only 2.48 percents of employers prefer applicants with a Moroccan sounding name. This

difference is highly significant and no symmetry is also observed in the favoring of workers with French sounding name and workers with Moroccan sounding name. The ratio is yet one fourteenth, which confirms Table 4 figures and the strong discrimination against second generation immigrants from Morocco.

Does discrimination vary according to competition?

Discrimination against men and especially against applicants with Moroccan origin is well established by the previous section. This part aims at observing a statistical difference between population catchment areas (PCA) with various levels of competition.

First, Table 7 and Table 9 tabulate the average callback rates by gender and HHI category, and by origin of names and HHI category, respectively. These tables give an overlook of some variations of discrimination depending on the level of competition of the PCA. It is worth observing that the percentage of callbacks for an interview decreases with the level of competition whatever the gender and the origin of the applicant. This is consistent with the fact that a more competitive environment induces a tighter labor market. However, monopolistic areas have the same callback rate than competitive areas. Tables 8 and 10 show the same analysis at store level instead of candidate level.

Table 7: Callbacks by gender and HHI category

	Competitive	Uncompetitive	Monopolistic
Women	9.4	7.2	9.6
Men	7.3	5.6	7.2
# applications	1,542	708	250
Men/women	0.78	0.78	0.75
H_0 : Men=Women	$p=0.037$	$p=0.233$	$p=0.334$

For each category, the first lines are the percentage of callbacks.

As has already been pointed out, men and women are differently treated in average. A difference in favor of women is observed and is statistically significant. Table 7 shows that the variation of the degree of competition has no impact on the gender gap of interview. The ratio of answers of men and women

is about 77 in the three cases. Tests of Hotelling show that higher the competition, less an equality of means could be accepted. In other words, lower is the level of competition, the more a significantly different treatment is observable between men and women. At first thought, we can assume that men may be discriminated against in uncompetitive employment areas. A possible interpretation is that, in a more competitive framework, it is costly for stores to favor women as cashier. However, these results have to be confirmed *ceteris paribus* and not only be observed in descriptive statistics. A comparison by

Table 8: Distribution of callbacks by gender and store

	Competitive	Uncompetitive	Monopolistic
Women Favored	43.6	47.7	50.0
Men Favored	29.6	32.3	30.0
Equal treatment	26.8	20.0	20.0
# answering stores	179	65	30
# stores	771	354	125
H_0 : Women=Men	$p=0.012$	$p=0.159$	$p=0.222$

For each category, the first line is the percentage of stores corresponding to the title and in brackets is the number of stores. For instance, 10.30% of stores located in a competitive employment area favored women, which is equivalent to 45 stores.

store gives a slightly different analysis. Indeed, if men are favored in the same proportion whatever the degree of competition, women are less preferred when competition increases. In the case of a discrimination of employers *à la* Becker, competition increases expression of preferences for the population discriminated against and/or decreases expression of preferences for the population favored, as discrimination or nepotism are costly. Women should be in the second case.

Table 9 gives the distribution of callbacks by origin and level of competition of the employment area. The percentage of callbacks is lower for young workers with Moroccan sounding name and this gap is significant whatever the level of competition. However, the results do not seem to depend on competition. The ratio of positive answer to workers of Moroccan origin on workers of French origin is relatively stable and reaches 0.25 At first sight, the prediction of Becker is not validated by this experiment. A higher competition level does not decrease

Table 9: Callbacks by origin and HHI category

	Competitive	Uncompetitive	Monopolistic
Moroccan	3.4	2.5	3.6
French	13.4	10.3	13.2
# applications	1,542	708	250
Moroccan/French	0.25	0.25	0.27
H_0 : Mo=Fr	$p=0.000$	$p=0.000$	$p=0.000$

For each category, the first lines are the percentage of callbacks.

the discrimination against second generation immigrants on the labor market.

Table 10: Distribution of callbacks by origin and store

	Competitive	Uncompetitive	Monopolistic
# stores	[771]	[354]	[125]
French Favored	77.6	80.0	80.0
Moroccan Favored	11.2	7.7	20.0
Equal treatment	11.2	12.3	0
# answering stores	179	65	30
H_0 : Moroccan=French	$p=0.000$	$p=0.000$	$p=0.000$

For each category, the first line is the percentage of stores corresponding to the title and in brackets is the number of stores. For instance, 21.06% of stores located in a competitive employment area favored French origin, which is equivalent to 92 stores.

