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ACCESS TO EMPLOYMENT WITH AGE AND GENDER: RESULTS OF A CONTROLLED EXPERIMENT

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ABSTRACT

Several concurrent hypotheses have been proposed in order to take into account the persistence of under-employment of persons aged over 50, in France. In this paper, we are interested in the labour demand. We construct and implement an experimental protocol allowing testing four hypotheses currently discussed: the unobservable distance from retirement by the recruiter; the supposed depreciation of skills in a context with repeated technological shocks; the supposed inability of professional retraining, eventually differentiated by gender; a taste discrimination against older workers, as the result of social norms. To test each of these hypotheses, we have conducted four separate campaigns of testing for evaluating them. Between mid-January and mid-August 2015, we have sent, 6 361 applications allocated on seven occupations and twenty-eight profiles. The research investigates a statistical processing of results of these testings. Our results indicate which must necessarily combine several hypotheses to take into account the under-employment of seniors, in France: the difficulties of professional retraining following a shock in the employment career; the social norms inducing a negative representation of the older workers through the employers. Seniors are both victims of the depreciation of the human capital and age discriminations in access to employment, which will especially penalise men in their professional retraining. The classical explanation by the distance from retirement is the only one which isn't statistical validated.

Key Words: Employment of older workers, access to employment, testing
JEL Codes: C93, L3, J24.

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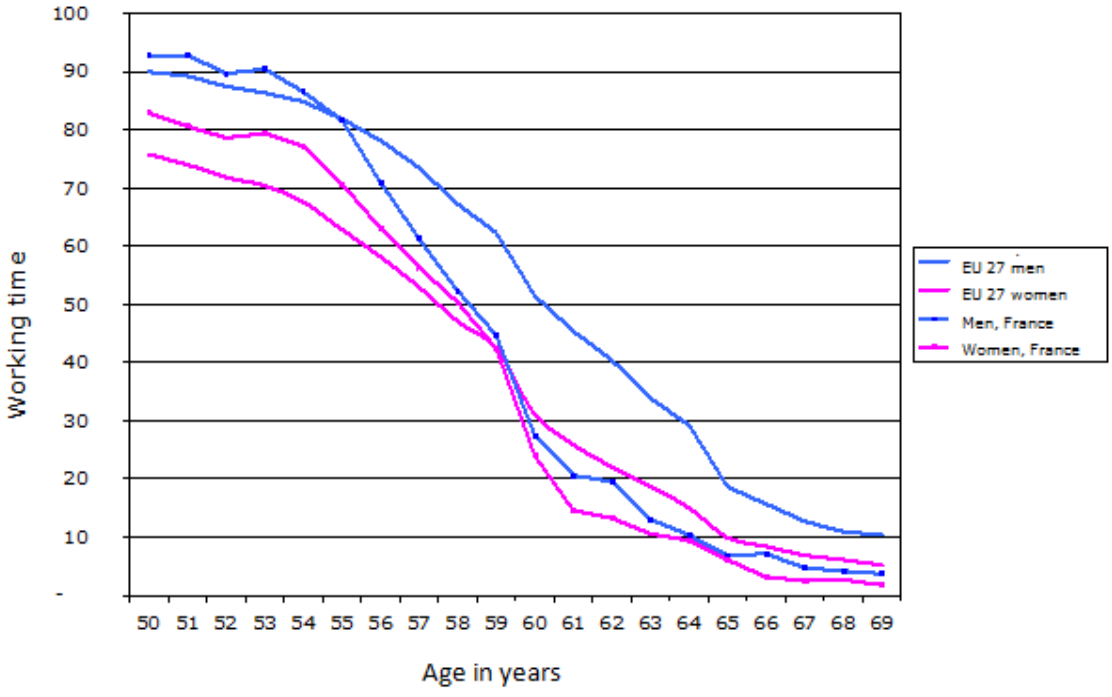
INTRODUCTION

The observation is well established and has been the subject of various official reports for several decades. The employment rate for older people aged over 50 is slower than it is for younger people. Although the legal retirement age falls between 60 and 65 in most OECD countries, we observe a lower working time and employment rate in people over the age of 50. This is more evident in France than elsewhere. The employment rate for people aged 55-64 stagnates at 40%, far from the target of 50% that France committed itself to in Lisbon in 2000, and certainly far from the rates that the United Kingdom (57%), Denmark (60%), the United States (62%) and Sweden (70%) have achieved. These figures illustrate well that older people have a smaller chance of employment because the employment rates for people aged 25-54 are the same in all of these countries.

The diagram 1 shows the average working time in the EU by gender. It highlights the fact that the fall in employment rate among the over 50s is particular to France and is even considerable for people around the age of 60. Working hours decrease sharply after the age of 50, more in France than the European average. This decrease occurs earlier and is sharper in men.

Diagram 1. Working time for people over 50 according to gender: France and the EU, 2009



Source: *Labour Force Surveys*, 2009.

There are various, well documented possible causes of this. These include: supply and demand of labour; technological progress; potential technological bias linked to age; or even the effects of national institutions, particularly employment protection legislation, pre-retirement plans, exemptions from job-seeking, compensation rules for unemployed older people, the organisation of retirement schemes, and terms of early settlement. These causes

have influenced many different public policies, which have been explored these past few decades, and a large number of reforms have made changes to incentives for early retirement by stopping measures promoting it. Following these reforms, a slow increase in employment rate and working time was witnessed in France and elsewhere. However, this trend remains slow and limited, particularly in France. One has to admit that legal or regulatory change, social partner agreements at the highest level (National Interprofessional Agreement [ANI] on the employment of older people, 13 October 2005), and the increased number of plans for older people are still insufficient in removing all obstacles older people come across to find and retain employment.

This is why discrimination against older workers on the labour market is worthy of analysis. In the United States, removing certain legal obstacles when recruiting older workers has also had little effect on their success of finding a job, leading experts to question themselves on these issues of age discrimination (Neumark, 2008). Among all causes of the under-employment of older workers, this opportunity has not yet been discussed in the French context.

The discrimination can be highly variable according to professional context. Indeed, the proportion of older people in employment differs greatly according to occupation, especially when distinguishing between men and women: occupational segregation increases with age against men. They are affected by difficulties of occupational retraining in some low-skilled occupations compared to the women (Challe, 2013). These contrasts in age, gender and occupation form many new questions of research to reach a better understanding of the problems of access to employment for older workers.

Over the last thirty years, in almost OECD countries, a lot of research measures age discrimination in access to employment, by using controlled experiments as correspondence tests, without being able to identify the causes, taste or statistical discrimination (Riach and Rich, 2002). For example, in France, some researchers found evidences for discrimination in access to employment due to the gender (Duguet *and* Petit (2005), Petit (2007)), the apparent origin (Berson, 2011), the reputation of the place of residence (Bunel *and al*., 2015), the supposed religion (Adida *and al*. (2010), Pierné (2013)), and the other cumulated criteria. (Duguet *et al*. (2010), L'Horty *and al.* (2011), Petit *and al.* (2014)).

There have been very few applied studies on labour market discrimination that considered age as a criterion. To our knowledge, only four correspondence tests of access to the recruitment interview, measure the age discrimination. The main reason lies in the difficulty to measure the age discrimination. It comes to comparing access to employment of individuals with different ages, but with the same productive attributes. But, the age and some productive attributes, such as experience are necessarily correlated. For example, in the United States, Bendick *and al.* (1997) compare the chances of candidates of the same sex, one 32 years of age and another 57, in two occupations (computing for men and administration for women). They bring to light a strong age discrimination against older workers. Riach & Rich (2010) consider, on the English labour market the chances of two candidates, one 27 years of age and another 47 in three occupations (administration and sales for women, food service for men).

