

**Breaking through the glass ceiling in academia.  
An agent-based model simulating policies to close the gender gap.**

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*Abstract*

Gender discrimination in academia is still far from being solved. The persistent gender gap in the different rungs of the academic ladder and the “leaky pipeline” phenomenon, *i.e.* the progressive lower proportion of women as they advance in academic careers, are well-known facts in all OECD countries: the recent debate focuses on the policies that can be adopted to increase the gender balance in the university systems. We build an agent-based model to study how the gender composition of a virtual academia, that is a scale reproduction of the Italian academia, might evolve in one hundred years. We simulate recruitment and promotions of the academic staff by considering the discrimination mechanisms producing the gender gap and we test the effectiveness of different policies aimed at closing it. Results show that, despite the rhetoric of meritocracy, even if female researchers had the same scientific productivity as their male colleagues the gender gap will not close even in the long run. To reach more gender equality, but also higher efficiency in the recruitment and promotion, universities should implement a set of policies acting on the different mechanisms causing discrimination. These include maternity bonuses in the evaluation of the CVs of female candidates to promotions, rules for a more gender balanced composition of the evaluating committees, and gender quotas in the promotions to full professorship positions. However, our simulations show that that it is only by guaranteeing a more gender balanced recruitment that gender gap will close in a reasonable time.