Table 10 studies by HHI category how employers favor some applicants. Whatever the level of competition, employers favor workers with French sounding names. The difference in callbacks for an interview between both origins is statistically significant and the null hypothesis of equality of means between both groups is rejected. However, as in the previous table, there is no strong evidence of an impact of competition in this difference. To confirm this conclusion, the next section presents an econometric study taking into account observable characteristics of employment areas.

To summarize, descriptive statistics does not show a disappearance of discrimination with competition. Concerning gender, the gap is only significant when competition is high. The taste of employers for a discrimination against

men is rejected. The study of Askenazy *et al.* (2009) on the French retail sector explains that employers prefer hiring women suffering fragile economic condition in order to decrease the turnover of employees. This explanation suggests that there is a correlation between a competitive market of retail and a tight labor market. Concerning applicants with Moroccan origin, discrimination seems to be due to a taste of customers. Indeed, the level of discrimination does not vary with competition. In the study of Askenazy *et al.* (2009), employers admit a discrimination against workers of foreign origin supposedly to answer of customers' taste. In this case, a higher competition will not have any impact of discrimination because the cost is borne by consumers. The next part aims at controlling other characteristics of areas in order to disentangle the real impact of competition from other causes of discrimination.

What is the influence of competition on discrimination?

In order to study the impact of competition on the hiring process *ceteris paribus*, the probability to have an interview is estimated by a probit model. The explanatory equation of a callback is the following:

$$Callback_i^* = X_i'\delta_i + X_j'\delta_j + X_{EA}'\gamma_{EA} + X_{PCA}'\gamma_{PCA} + \nu_i \quad (1)$$

where $Callback^*$ is latent variable, X_i the vector of characteristics of applicant i , X_j the one of the firm, X_{EA} the one of employment area EA and X_{PCA} the one of population catchment area PCA , δ and γ the coefficient to be estimated and ν the error term. The latent variable is not observable and an index-function is used:

$$\begin{aligned} Callback_i &= 1 \text{ if } Callback_i^* > 0 \\ Callback_i &= 0 \text{ if } Callback_i^* \leq 0 \end{aligned}$$

where $Callback_i = 1$ indicates that the applicant received a callback and $Callback_i = 0$ that she does not. The error term of the equation is normally distributed with mean 0 and variance σ_ν . As every other characteristics are identical, variables of X_i are origin and gender. X_j is composed of the number of cash desk and

the nature of the owner. X_{EA} contains unemployment rate, the density of the area, region and immigration rate concerning origin. X_{PCA} comprises the rate of blue and white collar in the population, if there is a central city in the PCA and the variable of interest, the HHI.

Table 11 reports the impact of control variables on the likelihood to receive a callback for an interview. Estimation (1) contains only individual characteristics, competition index and geographical data such as region and rural/urban location of the PCA. To be a woman increases the probability to be called back by 5.6%. The likelihood for an applicant with a Moroccan sounding name to obtain an interview is lower by roughly 30% percentage points than likelihood of other applicants. These results are consistent with previous observations. The effect of competition index is significant. In order to allow non-linear effect, HHI is linear and squared. Moreover, to make reading easier, the index is divided by hundred. Results show that the more competitive the area, lower is the probability to obtain an interview. However, the negative impact decreases with concentration. Intuition suggests that competition is synonymous of a larger number of stores and also a larger number of jobs and we have to purge competition of these effects. Furthermore, a monopolistic firm can easier secure loyalty of employees. Consequently, estimation (2) uses other competition variables and estimation (3) introduces some characteristics of the labor market in order to disentangle the role of competition.

The second estimation shows that the size of stores has a positive impact on the probability to be called back. Retail companies have two different mode of governance. Half of them manage their stores by franchise or branch stores and the other half are composed of individual owners, who are signatory of the company's charter. In the first case, managers are not owners and, even if they are profit-sharing, the prediction of Becker concerning taste of employers should be less observed than in stores, where the manager is the owner. The probability to receive a call back decrease of 13.25 percentage points when the manager is not owner of the store. Central recruitment does not impact the probability. The third estimation takes into account labor market characteristics and economic situation. Three variables are introduced: unemployment rate and density of employment area and the composition of the labor force of PCA. The unem-

Table 11: Estimation of the probability to obtain an interview.