Strong age discrimination was highlighted against older workers on administration jobs, one more moderate on food service jobs and age discrimination in favour of women on sales jobs. To permit comparison with the young candidate and the senior, the authors use two strategies The first strategy is to allocate candidates with experience in different fields (unrelated to the post they are applying for) at the beginning of their careers, to equalize number of years of experience between young and senior candidates in the tested occupation (Riach et Rich, 2010). Another strategy is to mention in the application of senior candidate the length of career breaks, for example, in order to care for his children (Bendick et al., 1997 ; Lahey, 2008) ; in this case, the authors considered to this characteristic doesn't be perceived by the recruiter as a negative signal of productivity, in particular if the candidate is a woman. This discrimination is highlighted by comparing low-skilled candidates, which distinguish themselves through their age. As discussed Burn and Button (2015), the low-skilled seniors are not sufficiently representative to the unemployed in this age group. Deriving of recommendations of public policies aimed at promoting employment of older workers of this controlled experiments may seem to be questionable.

More recently, Neumark, Burn et Button (2015) explore the age discrimination in twelve US towns allocated in eleven States, which are distinguishing by the rate of seniors in the population and a law against discrimination more or less severe. Almost 40 000 fictitious applications of men and women have been sending in response to the low-skilled job offers: sales and casher (men or women), caretakers and cleaning persons (men), safety officers (men), secretary and administrative assistant (women). The fictitious candidates are differentiated by their age (30, 50, 65 years old), and for candidates aged of 50 and 65 years old, by their professional experience: low (as the candidate aged 30), or then higher. In the second case the researchers make to vary the professional career of fictitious candidates. At the moment where they apply, two candidates of 50 and 65 years old are in the continuity of their career: they are skilled on the kind of jobs. Two other candidates of 50 and 65 years old, by contrast, were previously on the higher skilled jobs in the same sector of activity. For them, it is a downgrading in their professional position, a transitional job. Finally, for another candidate who is aged of 65 years, this downgrading did act 10 years earlier. Their main results are following: firstly, the age discrimination put more the candidates which are close to retirement (65 versus 50 years old). This discrimination against them appears, also, in the strategy of downgrading. Secondly, if the age discrimination appears systematically in their results for the women, it is more ambiguous for men. If in all tested occupations, women suffer age discrimination; this is not the case of men. Thirdly, the age discrimination appears more limited in the States where the law against discrimination is more binding: when it is more severe opposite offenders, the access to employment of the older workers is higher.

In this paper, we innovate on two points. On the one hand, we overcome difficulty inherent in the age discrimination measure and on the other hand, we can identify the framework of this discrimination beyond the initial measure. We purpose a protocol permitting to test potential effect of discrimination due to the age by measuring, also, the rule played by the other potential determinants of the under-employment of older workers on the labour demand. We focus on and test four hypotheses successively: the distance from retirement effect, the maladjustments of technological and organisational shocks causing a depreciation of the

human capital; the difficulties of professional retraining following a shock in the employment career; the social norms inducing a negative representation of the older workers through the employers.

For this purpose, a suitable method for evaluating discrimination in recruitment consists of constructing a controlled experiment on the labour market (Riach & Rich, 2002; Petit, 2003). The testing method consists of creating two fictitious application (CVs and cover letters), perfectly similar in terms of career and qualifications. The only significant distinction between the two candidates will be the attribute whose effect on access to employment is to be evaluated (for example their origin or even location). These two CVs will then be sent simultaneously in response to the same job vacancies. Since the two candidates are perfectly similar with the exception of one attribute, any significant disparity in attaining job interviews will only be imputable to the effect of this attribute on the access to employment. The experimental data collected during testing is, as a result, free of selection bias and unobserved heterogeneity. These are the primary contributions of this experimental method. Its principal limitation is, however, that it does not provide a measure of recruitment discrimination on the labour market (Heckman, 1998). Indeed, contrary to survey data, and even to administrative data, the test results are partial (some occupations tested), occasional (some months of experimentation) and localised (some employment areas examined). The measure of discrimination thus does not refer to a representative cross-section of the labour market. Precautions need to be taken in regard to the generalisation of the results of a *testing*.

Data were collected between mid-January and mid-August 2015. For all tested hypotheses, 6 361 applications have been sending allocated on seven occupations and twenty-eight profiles. On the two phases of recruitment, we test only, the access to the job interview and not the result of this interview itself. Indeed, this second phase is subject to biases influenced by the personality and the appearance of candidates.

We present and discuss the results of each campaign of testing in the following sections.

1. The distance from retirement age effect

1.1. Data collection protocol and expected results

A first strand of the theoretical literature emphasises the negative role played by horizon effect before the age of retirement ("horizon effect"): the faster it is short, lower investments associated with the recruitment of the candidate are profitable (Hairault *and al.,* 2010). The impact of this horizon effect is reinforcing by labour market institutions (Blondal and Scarpetta, 1998; Ljungvist and Sargent, 2008). On OECD data, these authors' shows institutions, such as the unemployed benefits, or this costs of dismissal are negative effects higher for seniors.

The horizon effect has already been analysed in the canonical matching model *à la* Mortensen-Pissarides (1994) in Chéron and *al.* (2011) and (2013). This kind of theoretical framework rationalizes the difficulties older people come across when accessing employment as well as the extreme vulnerability of their jobs: a short horizon before retirement makes

companies more selective in the hiring process for a senior candidate because his prospects of professional development on the job are more limited. It allows introducing the policy against discrimination by imposing a non-managed matching function, and analyzing age specific policies, required for their accompaniment.

Distance from retirement age, synonymous with, short employment relationship, deters employers from hiring senior workers. This factor illustrates statistical discrimination. Indeed, any investment in a new employee has to generate enough return for the employer, as far as productivity and length of employment are concerned. Getting closer to retirement age restricts depreciation duration of this investment. When they are willing to train new employees to better adapt to their working station, employers will be more inclined to invest in this training if the future employment relationship is longer.

Data collection

In order to analyse distance from retirement age hypothesis, two similar level professions (call call centre agent, and sales assistant) were assessed, the former involving more often than the latter the funding of a training by the employers who expect a return on investment.

For each of the two occupations, three fictitious applications were built and sent to answer the same job offers. They involve two senior men of the same age (56) and a younger man aged 29. The first one entered the labour market at age 15, and thus, is entitled to retire before legal age of 62. He specified in his resume that he has 41 years of experience and specified in his covering letter that he's entitled to retire in about one year. The second one is the same age, but entered the labour market when he was 21. He mentioned in his resume that he has 34 years of experience. The third fictitious applicant is a 29-year-old man who has 13 years of experience.

All applications are otherwise similar in all remaining points. We present, in table 1-A, the main average and modal attributes of individuals working in those two occupations, as extracted from *Emploi* survey. In both occupations, the three fictitious applicants hold a Certificate of Professional Competence in sales. Since they entered the labour market, they have accumulated significant experience in the kind of job they are applying for. Within their professional experience as sales assistant, the call centre agents have two experiences as call centre agents (the second experience being longer than the first one). As for the sales assistants, they only have experiences in retail business. Additions to the protocol are provided in Appendix A, and we present three examples of fictitious applications in Appendix B.

Table 1. Average and modal attributes of call centre agents and sales assistants

Protocol « distance from retirement age »		
Characteristics	Call centre agents	Sales assistants
Nationality (mode)	French	French
Region of residence (mode)	Nord-Pas de Calais	Ile-de-France
School leaving age (average)	20 years old	20 years old
Highest qualification obtained (mode)	BTS	BEP
potential experience on the labour market, in years (average)	12 years old	16 years old
Rate of women (percentage)	76	75

Source: Labour Force Survey 2008-2012 (INSEE)
Field: Employed workers having finished their studies.
Sales assistants by correspondence, Telemarketers: code profession 555a, nomenclature PCS 2003
Non-specialised sales assistants: code profession 553a de la nomenclature PCS 2003
Lecture: Between 2008 and 2012, the call centre agents having finished their studies were most often French women who live in the Nord-Pas-de-Calais. In average, they are 20 years old at the end of their studies. The highest qualification obtained by these workers is most often the BTS, (a degree of Bac+2 level). Finally, in average, the surveyed call centre agents have accumulated 12 years of potential experience on the labour market for the end of their initial studies.

Expected results

Under the distance from retirement age hypothesis we should empirically find out that employers prefer the 29-year-old candidate, and among 56-year old candidates, that they prefer the one further from retirement. This distinguished expected effect for both applicants over 50 should be more important in the call centre agent occupation, as it involves, in most cases, a training funded by the employer.

