She Figures 2009 pt. II

Seminar: Equal Opportunity and Gender Studies, 30OCT12
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This manuscripts serves as an addition to the talk and gives a compact summary touching on the most important facts and insights discussed. The talk comprises two chapters of She Figures 2009 [1], a study on the representation of women in academia by the European Commission's Directorate-General for Research, namely '*Seniority*' and '*Setting the Scientific Agenda*'.

1 Seniority

There has been a strong feminization of the student population in the last 30 years, yet still a severe vertical segregation persists.

In the EU-27, 55% of enrolled entry-level and 59% of graduate students are female. 48% of PhD students, 45% of PhD graduates and 44% of Grade C academic staff are women. At Grade B the number has gone down to 36% and at Grade A we find only 18% of the academic staff to be female.

In most countries, these grades refer to a starting scientific career as a PostDoc (C), senior PostDoc positions with original research responsibilities (B) and Full Professors (A), respectively.

Possible reasons for this drop-off could be direct discrimination, e.g. choices made by selection committees, and indirect discrimination through gender-based selection criteria or self-censuring rooted in gender stereotypes. Thus, the study introduces the notion of a Glass Ceiling, referring to obstacles holding women back from accessing the highest levels of the academic career. Quantitatively, a Glass Ceiling Index is defined as

$$GCI = \frac{\text{Men at Grade A}}{\text{Men at Grades A, B and C}} : \frac{\text{Women at Grade A}}{\text{Women at Grades A, B and C}}.$$

Let us point out that there are different classifications for these Grades in different countries and that this study relies on head-counts only, so there is no distinction between part-time and full-time occupations. The average over all countries is $GCI_{EU-27} = 1.8$ with no country featuring a GCI smaller than 1.

A comparison between 2002 and 2006 shows a slight improvement but the study advocates '*proactive policies to close the gender gap*'. Furthermore, they observe significant variations among the different fields.

In science and engineering only 31% of entry-level students are girls, 36% at the PhD graduate level, and then 33% at Grade C, 22% at Grade B and 11% at Grade A are female. There seems to be a lack of appeal for girls to start studies in science and engineering and the gender segregation is also due to boy's preferences for certain fields, so policies should also take study choices into account. 'A more mixed composition should not mean an alignment on the male model'.

A possible explanation for the small share of women in higher positions could be a generation effect,: today's top-level women were part of a small share of female students when they were young. This is only a hypothesis and the study does not feature any data to proof this idea, yet there is data from twelve countries which rejects it. The share of high-level females still seems disproportionately low compared to the share of girls who take up university studies, so there does not seem to be an automatic catch-up.

Therefore, the study emphasises that policies are needed. Their suggestions include a *gender-mixed composition of nominating committees*, an *increase in objectivity of applied selection criteria*, *tutoring of women* and the *fixing of target quotas* among other ideas. Moreover, there should be a *fight against gender stereotypes* and *measures to promote a gender-mix* in primary and secondary school study fields.

Overall, in research and development (including private enterprise and the public sector) women's share amongst actual research staff is 61%, while men's share is 78%. For technicians in research the quota is 21% female and 14% male, and in supporting jobs we have 18% vs. 8%.

Finally, there is the phenomenon of the gender pay-gap, which seems to have two components: firstly, the 'exogenous component' referring to differences in educational attainment, sectoral affiliation, labour market experience, tenure,etc. and secondly, the 'unexplained' part which is due to direct discrimination or unobserved heterogeneity. Yet, this decomposition is a bit arbitrary, since one component affects the other and there is no data provided on any of these components in this study.

No observed country showed higher wages for women than for men. The average pay-gap among all countries is 25%, despite legislation guaranteeing equal pay for equal work almost everywhere. Interestingly, the pay-gap is seven percentage points higher in the public sector than in the private industry. Yet, the public/private difference got considerably smaller from 2002 to 2006.

Even women in top managing positions earn significantly less than their male counterparts. The pay-gap is roughly 10% wider for health care personnel and teachers as compared to engineers and technicians and the whole

economy average lies somewhere in between. The study suggests, that 'maybe the business sector cannot afford to pay top women less'. In addition, the gender *pay-gap widens with the age* of the researchers which can be at least partly explained by the observed Glass Ceiling mentioned earlier. At this point, et us emphasize again, that these numbers are based on head-counts, so there is no distinction between full-time and part-time jobs.

2 Setting the Scientific Agenda

Women's underrepresentation in the highest levels of academia has various consequences, e.g., there are only few role models for young females. The weak presence of women and the thus resulting male dominance often unconsciously biases decisions. The study calls this the '*discriminatory snowball effect*'.

There seems to be a leaky pipeline in the sense that despite 18% Grade A academic staff, only 9% of heads of institutions are female (Unfortunately the sample size here is very small). Furthermore, only 22% of board members across all observed countries are women. The study promotes a high representation of women in leading and decision-making positions as crucial to promoting the cause of women in science, avoiding the snowball effect mentioned above and diversity in research objectives and strategies.

Lastly, the study touches on research funding, observing that 21 of 26 countries with available data show higher success rates for men in acquiring research grants, but none with a difference of more than 10%. Yet, one has to be careful when comparing success rates, as not as many women as men actually apply for funding. On top of that the number and orientation of considered research funds can vary dramatically.

For example in the case of Denmark they considered seven distinct funds until 2004 and from then on four completely different ones, while for Poland only governmental funding was considered. This explains the strong variation (10% or more) in their data from 2002 to 2007.

The study cannot find clear differences in success rates between different fields of science.

Remarkably, it is mentioned that the less a country spends on R&D, the higher the share of female researchers (with a correlation coefficient of -81.6 (here -100 means perfect anti-correlation and 0 means uncorrelated). They claim this is particularly true for expenses in the business enterprise sector, which holds the lowest proportion of women of all three considered research sectors (the other two are Higher education and Government).

References

[1] She Figures 2009: Statistics and Indicators on Gender Equality in Science (European Commission), http://ec.europa.eu/research/science-society/document_library/pdf_06/she_figures_2009_en.pdf