	(1)	(2)	(3)
	Callback	Callback	Callback
Woman	0.14*** (0.05)	0.14*** (0.05)	0.14*** (0.05)
Moroccan origin	-0.74*** (0.06)	-0.74*** (0.06)	-0.75*** (0.06)
HHI (*0.01, by PCA)	-0.035*** (0.011)	-0.035*** (0.012)	-0.035*** (0.012)
HHI squared (*0.01, by PCA)	0.0002*** (0.0001)	0.0002*** (0.0001)	0.0002*** (0.0001)
Unemployment rate (by EA)			-0.074*** (0.021)
Density (inhab./km ² , by EA)			0.07 (0.06)
White and blue collars rate (by PCA)			-0.63 (0.49)
# cashdesks		0.005** (0.002)	0.005** (0.002)
Franchise/branch		-0.31*** (0.09)	-0.32*** (0.09)
Central recruitment		-0.03 (0.10)	-0.03 (0.10)
Ile-de-France	-	-	-
Ile-de-France periphery	-0.17 (0.13)	-0.21 (0.13)	0.13 (0.16)
North	-0.51*** (0.13)	-0.57*** (0.13)	-0.20 (0.16)
South West	0.13 (0.10)	0.07 (0.10)	0.27** (0.11)
South East	-0.18* (0.10)	-0.21** (0.10)	0.11 (0.14)
PCA with a city of more than 30,000 inhab.	-	-	-
PCA without a city of 30,000 inhab.	0.23 (0.14)	0.21 (0.14)	0.25 (0.15)
PCA in the periphery of a city of more than 30,000 inhab.	-0.04 (0.17)	-0.08 (0.16)	-0.07 (0.17)
Constant	-0.35 (0.25)	-0.21 (0.25)	0.16 (0.38)
Observations	5,000	5,000	5,000

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

PCA stands for population catchment area, EA for employment area.

ployment rate stands for controlling economic circumstances of the employment area. It impacts negatively the probability to have an interview as cashier. The interpretation is intuitive: In a high unemployment place, it would be more difficult to find a job than in another place because of a queue phenomenon. The density, which has to control for rural location of EA, has a positive but insignificant effect. The white and blue collars rate in the population aims at controlling for the local composition of working population. Its effect is negative: A higher rate suggests more competition between applicants as cashiers. However, this impact is not significant. In all cases, the impact of the HHI and the gender and origin gaps do not vary with the introduction of other variables.

Tables 12 and 13 show the results concerning the estimation of the likelihood to be called back, where variables are interacted with gender and origin, respectively. Concerning gender, the constant term is positive and significant. A preference for women is clearly observed in this job, as the likelihood to receive a callback is 47% higher when the applicant is a woman. Moreover, interacted terms between other variables and women are not significant, except some regions where the gender preference is lower. In other words, explanatory variables have no influence on gender gap. However, signs of coefficients give an intuition of the situation. First, competition seems to reinforce the gender gap, which contradicts the employer taste theory. In a competitive PCA, women are more favored than in a less competitive one. Consequently, probit estimation of the likelihood to be called back points out a discrimination *à la* Becker against women. Indeed, these coefficients are significant for women and the negative effect is stronger for women than for men. Results are probably not significant for men because of fewer answers. The fact that a weaker competition induces a lower likelihood for women to be called back compared to men, can be interpreted in this way: when employers have a higher rent, they can spend more time and money to search an applicant corresponding to their taste and hire a man. Moreover, the population composition has no impact on women whereas a larger pool of blue and white collars significantly decreases the probability to obtain an interview for male applicants. These results are in keeping with statistical discrimination described by Askenazy *et al.* (2009): employers prefer

Table 12: Estimation of the probability to obtain an interview by gender.

	(1)	
	Callback	
	Interacted with <i>woman</i>	
Moroccan	-0.80***	0.08
origin	(0.09)	(0.11)
HHI	-0.021	-0.025
(*0.01, by PCA)	(0.016)	(0.019)
HHI squared	0.0001	0.0002
(*0.01, by PCA)	(0.0001)	(0.0001)
Unemployment	-0.066**	-0.018
rate (by EA)	(0.027)	(0.032)
Density	0.11	-0.06
(inhab./km ² , by EA)	(0.07)	(0.09)
White and blue collars	-1.64**	1.3
rate (by PCA)	(0.79)	(0.87)
# cashdesks	0.007***	-0.004
	(0.002)	(0.003)
Franchise/branch	-0.20*	-0.24*
	(0.11)	(0.13)
Central recruitment	-0.10	0.14
	(0.13)	(0.15)
Ile-de-France	-	-
Ile-de-France periphery	0.43**	-0.51**
	(0.19)	(0.22)
North	0.13	-0.56**
	(0.20)	(0.22)
South West	0.46***	-0.31*
	(0.14)	(0.16)
South East	0.17	-0.10
	(0.19)	(0.21)
PCA with a city	-	-
of more than 30,000 inhab.		
PCA without a city	0.20	0.09
of 30,000 inhab.	(0.20)	(0.23)
PCA in the periphery of	0.04	-0.21
a city of more than 30,000 inhab.	(0.22)	(0.24)
Constant	-0.35	1.16**
	(0.49)	(0.58)
Observations	5,000	

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

PCA stands for population catchment area and EA for employment area.

women because their turn over is lower and they accept harder tasks and part time contracts. Coefficients of unemployment rate reinforce this interpretation as increasing unemployment rate impacts more sharply women than men. In other words, when the labor market is more tight, employers prefer women than men, *ceteris paribus*. To summarize, the lower probability of men to obtain an interview is less due to a discrimination against them than the results of women condition on the labor market and beliefs of employers concerning their vulnerability.