1.2. Résultats

We assessed about 300 job offers for each of both occupations. As far as call centre agents were concerned, 20.6% of tested job offers received a positive answer to, at least, one of the three fictitious candidates. Sales assistants got a lesser overall answer rate with 13.9% of employers who responded positively to, at least, one of the fictitious candidates. These differences in percentages between occupations translate two traits. First, a high percentage means an important tension in this occupation. Then, it suggests a good match between the application profiles we built and the employer's expectations. We also find out that on this tested sample of job offers, the proportion of job offers mentioning the funding of training by the employer is higher for the call centre agents than for the sales assistants (table 2). At the same time, the average duration of this training, when it is mentioned in the job offer, is also more important for the call centre agents.

Table 2. Reference to the funding of training by the employer in the job offers of the call centre agents and the sales assistants

	Number of job offers	Rate of job offers indicating the funding of the training	Average length of training given in the job offer
Call centre agent	300	14,67% (N=44)	29,72 days (N=9)
Sales assistants	301	8,31% (N=25)	16 days (N=3)

Source: TEPP-CNRS testing data on 300 job offers of call centre agents and 301 in sales assistants tested in Ile de France, between mid-January and mid-August 2015.

The table 3 detailed the access rates to a job interview according to profiles while the table 4 provides a comparison of these rates of success.

Table 3. Gross rate of success on the same job offers (« Distance from retirement age » hypothesis)

	Call centre agents			Sales assistants		
	Positive answers rate (p-value)	Confidence interval of 90%		Positive answers rate (p-value)	Confidence interval of 90%	
		Lower bound	Upper bound		Lower bound	Upper bound
56 years old – long distance	10,00%*** (0,000)	7,15%	12,85%	3,99%*** (0,000)	2,13%	5,84%
56 years old – short distance	8,33%*** (0,000)	5,69%	10,98%	2,99%*** (0,002)	1,39%	4,59%
29 years old	17,00%*** (0,000)	13,43%	20,57%	12,62%*** (0,000)	9,50%	15,75%
% of job offers with a positive answer for at least a fictitious candidate[1]	20,67%			13,95%		
Number of job offers	300			301		

[1] Percentage of jobs offers for which at least one of 3 fictitious candidates has received a positive answer from the employer (for the access to job interview).

Example of lecture: on the 300 tested job offers of call centre agents, the senior man with a long distance from retirement age has obtained a job interview in 10% of cases.

Source: TEPP-CNRS testing data on 300 job offers of call centre agent and 301 in sales assistants tested in Ile de France, between mid-January and mid-August 2015.

P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.

* 10% significance level; ** 5% significance level; ***1% significance level

Table 4. Differences in success rates on the same job offers
(« Distance from retirement age » hypothesis)

Pairwise comparison on the same job offers	CALL CENTRE AGENT			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
56 years old–long distance ***versus*** 29 years old	-7,00***	0,001	-10,41%	-3,59%
56 years old–short distance ***versus*** 29 years old	-8,67***	0,000	-12,03%	-5,31%
Effect of the distance				
56 years old short distance ***versus*** 56 years old long distance	-1,67	0,160	-3,62%	0,29%
Number of job offers	300			

Pairwise comparison on the same job offers	SALES ASSISTANT			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
56 years old–long distance ***versus*** 29 years old	-8,64***	0,000	-11,54%	-5,74%
56 years old–short distance ***versus*** 29 years old	-9,63***	0,000	-12,49%	-6,78%
Effect of the distance				
56 years old short distance ***versus*** 56 years old long distance	-1,00	0,371	-2,83%	0,84%
Number of job offers	301			

Source: TEPP-CNRS testing data on 300 job offers of call centre agent and 301 in sales assistants tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Basically, the access rate to a job interview is higher for the 29-year-old candidate if compared to senior profiles (table 3). It is 17% for call centre agents, and almost 13% for sales assistants. The senior candidate with a longer distance from retirement age (10% and 4%) has a success rate a little higher than that of the senior candidate with a shorter distance to retirement (8,33% and 3%). However, the difference between the access rates to a job interview of the two senior candidates is not statistically significant at a conventional threshold of 10% (table 4).[1]

In both occupations, preference expressed by employers for the 29-year-old candidate confirms on jobs offered with a permanent contract (Annex C, Table C1). Among 56-year-old candidates, employers with call centre agent or sales assistant permanent contracts to offer tend to favour the one further from retirement; however, this preference is not significant at conventional thresholds.

In sales assistant occupation, preference expressed for the 29-year-old candidate also emerges for jobs which offered wage is higher than the average of overall sample (Annex C, Table C2). At the same time, for this relatively better paid type of job, chances for a 56-year-old

[1] The gap between the success rate of the senior who have a long distance from retirement and the other one who has a shorter distance from retirement is 1.67 point in percentage against the second. Here, this gap was not significant at the threshold of 16%. We note that the detectable minimal effect with 300 job offers is around 6%. In addition, to detect the effect of 1.67 point in percentage, we should have a larger sample : between 900 job offers (3 times more) and 4000 job offers (10 times more), depending on whether the standard deviations are clustered by job offer or not.

candidate to access a job interview are significantly higher if his distance from retirement age is further (gap of 4 points in percentage).

This first assessment confirms difficulties encountered by senior to find a job compared to younger candidates, other things being equal. However, it does not validate the hypothesis of the distance from retirement age effect. We should remember that this kind of experience only apply to a group of given occupations, to a given time frame, and in a given location.

2. Skill obsolescence

2.1. Data collection protocol and expected results

A second strand of the theoretical literature gives greater importance to skill obsolescence, arguing that older workers are affected by technological progress. Under wage stickiness, this gives firms incentives to send older workers into early retirement (see Hellerstein, Neumark and Troske, 1999). This point is found on the Lazear (1979) seminal theoretical paper.

The senior worker's difficulties to adapt to technological and organizational shocks may lead a depreciation of human capital that has been accumulated by individuals over their professional career. Obsolescence is about human capital wearing out. All accumulated skills are not of the same kind (general or specific human capital), and thus, they don't have the same pace towards obsolescence. But, senior individuals have more specific human capital that can be valued in fewer companies, in contrast with general human capital. This point penalizes them when they lose their job.

Data collection

To test this hypothesis, we target two occupations with similar skill levels (Master degree /Executive position), with no relationship with customers, and no intense exposure to various technological shocks. Technological shocks are more important with IT project managers and IT developers than with management accountants and accountants. Three fictitious applications are submitted in answer to job offers in each of both occupations: three men holding a Master degree, respectively aged 32, 42 and 52. Their experience tends to increase with age. Based on *Labour Force Survey* data (tableau 5), the applications are made realistic.

Table 5. Average and modal characteristics of IT Project managers and management accountants

Characteristics	IT Project managers	Management accountants
Nationality (mode)	French	French
Region of residence (mode)	Ile-de-France	Ile-de-France
School leaving age (average)	23 years old	23 years old
Highest qualification obtained (mode)	Ecoles d'ingénieur	DESS, masters professionnels
Potential experience on the labour market, in years (average)	15 years old	15 years old
Part of permanent contract (pourcentage)	99	98
25-29 years old (pourcentage)	19	18
30-34 years old	11	25
35-39 years old	17	16
40-44 years old	25	13
45-49 years old	16	12
50-54 years old	5	7
55-59 years old	3	6

Source: Labour Force Survey 2008-2012 (INSEE)
Field: Employed workers having finished their studies.

Expected results

If, in a technological shock context, recruiters think that, despite a more important experience, older workers are less able to adapt to new technologies and/or that their skills are obsolete, in spite of on-the-job training, we should find out a more important detrimental difference in job interview access for older candidates in this occupation than in the other one.

