Heuristic Self-Evaluation and the Returns to STEM

Abstract

Human capital choices are among the most consequential economic decisions young adults face, yet they are made under substantial uncertainty, including about one's own ability. This paper shows how cognitive heuristics in self-assessment shape entry into STEM. Using linked administrative data on test scores, applications, enrollment, and earnings, I exploit a regression discontinuity at a round-number threshold on the first university entrance test. The threshold has no admissions consequences, yet crossing it sharply increases applications to lucrative STEM programs. This response reflects left-digit bias: students treat the higher leading digit as a meaningful signal of ability, boosting confidence and encouraging further investment. Affected students subsequently improve their scores, enroll in STEM, and, over the next two decades, earn more, are more likely to work in technology firms, and are disproportionately represented at the top of the earnings distribution. The findings show how uncertainty and heuristics generate undermatch in test-based meritocratic systems, producing persistent disparities in economic opportunity unrelated to talent.