Besides, variables are further interacted with a dummy variable for whether the applicant has a Moroccan or a French sounding name. Dummies on immigration rate are added in regression in order to control for a negative reaction to a higher immigration rate. Results are summarized in the Table 13. The coefficients of interacted terms are only significant concerning immigration and unemployment rate, way of management and Northern France. As regards immigration rate, simple and interacted coefficients cancel each other. It means that the probability of an applicant with a Moroccan sounding name to obtain an interview does not vary with the immigration rate. On the contrary, an applicant with a French sounding name has a better chance to be called back if the number of immigrants is high in the local labor market. Moreover, the impact of immigration rate is only significant when more than 9.5% of population is immigrant. As in the gender case, the tightness of the labor market has not the same impact for both origins. A significant difference of almost 3 percentage points is observable in favor of the French origin. In other words, an increase of unemployment rate has a stronger impact on the Moroccan origin than on the French one. When the pool of applicants is larger, employers prefer the ethnic majority. Concerning competition, coefficients are not significant but signs comply with the Becker's theory of employer taste for discrimination. The impact of competition is stronger for workers with a Moroccan sounding name. Coefficients *Franchise/branch* reinforce this results. Branch stores and franchises call back more applicants with a Moroccan sounding name and fewer applicants with a French sounding name. Result of *Central recruitment* supports employer taste, as the coefficient is negative. Employers, who do not recruit by central office, are those who want to satisfy their taste. However, result is not signif-

Table 13: Estimation of the probability to obtain an interview by origin.

	(1)	
	Callback	Interacted with <i>origin</i>
Woman	0.11** (0.05)	0.11 (0.11)
HHI (*0.01, by PCA)	-0.022* (0.013)	-0.027 (0.030)
HHI squared (*0.01, by PCA)	0.0002* (0.0001)	0.0002 (0.0002)
Immigration rate 0.065<0.095 (by EA)	0.21 (0.13)	-0.28 (0.18)
Immigration rate >0.095 (by EA)	0.41** (0.18)	-0.46** (0.23)
Unemployment rate (by EA)	-0.066*** (0.024)	-0.068* (0.039)
Density (inhab./km ² , by EA)	0.092 (0.071)	-0.090 (0.113)
White and blue collars rate (by PCA)	-0.55 (0.081)	0.27 (0.79)
# cashdesks	0.005** (0.002)	0.001 (0.003)
Franchise/branch	-0.44*** (0.22)	0.37** (0.16)
Central recruitment	-0.001 (0.116)	-0.085 (0.184)
Ile-de-France	-	-
Ile-de-France periphery	0.41* (0.22)	-0.20 (0.34)
North	0.09 (0.22)	-0.72** (0.32)
South West	0.49*** (0.17)	-0.12 (0.36)
South East	0.17 (0.19)	0.07 (0.28)
PCA with a city of more than 30,000 inhab.	-	-
PCA without a city of 30,000 inhab.	0.10 (0.15)	0.43 (0.33)
PCA in the periphery of a city of more than 30,000 inhab.	-0.0004 (0.18)	-0.37 (0.27)
Constant	-0.58 (0.44)	0.83 (0.76)
Observations	5,000	

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

PCA stands for population catchment area and EA for employment area.

icant. In short, a part of origin gap is due to employers and another could be due to customers' taste because of the impact of immigration rate.

Results point out two different conclusions. First, it is worth to identify the type of discrimination before using competition to decrease discrimination. In the gender case, competition reinforces bad work condition of women and induces more segregation than equality. Second, to incite companies to increase awareness of human resources manager seems to be a better policy to fight discrimination than to improve competition.