2.2. Results

The number of tested job offers for IT project managers and IT developers is 302, while job offers for management accountants and accountants amount to 308. As far as IT project managers and IT developers are concerned, 33,4% of tested job offers were answered positively to, at least, one out of three, which means an important tension in this occupation, as well as a good match between employer's expectations and fictitious candidates profiles. As for management accountants and accountants, they obtain a lesser overall answer rate with 11% companies that positively responded to, at least, one of the fictitious candidates. Table 6 details of job interview access rates for each candidate, while table 7 compares success rates.

Table 6. Gross rate of success on the same job offers (« Obsolescence » hypothesis)

	IT PROJECT MANAGER AND IT DEVELOPER			
	Positive answers rate	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
52 years old	10,26%***	0,000	7,39%	13,14%
42 years old	17,88%***	0,000	14,23%	21,53%
32 years old	30,79%***	0,000	26,51%	35,08%
% of job offers with a positive answer for at least a fictitious candidate	33,44%			
Number of job offers	302			
	MANAGEMENT ACCOUNTANT AND ACCOUNTANT			
	Positive answers rate	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
52 years old	1,95%**	0,011	0,63%	3,27%
42 years old	4,22%***	0,000	2,35%	6,09%
32 years old	7,47%***	0,000	4,99%	9,95%
% of job offers with a positive answer for at least a fictitious candidate	11,04%			
Number of job offers	308			

Source: TEPP-CNRS testing data on 302 job offers in the computing sector and 308 job offers in accounting sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table 7. Differences in success rates on the same job offers (« obsolescence » hypothesis)

Pairwise comparison on the same job offers	IT PROJECT MANAGER AND IT DEVELOPER			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-20,53***	0,000	-24,51%	-16,55%
42 years old ***versus*** 32 years old	-12,91***	0,000	-16,48%	-9,35%
52 years old ***versus*** 42 years old	-7,62***	0,000	-10,66%	-4,57%
Number of job offers	302			
Pairwise comparison on the same job offers	MANAGEMENT ACCOUNTANT AND ACCOUNTANT			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	- 5,52***	0,000	-7,99%	-3,05%
42 years old ***versus*** 32 years old	-3,25**	0,049	-5,96%	-0,53%
52 years old ***versus*** 42 years old	-2,27*	0,092	-4,49%	-0,05%
Number of job offers	308			

Source: TEPP-CNRS testing data on 302 job offers in the computing sector and 308 job offers in accounting sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

This second assessment does not invalidate the obsolescence hypothesis: success rate strongly and regularly decreases in function of age for IT project managers and IT developers who are exposed to technological shocks, while it decreases in lesser proportions for management accountants and accountants. The specific profile of the position to be filled (management accountant *versus* accountant in one situation; IT project manager *versus* IT developer in the other one) does not really affect those results (Appendix C, tables C4 and C6). They can also be seen on permanent job offers (Appendix C, table C3). For jobs with wages higher than the sample average, we find out a similar effect in IT sector. In contrast, for management accountants and accountants, employers don't differentiate between 32 and 42-year-old candidates, but they significantly favour both over that who is 52 (Appendix C, Tableau C3).

3. Professional retraining difficulties

3.1. Data collection protocol and expected results

Difficulties encountered by senior workers on labour market can also been translated in terms of professional retraining. Senior workers who have lost their job face two options. They can either look for a job in the same field of activity, for the same level of wage, or even, sometimes, for a lesser one, or they look in another field, and thus, start a professional retraining that goes along a decrease in wage. This retraining increases their chances to find a job. Indeed, if we consider unemployment risks related to occupations, there are important differences for senior workers, depending on gender (Challe, 2013). This stylized fact suggests that retraining ability can bring gender stereotypes on the labour market. At the end of their career, a woman's professional mobility is actually more frequent than a man's. Senior men seem affected by a stereotype that makes them believe that retraining for a lesser skilled and more feminized profession is not suitable for them.

Data collection

Three occupations are assessed for which we purposely haven't taken all other discriminating factors into account, to keep the « other things being equal» principle (no exposure to technological shocks, lower skills, no costly training). They are personal care services: home help (domestic staff, and domestic help), cleaning persons and caretakers. For each job offer, four fictitious applications are built and sent. Each candidate has gone through a long period of unemployment after working for many years in a declining industry. They went through a professional retraining process for an occupation in tension, and are applying for a job in this new occupation. There are two 50-year-olds (51 and 52), still far from retirement and two 30-year-olds (35 and 36). The only difference between them lies in gender: one is a man, the other one a woman.

Expected results

After having neutralised the distance from retirement age, potential obsolescence and training funding, if the senior man has less chances to get a job interview (thus preventing his retraining) than a woman with a similar profile, we can conclude that a stereotype does exist, in which social standard, a senior man can't retrain in feminized and lower skilled occupations, such as personal care services. Adding two younger applications allows

confirming that retraining argument is an issue exclusively related to senior population. *Labour Force* survey data were used to build credible profiles (table 8).

Table 8. Average and modal characteristics of employed workers in personal care services

Characteristics	Household employee	Household helper	Cleaning person	Caretaker	All
Nationality (mode)	French	French	French	French	French
Region of residence (mode)	Ile-de-France	Ile-de-France	Ile-de-France	Ile-de-France	Ile-de-France
School leaving age (average)	17 years old	18 years old	18 years old	16 years old	17 years old
Highest qualification obtained (mode)	No degree	No degree	No degree	No degree	No degree
Potential experience on the labour market, in years (average)	32 years old	27 years old	26 years old	33 years old	28 years old
Proportion of women (percentage)	91	98	70	64	82
Average age	48 years old	45 years old	44 years old	49 years old	45 years old
Number of days of the unemployment for the unemployed before the actual job (average)	800 (2 years and 2 months)	664 (1 year and 9 months)	750 (2 years)	577 (1 year and 6 months)	724 (1 year and 11 months)
Proportion of unemployed before actual job (percentage)	18	25	27	18	25
Age groups					
25-29 years old (percentage)	3	6	7	3	6
30-34 years old	5	7	8	4	7
35-39 years old	9	10	11	8	10
40-44 years old	14	14	16	13	15
45-49 years old	17	17	18	17	18
50-54 years old	19	18	17	18	18
55-59 years old	19	15	13	23	15

Source: Labour Force Survey 2008-2012 (INSEE)
Field: Employed workers having finished their studies

3.2. Results

We present job interview access rates for the four fictitious candidates in table 9, incorporating the different occupations. 381 job offers were tested in the personal care services occupation profession group. An overall 42% of these job offers received a positive response to, at least, one of the four fictitious candidates, confirming the high tension in this family of occupations, and a good match between employers' expectations and the profiles of built applications. Table 10 compares job interview access rates of each fictitious candidate, with a pairwise comparison on the same job offers.

Table 9. Gross rate of success on the same job offers
(« Professional retraining hypothesis »)

	PERSONAL CARE SERVICES (3 occupations)			
	Positive answers rate	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Thirty-years-old Man	17,85%***	0,000	14,62%	21,08%
Fifty-years-old Man	12,07%***	0,000	9,29%	14,85%
Thirty-years-old Woman	26,77%***	0,000	23,08%	30,46%
Fifty-years-old Woman	25,98%***	0,000	22,24%	29,72%
% of job offers with a positive answer for at least a fictitious candidate	41,99%			
Number of job offers	381			

Source: TEPP-CNRS testing data on 381 job offers in personal care services sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table 10. Differences in success rates on the same job offers
(« Professional retraining hypothesis »)

	PERSONAL CARE SERVICES (3 occupations)			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
Men				
Fifty-years-old ***versus*** Thirty-years-old	-5,77***	0,001	-8,61%	-2,93%
Women				
Fifty-years-old ***versus*** Thirty-years-old	-0,79	0,733	-4,59%	3,01%
Effets of the gender				
Thirty-years-old				
Women ***versus*** Men	8,92***	0,000	4,88%	12,96%
Fifty-years-old				
Women ***versus*** Men	13,91***	0,000	10,02%	17,80%
Number of job offers	381			

Source: TEPP-CNRS testing data on 381 job offers in personal care services sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Basically, age only affects chances to access a job interview for men: chances of a 50-year-old are lesser than that of a 30-year-old one (gap of 6 points in percentage). However, for woman, age seems effectless: a 30-year-old and a 50-year-old have roughly the same chances of getting a job interview. Also, regardless of their age, women are significantly more successful than men. However, this gender preference is more important among senior population. There is a 9 point gap in percentage among the 30-year-olds, and a 14 point one among the 50-year-olds. We reach the same results when we reduce the scope to higher quality job offers: permanent positions (Appendix C, table C8) and wages higher than sample median value (Appendix C, table C9).

