Does the Gender Composition of Scientific Committees Matter?

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Women underrapresented in top positions in academia

- In Europe, 37% of associate professors and 20% of full professors are women (European Commission 2013)
Women underrapresented in top positions in academia

- In Europe, 37% of associate professors and 20% of full professors are women (European Commission 2013)
- Is it because evaluators are mostly men?
  - Gender segregation across fields combined with same field preference (Dolado et al. 2012, Hale and Regev 2011)
  - Old boys networks (Zinovyeva and Bagues 2015, Bagues, Sylos-Labini and Zinovyeva 2014)
  - Gender stereotypes (World Value Survey)
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  - Old boys networks (Zinovyeva and Bagues 2015, Bagues, Sylos-Labini and Zinovyeva 2014)
  - Gender stereotypes (World Value Survey)
- **Gender quotas** in scientific committees:
  - Spain, France, Finland, European Commission...
However...

- ...female evaluators may be similar to male (Mendez and Busenbark 2012)
- ...female evaluators may be not influential within committees (Karpowitz 2012, Brescoll 2011)
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- ...female evaluators may be not influential within committees (Karpowitz 2012, Brescoll 2011)
- Gender quotas are costly for senior female researchers!
- Empirical evidence: few studies, small samples, mixed results
  - Same-sex preference
    - Casadevall and Handelsman (2013, 1845 obs.), De Paola and Scoppa (2014, 1000 obs.)
  - Opposite-sex preference:
- Gender of evaluators has no statistically significant effect:
In this paper:

- **Nation-wide evaluations** in Italy and Spain
  - 100,000 applications, 8,000 evaluators, 300,000 individual evaluation reports
- **Transparent identification strategy**
  - Evaluators selected out of a pool using random draw
- Does **gender composition** of scientific committees matter?
  1. Do more women in committee increase **chances of female** candidates?
  2. Do they increase **quality** of promoted candidates?
What mechanism?

- Richness of information allows testing different theories:
  1. Old-boys networks
  2. Gender segregation across research interests
  3. Stereotypes
  4. Influence within committee
Institutional Background

- Nation-wide evaluations to become associate or full professor ($1^{st}$ stage):
  - In Italy, *Abilitazione Scientifica Nazionale (2012-2014)*
  - In Spain, *Habilitación (2002-2006)*:

- The timeline of the national evaluations:
  1. The call is announced
  2. Candidates apply
  3. Random selection of evaluators that satisfy minimum requirements
  4. Evaluation takes place
Italy vs. Spain

- In Italy:
  - Evaluations on CVs
  - No limit on the number of qualifications
  - It does not necessarily lead to promotion
  - 5 committee members
  - Very transparent: CVs, evaluation criteria and evaluations published on-line

- In Spain:
  - Oral qualifying exams
  - Number of qualifications limited
  - It implies almost automatically promotion
  - 7 committee members
  - Only final outcome observed
Data

- **In Italy:**
  - 184 committees in corresponding fields
  - Evaluators:
    - 7,241 eligible evaluators, 8% of initially rostered evaluators resigned
    - Share of women in committees 19% (all-male committees 41%)
  - Candidates:
    - 69,020 initial applications, 375 per committee, 38% women
    - 14% of candidates dropped out after committees were formed; 59,150 final candidates

- **In Spain:**
  - 967 committees in 174 fields
  - Evaluators:
    - 29,930 eligible evaluators, 2% of initially rostered evaluators resigned
    - Share of women in committees 19% (all-male committees 31%)
  - Candidates:
    - 31,243 applications, 32 candidates per exam, 34% women
Links between candidates and evaluators

- **Strong ties**
  - Coauthors and/or colleagues
  - Student-advisor relationship (Spain)

- **Weak ties**
  - Participation in assessment of the same doctoral thesis (Spain)

- **Research interest overlap**
  - Same officially defined subfield (Italy)
  - Overlap of Unesco subfield codes of doctoral dissertations (Spain)
Causal effect of committee gender composition

- We estimate the following equation using the sample of initial applicants:

\[ Y_{i,e} = \beta_1 Female_i + \beta_2 Female_i * Female_{expected} + \beta_3 Female_i * Female_{expected} + \mu_e + \epsilon_{i,e} \] (1)

where

- \( Female_{expected} \) is the expected proportion of women in the committee
- \( \beta_2 \) captures the causal impact of committees’ gender composition on the relative success rate of female candidates
- Key identification assumption: random selection of committee members (see randomization checks in the paper)
Table: Effect of female evaluators on the relative success of female candidates

