Two pieces of evidence on gender discrimination in the Italian University system

1) Local competitions in 2009-2010 with randomly selected committee members

2) Effective promotions after ASN in 2014-2015

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Gender Discrimination and Evaluators' Gender: Evidence from the Italian Academia

Maria De Paola, Vincenzo Scoppa

Aim of the paper

To analyze ***whether gender discrimination exists*** *in academic promotions and* ***whether it is affected by the gender of evaluators***

Estimation Strategy: *Natural experiment consisting in 130 local competitions for promotion to associate and full professor in the Italian University (2009-2010) in which evaluators are randomly assigned to each competition*

Institutional Background

- At the end of 2008, the Italian Government changed the rules governing promotions to associate and full professors' positions through local competitions

- The main change concerned the way in which **committees are formed: four members (out of five) are randomly selected** (among all the full professors in each field) instead of being elected, while one member is appointed by the university opening the vacancy

Data (1)

- No organized dataset. Data gathered reading one by one the official reports of evaluation committees

- We focus our attention on competitions undertaken in two relatively large fields: Economics (52 competitions) and Chemistry (78 competitions).

- We end up with 130 evaluation procedures, involving 1,007 candidates and 650 committee members.
- For each competition, two candidates were promoted (Dummy Success)
- We observe some individual characteristics (gender, age, position, affiliation, etc.) of candidates and evaluators

Data (2)

- We build a comprehensive measure of individual productivity *for each* candidate *through a* principal component analysis using the number of publications, citations, *h* and *g* indexes (obtained from the "Publish or Perish" software based on Google Scholar)

- For each candidate we build ***Relative Productivity*** as the difference between his/her *Productivity* minus the average productivity of the other candidates in the same competition

Descriptive Statistics - CANDIDATES

	Mean	*St. Dev*	*Observations*
Success	0.113	0.317	2279
Associate Professor	0.122	0.327	1024
Full Professor	0.103	0.304	1255
Female	0.397	0.489	2279
Associate Professor	0.453	0.498	1024
Full Professor	0.328	0.469	1255
Number of Publications	50.491	37.740	2279
Associate Professor	41.909	30.080	1024
Full Professor	61.010	43.144	1255
Citations	362.502	491.504	2279
Associate Professor	274.811	384.017	1024
Full Professor	469.976	579.806	1255
h-index	8.812	5.404	2279
Associate Professor	7.726	4.814	1024
Full Professor	10.144	5.779	1255
Insider	0.147	0.355	2279
Associate Professor	0.168	0.329	1024
Full Professor	0.123	0.374	1255
Connections	0.103	0.305	2279
Associate Professor	0.112	0.317	1024
Full Professor	0.091	0.289	1255
Withdrawn	0.275	0.446	2279
Associate Professor	0.436	0.496	1024
Full Professor	0.078	0.268	1255

We focus our attention exclusively on the four randomly selected committee members and neglect the internal member since the individual characteristics of the latter could be correlated to unobservable determinants of success of candidates.

Females in Committee (dummy equal to one if at least one woman is in the committee): women in 44% of committees

% Females in Committee: mean: 0.156

Empirical Analysis

- To investigate the effect of committee gender composition on the probability of success of candidates we estimate the following model:

$$Success_{ij}=\beta_0+\beta_1 Female+\beta_2(Females\ in\ Committee)+$$
$$+\beta_3 Female*(Females\ in\ Committee)+\phi X_{ij}+\mu_j+\lambda_j+\varepsilon_{ij}$$

$Success_{ij}$=1 if candidate i is promoted in competition j

X_{ij}: candidate's characteristics (including Relative Productivity) and number of competitors in each competition;