Thus, as stated by the hypothesis of professional retraining difficulties, men undergo a specific age-related penalty, women don't. Chances for men to get a job interview decrease by one third over 50, other things being equal. Women are preferred to men for personal care services, especially over 50.

4. Pure discrimination and social norm

4.1. Data collection protocol and expected results

In literature on discrimination, a classic distinction opposes discriminations based on imperfect information or statistical discrimination (Arrow, 1972; Phelps, 1972) and discrimination based on preferences or pure discrimination, *à la* Becker (1957). The first are linked to asymmetries of information which are inherent in recruitment and would not exist in a framework of perfect information. They can be conceptualised in a micro-founded theoretical framework of a labour market with friction and mixed agents, where age and time remaining on the labour market are considered explicitly. Pure discrimination, in turn, is an exogenous characteristic of employer preference, of their salaries or of their customers, and corresponds quite naturally to the residual component of this type of conceptualisation.

Many economic analyses have already provoked cultural barriers, stereotypes, and have created social norms such as resistance by employers to the idea of recruiting older people (as mentioned in the 2005 report by the French Council of Economic Analysis [CAE or *Conseil d'analyse économique*]). As Pierre Cahuc already indicated in his 2005 paper, "To our knowledge, the only studies available concerning discrimination by employers in France attribute age discrimination to economic factors and nothing else". But no study has, so far, thoroughly explored the possibility of discrimination in recruitment against older people by distinguishing possible causes (discrimination based on preference or information). The idea is to find out, firstly, if discrimination against older people exists, and secondly, if it is motivated by the pure effects of persistent social norms, by preference of younger people over older people, or by evidence of statistical discrimination.

Data collection

The social norm sends back to the theory of « taste discrimination » (also called pure discrimination) to Becker. In our case, we can talk about an anti-senior culture. According to this approach the employer's discrimination can apply from his clients. The chosen occupation is voluntarily in contact with clients to allow clients' preferences to exercise. This occupation doesn't imply investments in the human capital from the employer's part, who doesn't expect any return on his investment. Otherwise, it is not exposed to technological shocks. According to these criteria, we kept the salesman occupation.

On each job offer, we build and send four fictitious applications. The individuals are distinguished from their gender and age: a man and a woman, respectively 49 and 48 years old, a man and a woman respectively 52 and 53 years old. We built their experiences in order to get them as fairly far from retirement, accordingly to their experiences too (like the protocol obsolescence) knowing that the oldest (the one who is 53 years old) is still far from retirement. At the same period of time, all they entire in the labour market. We verify with the Labour Force Survey that the characteristics of candidates are realistic (Table 11).

Table 11. Average and modal attributes on sales assistants

Complementary statistics on sales assistant occupation

(Protocol « distance from retirement age »)

Characteristics	Sales assistants		
	Man	Woman	All
25-29 years old (percentage)	7	15	22
30-34 years old	4	12	15
35-39 years old	3	10	13
40-44 years old	3	8	11
45-49 years old	2	7	9
50-54 years old	1	6	7
55-59 years old	1	5	6

Source: Labour Force Survey 2008-2012 (INSEE)
Field: Employed workers having finished their studies

Expected results

Without technological shocks, if the distance from retirement age is in a linear relation with experience, if the employer doesn't have to finance a training to the employee, and the access to employment for older workers is lower, we will be able to deduct the existence of a stereotype, of a social norm according the seniors place on the work's market is depreciated, even for the low-skilled jobs in contact with the clients. We will be able to compare this result according to the gender of the individuals.

4.2. Résultats

The table 12 presents the access rates to a job interview for four fictitious candidates on 301 tested job offers of sales assistant. The table 13 makes a pair wise comparison on the same job offers.

Table 12. Gross rate of success on the same job offers (« social norm » hypothesis)

	SALES ASSISTANT			
	Positive answers rate	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Forty-years-old Man	6,98%***	0,000	4,57%	9,38%
Fifty-years-old Man	4,65%***	0,000	2,63%	6,67%
Forty-years-old Woman	11,96%***	0,000	8,88%	15,04%
Fifty-years-old Woman	8,31%***	0,000	5,73%	10,88%
% of job offers with a positive answer for at least a fictitious candidate	17,28%			
Number of job offers	301			

Source: TEPP-CNRS testing data on 301 job offers in sales sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table 13. Differences in success rates on the same job offers (« social norm » hypothesis)

	SALES ASSISTANT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effects of the age				
Men				
Fifty-years-old ***versus*** Forty-years-old	-2,33*	0,088	-4,57%	-0,08%
Women				
Fifty-years-old ***versus*** Forty-years-old	-3,65**	0,046	-6,67%	-0,64%
Effects of the gender				
Forty-years-old				
Woman ***versus*** Man	4,98***	0,005	2,06%	7,91%
Fifty-years-old				
Woman ***versus*** Man	3,65**	0,020	1,08%	6,23%
Number of job offers	301			

Source: TEPP-CNRS testing data on 301 job offers in sales sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Even through a very few years separate the forty-years-old and fifty-years-old candidates in our controlled experience (less than 5 years) a more advances age lowers the chances to access to an job interview for a man or a woman, with an effect a little more marked for this last one (around 3%). In the occupation of sales assistants, a discrimination related to the gender appears, which goes against men, among the forty-years-old and fifty-years-old candidates. In both cases, women have a higher chance than men with the same age, but this effect is higher for the forty-years-old candidates (differences of 5% in favour women). So the hypothesis that, the social norm discriminates older workers in the employment is validated. But the attributes of job offers exercise an influence. For the permanent contract jobs, the employers seem to be less sensitive to age: they still prefer forty-years-old candidates but this difference is significant, only for women (Appendix C, table C10). When they have a vacant permanent job to promote, employers consider indifferently a man which is a little bit younger or older than 50. Along with the kind of jobs, among the forty-years-old candidates, the employers discriminate men, but this trend is not significant among the fifty-years-old candidates. Finally, on the job offers offering a wage above to the median value of the sample, no age or gender effects appear in the statistically significant (Appendix C, table C11).

4. CONCLUSIONS

In a context of ageing populations and rising life expectancy, the access and remain to employment for older workers recovers major economical and social challenges. The small proportion of seniors in the workforce is a social issue, the one about their inclusion in the society, is an economical concern, the one about the privation of productive resources, expansive in growth points, furthermore the cost of retirement pay takes the first place among social protection costs. In France for example, of all retirement systems, the benefits of pensions represent about 40% of all social protection benefits. A growth, even low, of the employment rate for individuals older than 50 lowers the unemployment benefits while raising the resources of contributions for pension systems.

Age is 1 of 20 criteria against which it is prohibited to discriminate in France. Age discrimination is, as such, prohibited by French law as it is by European law. However, age has a special place among these criteria. It is a visible characteristic that is not chosen by the individual, as is gender or ethnic origin. But, unlike these two criteria, age is not innate and ageing directly concerns everyone. In France, 1 in 4 workers is an older person (in 2010) and all of these 4 workers are going to become older people in the future. If age discrimination does exist, it is a form of discrimination that can directly affect everyone.

In this paper, we construct and implement an experimental protocol allowing testing four hypotheses currently discussed in order to take into account the persistence of under-employment of persons aged over 50, in France : the unobservable distance from retirement age by the recruiter; the supposed depreciation of skills in a context with repeated technological shocks; the supposed inability of professional retraining, differentiated by gender; a taste discrimination against older workers, as the result of social norms. Our results show that we need to combine multiple hypotheses to understand the under-employment of the seniors in France. They are victims of depreciation of human capital and age discrimination in access to employment, and more particularly the men in their professional retaining. The classic explanation by distance to retirement is the only one invalidated.

