Testing Academic Fairness of University Admissions with Application to Oxford PPE

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Abstract

Admissions to selective colleges – especially publicly funded ones – are often criticized for "unfair" admission policies that favour specific socioeconomic groups. In this paper, we develop a statistical framework for testing whether current admission practices maximize expected academic performance of the entrants. Such maximization would imply that the expected performance of the marginal admitted candidate –the admission threshold– is equalized across socioeconomic groups. For biased practices, the marginal candidate in the discriminated group will have higher expected outcomes. When we observe for every applicant all of his/her pre-admission characteristics used by the university (e.g., the application form data and test and essay scores) and post admission performance of admitted candidates, the admission threshold can be identified as long as the density of expected performance is positive around that threshold. This leads to a test of whether the observed socioeconomic disparities among the admitted cohort can be justified as the consequence of admitting candidates with the highest academic potential. Our identification strategy leads to natural estimators and we derive the relevant large sample distribution theory. Applying these methods to two cohorts of UK and EU-based applications to Oxford's flagship PPE degree, we find that male applicants face a higher threshold than female applicants and that there is no difference between thresholds faced by state-school and private school pupils.

Keywords: University admissions, discrimination, selection on observables, conditional median restriction, nonparametric maximum score.