

**Do anonymous resumes
make the field more even?
Evidence from a randomized field experiment**

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Context

- Correspondence studies (*testings*) show strong discrimination against candidates with foreign background in hiring decisions in France
 - When identical resumes are sent to the same employer, the recall rate of candidates with foreign origin is 5 % compared to 15% for candidates with French origin (from an audit study conducted on job offers posted by hotels and restaurants and analyzed by Duguet, Leandri, L'Horty and Petit)
- How to make recruiters focus on objective productive skills rather than origin?
- One recurrent idea in the French public/political debate (also in Belgium, Germany, Netherlands, UK): make resumes anonymous

Broad mechanisms

- With anonymous resumes recruiters interview a different pool of candidates
 - hide ethnicity
 - make recruiters focus on productive skills
- If discrimination (whether statistical or taste-based) is less severe during interviews, usually discriminated candidates could be hired; but if it is more severe, there will be no change in hiring diversity
- In the long run, if anonymization actually reduces discrimination, it may change the pool of candidates who apply for jobs... (calling effect)

Previous literature

- Numerous correspondence/audit studies (Riach and Rich 2002)
- Goldin and Rouse (2000): introduction of shields in hiring auditions of American orchestras. Diff in diff shows that women benefit from blind auditions.
- Aslund and Nordstrom Skans (2007): anonymous applications for 109 public jobs. Diff in diff shows that women and foreigners benefit from anonymous applications.
- Krause, Rinne and Zimmerman (2012): anonymous applications for 4-6 job openings in one economic research institution. Small scale experiment shows that women are adversely affected.

Our setting

- Anonymization Law was passed in 2006 in the wake of 2005 riots in Paris: attenuate discrimination against deprived neighborhood
- Anonymization Law never applied: evaluation in 2009
- Randomized experiment based on 600 recruiters who post their vacancies at the French Public Employment Service
 - Who do not refuse to participate to the experiment
 - Treatment applied to all the resumes that the PES sends to the recruiter: anonymous vs standard
 - Treatment = removing the upper part of the resume: name, gender, birthdate, address,...

Results

- Minority: candidates with foreign background or living in deprived neighborhoods
- The relative chances of minority candidates to be interviewed **decrease** when resumes are anonymous
→ **reverse discrimination** possibly explained by selection of firms into the experiment
- Recruiters value productive skills less, when resumes are anonymous, and they are more reluctant to interview candidates whose CVs convey uncertain signals

Other Results: not in this talk

- The relative chances of women to be interviewed **increase** when resumes are anonymous, when they directly compete with men
- With standard resumes, women (men) tend to recruit women (men); when resumes are anonymous, interview and even recruitment are more balanced (**anonymous resumes undo homophily?**)

Outline

- ① Experimental design
- ② Selection of firms into the experiment?
- ③ Results
- ④ Change in information extraction
- ⑤ Conclusion

Experimental design

- 1 The PES counselor indicates that the recruiter may receive anonymous resumes
- 2 The recruiter can refuse to participate (30%)
- 3 The counselor pre selects a pool of suitable candidates, around 6 persons
- 4 Once pre selection is done, the counselor randomly draws the treatment: anonymous resumes for all pre selected candidates or usual process
- 5 The PES makes the resumes anonymous
- 6 The recruiter chooses candidates to interview and interviews take place (meeting set up by PES counselor to preserve anonymity)
- 7 New resumes (with the same treatment as the first pool) are sent if the recruiter is not satisfied

Note that firms can receive resumes from other internal or external sources than the PES

Type of jobs and firms

- Experimental target: firms with more than 50 employees posting jobs lasting more than 3 months
- Actually: mostly firms from the service sector (75%), posting skilled job positions
- 80% of jobs involves teamwork and 70% frequent contact with customer
- 10% of recruiters are immigrants or children of immigrant
- 25% of recruiters have at least one colleague with an African or Muslim sounding

Balancing and measure of discrimination

	Test	Control
Candidates' characteristics		
Women	0.51	0.47
Less than 26	0.29	0.29
More than 50	0.13	0.09
Deprived neighborhood (1)	0.23	0.25
Immigrant (2)	0.22	0.23
Child of immigrant (3)	0.18	0.15
(1), (2) or (3)	0.50	0.49
African or Muslim-sounding name (4)	0.24	0.24
More than 12 years of education	0.72	0.75
Number of candidates sent to recruiter		
candidates (1) or (4)	2.08	2.05
other candidates	3.45	3.42

Among candidates with African or Muslim sounding name, 92% are immigrants or child of immigrant.

