

College Performance Predictions and the SAT

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Study Description

An unquestioned assumption in the academic and political debates over college admissions policy is that the ideal is a purely “meritocratic” admissions rule, in which students who are best prepared to succeed in college are uniformly admitted over those less-well prepared. Any consideration of non-academic factors in admissions - such as race-based affirmative action, “legacy” preferences for the children of alumni, or preferential admissions for star athletes - is suspect, evidence that the college is permitting political or other considerations to water down academic rigor.

In this environment, admissions officers may consider only a few variables: Applicants’ high school grades and class ranks, advanced placement credits, and scores on college admissions exams like the Scholastic Aptitude Test (SAT). Of these, many see the SAT as the most directly meritocratic, and critics see admissions plans - like Texas’ well-known “Ten Percent Plan” - that downweight the SAT in favor of the high school grade point average as politically-motivated deviations from meritocracy. Evidence for the SAT’s importance as a measure of student merit comes from studies of its predictive power for students’ collegiate performance. An applicant with a high SAT score is likely to earn higher grades as college freshman than will his competitor with a lower score, even when the students’ high school grades are similar.

At the same time, critics of the SAT’s importance point to large racial and socioeconomic gaps in average SAT scores, arguing that this indicates that SAT-based admissions rules are biased against minority and disadvantaged students relative to more purely meritocratic rules.

In a new paper entitled “College Performance Predictions and the SAT” (forthcoming in the *Journal of Econometrics*), Jesse Rothstein, an assistant professor of economics and public affairs at Princeton University’s Woodrow Wilson School of Public and International Affairs, argues that this disagreement derives from differing interpretations of the pattern of correlations among SAT scores, measures of student background, and collegiate academic performance. By studying the relationships among these measures, he uncovers information about just what role the SAT plays in admissions that should inform admissions policy debates.

There is no dispute that any pair of the three variables - SAT scores, student background, and collegiate performance - are strongly positively correlated. Where the two sides differ is in the causal story they tell about these correlations. One camp believes that the SAT measures student preparedness directly, and that student preparedness happens to be correlated with background; the other that the SAT measures student background, which might be correlated with preparedness or with other determinants of collegiate performance.

SAT proponents (generally also affirmative action opponents) are in the first camp. They believe that the SAT is an unbiased measure of academic merit, which is also reflected in college grades, and they interpret the association of both SATs and college GPAs with student socioeconomic status as evidence that disadvantaged students are, on average, inadequately prepared for success in college. Opponents of testing see a direct causal effect of student background on standardized test scores, though they vary somewhat in their interpretation of the patterns of collegiate success.

Rothstein proposes a novel approach to distinguishing these views. To the extent that the SAT measures student background, variations in SAT scores among students from similar backgrounds should not be strongly predictive of differences in collegiate grades. Alternatively, if the SAT is a pure measure of preparedness, SAT scores should be just as predictive of performance among students with similar backgrounds as in the population as a whole.

Rothstein tests these hypotheses on a large and rich data set extracted from University of California administrative records, with observations on all California residents from the 1993 high school class who enrolled as freshmen at any of the eight UC campuses. Each public high school graduate is matched to school-level demographic characteristics, which are strongly associated both with average SAT scores and with average freshman grades. A separate database of all California SAT-takers is used to correct for selection biases that arise in analyses only of students who were admitted to the selective UC campuses, using a new correction that improves on those in the test validation literature.

Study Findings

Rothstein finds that the SAT's role as a predictor of freshman grades is quite sensitive to students' background characteristics. Characteristics of students' schools are particularly important, and account for a large share of the SAT's apparent predictive power. SAT scores are much less predictive of collegiate grade point averages (GPAs) among same-race students from demographically-similar schools than they are in the population at large.

For example, racial minorities and students from schools with high concentrations of Blacks, Hispanics, or low-education parents earned lower freshman grades than did White students from high income schools, even when SAT scores were similar. SAT score differences among demographically similar students—say, Hispanic students from the same suburban high school—predict significant differences in collegiate performance, but these predicted differences are substantially smaller than when student background is not held constant. Somewhat surprisingly, high school grades are equally predictive across and within demographic categories, suggesting that grade inflation does not erode the value of GPA comparisons across high schools.