μ_j dummies for scientific subfields; λ_j dummy for position

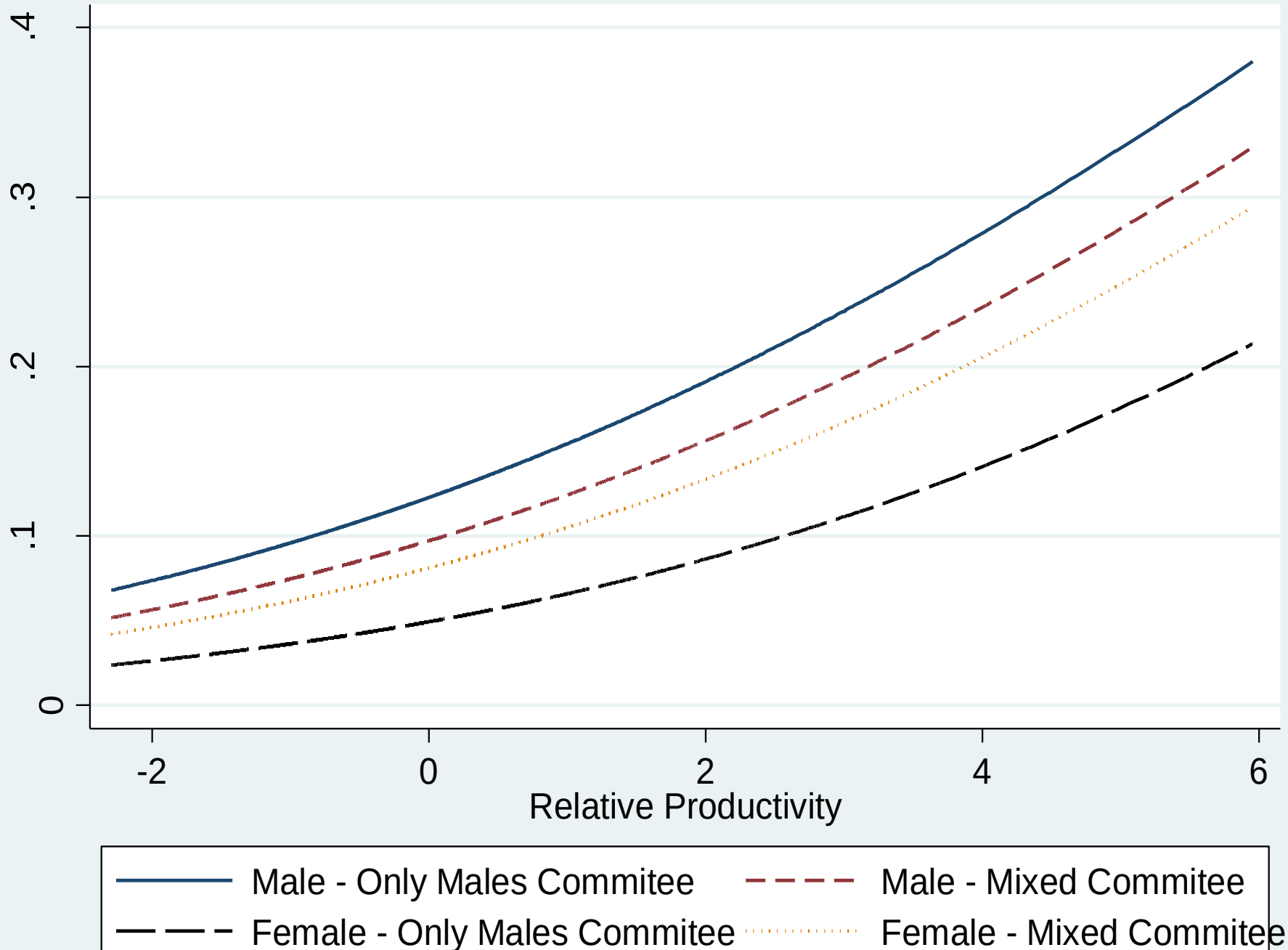
β_1 measures the prob. of success of females (wrt to males) in all-males committee;

$\beta_1+\beta_3$ measures the prob. of success of females when at least one female is present in the evaluation committee;

Estimates of the Probability of Success. Marginal Effects of Probit

	(1)	(2)	(3)	(4)	(5)
Female	**-0.047*** **	**-0.037*** **	**-0.076*** **	**-0.064*** **	**-0.065*** **
Female*(Females in Com.)			**0.076** **	**0.072***	**+0.073***
Females in Com.			-0.021**	-0.020*	-0.020**
Relative Productivity		0.020***		0.020***	
Insider		0.283***		0.283***	0.282***
Connections		0.070***		0.071***	0.069***
University Job		-0.007		-0.006	-0.011
Age		-0.001		-0.001	-0.001
Relative h-index					0.008***
Observations	2279	2279	2279	2279	2279
Pseudo R-squared	0.041	0.166	0.066	0.170	0.167

Probability of success of male and female candidates and evaluators' gender



Does the Glass Ceiling Still Exist in the Italian Academia?

Work in progress

Maria De Paola, Michela Ponzo, Vincenzo Scoppa

Outline

- In the new Italian promotion system (ASN) for associate and full professor positions, candidates obtaining a Scientific Qualification, awarded by a national committee, can be promoted by local University Departments to the higher academic rank

- Using data on about 14,000 successful candidates, for whom we observe the measures of scientific productivity used by the national committees to award Qualifications,
- we investigate if the probability of promotion is related to the candidate's gender, controlling for measures of productivity and a number of individual, field and university characteristics (seniority, tenure, connections, open positions, etc.)