Selection into the experiment?

- Very few differences in firms' characteristics:
 - Firms accepting to enter the experiment search for more skilled candidates and offer better contracts
 - But no difference in other covariates (sector, size, job characteristics associated with discrimination, gender, foreign background of the recruiter, diversity of colleagues or friends network)
- But the gap in interview rates between minority and majority candidates is lower in firms participating to the experiment.

Change in the **interview** gap

	Minority (D)	Majority (ND)	gap (D-ND)
Anonymous (t)	0.047 (0.011)	0.177 (0.030)	-0.130*** (0.032)
Standard (c)	0.093 (0.017)	0.116 (0.026)	-0.024 (0.031)
Effect (t-c)	-0.046** (0.020)	0.061 (0.040)	-0.107** (0.045)
Observations	696	572	1268
Job offers	418	385	598

Errors are clustered at the job offer level

Robust to adding controls, within job offer estimation, change in the definition of "foreign background"

Change in the **recruitment** gap

	Minority (D)	Majority (ND)	gap (D-ND)
Anonymous (t)	0.017 (0.007)	0.052 (0.017)	-0.035** (0.018)
Standard (c)	0.023 (0.008)	0.021 (0.009)	0.002 (0.012)
Effect (t-c)	-0.006 (0.010)	0.031 (0.019)	-0.037* (0.021)
Observations	696	572	1268
Job offers	418	385	598

Main issues

- The negative impact on the relative chances of minority candidates is not driven by a **John Henry effect** (the control group changes their behaviors knowing they are in the experiment).
- **Insufficient anonymization**: the unexpected effect is robust whether candidates indicate foreign languages (such as Arabic) in their resumes

Coding of the resumes after the experiment

- all resumes have been made anonymous after the experiment
- 16 PES counselors were asked to play recruiters and to rate resumes
 - Overall is the candidate suitable for the job ?
 - Uncertainty about ratings?

	Minority (D)	Majority (ND)	gap (D-ND)
Overall rating	0.441	0.513	*
Uncertainty	1.908	1.857	

change in resumes' valuation

- Denote X the coding of resumes (does not include ethnicity)
- Within job offer, estimate $Y = \beta'_s X + u_j + v_i$ with $s = T, C$ on the 2 sub samples treated and control
- We also decompose β between minority and majority candidates in the control sample

changes in resumes' valuation

	(1)	(2)	(3)	(4)
	Treated	Control	Control	Control
Overall rating	0.067*	0.100***	0.099***	0.111*
	(0.040)	(0.036)	(0.036)	(0.058)
Uncertainty	-0.103**	0.059	0.056	0.040
	(0.049)	(0.042)	(0.042)	(0.062)
Minority (M)			0.041	0.037
			(0.037)	(0.064)
M x Overall rating				-0.025
				(0.072)
M x Uncertainty				0.030
				(0.075)
Observations	550	581	581	581
R-squared	0.030	0.026	0.031	0.032
Number of ID_OFFRE	270	283	283	283
F-test	4.316	4.025		0.169
Prob > F	0.0143	0.0189		0.845

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Does the change in resumes' valuation explain the DiD estimate on interviews?

- Decomposition of the Diff in diff :
- $E[Y|T, Mi] - E[Y|T, Ma] = \beta'_T(X_{Mi} - X_{Ma}) + \delta_T$
- $E[Y|C, Mi] - E[Y|C, Ma] = \beta'_C(X_{Mi} - X_{Ma}) + \delta_C$

	Minority (D)	Majority (ND)	gap (D-ND)
Anonymous	0.131 (0.006)	0.143 (0.006)	-0.012 (0.008)
Nominative	0.124 (0.003)	0.120 0.004	0.004 0.005
Effect	0.007 (0.007)	0.024*** (0.007)	-0.016* (0.010)
Obs.	636	504	1140
Job offers	387	351	553

Does the change in resumes' valuation explain the DiD estimate on interviews?

