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Excerpt:
The numbers on women and science: Italy compared with Europe

Several questions animate the issue of women and science, but the first, "why so few?", needs reframing from its mid-1960s formulation.

According to data from the EU-27 on second-level graduates, women represent 67% of biological science graduates, 61.5% of medical science graduates, and 61% of agricultural and veterinary science graduates. However, the percentage drops below 50% in mathematics and statistics, where it stands at 46%, and in physical sciences, it's 44%. This figure is not significant as it covers several subfields, including chemistry with 52% female graduates and physics with only 27%. The proportion of women in ICT (23%) and engineering (33%) is particularly low.

Italy performs better than many other western countries, particularly in natural sciences, statistics, and mathematics (60%) due to good performance in biological sciences (72.5%) and mathematics and statistics (52%). Women's representation in engineering and construction slightly exceeds the European average, mainly due to good performance in architecture. However, it remains below average in medical sciences, although it surpasses the average in the Ph.D. stage. The countries with higher percentages of female graduates in natural sciences, mathematics, and statistics than Italy include the UK (63.5%), Portugal (60%), Iceland (61%), and most Central and Eastern European countries like Poland, Romania, and some former Yugoslavian countries. Switzerland, the Netherlands, and Belgium have percentages between 43% and 46%, among the worst. When it comes to engineering, Romania, Poland, and Greece lead the trend, with percentages above 44%, followed by Portugal (38%) and Spain (37%). The Scandinavian countries (except Finland) account for 36%, followed by Italy (34%). Switzerland (24%), Germany (26%), and Belgium (27%) lag behind. The top ICT countries are Estonia (47%), Bulgaria (39%), and Romania (38%), while Denmark, Sweden, Greece, and Portugal range from 30% to 35%.

The low presence of women in STEM curricula translates to a low presence in the associated occupations, both inside and outside of academia. Women make up 41%

of scientists and engineers in Europe in 2020, including both graduates and employed individuals aged 25-64 in the fields of science and engineering (ISCO 21), medicine (ISCO 22), and ICT (ISCO 25). Data on employed personnel in research and development, updated to 2019, is more accurate as it only includes the employed (excluding the inactive) and specifically, the researchers. Women make up only 33% of the total in Europe in this field, with considerable variations between countries and sectors. Italy is slightly above average (34%) in this ranking, led once again by many CEEC countries, followed by Mediterranean and Scandinavian countries.

In contrast, the Netherlands, Germany, and Austria are below average, with percentages between 28% and 30%. The percentage of women in these countries decreases when considering "full-time equivalent" employees instead of the employed, meaning counted based on working hours. For example, Germany and Austria don't reach 24% because many women work part-time.

Women's representation also varies greatly depending on the sector. In the EU-27, women make up 21% within the business enterprise sector (BES), but the figure doubles in the public sector, accounting for 44% of the government sector (GOV) and 43% of staff in higher education (HES). The data on scientific areas is only available by country for HES and suggests the significance of Central and Eastern Europe in the feminization of natural sciences and engineering (except for the Czech Republic and Hungary), together with Mediterranean countries, although the latter do not perform as well in medicine (with percentages still above 40%). Scandinavian countries, on the other hand, perform well in both medical and agricultural sciences.

Despite the increasing number of women in scientific occupations and professions, a persistent disadvantage in career progression still exists for women in the labor market. According to the latest She Figures report, which provides data updated to 2018 on vertical segregation within the academic profession, there is a "leaky pipeline" mechanism within higher education. Women make up the majority of second-level graduates, but their representation decreases as they move up the academic ladder, starting with PhDs (European Commission, 2021). Although almost equal numbers of women and men are now earning PhDs (48% women), this proportion falls to 42% among associate professors and just 26% among full professors. This represents a slight improvement from previous years (it was 22% in 2013 and 24% in 2016) (European Commission, 2019; 2021), but still means that less than one in four professors is a woman. In the science and engineering field, women are a minority from the start, making up 35% of graduates, but this increases to 38% among PhDs and then decreases at later stages. Thirty-six percent of post-doctoral fellows and researchers are women, while they represent 28% of associates and 18% of full professors. The ratio of women among full professors varies widely by country, with Romania being the only country where women make up 50% of full professors. Other Eastern European and Baltic countries

(Bosnia-Herzegovina, Latvia, Lithuania, Hungary, Croatia, and Bulgaria) have between 40% and 47% women full professors, while Malta has 44%. Hungary is an exception (22%), while Poland is not far from the European average (25%). Finland also shows significant rates (30%), followed by Sweden, France (28%), and Portugal (27%). Italy and Spain are around 24%, which is better than some Nordic countries, in particular, Belgium (20%), Germany (21%), and the Netherlands (22%), which are among the worst in the continent.

2.5 Women and science: a paradox

From European data on education and work in science, a clear yet unexpected pattern emerges. Generally speaking, the countries that we would expect to be at the top of the women and science rankings - those known for high gender equality - perform below the European average or poorly (Chapter 1). These countries include Germany, Austria, Switzerland, and the Netherlands, as well as Belgium, France, Finland, and Norway, which have low numbers of female graduates in natural sciences and engineering. Sweden also performs below average regarding the number of women researchers, with the worst performers being the Netherlands, Germany, and France. The Czech Republic and Hungary deviate from the rest of the Central and Eastern European countries by having low numbers of female graduates and researchers. The Mediterranean countries perform well in higher education, with Portugal and Italy having high numbers of women among full professors, and Spain and Greece performing well in engineering and technology (where Italy, however, does not excel). Central and Eastern European countries, including the Baltic republics, perform well in higher education, with the exception of the Czech Republic and Hungary. Germany, the Netherlands, and Belgium perform poorly.

The debate on gender regimes was discussed in Chapter 1, highlighting the differences and similarities between countries in terms of policies, labor market structure, and gender norms. With regard to women in science, the descriptive results can also be grouped into clusters, with the Central and Eastern European countries performing best, with a few exceptions, and the Mediterranean countries performing well. The conservative-corporatist cluster, i.e. the Germanic-speaking countries, does not perform well, and the social-democratic cluster, i.e. the Scandinavian countries, performs well but not as expected (with the possible exception of Iceland). In short, the North is less advanced in terms of women's rights and science than it appears, raising the question of a paradox.