These results have important consequences when we look at the public policies. They show that the main obstacles to get a job, for the older workers is the fact that they are unable to get access to a training, to allow for depreciation of skills fighting, and the presence of age discrimination, made by employers. But the aid programs towards seniors give, today, a limited foresight about measures against discriminations. When the age discrimination in the access to job occurred, preventive measures such as awareness-raising to employers can be used, in particular, the reminding of law rules. Our results show that these actions would gain from better targeting, specifically, the difficulties encountered by men aged 50 and over.

REFERENCES

Adida, C. L., D. D. Laitin et M.-A. Valfort (2010). Identifying barriers to Muslim integration in France. *PNAS (Proceedings of the National Academy of Sciences of the United States of America)* 107(52): 384-390.

Arrow, K. J (1972), Models of job discrimination, in *Racial Discrimination in Economic Life*, A. H. Pascal, (Lexington Mass.: Lexington Books), pp. 83-102.

Becker, G. (1957), *The Economics of Discrimination*, (Chicago: University of Chicago Press), (2nd edition: 1971).

Berson C. (2011), Testing sur les jeunes français issus de l'immigration en fonction du degré de concurrence, Rapport final d'évaluation du Fonds d'Expérimentation pour la Jeunesse, AP2 091.

Bettendorf, L. and P. Broer (2005), Lifetime Labor Supply in a Search Model of Unemployment, Tinbergen Institute Discussion Paper, 1679

Bunel M., Y. L'Horty et P. Petit, (2015). « Discrimination based on place of residence and access to employment". *Urban Studies*, January 8, 2015.

Blöndal S. and S. Scarpetta (1998), The Retirement Decision in OECD Countries, OECD Economics Department Working Paper, 202.

Cahuc P. (2005), Le difficile retour en emploi des seniors, *Revue française d'économie*, 20 (1), pp. 3-56.

Challe, L. (2013), L'emploi des seniors : un réexamen des écarts de taux d'emploi européens. In : Les nouvelles frontières de l'économie sociale et solidaire, éd. par H. Defalvard, Y. L'Horty, F. Legendre et M. Narcy, XXXIIIes journées de l'Association d'Économie Sociale, Presses universitaires de Louvain, Les Cahiers du CIRTES, Louvain-la-Neuve, Belgique, p. 347-369

Chéron A., J.O. Hairault and F. Langot (2011), Age-Dependent Employment Protection, *Economic Journal*, vol 121, issue 557, pp 1477-1504

A. Chéron and J.O. Hairault, F. Langot (2013), «Life-Cycle Equilibrium Unemployment», *Journal of Labor Economics*, Vol. 31, No. 4, October, pp. 843-882

Duguet E. et P. Petit (2005). « Hiring discrimination in the French financial sector : an econometric analysis on field experiment data », *Annals of Economics and Statistics*, 78, pp. 79-102.

Duguet E., N. Leandri, Y. L'Horty, P. Petit. « Are Young French Jobseekers of Ethnic Immigrant Origin Discriminated Against? A Controlled Experiment in the Paris Area », *Annals of Economics and Statistics*, 2010, (99-100), pp. 187-215.

Hairault J-O., F. Langot, and T. Sopraseuth (2010), Distance to Retirement and Older Workers' Employment: The Case For Delaying The Retirement Age, *Journal of European Economic Association*, 85, pp. 1034-1076.

Heckman, J. J. (1998), Detecting Discrimination, *Journal of Economic Perspectives, 12* (2), pp. 101-116.

Hellerstein J.K., D. Neumark and K.R. Troske (1999), Wages, productivity and worker characteristics: evidence from plant-level production functions and wage equations, *Journal of Labor Economics*, 17, pp. 409-446.

Langot, F. and E. Moreno (2013), Does the Growth Process Discriminate Against Older Workers, *Journal of Macroeconomics*, vol 38, part B, pp 286-306

Lazear E.P. (1979) "Why is there Mandatory retirement" *Journal of Political Economy*, 87, pp. 1261-84

L'Horty Y., E. Duguet, L. du Parquet, P. Petit et F. Sari (2011). « Les effets du lieu de résidence sur l'accès à l'emploi : Une expérience contrôlée sur des jeunes qualifiés en Ile-de-France », *Economie et Statistique*, (447), pp. 71-95.

Ljungqvist L. and T. Sargent (2008), Two Questions About European Unemployment, *Econometrica*,76, 1-30.

Mortensen D.T. and C. Pissarides (1994), Job creation and job destruction in the theory of unemployment, *Review of Economic Studies*, 61, pp. 397-415.

Neumark, D. (2008), La discrimination à l'emploi des seniors aux Etats-Unis, *Connaissance de l'Emploi*, (53).

Neumark, D., I. Burn et P. Button (2015), “Is it Harder for Older Workers to Find a job? New and Improved Evidence from a Field Experiment”, NBER working paper n°21669.

OECD publishing (2006), Live longer, work longer, Ageing and Employment Policies.

Petit, P. (2003), Comment évaluer la discrimination à l’embauche ? *Revue Française d’Economie*, *17* (3), pp. 55-87

Petit, P. (2007), « The Effects of Age and Family Constraints on Gender Hiring Discrimination : A Field Experiment in the French Financial Sector », *Labour Economics,* 14 (3), pp. 371-392.

Petit P., E. Duguet, Y. L’Horty, Loïc du Parquet et Florent Sari (2014), « Discriminations à l’embauche : les effets du genre et de l’origine se cumulent-ils systématiquement ? », *Economie et Statistique*, (464).

Phelps, E. (1972), The Statistical Theory of Racism and Sexism, *American Economic Review*, *62*, pp. 659-661.

Pierné, G. (2013), Hiring discrimination based on national origin and religious closeness: results from a field experiment in the Paris area, IZA Journal of Labor Economics, 2 (4).

Riach, P. and J. Rich (2002), Field Experiments of Discrimination in the Market Place, *The Economic Journal*, *112*, pp. 480-518.

Riach, P. and J. Rich (2010), An experimental investigation of age discrimination in the English labor market, *Annals of Economics and Statistics*, *99-100*, pp. 169-186.

APPENDIX A : Data collection for the four protocols

In a same campaign of testing, the fictitious candidates are distinguishing; only, by the attribute whose we want to test the effect on the chances to access to job interview. They are, also, the same characteristics. All of them, are French, the sound of their first name and name indicate a French origin. They are the driving license with a car, and live in Paris and suburbs, in neighbourhood similar across socio-economic perspectives. All of them are employed when they apply and explain, in their CVs, have at least a similar experience to that required for tested job offers.

Internet is the main source used to collect the job offers where the fictitious applications have been sending. Specialised web-sites have been using for some occupations (jobanque for the management accountant, jobtic for the computing) as a complement to normal generalists web-sites (Pôle Emploi, Monster, cadremploi, cadresonline, keljob, boncoin, vivastreet). For most of the applications have been sent by e-mail either pôle emploi, or private placement operator, or, directly, company, the same day as the publishing date of the job offers. For a same job offer, the applications have been sent the same day with a different random sending order according to job offers. The collected job offers cover exclusively permanent and fixed-term contracts (full-time and part-time for low-skilled occupations) on the region Ile-de-France.

Table A1. Collected Data

Tested Occupations	Number of build profiles	Number of tested job offers	Number of sending applications
« distance of the retirement » hypothesis			
Call centre agent	3	300	900
Sales assistant	3	301	903
Sub-total « distance of the retirement »	6	601	1803
« obsolescence » hypothesis			
IT project manager and IT developer	3	302	906
Management accountant and accountant	3	308	924
Sub-total « obsolescence »	6	610	1830
« professional retraining » hypothesis			
Household employee and household helper	4	189	756
Cleaning person	4	169	676
Caretaker	4	23	92
Sub-total « professional retraining »	12	381	1524
« social norm » hypothesis			
Sales assistant	4	301	1204
Sub-total « social norm »	4	301	1204
General Total	**28**	**1893**	**6361**

APPENDIX B: Examples of fictitious applications

We present, hereafter, the 3 tested fictitious applications discussing the distance from retirement age hypothesis, on the call centre agent occupation.