- $E[Y|C, Mi] - E[Y|C, Ma] = \Delta_X + \Delta_\beta + \delta_C$
- $\Delta_X = \frac{\beta_{C,Mi} + \beta_{C,Ma}}{2} (X_{Mi} - X_{Ma}) = 0.002$
- $\Delta_\beta = \frac{\beta_{C,Mi} - \beta_{C,Ma}}{2} (X_{Mi} + X_{Ma}) = -0.027$

Conclusion

In the context of firms recruiting through the PES that do not refuse the experiment, anonymous resumes

- increase the gap in the interview rates between minority and majority candidates
- to some extent the effect persist until the recruitment stage

Counterintuitive effect can be explained by selection of firms in the experiment

Mechanisms: when CV are anonymous firms are more reluctant to interview candidates whose CV convey more uncertain signals

Context

- Anonymous resumes are introduced in the French Law in 2006 (*loi sur l'égalité des chances*), but they are not enforced
- November 2009: the Parliament launches experimentation of anonymous resumes to learn about the process before making it mandatory
- The Public Employment Service (*Pôle emploi*) is in charge of coordinating the experimentation
 - a few big companies accept to test the process by themselves
 - qualitative work
 - our study: randomized experiment

Environment

- There are 2 types of candidates : from the majority group (0) and from the minority group (1). Each type has its own distribution of net profit (p) to the firm : $F_0(p)$ and $F_1(p)$; p can represent productivity if wages are fixed and equally distributed among groups, net output if wages are different (typically lower for the discriminated group), profit net of disutility.
- The recruiter has a prior on π the proportion of candidates from the minority. The recruitment is in 2 steps:
 - ① The recruiter receives N resumes. He does not observe p . He chooses M candidates to interview.
 - ② At the interview stage, which is costly (c per candidate), the recruiter observes p . He chooses randomly to recruit any candidate whose productivity is above \bar{p}

When resumes are nominative

- The recruiter knows the resumes' types.
- To choose among the N nominative resumes, the recruiter maximizes:

$$\bar{p} \left(1 - (F_0(\bar{p}))^{M_0} (F_1(\bar{p}))^{M_1} \right) - c(M_0 + M_1)$$

such that $M_0 \leq N_0$ and $M_1 \leq N_1$. Suppose $F_0(\bar{p}) < F_1(\bar{p})$, the recruiter chooses first the resumes from the majority group and, if there is still some net gain to expect, chooses among the minority group.

- depending on the split N_0 and N_1 for one particular recruiter, discrimination can be strong or mild

When resumes are anonymous

- When resumes are anonymous, the recruiter faces a distribution $F(p)$ that is a mixture of $F_0(p)$ and $F_1(p)$ with parameter π . We assume that $F_0(\bar{p}) < F(\bar{p}) < F_1(\bar{p})$.
- Interview rates are equalized between groups
- The number of candidates interviewed in the treatment group can be higher or lower than in the control group.
- Conditional on the interview pool, the hiring gap is not altered
- Unconditional hiring gap is reduced

Extension ??

- the recruiter observes a signal \tilde{p} at the first stage...
- when resumes are anonymous, he will infer from the signal the candidate's group...

Job offers to be treated

- Job offers posted in 8 experimental local labor markets
- From a firm with more than 50 employees
- For a “stable” regular job (contract lasting more than 3 months and no sponsored employment)
- The recruiter asks the PES to pre select the candidates (make it possible to control the candidate-employer contacts)
- With CVs
- Recruiters only participate once

Data

- **Administrative files** from Pôle emploi on the job offers (SAGE) and on the resumes
- **Survey of the recruiters** from the experimental population and from a sample of refusing recruiters (55%) or recruiters without proposition to participate (12%)
- **Survey of a sample of candidates** to the job offers from the experimental population
- Response rates: 58 % for recruiters and 66% for candidates (balanced between test and control)

Main econometric model

$$Y_{ij} = a_0 + a_1M_i + a_2F_i + d_0T_j + d_1T_j \times M_i + d_2T_j \times F_i + e_{ij}, \quad (1)$$

- Y_{ij} is an indicator variable equal to 1 if applicant i on job offer j is interviewed (or is hired),
- M is an indicator for minority (being in the group of immigrants, children of immigrants and/or residents of deprived neighborhoods),
- F is an indicator for female applicants,
- T is the indicator variable for anonymization
- errors are clustered by job offers

