Gender imbalances in medical specialty training. Analysing the impact of a policy change in Spain

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Motivation

Feminization of the medical workforce → In Spain the share of female doctors has risen from 36.8% in 2000 to 52.6% in 2015 (OECD 2015)

Doctors in training: in 1991 the share of females was 50.53% and 65.69% in 2015

The large increase in the number of women has not been translated to an equal representation of them in each specialty. Some have become either:

- Female-dominated (Obs & Gyn, Pediatrics, etc.)
- Male-dominated (Surgical and medical-surgical, cardiology, etc.) → Most demanded and better remunerated

Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places, OECD, 2016: the imbalances across specialties and across regions in the distibution of doctors are the current policy concerns (OECD ,2016)

Why do we observe an unequal sorting of doctors?

- Difference in intrinsic preferences between socio-demographic groups
- Information asymmetries affecting doctors and (or) selectors
- Existence of *entry barriers* in some specialties: Real or Percieved
- **Due to the design of the specialty allocation system**

This work analyses the role of the current Spanish specialty allocation system in perpetuating the observed unbalanced specialty outcomes $\rightarrow$ Lack of females in high demand specialties

How? by exploiting a policy change that took place in the year 2010

The Spanish allocation system and the 2010 policy change

- **Allocation process:** one-sided sequential allocation mechanism where specialties play a passive role
- Doctors choose their *preferred* specialty according to a pre-established ranking $\rightarrow RankingPosition = F(GPA, ES)$
  - *GPA*: Grade point average; *ES*: MIR Exam Score
  - Dávila-Quintana et al. (2015) define *ES* as **Sprint Effort** and *GPA* as **Long Term Effort**
- **What is the proposed change?** To ensure the *objectivity* of the process by increasing the importance of the *ES* in detriment of the *GPA* (Boletin Oficial del Estado 2010)

$$\begin{aligned} TotalScore_{old,i} &= \frac{75}{\alpha} ES_i + \frac{25}{\beta} GPA_i \\ TotalScore_{new,i} &= \frac{90}{\alpha} ES_i + \frac{10}{\beta} GPA_i \end{aligned} \tag{1}$$

The Spanish allocation system and the 2010 policy change II

Previous literature suggest that female doctors might be worse off with the new ranking system:

- Niederle and Vesterlund (2007, 2010): Women are *uncomfortable* performing in highly competitive settings, choose not to compete and exert less effort than men
- Gneezy et al. (2003): found that females are less effective than men in competitive environments, even if they are able to perform similarly in non-competitive ones. Possible explanation: Women more risk averse, whilst men show overconfidence (Frick 2011)
- Ors et al. (2013) men outperform women in a highly competitive entry exam to a French business school. Opposite results long-term measures of performance. Jurajda and Munich (2008) similar results in the Czech Republic

Measuring the impact of the policy change

To test if the change in weights affect men and women differently, we perform a test of equality of means to the variable *RankDif*:

$$RankDif_i = RankOld_i - RankNew_i \tag{2}$$

$$RankDif_i = F(TotalScore_{old,i}) - F(TotalScore_{new,i}) \tag{3}$$

$$\Delta RankDif = \overline{RankDif}_{men} - \overline{RankDif}_{women} \tag{4}$$

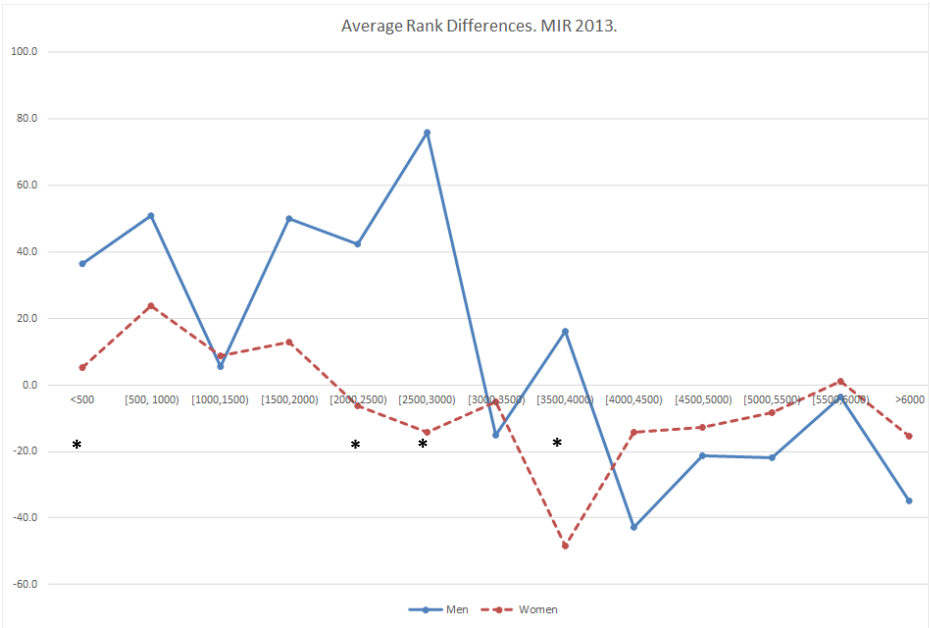
- Parametric: T-test
- Non-Parametric: Wilcoxon Rank Sum Test