4 Robustness checks

Experimental design The experimental design aims at controlling all applicants' characteristics. However, some templates for resumes may be better than others, or a specific name may have more callbacks due to a less typical feeling. Resumes are sent in a randomize order. However, to be sent first could have a positive effect on callbacks. In this section, the effect of applicants' characteristics and resumes is estimated on the likelihood of callback to confirm neutrality of the design. Table 14 summarizes the results. As none coefficients of 'CV' is significant, templates of resumes are equivalent, even if CV4 has a negative coefficient and CV2 and CV3 a positive one. Moreover, order of sending is not significant even if the first intuition is confirmed as to be sent first or second has a positive impact on the likelihood to be called back. Finally, names are relatively equivalent as no coefficient is significant, except the second Moroccan female name of "Aïda Djalouzi", which has a positive and significant impact on the likelihood to obtain an interview. Note that nul coefficients come from gender and origin dummies and those results are similar without any control variables. According to the results, the experimental design of this correspondence study is relatively neutral.

Answering stores As the main point of this paper is the impact of competition on discrimination, it could be interesting to restrict the sample to stores, which answer to, at least, one applicant. Indeed, stores, which did not answer,

cannot be classified as prejudiced or not. Table 15 summarizes results of the probit regression of the likelihood to be called back. The few number of observations decreases the significance of coefficients. First column is the basic estimation of the probability to be called back. Only gender and origin and Southwestern France are significant. It is worth to notice that gender coefficient is lower and the origin one is larger than in previous estimations. It suggests that discrimination against applicants with a Moroccan sounding name is underestimated and women preference overestimated. The second column contains results of the probit regression where all variables are interacted with gender. Men have a higher probability to be favored when competition decreases and signs of coefficients are similar to previous regressions. The third regression concerns origin and all variables are interacted with origin. Applicants with a Moroccan sounding name increase their chance to have an interview when competition goes down. Only two coefficients remain significant: unemployment rate and the way of management. The first one has a negative effect on the probability of Moroccan origin applicants to obtain an interview, the second has a negative impact on the likelihood to obtain an interview for applicants with a French origin. This results mirror the previous one.

Preferences In order to better explain discrimination as a preference, an ordered probit model of the likelihood to favor an origin or a gender is estimated. Results basically mirror our previous findings (Table 16) but are not significant, certainly due to a lack of data. Concerning gender, men have a higher probability to be favored when competition decreases. In the second estimation, applicants with a Moroccan sounding name increase their chance to have an interview when competition goes down. Only two coefficients remain significant: unemployment rate and the way of management. The first one has a positive effect on the probability of French origin applicants to obtain an interview, the second a negative one. This confirms former findings.

Table 17 sums up the results of a probit regression of the likelihood to prefer one category of applicants. Coefficients are consistent with former results on the probability to obtain an interview. Concerning gender, coefficients are not significant except concerning geographical location. However, it confirms

our previous findings as competition increases the probability of women to obtain an interview whereas it decreases this probability for men. Findings on origin highlight two points. First, the usual effect of competition on discrimination suggests a taste of employers for discrimination against second generation migrants. Coefficients of applicants with Moroccan origin decrease with the competition level as Becker's theory predicts. Coefficients of the way of management reinforce this conclusion. Second, the unemployment rate decreases the likelihood to obtain an interview for Moroccan origin applicants whereas it increases the likelihood of French origin applicants. This result reinforces the results on the tightness of the labor market.

5 Conclusion

This article uses an original way to study the impact of competition on labor market outcomes. This experiment adds to the literature on the consequences of a variation of competition. The hiring process has never been studied and this correspondence study in the French retail sector allows us to measure the effect of competition on hiring. The population tested is young French applicants with Moroccan sounding names, male and female. Results show that men do not face discrimination, contrary to what one may think at first sight. On the contrary, their callbacks decrease with competition, showing that if employers have a rent, they prefer hiring men. This shows that experiment studies do not always point out discrimination. A deeper analysis of descriptive statistics is necessary to correctly interpret results. Concerning origin, a large and significant difference of callbacks for an interview underlines discrimination against the second generation immigrants from North Africa in France. The level of competition has a positive impact on the number of callbacks whatever the origin of the applicant. Nevertheless there is no evidence for a stronger effect concerning the population discriminated against. Becker's theory could be applied in this case as employers seem to have a taste for discrimination. However, higher competition is less efficient to reduce discrimination than a consciousness rising of human resources managers to discrimination.