Impact of anonymous resumes

	Interview				Recruitment			
Intercept	0.106*** (0.016)	0.131*** (0.035)	0.129*** (0.034)		0.022*** (0.006)	0.016** (0.007)	0.022** (0.009)	
Minority		-0.028 (0.032)	-0.010 (0.032)	0.023 (0.050)		0.002 (0.012)	0.001 (0.013)	0.016 (0.025)
Woman		-0.022 (0.033)	-0.042 (0.035)	-0.111 (0.086)		0.011 (0.012)	-0.002 (0.014)	0.003 (0.044)
Anonymous resume (T)	0.005 (0.023)	0.042 (0.047)	0.037 (0.044)		0.013 (0.011)	0.025* (0.015)	0.023* (0.014)	
T × minority		-0.100** (0.044)	-0.090** (0.044)	-0.117 (0.074)		-0.035* (0.020)	-0.025 (0.020)	-0.046 (0.035)
T × woman		0.028 (0.045)	0.039 (0.043)	0.201* (0.109)		0.009 (0.021)	0.006 (0.020)	-0.001 (0.045)
Controls	No	No	Yes	Yes	No	No	Yes	Yes
Job offer effects	No	No	No	Yes	No	No	No	Yes
Observations	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Job offers	598	598	598	598	598	598	598	598
R-squared	0.109	0.128	0.173	0.657	0.030	0.037	0.082	0.582

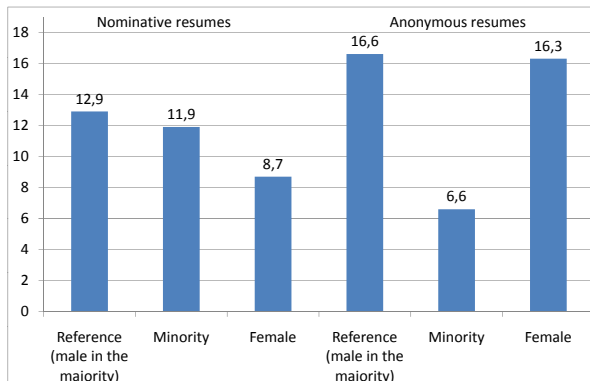


Figure: Interview rates

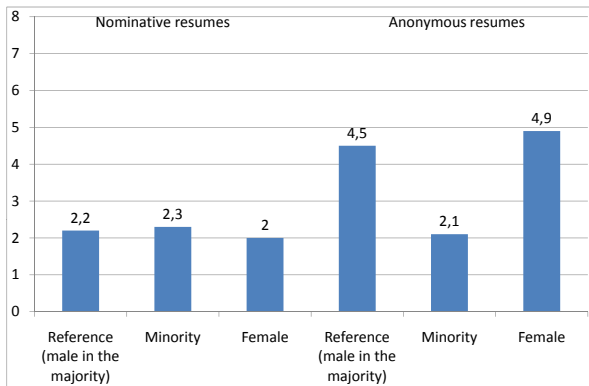


Figure: Recruitment rates

Impact of anonymous resumes on job offers with male and female applicants

	Interview			Recruitment		
Intercept	0.120*** (0.021)	0.185*** (0.054)	0.180*** (0.047)	0.026*** (0.009)	0.016 (0.011)	0.014 (0.012)
Deprived neighborhood or foreign origin		-0.035 (0.043)	-0.013 (0.042)		0.007 (0.017)	0.007 (0.017)
Woman		-0.086* (0.047)	-0.094** (0.046)		0.012 (0.017)	0.011 (0.017)
Anonymous resumes (T)	-0.042 (0.029)	-0.076 (0.065)	-0.069 (0.060)	-0.013 (0.010)	0.001 (0.013)	0.012 (0.015)
T × deprived neighborhood or foreign origin		-0.060 (0.057)	-0.062 (0.057)		-0.011 (0.019)	-0.008 (0.020)
T × woman		0.119** (0.057)	0.125** (0.055)		-0.015 (0.019)	-0.025 (0.022)
Observations	714	714	714	714	714	714
Job offers	311	311	311	311	311	311
R-squared	0.105	0.129	0.208	0.022	0.024	0.060

John Henry effect?

	Interview			Recruitment		
Intercept	0.156*** (0.025)	0.141*** (0.045)	0.102* (0.060)	0.053*** (0.015)	0.042 (0.030)	0.010 (0.034)
Deprived neighborhood or foreign origine		0.020 (0.051)	0.017 (0.052)		-0.002 (0.030)	-0.006 (0.031)
Woman		0.010 (0.051)	0.012 (0.052)		0.026 (0.031)	0.032 (0.033)
Experimental job offer (EXP)	-0.025 (0.033)	-0.019 (0.055)	0.083 (0.113)	-0.020 (0.019)	0.004 (0.035)	0.078 (0.054)
EXP × deprived neighborhood or foreign origin		-0.031 (0.064)	-0.038 (0.067)		-0.023 (0.034)	-0.009 (0.035)
EXP × woman		0.020 (0.070)	0.021 (0.070)		-0.032 (0.038)	-0.034 (0.036)
Observations	807	807	807	807	807	807
Job offers	296	296	296	296	296	296
R-squared	0.147	0.148	0.168	0.047	0.051	0.077