- While there are no gender differences in the probability of obtaining the National Scientific Qualification, we find that, ceteris paribus, females have a significantly lower probability of promotion at the local level

The Data

- From ASN webpages we have collected data on all successful candidates of the first National Evaluation who have a position in the Italian University System in 2013
- We have data on about 14,000 ASN successful candidates:
  - 9,100 Assistant Professors qualified for Associate Professors
  - 4,900 Associate Professors qualified for Full Professors
- We matched these researchers with their academic position in September 2015
- A dummy ***Promotion*** *is set* =1 if they are in a higher academic position:
  - 41% Assistant Prof. have been promoted;
  - 7% Associate Prof. have been promoted;

Descriptive Statistics

	Mean	Std. Dev.	Min	Max	Obs
Promotion	0.296	0.457	0	1	14045
Female	0.376	0.484	0	1	14045
Experience	9.856	5.239	0	22	14045
Years in Rank	8.253	4.788	0	23	14045
No tenure	0.153	0.360	0	1	14045
Productivity	0.000	1.385	-5.817	16.178	14045
% Open Positions	0.293	0.326	0	2	14045
North-West	0.266	0.442	0	1	14045
North-East	0.225	0.418	0	1	14045
Centre	0.266	0.442	0	1	14045
South	0.163	0.369	0	1	14045
Islands	0.079	0.270	0	1	14045
Ass. Prof. Comp.	0.651	0.477	0	1	14045
Connections	0.203	0.402	0	1	14045

Academic Career and Gender: The Empirical Analysis

We estimate the following probit model:

$$\Phi\left(\text{Promotion}_{ijkr} \mid X\right) = \Phi(\beta_0 + \beta_1 Female_i + \beta_2 \text{Productivity}_i + \\ + \beta_3 X_i + \beta_4 V_{jkr} + \mu_j + \lambda_k + \theta_r + \varepsilon_i$$

i: individual; *j*: scientific field;

k: university; *r*: rank

Probability of Promotion to Associate and Full Professor Positions. Probit Estimates (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
					Assoc. Prof.	Full Prof.
Female	-0.040***	-0.033***	-0.038***	-0.037***	-0.044***	-0.015***
	(0.008)	(0.009)	(0.009)	(0.009)	(0.015)	(0.004)
% Open Positions	1.045***	1.040***	1.038***	0.984***	1.378***	0.232***
Ass. Prof. Comp.	0.068***	0.071***	0.083***	0.091***		
Productivity		0.031***	0.036***	0.035***	0.052***	0.006***
Experience			0.039***	0.040***	0.078***	0.007**
Experience Sq.			-0.002***	-0.002***	-0.003***	-0.000***
Years in Rank			0.005**	0.005**	0.001	0.001**
No tenure			-0.067***	-0.070***	-0.064**	-0.007
# Qualifications			0.090***	0.087***	0.139***	0.007
Connections			0.007	0.010	-0.001	0.010*
Sci. Field Dummies	NO	NO	YES	YES	YES	YES
Geogr. Dummies	NO	YES	YES	NO	YES	YES
University Dummies	NO	NO	NO	YES	NO	NO
Observations	14045	14045	14045	13925	9139	4164
Pseudo R-squared	0.446	0.453	0.487	0.488	0.408	0.519

Probability of Promotion Considering Only Departments with Insiders

	(1)	(2)	(3)	(4)	(5)	(6)
					Associate Prof.	Full Prof.
Female	-0.057***	-0.046***	-0.057***	-0.057***	-0.044***	-0.158***
	(0.013)	(0.013)	(0.014)	(0.015)	(0.016)	(0.032)
Observations	8212	8212	8212	8141	7046	1068
Pseudo R-squared	0.236	0.246	0.296	0.295	0.294	0.272

Gender Differences and Percentage of Female Full Professors in Scientific Fields

We build a measure of females' success in each field based on the promotion rates of women in the past

Females' Career Success is the ratio, for each field, between the share of females among full professors in 2013 and the share of females among assistant professors in 2000

	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.073***	-0.071***	-0.126***	-0.080***	-0.095**	-0.129
	(0.026)	(0.025)	(0.040)	(0.024)	(0.042)	(0.112)
Female*(Females' Career Success)	0.075	0.073	0.143**	0.100**	0.106	-0.062
	(0.048)	(0.047)	(0.071)	(0.045)	(0.078)	(0.244)
Observations	13924	13807	8135	13776	9065	1054
Pseudo R-sq.	0.486	0.488	0.296	0.507	0.407	0.273

Other findings

- Percentage of Female Full Professors in the Department does not affect female rate of promotion

- Better departments tend to discriminate less