Data: MIR Registry (doctor's administrative records), cross-sectional, years 2013 (N= 6,348) and 2015 (N=6,015)

Limitations: (i) No data before the policy change (ii) No access to a conterfactual information for each doctor (iii) We don't know anything about the doctors who opted out of the process

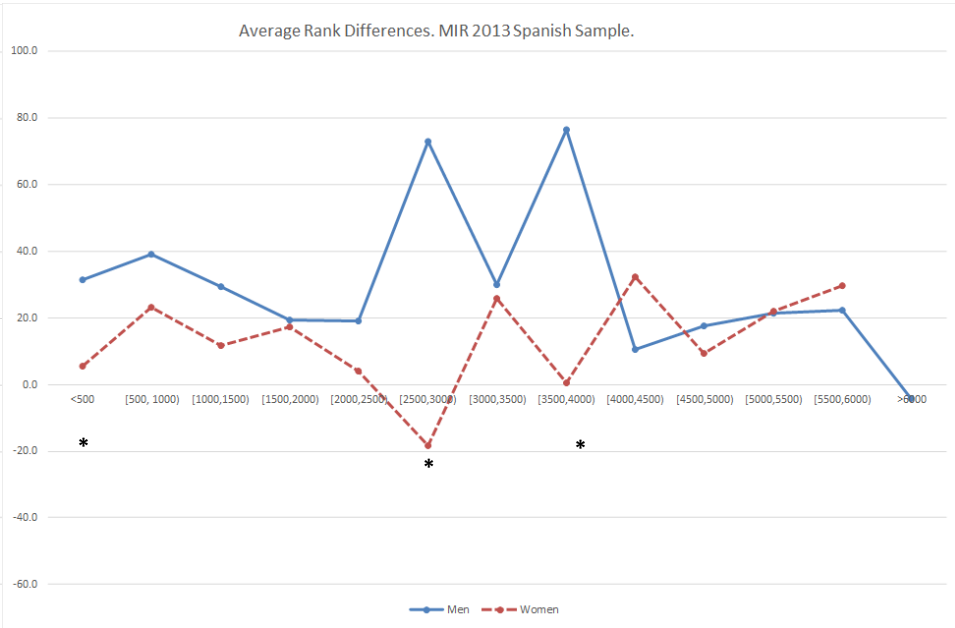
Results MIR 2013

MIR 2013



Total ΔRankDiff= 11.4 (Men) – (- 5.7) (Women)= 17.1*

MIR 2013 Spanish Graduates ONLY

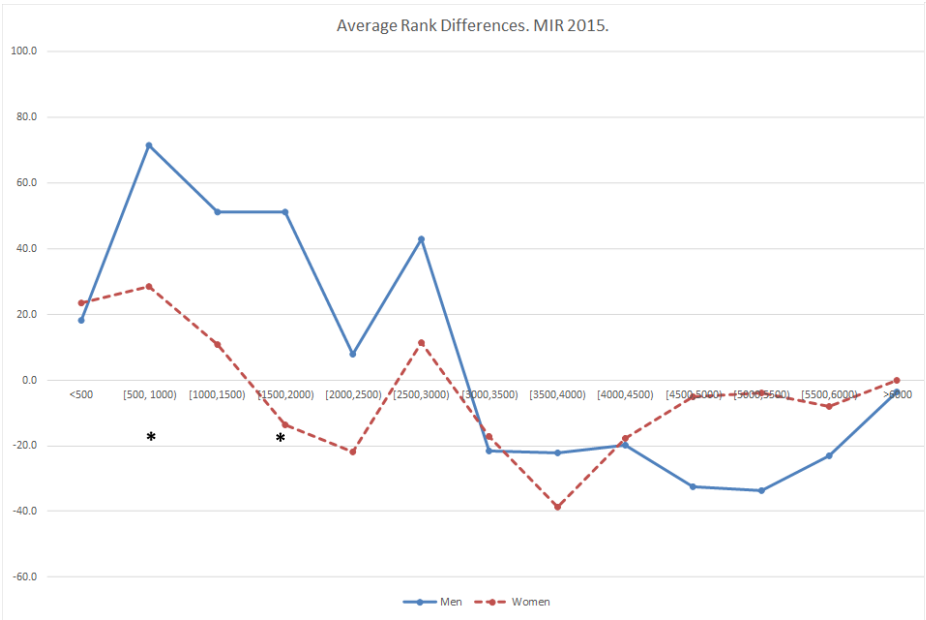


Total ΔRankDiff= 31.0 (Men) – 13.2(Women)= 17.8*

*Statistically signficant at least the 95% confidence level

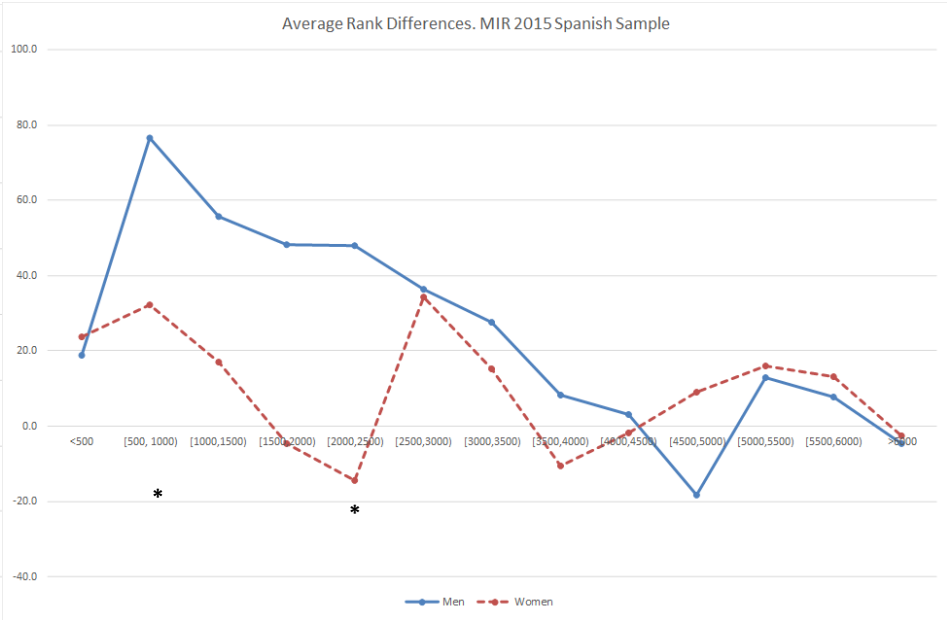
Results MIR 2015

MIR 2015



Total ΔRankDiff= 10.4 (Men) – (- 5.4) (Women)= 15.8*

MIR 2015 Spanish Graduates ONLY



Total ΔRankDiff= 29.5 (Men) – 10.3(Women)= 19.2*

*Statistically signficant at least the 95% confidence level

Consecuences

- **The change in weights had the unintended consequence of reducing the probability of female doctors of accessing very demanded specialties/locations.** On average, female doctors lose ranking positions, whilst male doctors gain positions
- For Spanish graduates and top achievers, both men and women are better off after the change, however the gain in positions is smaller for women
- Results seem to confirm the gender gap in competitiveness
- They might be also explained by the different degree of risk taken in the MIR Exam (Romeo-Ladrero 2014): males take more risk $\rightarrow$ better results for top achievers and worse for bottom achivers

Policy recommendations

The of design MIR ranking system was motivated to ensure the reliability and trasparency of the process and to avoid favouritisim (Aranda 2016)

However, there is a need for an in **depth revision of the functioning of the process** to make it accountable for the other competences: such as communication, empathy, professionalism (Aranda 2016) or having real vocation (Lorusso and Gonzalez Lopez-Valcarcel 2013)

- For those other non-valued aspects there is evidence of females outperforming male doctors

Why is desirable an equal distribution of doctors across specialties?
To reduce earning disparities, geographic imbalances, differences in productivity, shortages of specialties, differences in the quality of care, etc

Many Thanks! Any Questions?

