Invisible Geniuses: Could the Knowledge Frontier Advance Faster?*

Ruchir Agarwal  Patrick Gaulé
IMF  University of Bath and IZA

January 4, 2019

Abstract

The advancement of the knowledge frontier is crucial for technological innovation and human progress. Using novel data from the setting of mathematics, this paper establishes two results. First, we document that individuals who demonstrate exceptional talent in their teenage years have an irreplaceable ability to create new ideas over their lifetime, suggesting that talent is a central ingredient in the production of knowledge. Second, such talented individuals born in low- or middle-income countries are systematically less likely to become knowledge producers. Our findings suggest that policies to encourage exceptionally-talented youth to pursue scientific careers—especially those from lower income countries—could accelerate the advancement of the knowledge frontier.

*We appreciate helpful comments from Dan Cao, Christian Catalini, Evan Chen, Annamaria Conti, Tom Cunningham, Kirk Doran, Ehsan Ebrahimy, Tarhan Feyzioglu, Christian Fons-Rosen, Ina Ganguli, Jon Gruber, Niels-Jakob Hansen, Scott Kominers, Alessandro Iara, Artjom Ivlevs, Xavier Jaravel, Vitalijs Jascisens, Ben Jones, Stepan Jurajda, Jin Li, Megan MacGarvie, Mark McCabe, Nikolas Mittag, Abishek Nagaraj, Alex Oettl, Chris Peterson, Pian Shu, Geoff Smith, Sarah Smith, John von Reenen, Valentina Tartari, Otto Toivanen, Fabian Waldinger, Heidi Williams and seminar and conference participants at the NBER Summer Institute, Barcelona Summer Forum, MIT Sloan School, Georgia Tech, the Higher School of Economics, the University of Bristol, Copenhagen Business School, the University of Leicester, the University of Massachusetts and ZEW Mannheim. We are grateful to Suzie Maine and Deborah Novakova for excellent work in proofreading and copy-editing the paper. All errors are our own. The views expressed therein are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management. Gaule acknowledges financial support from the Czech Science Foundation (GACR grant no 16-05082S).