Guillaume BOYER
29 Rue du Saint-Gothard
75014 Paris
Portable : 06-28-32-29-60
Mail : g.boyer5@yahoo.fr

Situation actuelle
29 ans
Voiture personnelle
(permis B)

A LA RECHERCHE D'UN POSTE DE CONSEILLER SUR PLATEFORME

EXPERIENCES

Août 2010- en cours: Vendeur - **LA CROISSANTERIE** à Paris 13ème

Déc 2007-Juillet 2010: Conseiller sur plateforme - **ACTICALL** à Romainville

Déc 2003-Nov 2007: Vendeur - **SPORT NATION** à Paris 12ème

Oct 2002-Nov 2003: Conseiller sur plateforme - **TIMELINE** à Montrouge

Sept 2000-Sept 2002: Vendeur - **ALINEA** à Villiers sur Marne
(Apprentissage)

FORMATION

2002: CAP « Employé de commerce multi-spécialités »

LOISIRS

Musique, Jogging

Guillaume BOYER
29 Rue du Saint-Gothard
75014 Paris
Portable : 06-28-32-29-60
Mail : g.boyer5@yahoo.fr

Objet : REPONSE A UNE ANNONCE DE TELECONSEILLER

Monsieur d'ARCANGELO,

Votre annonce pour un poste de téléconseiller dans votre entreprise a retenu mon attention. Je souhaite postuler à cette annonce.
J'ai un CAP « Employé de commerce multi-spécialités » obtenu en 2002 et plusieurs expériences comme conseiller sur plateforme pendant 4 ans (appel entrants, appels sortants, prospection clients, télémarketing, enquête de satisfaction, prise de rendez-vous clients…)
Je souhaite continuer ma carrière dans une entreprise comme la votre. Ma formation et mes expériences m'ont permis d'acquérir les compétences que vous recherchez pour ce poste. Je suis très motivé et efficace.
Souhaitant que ma candidature attire votre attention et que vous m'accordiez un entretien, je vous prie d'agréer l'expression de toute ma considération.

G. BOYER

Jean Durand
79 Rue Emile Zola 75015 PARIS
☎ 06 41 05 65 47
✉ durand.jean010@gmail.com

56 ans
Permis B et Voiture

Employé dans la vente
(Expérience de vente depuis 41 ans)

EXPERIENCE

2008 à aujourd'hui	Vendeur (LECLERC A PARIS)
2005-2007	Conseiller à distance (PRATIC APPEL A PARIS)
2003-2004	Conseiller à distance (ACTEL A RUEIL MALMAISON)
2000 - 2002	Vendeur en luminaire (CASTORAMA A CLAYES SOUILLY)
1992 - 1999	Vendeur (LA MIE CALINE A PARIS)
1986 - 1991	Vendeur (VIDEO FUTUR A PARIS)
1977- 1985	Vendeur (TOUT POUR L'HOMME A PARIS)
1974 - 1976	Vendeur (CAP en apprentissage chez FELIX POTIN A PARIS)
1973 - 1974	Vendeur (FELIX POTIN A PARIS)

DIPLOME

1974 - 1976	CAP Vente

INTERETS

Course à pied, cinéma et musique

Jean Durand
79 Rue Emile Zola 75015 PARIS
☎ 06 41 05 65 47
✉ durand.jean010@gmail.com

Madame De Rancourt,

Votre offre d'emploi de téléprospecteur m'intéresse beaucoup car je pense avoir les compétences que vous cherchez.

Ma formation de vendeur et mes emplois précédents m'ont permis de développer mes compétences de vendeur et de conseiller à distance. Mon sérieux et mon expérience sont des atouts pour occuper cet emploi. Je m'adapte facilement depuis que je travaille depuis mes 15 ans.

Aujourd'hui, je souhaite mettre mon expérience et mes compétences à votre service. Je voudrais aussi vous informer que par rapport à mes 41 années d'expérience, je pourrai partir à la retraite en Avril 2016. Je reste à votre disposition pour vous montrer ma motivation.

En l'attente de votre réponse, je vous prie d'agréer, Madame, l'expression de mes respectueuses salutations.

Jean Durand

Philippe PETIT
16 Rue du Père Guérin
75013 Paris
philippepetit39@gmail.com
06/44/88/07/30

Mobile (permis B et véhicule)
57 ans

VENDEUR
34 ans d'expérience

Expériences Professionnelles

De 2008 à actuellement	**Vendeur** rayon literie chez Ikea *(Nanterre)*
De 2005 à 2007	**Téléconseiller** chez Téléperformance *(Pantin)*
De 2003 à 2004	**Vendeur** chez Courir *(Paris 12ème)*
De 2002 à 2003	**Téléconseiller** chez Clientlogic *(Malakoff)*
De 1996 à 2002	**Vendeur** chez Class'croute *(Paris 14ème)*
De 1989 à 1996	**Vendeur** rayon charcuterie chez Carrefour *(Thiais)*
De 1985 à 1989	**Vendeur** rayon décoration chez Leroy Merlin *(Genevilliers)*
De 1980 à 1985	**Vendeur** à La Foire Fouille *(Petit-Clamart)*

Qualification

1979 **CAP Vente**

Divers

Cyclisme, lecture

Philippe PETIT
16 Rue du Père Guérin
75013 Paris
philippepetit39@gmail.com
06/44/88/07/30

Monsieur XXX,

Je souhaite vous présenter ma candidature pour un emploi de téléprospecteur dans votre entreprise.

J'ai une expérience de 34 ans dans la vente. J'ai travaillé dans plusieurs entreprises comme vendeur ou téléconseiller, ce qui m'a permis d'avoir les compétences nécessaires pour ce travail comme téléconseiller, j'ai rempli différentes missions variées : appels entrants et sortants, assistance téléphonique des clients, standard externalisé, relance d'invitations, services consommateurs, phoning.

Je vous présente ma candidature car je pense correspondre à vos attentes. Pour cela, je vous envoie mon CV, et je me tiens à votre disposition pour tout entretien.

Je reste à votre disposition pour toute demande et vous prie de croire en l'expression de mon profond respect.

Philippe PETIT

APPENDIX C : Complementary results

Distance to retirement hypothesis

Table C1. Differences in success rates on the same job offers offering a permanent contract (distance to retirement hypothesis)

	CALL CENTRE AGENT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
56 years old–long distance ***versus*** 29 years old	-6,70***	0,011	-11,06%	-2,34%
56 years old–short distance ***versus*** 29 years old	-8,25***	0,001	-12,47%	-4,03%
Effect of the distance				
56 years old short distance ***versus*** 56 years old long distance)	-1,55	0,313	-4,07%	0,97%
Number of job offers	194			

	SALES ASSISTANT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
56 years old–long distance ***versus*** 29 years old	-11,44***	0,000	-15,30%	-7,59%
56 years old–short distance ***versus*** 29 years old	-12,94***	0,000	-16,87%	-9,00%
Effect of the distance				
56 years old short distance ***versus*** 56 years old long distance)	-1,49	0,251	-3,63%	0,65%
Number of job offers	201			

Source: TEPP-CNRS testing data on 300 job offers of call centre agent and 301 in sales assistants tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C2. Differences in success rates on the same job offers offering a wage above the median value of the sample (distance to retirement hypothesis)

	CALL CENTRE AGENT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
56 years old–long distance ***versus*** 29 years old	-5,41	0,104	-10,87%	0,06%
56 years old–short distance ***versus*** 29 years old	-5,41	0,108	-10,93%	0,12%
Effect of the distance				
56 years old short distance ***versus*** 56 years old long distance)	0,00	1,000	-2,12%	2,12%
Number of job offers	111			

	SALES ASSISTANT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
56 years old–long distance ***versus*** 29 years old	-7,83***	0,005	-12,42%	-3,23%
56 years old–short distance ***versus*** 29 years old	-12,17***	0,000	-17,21%	-7,14%
Effect of the distance				
56 years old short distance ***versus*** 56 years old long distance)	-4,35**	0,023	-7,50%	-1,20%
Number of job offers	115			