The pattern of results suggests that part of the evidence that SAT scores predict future performance arises because SAT scores function in part as a type of “laundering” device for student characteristics, like race and family income, which are themselves strong predictors but are typically not considered in “validation” studies.

Traditional methods indicate that the SAT explains 5.6% more of the variation in freshman grades than can be explained by high school grades alone. Rothstein's study suggests that in fact the SAT's contribution is only 2.7% after students' backgrounds are taken into account. The larger figure arises because the SAT is at least as effective as a measure of the demographic characteristics of the student's high school as it is as a measure of variations in preparedness among similarly situated students.

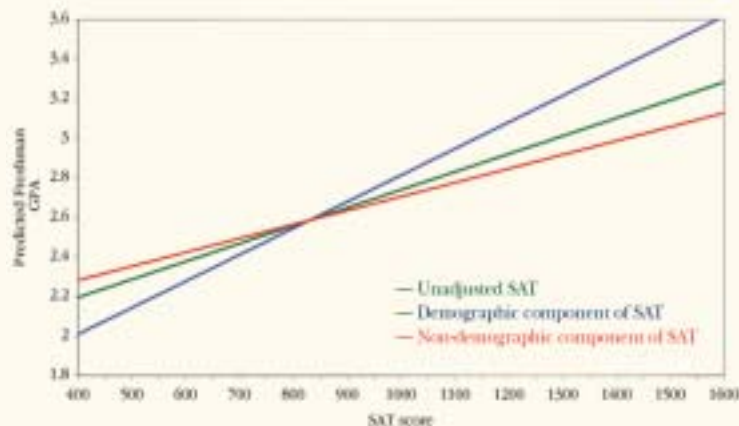
Policy Implications

The admissions rule that would maximize the performance of admitted students places positive weight - though less than would be implied by traditional validity studies - on SAT scores. It also, however, awards extra points to white students from high income, predominantly white high schools, even relative to less advantaged students with similar academic qualifications.

This rule - essentially, affirmative action for socioeconomically advantaged students - clearly conflicts with widely held ideals of equal opportunity. Maximizing student performance cannot be the sole goal of admissions policy, and colleges quite rightly rule out consideration of certain variables seen as inappropriate for use in admissions in spite of their clear utility in prediction. In other words, not all predictors of performance can be considered measures of merit.

If student background is not considered a valid admissions qualification, however, analyses of the SAT's importance must be careful not to allow the SAT to function as a laundering device for excluded background measures. The portion of the SAT score that varies independently of stu-

Decomposing the SAT's role in predictions



Notes: Predictions are based on a student with a 3.8 high school GPA attending UC Berkeley with a "General / Unclassified" major. "Unadjusted SAT" line neglects role of student characteristics in prediction and allows SAT score to vary. "Demographic component" line allows individual and school characteristics to vary, keeping the student's performance average given his/her demographics. "Non-demographic component" line considers a student with average demographic characteristics at a school with SAT average 830, and allows the student's SAT score to vary around this.

dent background is the portion most plausibly considered an independent measure of merit, but is substantially less predictive of collegiate grades than is the unadjusted SAT score. The unadjusted SAT score can no more be assumed a fair measure of “merit” than can student background itself.

Regardless of the goals of the admissions process, Rothstein's results suggest that the SAT is less important than is implied by existing research on the subject. If admissions offices wish to exploit the predictive power of student background, the background information itself provides much of the information contained in the SAT score; if they are not willing to use students' background in prediction, the SAT's potential contribution is substantially smaller than previously thought.

In the latter case, where the policymaker prefers not to use demographic variation to identify students likely to succeed, he or she should nevertheless hold demographic characteristics constant in a prediction model for collegiate performance, as in Rothstein's study, then create an admissions formula that ignores the background variables but keeps the same relative weights on academic measures like SATs and high school GPAs. Both affirmative action and “percent plans” can be seen as approximations to this formula, as each offsets a portion of the demographic gaps in SAT scores with direct preferences for disadvantaged groups.

A copy of the policy brief can be found at:
http://www.wws.princeton.edu/policybriefs/rothstein_sat.pdf

The website for the Woodrow Wilson School of Public and International Affairs:
<http://www.wws.princeton.edu>

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