Homophily test

- At the root of most economic model of discrimination: interaction between members of different group is costly?
 - **taste-based discrimination**: recruiters who belong to the majority group do not like to interact with the minority (consumer or colleague)
 - **statistical discrimination**: it is more difficult to assess the productivity of a member from another group
- To what extent recruiters prefer their peers? Does anonymisation go against this tendency ?
- Possible to answer thanks to the matching of recruiters' and candidates survey

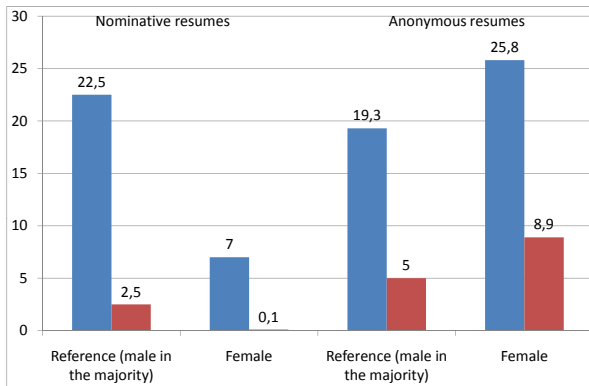


Figure: Interview (blue) and recruitment (red) rates with male recruiter

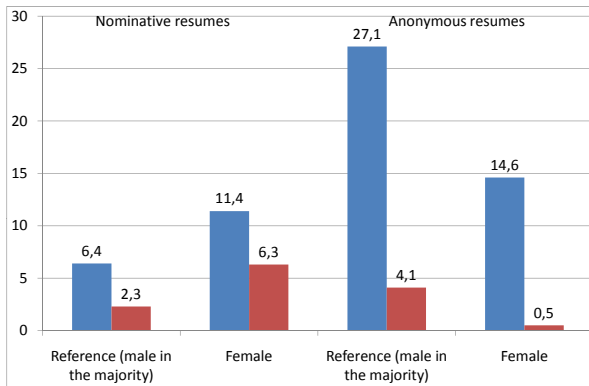


Figure: Interview (blue) and recruitment (red) rates with female Recruiter

Homophily in gender

	Interview			Recruitment		
	Male recruiter	Female recruiter	test	Male recruiter	Female recruiter	test
Intercept	0.225** (0.097)	0.064** (0.027)		0.025 (0.019)	0.023* (0.013)	
Deprived neighborhood or foreign origin	-0.062 (0.089)	-0.019 (0.034)		0.010 (0.025)	-0.028 (0.022)	
Woman	-0.155** (0.073)	0.050 (0.037)	**	-0.024 (0.020)	0.040* (0.021)	**
Anonymous resumes (T)	-0.032 (0.112)	0.207*** (0.073)	**	0.025 (0.031)	0.018 (0.030)	
T x deprived neighborhood or foreign origin	-0.126 (0.105)	-0.123* (0.070)		-0.065* (0.037)	0.030 (0.033)	*
T x woman	0.220** (0.092)	-0.175** (0.075)	***	0.063* (0.034)	-0.076** (0.033)	***
Observations	289	436		289	436	
R-squared	0.193	0.145		0.054	0.047	

Homophily in origin

	Interview			Recruitment		
	Has the recruiter foreign friends ?		test	Has the recruiter foreign friends ?		test
	No	Yes		No	Yes	
Intercept	0.134** (0.058)	0.093* (0.054)		0.037** (0.016)	0.027 (0.028)	
Deprived neighborhood or foreign origin	-0.035 (0.054)	0.009 (0.059)		-0.027 (0.027)	-0.026 (0.032)	
Woman	-0.005 (0.058)	-0.046 (0.064)		0.022 (0.029)	0.024 (0.028)	
Anonymous resumes (T)	0.069 (0.081)	0.167 (0.122)		-0.005 (0.024)	0.005 (0.036)	
T x deprived neighborhood or foreign origin	-0.123 (0.079)	-0.236** (0.108)		0.025 (0.033)	-0.023 (0.047)	
T x woman	0.007 (0.080)	0.001 (0.108)		-0.039 (0.034)	0.022 (0.043)	
Observations	425	159		425	159	
R-squared	0.148	0.168		0.037	0.061	