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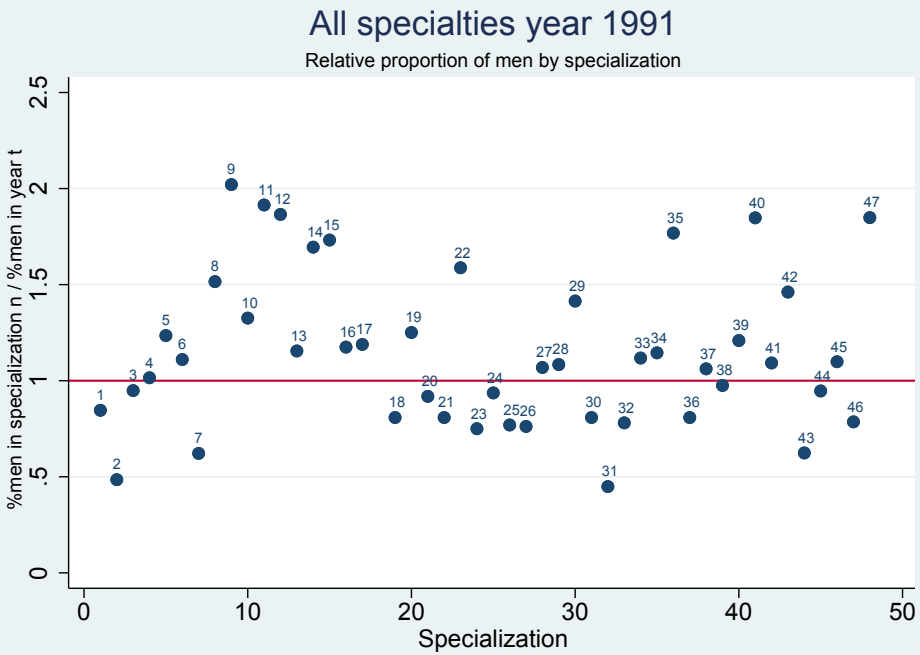
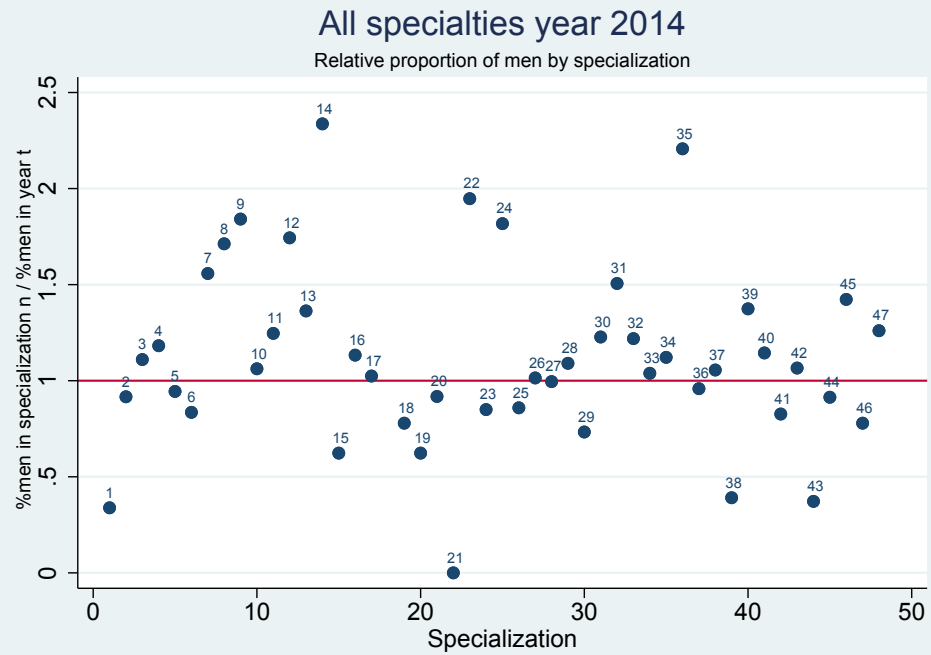
Distribution of male doctors across specialties



In 1991: 49.48% Males, 50.52% Females



In 2014: 32.1% Males, 67.9% Females