References

- Allain, M.-L., Chambolle, C., & Vergé, T. 2008. *La loi Galland sur les Relations Commerciales : jusqu'où la réformer ?* Editions rue d'ulm (fra) edn. Vol. 13. Collections du CEPREMAP.
- Altonji, J.G., & Blank, R.M. 1999. *Race and Gender in the Labor Market*. Vol. 3. Elsevier Science BV. Chap. 48, pages 3143–3259.
- Arrow, K. J. 1973. The Theory of Discrimination. *Pages 3–33 of: Ashenfelter, O., & Rees, A. (eds), Discrimination in Labor Markets*. Princeton University Press.
- Ashenfelter, O., & Hannan, T. 1986. Sex Discrimination and Product Market Competition: The Case of the Banking Industry. *The Quarterly Journal of Economics*, **101(1)**(February), 149–73.
- Askenazy, P., Berry, J.-B., & Prunier-Poulmaire, S. 2009. *Travail et salariés dans la grande distribution*. Rue d'ulm edn. CEPREMAP. Chap. 5, pages 333–393.
- Becker, G. 1957. *The Economics of Discrimination*. University of Chicago Press.
- Bertrand, M., & Kramarz, F. 2002. Does entry regulation hinder job creation? Evidence from the French retail Industry. *The Quarterly Journal of Economics*, **117(4)**, 1369–1413.
- Bertrand, M., & Mullainathan, S. 2004. Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. *American Economic Review*, **94(4)**, 991–1013.
- Biscourp, P., Boutin, X., & Vergé, T. 2008 (Februar). *The Effects of Retail Regulations on Prices: Evidence from the Loi Galland*. DESE-INSEE Working Papers.
- Black, S.E., & Brainerd, E. 2004. Importing equality? The impact of globalization on gender discrimination. *Industrial and Labor Relations Review*, **57(4)**, 540–559.

- Black, S.E., & Strahan, P.E. 2001. The Division of Spoils: Rent-Sharing and Discrimination in a Regulated Industry. *American Economic Review*, **91**(4), 814–831.
- Comanor, W.S. 1973. Racial Discrimination in American Industry. *Economica*, **40**(160), 363–378.
- Duguet, E., Léandri, N., L'Horty, Y., & Petit, P. 2010. Are Young French Jobseekers of Ethnic Immigrant Origin Discriminated Against? *Annals of Economics and Statistics*, Dec, 187–216.
- Hellerstein, J.K., Neumark, D., & Troske, K.R. 2002. Market Forces and Sex Discrimination. *The Journal of Human Resources*, **37**, 353–380.
- Heywood, J.S., & Peoples, J.H. 1994. Deregulation and the Prevalence of Black Truck Drivers. *Journal of Law and Economics*, **37**(1), 133–155.
- Jowell, R., & Prescott-Clarke, P. 1970. Racial Discrimination and White-Collar Workers in Britain. *Race Class*, **11**(4), 307–319.
- Peoples, J. Jr, & Saunders, L. 1993. Trucking Deregulation and the Black/White Wage Gap. *Industrial and Labor Relations Review*, **47**, 23–35.
- Phelps, E. 1972. The Statistical Theory of Racism and Sexism. *American Economic Review*, **62**(4), 639–651.
- Riach, P.A., & Rich, J. 2002. Field Experiments of Discrimination in the Market Place. *Economic Journal*, **112**(483), F480–F518.

Figure 4: Density of the HHI by employment area.

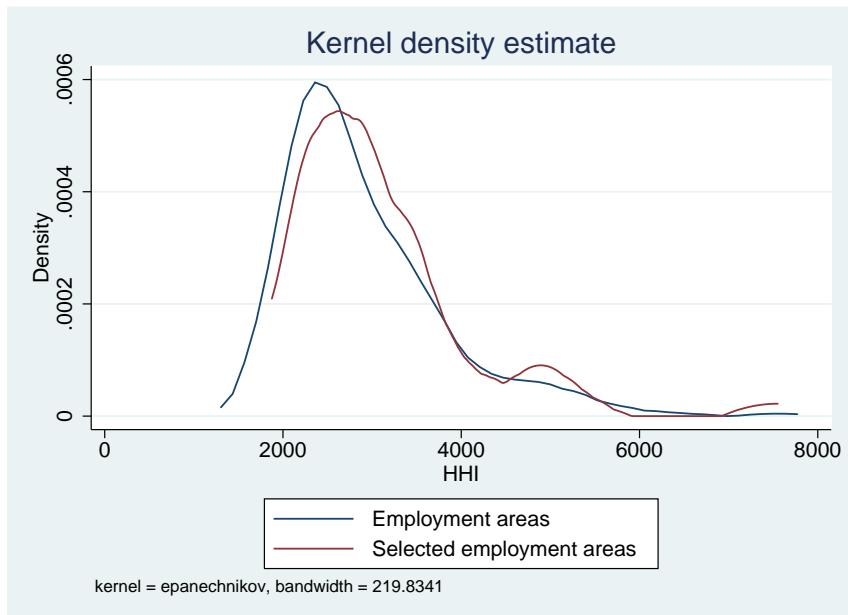


Table 14: Effect of application characteristics on likelihood to receive a callback