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Italy</td>
<td>Spain</td>
<td></td>
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<tr>
<td></td>
<td>IV</td>
<td>IV</td>
<td></td>
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</tr>
<tr>
<td>Female candidate</td>
<td>0.003</td>
<td>0.009</td>
<td>-0.011*</td>
<td>-0.011*</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.008)</td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Female candidate* Share of women in committee</td>
<td>-0.107***</td>
<td>-0.132***</td>
<td>-0.015</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.035)</td>
<td>(0.028)</td>
<td>(0.028)</td>
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<tr>
<td>Controls:</td>
<td></td>
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</tr>
<tr>
<td>Female candidate* Expected share of women in committee</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Exam FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Research productivity</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Age</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Other predetermined characteristics</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N of observations</td>
<td>69020</td>
<td>69020</td>
<td>31243</td>
<td>31243</td>
</tr>
<tr>
<td>Average success rate of female candidates</td>
<td>0.35</td>
<td>0.35</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td>The effect of an additional female evaluator on the relative success of female candidates, 95% confidence interval (in % of the average success rate of female candidates)</td>
<td>[-6%, -2%]</td>
<td>[-8%, -3%]</td>
<td>[-9%, 5%]</td>
<td>[-9%, 5%]</td>
</tr>
</tbody>
</table>

Notes: OLS and IV estimates. Standard errors are clustered by exam.
Introduction
Institutional Background
Data
Does the gender composition of the committee matter?
Mechanisms
Conclusion

Do female evaluators increase the quality of selection

- Compare the observable quality of candidates who qualified in committees with different gender compositions:

\[ x_{ie} = \beta_0 + \beta_1 Female_e + \beta_2 Female_{e}^{expected} + \epsilon_{ie} \]

where \( x_{ie} \) is a proxy of candidate \( i \)'s quality, measured at the time of the evaluation or during the following five years.
Do female evaluators increase the quality of selection?

Table: Quality of qualified candidates

<table>
<thead>
<tr>
<th>Sample:</th>
<th>Publications</th>
<th>Citations</th>
<th>Total AIS</th>
<th>A-journal articles</th>
<th>PhD students advised</th>
<th>PhD committees</th>
<th>Success in future peer evaluation</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Italy, before the evaluation</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>0.001</td>
<td>0.123</td>
<td>-0.117</td>
<td>-0.186</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.060)</td>
<td>(0.102)</td>
<td>(0.134)</td>
<td>(0.183)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>-0.017</td>
<td>0.148</td>
<td>-0.020</td>
<td>-0.300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td>(0.114)</td>
<td>(0.137)</td>
<td>(0.234)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>-0.008</td>
<td>0.084</td>
<td>-0.203</td>
<td>-0.071</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.083)</td>
<td>(0.129)</td>
<td>(0.187)</td>
<td>(0.186)</td>
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<tr>
<td>Spain, before the evaluation</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>All</td>
<td>-0.004</td>
<td>0.068</td>
<td>-0.082</td>
<td>-0.200</td>
<td>0.121</td>
<td>-0.143</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.142)</td>
<td>(0.216)</td>
<td>(0.237)</td>
<td>(0.244)</td>
<td>(0.135)</td>
<td>(0.131)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>0.171</td>
<td>0.446</td>
<td>-0.004</td>
<td>-0.142</td>
<td>0.565**</td>
<td>0.052</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.216)</td>
<td>(0.396)</td>
<td>(0.426)</td>
<td>(0.357)</td>
<td>(0.239)</td>
<td>(0.230)</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>-0.149</td>
<td>-0.225</td>
<td>-0.201</td>
<td>-0.218</td>
<td>-0.163</td>
<td>-0.291*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.191)</td>
<td>(0.282)</td>
<td>(0.292)</td>
<td>(0.349)</td>
<td>(0.175)</td>
<td>(0.168)</td>
<td></td>
</tr>
<tr>
<td>Spain, after the evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>-0.005</td>
<td>-0.056</td>
<td>-0.092</td>
<td>-0.200</td>
<td>0.169</td>
<td>-0.083</td>
<td>0.040</td>
</tr>
<tr>
<td></td>
<td>(0.131)</td>
<td>(0.211)</td>
<td>(0.219)</td>
<td>(0.244)</td>
<td>(0.133)</td>
<td>(0.135)</td>
<td>(0.052)</td>
</tr>
<tr>
<td>Women</td>
<td>0.248</td>
<td>-0.009</td>
<td>-0.097</td>
<td>-0.142</td>
<td>0.116</td>
<td>-0.114</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.220)</td>
<td>(0.380)</td>
<td>(0.401)</td>
<td>(0.357)</td>
<td>(0.222)</td>
<td>(0.243)</td>
<td>(0.056)</td>
</tr>
<tr>
<td>Men</td>
<td>-0.167</td>
<td>-0.131</td>
<td>-0.230</td>
<td>-0.218</td>
<td>0.077</td>
<td>-0.129</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(0.181)</td>
<td>(0.273)</td>
<td>(0.275)</td>
<td>(0.349)</td>
<td>(0.189)</td>
<td>(0.184)</td>
<td>(0.076)</td>
</tr>
</tbody>
</table>
‘Old boys’ networks’