Source: TEPP-CNRS testing data on 300 job offers of call centre agent and 301 in sales assistants tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Obsolescence hypothesis

Table C3. Differences in success rates on the same job offers offering a permanent contract (obsolescence hypothesis)

Pairwise comparison on the same job offers	IT PROJECT MANAGER AND IT DEVELOPER			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-19,78***	0,000	-24,04%	-15,51%
42 years old ***versus*** 32 years old	-12,31***	0,000	-16,11%	-8,51%
52 years old ***versus*** 42 years old	-7,46***	0,000	-10,67%	-4,26%
Number of job offers	268			
Pairwise comparison on the same job offers	MANAGEMENT ACCOUNTANT AND ACCOUNTANT			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-4,62***	0,002	-7,12%	-2,11%
42 years old ***versus*** 32 years old	-1,54	0,346	-4,23%	1,15%
52 years old ***versus*** 42 years old	-3,08**	0,019	-5,23%	-0,92%
Number of job offers	260			

Source: TEPP-CNRS testing data on 302 job offers in the computing sector and 308 job offers in accounting sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C4. Differences in success rates on the same job offers offering a wage above the median value of the sample (obsolescence hypothesis)

Pairwise comparison on the same job offers	IT PROJECT MANAGER AND IT DEVELOPER			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-21,82***	0,000	-30,94%	-12,70%
42 years old ***versus*** 32 years old	-14,55***	0,002	-22,29%	-6,80%
52 years old ***versus*** 42 years old	-7,27**	0,038	-13,05%	-1,50%
Number of job offers	55			
Pairwise comparison on the same job offers	MANAGEMENT ACCOUNTANT AND ACCOUNTANT			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-23,81**	0,012	-39,36%	-8,26%
42 years old ***versus*** 32 years old	0,00	1,000	-15,72%	15,72%
52 years old ***versus*** 42 years old	-23,81***	0,010	-39,09%	-8,53%
Number of job offers	21			

Source: TEPP-CNRS testing data on 302 job offers in the computing sector and 308 job offers in accounting sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C5. Differences in success rates on the same job offers (IT Project managers *versus* other occupations in the computing) (obsolescence hypothesis)

Pairwise comparison on the same job offers	IT PROJECT MANAGER			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-23,46***	0,000	-29,18%	-17,73%
42 years old ***versus*** 32 years old	-12,96***	0,000	-18,16%	-7,77%
52 years old ***versus*** 42 years old	-10,49***	0,000	-14,74%	-6,25%
Number of job offers	162			
Pairwise comparison on the same job offers	OTHER OCCUPATIONS IN THE COMPUTING			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-17,14***	0,000	-22,95%	-11,34%
42 years old ***versus*** 32 years old	-12,86***	0,000	-17,84%	-7,88%
52 years old ***versus*** 42 years old	-4,29	0,104	-8,63%	0,05%
Number of job offers	140			

Source: TEPP-CNRS testing data on 302 job offers in the computing sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C6. Differences in success rates on the same job offers (SSII *versus* other kind of employer) (Obsolescence hypothesis)

Pairwise comparison on the same job offers	SSII			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-20,56***	0,000	-27,37%	-13,75%
42 years old ***versus*** 32 years old	-7,48***	0,030	-13,13%	-1,83%
52 years old ***versus*** 42 years old	-13,08**	0,000	-18,94%	-7,23%
Number of job offers	107			

Source: TEPP-CNRS testing data on 302 job offers in the computing sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C7. Differences in success rates on the same job offers (management accountants versus other occupations in the accounting) (Obsolescence hypothesis)

Pairwise comparison on the same job offers	MANAGEMENT ACCOUNTANT			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-5,63***	0,002	-8,64 %	-2,61 %
42 years old ***versus*** 32 years old	-3,90**	0,046	-7,11 %	-0,68 %
52 years old ***versus*** 42 years old	-1,73	0,245	-4,18 %	0,72 %
Number of job offers	231			
Pairwise comparison on the same job offers	OTHER OCCUPATIONS IN THE ACCOUNTING			
	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effect of the age				
52 years old ***versus*** 32 years old	-5.19**	0,042	-9,39%	-1,00%
42 years old ***versus*** 32 years old	-1.30	0,654	-6,06%	3,47%
52 years old ***versus*** 42 years old	-3.90	0,182	-8,7%	0,91%
Number of job offers	77			

Source: TEPP-CNRS testing data on 308 job offers in the accounting sector tested in Ile de France, between mid-January and mid-August 2015.

P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.

* 10% significance level; ** 5% significance level; ***1% significance level

Professional retraining hypothesis

Table C8. Differences in success rates on the same job offers offering a permanent contract (Professional retraining hypothesis)

	PERSONAL CARE SERVICES (3 occupations)			
	Gap		Confidence interval of 90%	
Pairwise comparison on the same job offers	(in % points)	p-value	Lower bound	Upper bound
Effects of the age				
Men				
Fifty-years-old ***versus*** Thirty-years-old	-6,58***	0,004	-10,37%	-2,80%
Women				
Fifty-years-old ***versus*** Thirty-years-old	-1,65	0,575	-6,48%	3,19%
Effects of the gender				
Thirty-years-old				
Woman ***versus*** Man	11,11***	0,001	5,63%	16,59%
Fifty-years-old				
Woman ***versus*** Man	16,05***	0,000	10,76%	21,34%
Number of job offers	243			

Source: TEPP-CNRS testing data on 381 job offers in personal care services sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C9. Differences in success rates on the same job offers offering a wage above the median value of the sample (Professional retraining hypothesis)

	PERSONAL CARE SERVICES (3 occupations)			
	Gap		Confidence interval of 90%	
Pairwise comparison on the same job offers	(in % points)	p-value	Lower bound	Upper bound
Effects of the age				
Men				
Fifty-years-old ***versus*** Thirty-years-old	-5,59**	0,048	-10,23%	-0,95%
Women				
Fifty-years-old ***versus*** Thirty-years-old	3,11	0,393	-2,88%	9,09%
Effects of the gender				
Thirty-years-old				
Woman ***versus*** Man	9,32***	0,009	3,43%	15,20%
Fifty-years-old				
Woman ***versus*** Man	18,01***	0,000	12,22%	23,80%
Number of job offers	161			

Source: TEPP-CNRS testing data on 381 job offers in personal care services sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Social norm hypothesis

Table C10. Differences in success rates on the same job offers offering a permanent contract (social norm hypothesis)

	SALES ASSISTANT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effects of the age				
Men				
Fifty-years-old ***versus*** Forty-years-old	-1,99	0,286	-5,06%	1,07%
Women				
Fifty-years-old ***versus*** Forty-years-old	-3,98*	0,056	-7,40%	-0,56%
Effects of the gender				
Forty-years-old				
Woman ***versus*** Man	4,98**	0,011	1,78%	8,17%
Fifty-years-old				
Woman ***versus*** Man	2,99	0,155	-0,47%	6,44%
Number of job offers	201			

Source: TEPP-CNRS testing data on 301 job offers in sales sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

Table C11. Differences in success rates on the same job offers offering a wage above the median value of the sample (social norm hypothesis)

	SALES ASSISTANT			
Pairwise comparison on the same job offers	Gap (in % points)	p-value	Confidence interval of 90%	
			Lower bound	Upper bound
Effects of the age				
Men				
Fifty-years-old ***versus*** Forty-years-old	-0,87	0,656	-4,08%	2,34%
Women				
Fifty-years-old ***versus*** Forty-years-old	-2,61	0,328	-6,99%	1,77%
Effects of the gender				
Forty-years-old				
Woman ***versus*** Man	4,35	0,131	-0,39%	9,09%
Fifty-years-old				
Woman ***versus*** Man	2,61	0,256	-1,17%	6,39%
Number of job offers	115			

Source: TEPP-CNRS testing data on 301 job offers in sales sector tested in Ile de France, between mid-January and mid-August 2015.
P-values and confidence intervals were calculated using the *bootstrap* method based on 5, 000 draws.
* 10% significance level; ** 5% significance level; ***1% significance level

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