Interview					
Name Mf 1		Name Mm 1	-0.36	CV 2	0.06
			(0.28)		(0.07)
Name Mf 2	0.18	Name Mm 2	0.051	CV 3	0.06
	(0.14)		(0.23)		(0.07)
Name Mf 3	0.18	Name Mm 3	0.28	CV 4	-0.15
	(0.14)		(0.22)		(0.12)
Name Mf 4	0.10	Name Mm 4	0	Second	0.05
	(0.14)		(0)		(0.07)
Name Wf 1	0.23	Name Wm 1	0.13	Third	-0.02
	(0.26)		(0.22)		(0.07)
Name Wf 2	0.19	Name Wm 2	0.47**	Fourth	-0.06
	(0.27)		(0.20)		(0.08)
Name Wf 3	0.18	Name Wm 3	0.26	Constant	-0.63*
	(0.27)		(0.21)		(0.34)
Name Wf 4	0.17	Name Wm 4	0		
	(0.28)		(0)		
Observations	5,000				

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Estimation is controlled for gender, origin, competition, regions, unemployment rate and density of the employment area, the number of cashdesks in the store and its way of management, composition of population and type of PCA.

Wf stands for women with a French sounded name, Wm for women with a Moroccan sounded name, MF stands for men with a French sounded name and Mm for men with a Moroccan sounded name.

Table 15: Estimation of the likelihood to obtain an interview, limited sample.

	(1)	(2)	(3)		
	Callback	Callback	Callback	Callback	Callback
Moroccan origin	-1.26*** (0.10)	-1.29*** (0.14)	0.02 (0.18)		
Woman	0.29*** (0.09)			0.28** (0.125)	0.04 (0.182)
HHI (*100, by PCA)	-0.014 (0.013)	0.010 (0.025)	-0.046 (0.041)	-0.005 (0.016)	-0.040 (0.044)
HHI squared (*100, by PCA)	0.0001 (0.0001)	-0.0001 (0.0002)	0.0003 (0.0003)	0.00003 (0.0001)	0.0003 (0.0003)
Immigration rate 0.065<0.095				-0.11 (0.15)	-0.24 (0.29)
Immigration rate >0.095				0.04 (0.19)	-0.55 (0.42)
Unemployment rate (by EA)	-0.011 (0.022)	-0.009 (0.043)	-0.006 (0.072)	0.020 (0.033)	-0.121* (0.071)
Density (inhab./km ² , by EA)	-0.02 (0.06)	0.04 (0.10)	-0.11 (0.17)	0.04 (0.09)	-0.14 (0.18)
White and blue collars rate (by PCA)	0.007 (0.502)	-1.075 (1.166)	1.815 (1.498)	-0.073 (0.722)	0.107 (1.913)
# cashdesks	0.0004 (0.003)	0.004 (0.005)	-0.008 (0.009)	-0.001 (0.003)	0.003 (0.007)
Franchise/branch	-0.07 (0.08)	0.11 (0.16)	-0.36 (0.27)	-0.25** (0.12)	0.44 (0.27)
Central recruitment	-0.03 (0.09)	-0.12 (0.19)	0.17 (0.32)	0.04 (0.16)	-0.12 (0.33)
Ile-de-France	-	-	-	-	-
Ile-de-France periphery	0.09 (0.15)	0.57** (0.27)	-0.88* (0.49)	0.23 (0.31)	-0.33 (0.65)
North	-0.01 (0.17)	0.56* (0.33)	-1.07* (0.56)	0.33 (0.29)	-1.06* (0.58)
South West	0.19* (0.11)	0.48** (0.22)	-0.55 (0.34)	0.31 (0.21)	-0.19 (0.49)
South East	-0.03 (0.14)	0.11 (0.32)	-0.25 (0.54)	0.01 (0.26)	0.16 (0.61)
PCA >30,000 inhab.	-	-	-	-	-
PCA without city> 30,000 inhab.	0.15 (0.16)	0.01 (0.31)	0.26 (0.51)	-0.04 (0.20)	0.60 (0.48)
PCA periphery city>30,000 inhab.	0.01 (0.15)	0.15 (0.33)	-0.29 (0.50)	0.23 (0.24)	-0.77* (0.40)
Constant	0.51 (0.37)	-0.37 (0.71)	2.01* (1.18)	-0.14 (0.63)	1.35 (1.47)
Observations	1,096	1,096		1,096	

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

PCA stands for population catchment area and EA for employment area.

Table 16: Estimation of the likelihood to favor a gender/origin by an ordered probit.