1. **Networks matter** for promotion:
   - Colleague premium is 10% in Italy and 41% in Spain.
   - Co-author premium is 14% in Italy and 113% in Spain.
   - Advisor premium is 82% in Spain

2. **Networks are gendered**:
   - Same affiliation: same-sex links are 13% more likely than mixed-gender links in Spain and 9% more likely in Italy
   - Co-authorship: same-sex links 22% more likely than mixed-gender links in Spain and 19% more likely in Italy
   - PhD supervisions: female candidates are 20% more likely to have a female advisor

3. **Connections in committee** are **unfrequent** in this context.
Gender segregation across subfield

1. Research overlap with evaluators matter for promotion
2. Gender segregation at the field level is limited:
   - In Italy, female candidates are 3.5% more likely to be in the same subfield as a female professor
   - In Spain, overlap between female candidates and female eligible evaluators is 2% larger than the overlap between female candidates and male evaluators
**Table: Stereotypes? Heterogeneity analysis**

<table>
<thead>
<tr>
<th></th>
<th>IT (Italy)</th>
<th>ES (Spain)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research overlap</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; median</td>
<td>&lt; median</td>
<td>&gt; median</td>
</tr>
<tr>
<td>-0.047</td>
<td>-0.183**</td>
<td>0.063</td>
</tr>
<tr>
<td>(0.045)</td>
<td>(0.073)</td>
<td>(0.048)</td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSH</td>
<td>STEMM</td>
<td>SSH</td>
</tr>
<tr>
<td>-0.117**</td>
<td>-0.135***</td>
<td>-0.026</td>
</tr>
<tr>
<td>(0.053)</td>
<td>(0.039)</td>
<td>(0.039)</td>
</tr>
<tr>
<td><strong>Feminization of field</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; median</td>
<td>&lt; median</td>
<td>&gt; median</td>
</tr>
<tr>
<td>-0.152***</td>
<td>-0.077</td>
<td>-0.018</td>
</tr>
<tr>
<td>(0.042)</td>
<td>(0.056)</td>
<td>(0.040)</td>
</tr>
<tr>
<td><strong>Level of promotion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>AP</td>
<td>FP</td>
</tr>
<tr>
<td>-0.107*</td>
<td>-0.144***</td>
<td>0.121**</td>
</tr>
<tr>
<td>(0.058)</td>
<td>(0.038)</td>
<td>(0.054)</td>
</tr>
</tbody>
</table>
Interactions within the committee

- Information from individual votes:
  - Female evaluators are **slightly more favorable** towards female candidates.
  - The presence of women in committee **makes men less favorable** towards female candidates.
Conclusions

- Female evaluators do not increase female promotion rates:
  - we can reject any positive impact in Italy
  - we can reject any sizable positive impact in Spain
Conclusions

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  - we can reject any positive impact in Italy
  - we can reject any sizable positive impact in Spain
- Gender composition of committees does not affect quality of evaluation

⇒ No evidence in favor of gender quotas in context of national evaluations
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  - we can reject any positive impact in Italy
  - we can reject any sizable positive impact in Spain
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- ⇒ No evidence in favor of gender quotas in context of national evaluations
- Result might not necessarily hold in other contexts:
  - where fields are defined more broadly (and gender segregation is stronger)
  - where networks are more prominent (such as evaluations at the university level)
Conclusions

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- we can reject any positive impact in Italy
- we can reject any sizable positive impact in Spain

Gender composition of committees does not affect quality of evaluation

⇒ No evidence in favor of gender quotas in context of national evaluations

Result might not necessarily hold in other contexts:
- where fields are defined more broadly (and gender segregation is stronger)
- where networks are more prominent (such as evaluations at the university level)

Gender does not play any role when evaluators belong to the same field of research as candidates ⇒ focus more on evaluators’ knowledge (than gender)
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  - we can reject any positive impact in Italy
  - we can reject any sizable positive impact in Spain

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$\Rightarrow$ No evidence in favor of gender quotas in context of national evaluations

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  - where fields are defined more broadly (and gender segregation is stronger)
  - where networks are more prominent (such as evaluations at the university level)

- Gender does not play any role when evaluators belong to the same field of research as candidates $\Rightarrow$ focus more on evaluators’ knowledge (than gender)

- Interaction within committee might have unexpected consequences
Thank you for your attention!