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An International Perspective on Gender Gaps along the Educational Trajectory

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The gender gap in general educational attainment has reversed in most of the European Union and other advanced economies, as more young women go to university than men. Yet, significant gender gaps persist in educational choices and across fields of study. Gender gaps persist in the STEM fields of science, technology, engineering and mathematics. These gaps emerge early in secondary school and then widen further along the educational trajectory, leading to gender-specific segregation in the labour market. Understanding what causes the persistence of these gender differences, and how the causes differ at each educational stage is critical, and has implications for gender equality as well as for the allocation of talent and the overall competitiveness of countries. Given the nature and magnitude of the gender gaps, and the fact that they alter by educational stage, different policies and interventions are needed along the educational trajectory.

THE STATE OF GENDER GAPS

The gender gap in educational attainment has reversed in the majority of member states of the European Union. In 2019, on average, among the member states 45% of women vs. 34% of men had completed tertiary education (Eurostat Database). Men and women's level of educational attainment has increased over the previous decades, but in the most relatively recent past, this has been at a faster pace for women.

The nature and magnitude of the gender gaps in learning outcomes vary in different studies, by subject and across countries. Yet, gender gaps persist across the various fields of study. Women are relatively over-represented in the arts and humanities whereas they are under-represented in science, technology, engineering and mathematics (the 'STEM' subjects). The under-representation of women is especially pronounced in maths-intensive STEM fields. These gaps in educational choices emerge in secondary school and then widen along the educational trajectory.

EMPIRICAL EVIDENCE

An increasing body of research provides evidence on the factors that explain gender gaps in educational attainment and the gender-specific segregation across fields of study. There is significant variation about the role of the specific factors, the magnitude of their impact, and the variation of the effects across countries and over time.[1]

EDUCATIONAL CONTEXT

The educational environment matters in shaping students' educational attainment and learning outcomes (Woessmann 2016). Existing research has examined the role that factors such as the institutional settings, educational resources, teachers and peers play in affecting educational performance.

Recent research has shown that teachers play an important role in affecting students' educational achievement and the choices they make at different stages of their education path. First, studies have consistently shown that girls perform less well when exposed to teachers who have gender biases. Carlana (2019) finds that girls underperform in mathematics when they are exposed to teachers who hold strong gender stereotypes. Terrier (2020) finds that teachers' biases affect students' decisions, and in the presence of teachers favoring girls, academic achievement is lower for boys compared to girls with similar characteristics.

Secondly, studies examining the effects of the increasing feminisation of the teaching profession have provided mixed evidence over the same gender matching. Studies in this area have examined to what extent teacher-student gender matches affect educational outcomes. There is heterogeneity of the effects by country, stage of education and time-frame examined.

Another aspect that has received recent attention in the literature is related to role models. Existing studies have shown

[1] Recent reviews include Viarengo (2021), Delaney and Devereux (2021), for a comprehensive review in the area of STEM see McNally (2020).

the importance of role models for girls, especially in shaping educational and professional aspirations, particularly in those fields where there is a greater gender imbalance. Breda et al. (2020) evaluated a large-scale field experiment which aimed to increase the exposure of students to external female role models and find that it had a positive impact in increasing the share of girls studying the science track in twelfth grade. In a study examining the effects of role models on the choice of university major, Canaan and Mougaine (2021) find that following the exposure of girls to a female adviser, the gender gap in STEM enrolment was significantly reduced.

Structure of the Labour Market

Existing research has documented that gender differences in educational choices are related to gender differences in preferences concerning expected future labour market opportunities. Both pecuniary and non-pecuniary characteristics of occupations such as expected earnings and career progression, workplace flexibility, and job security impact educational choices. Gender gaps in labour market outcomes persist and increase with seniority in many professional occupations, even in those occupations where gender gaps in educational attainment have closed (Bertrand 2018; Ganguli et al. 2021). Recent research has shown that the perception that boys and girls have about different career paths affects their educational choices, and their overall educational achievement.

Wiswall and Zafar (2018) find a strong relationship between gender differences in preferences related to job characteristics and the related educational choices that students make in terms of university major. They also highlight that non-pecuniary job characteristics play a greater role in women's choices.

Cultural Context

The role that cultural values and social norms play in affecting gender gaps in educational achievement and educational choices have also been examined in the literature. Existing research has shown that in societies characterised by greater gender equality, the gender gap in learning outcomes in mathematics is smaller, suggesting that the gap is endogenous to social norms. Rodríguez-Planas and Nollenberger (2018) examine gender gaps in learning outcomes in maths and find that girls whose parents' country of ancestry is characterised by greater gender equality also have a higher preference for mathematics.

Implications for Policy

The nature and magnitude of the existing gender gaps, and the fact that they vary by educational stage, suggest that different policies and interventions are needed along the educational trajectory. Existing research has pointed towards a complex set of factors that explain the persistence of gender gaps in educational choices and across fields of study. The current evidence on the effectiveness of educational policies suggests that teachers and role models matter, but also the structure of the labour market and the characteristics of the workplace environment play an important role in affecting the educational and career paths that boys and girls undertake. Policymakers should take these factors into close consideration when advancing policy interventions that aim to address the continuing persistence of gender gaps in our education systems.

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