	(1)	(2)
	Gender preferences	Origin preferences
HHI	0.026	0.060
(*100, by PCA)	(0.028)	(0.038)
HHI squared	-0.0002	-0.0004
(*100, by PCA)	(0.0002)	(0.0003)
Immigration rate		0.15
0.065<0.095		(0.28)
Immigration rate		0.39
>0.095		(0.39)
Unemployment	-0.012	0.137**
rate (by EA)	(0.049)	(0.063)
Density	0.03	-3.44
(inhab./km ² , by EA)	(1.75)	(2.11)
White and blue collars	-1.59	0.22
rate (by PCA)	(1.36)	(1.32)
# cashdesks	0.005	-0.001
	(0.005)	(0.006)
Franchise/branch	0.28	-0.49**
	(0.192)	(0.229)
Central recruitment	-0.20	0.01
	(0.23)	(0.26)
Ile-de-France	-	-
Ile-de-France periphery	0.77**	0.017
	(0.35)	(0.52)
North	0.91**	4.36
	(0.39)	(191.7)
South West	0.48*	-0.08
	(0.25)	(0.44)
South East	0.34	-0.63
	(0.37)	(0.50)
PCA with a city >30,000 inhab.	-	-
PCA without a city	-0.17	-0.66
of 30,000 inhab.	(0.33)	(0.44)
PCA in the periphery of	0.05	0.95
a city of more than 30,000 inhab.	(0.33)	(0.58)
Constant 1	0.50	0.17
	(0.822)	(1.17)
Constant 2	1.16	0.65
	(0.82)	(1.17)
Observations	274	274

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Concerning gender, the interest variable is null when no preferences are revealed, -1 when women are favored and 1 when men are favored. Concerning origin, the interest variable is null when no preferences are revealed, -1 when Moroccan origin is favored and 1 when French origin is favored. In estimations (2) and (4) the sample only contains stores which call back at least one applicant. Estimations are controlled for regions. EA stands for employment area.

Table 17: Estimation of the likelihood to be preferred by gender and origin.

	(1)	(2)	(3)	(4)
	Women favored	Men favored	Fr. origin favored	Mo. origin favored
HHI	-0.009	0.043	0.057	-0.059
(*100, by PCA)	(0.030)	(0.030)	(0.039)	(0.045)
HHI squared	-0.0001	-0.0003	-0.0004	0.0005
(*100, by PCA)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Immigration rate 0.065<0.095			0.25 (0.29)	0.23 (0.39)
Immigration rate >0.095			0.37 (0.40)	-0.22 (0.49)
Unemployment rate (by EA)	0.012 (0.053)	-0.018 (0.055)	0.150** (0.066)	-0.125 (0.082)
Density (inhab./km ² , by EA)	-0.20 (1.89)	-0.37 (2.07)	-4.56** (2.27)	1.99 (2.617)
White and blue collars rate (by PCA)	1.69 (1.50)	-1.24 (1.59)	-0.10 (1.33)	-1.18 (1.82)
# cashdesks	-0.003 (0.00596)	0.008 (0.006)	0.0005 (0.007)	0.006 (0.008)
Franchise/branch	-0.21 (0.21)	0.36* (0.22)	-0.56** (0.24)	0.37 (0.28)
Central recruitment	0.13 (0.25)	-0.26 (0.26)	0.10 (0.27)	0.16 (0.31)
Ile-de-France	-	-	-	-
Ile-de-France periphery	-0.84** (0.39)	0.71* (0.40)	-0.07 (0.54)	-0.28 (0.62)
North	-0.96** (0.44)	0.90** (0.45)	0 (0)	0 (0)
South West	-0.56** (0.27)	0.40 (0.29)	-0.28 (0.46)	-0.43 (0.53)
South East	-0.37 (0.40)	0.36 (0.42)	-0.68 (0.52)	0.60 (0.60)
PCA (city >30,000 inhab.)	-	-	-	-
PCA without a city of 30,000 inhab.	0.09 (0.36)	-0.21 (0.36)	-0.68 (0.45)	0.46 (0.53)
PCA in the periphery of a city>30,000 inhab.	-0.052 (0.36)	0.07 (0.39)	0.96 (0.59)	0 (0)
Constant	0.14 (0.89)	-1.52 (0.93)	-0.32 (1.22)	0.46 (1.42)
Observations	274	274	253	239

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The sample only contains stores which call back at least one applicant. In estimations (1) and (2), the interest variable is worth 1 if women/men are favored, 0 otherwise. In estimation (3), the interest variable is worth 1 if there is any favor (women and men) and 0 in case of equal treatment. Estimations are controlled for regions. EA stands for employment area.