Share of women and the gender productivity gap in economic research

Simon Hilber
Jan-Egbert Sturm
Heinrich Ursprung
Research questions and data used

• Within the field of economics, covering the German-speaking research area, we
  – document the development of the share of women over time, countries and university classes
  – measure the gender-specific productivity gap in economic research

• Our data is taken from the Forschungmonitoring Database hosted at KOF, ETH Zurich
  – It is based on 10 waves of data collection and surveys starting 2006 and ending 2019

• Our population consists of 71 economics departments in Germany, Austria and Switzerland,
  with a total of 3,212 researchers, and 73,770 unique publications in EconLit journals
  – Full sample: Researchers with PhD and at most 25 years since and publications from 1970 onward
  – Small sample: Publications & year of PhD from 2005 onward

• The study is essentially of a descriptive nature
  – We give no causal explanations for the gender differences found
  – Our descriptive statistics are intended to encourage a more research in this area
Share of women across data waves in Austria, Germany and Switzerland

Source: Forschungsmonitoring
Share of women across different university classes

Source: Forschungsmonitoring
The leaking pipeline across data waves – Share of women

Source: Forschungsmonitoring
Share of women across different university classes

Juniors (academic age 1 to 5)

Seniors (academic age 6 and higher)

Source: Forschungsmonitoring
Taking an output perspective

• The total research performance of individual researchers is based on journal articles
• Articles are weighted with the quality of the publishing journal and corrected for the number of authors:

\[ R_i(T) = \sum_{t=-\infty}^{T} \frac{w_k(t)}{n_k} \]

– where \( w_k(t) \) is a quality weighting of the journal in which article \( k \) was published in year \( t \), based on the *SCImago Journal Rank*
– The denominator \( n_k \) corresponds to the number of authors of article \( k \)
• We use the log of \( R_i(T) \)
Histogram of cumulative output by gender

Source: Forschungsmonitoring
Kernel density plots for different academic ages by gender

Source: Forschungsmonitoring
Kernel density plots for different academic ages by gender – Small sample

Source: Forschungsmonitoring
Putting this into a regression framework

- Explain cumulative research performance by
  - Academic age
  - University class
  - Country
  - Publication year
  - Gender

- Allow gender to interact which each of the other set of variables

- Full sample (while controlling for the above): women have on average a 40% lower score than men
- Small sample (while controlling for the above): women have on average a 20% lower score than men
Marginal effect by academic age – Small sample

Difference when being female

Percentage difference in publication output

Source: Forschungsmonitoring

ETH zürich
Conclusions

• There is no difference in when men and women receive their PhD or publish their first paper

• About 20% of current economic researchers with a PhD are women
  – The female share of junior researchers is approaching 30%
  – The female share of senior researchers is still below 20%
  – The share of female researchers at top universities is around 15%
  – The share of senior female researchers is – with close to 10% - low at top universities

• With academic age the average output of women reduces relative to that of men
  – There is basically no difference in output for junior researchers
  – At an academic age of 8, it approaches an average difference of 50%

• What explains the observed lower productivity of women and the observed leaking pipeline?