American Sociological Review

VOLUME 72 • NUMBER 4 • AUGUST 2007
OFFICIAL JOURNAL OF THE AMERICAN SOCIOLOGICAL ASSOCIATION

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ARTICLES

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The ***American Sociological Review*** (ISSN 0003-1224) is published bimonthly in February, April, June, August, October, and December by the American Sociological Association, 1307 New York Avenue NW, Suite 700, Washington, DC 20005-4701. Phone (202) 383-9005. *ASR* is printed by Boyd Printing Company, Albany, New York. Periodicals postage paid at Washington, DC and additional mailing offices. **Postmaster**: Send address changes to the American Sociological Review, 1307 New York Avenue NW, Suite 700, Washington, DC 20005-4701.

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The American Sociological Association acknowledges with appreciation the facilities and assistance provided by The Ohio State University.

Diversity, Opportunity, and the Shifting Meritocracy in Higher Education

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This article uses four data sets to assess changes in the relative weights of test- and performance-based merit criteria on college enrollment during the 1980s and 1990s and considers their significance for affirmative action. Our results support the "shifting meritocracy" hypothesis, revealed by selective postsecondary institutions' increased reliance on test scores to screen students. This shift has made it difficult for institutions to achieve diversity without giving minorities a "boost" through race-sensitive preferences. Statistical simulations that equalize, hold constant, or exclude test scores or class rank from the admission decision illustrate that reliance on performance-based criteria is highly compatible with achieving institutional diversity and does not lower graduation rates. Evidence from a natural experiment in Texas after the implementation of the "top 10 percent" law supports this conclusion. The apparent tension between merit and diversity exists only when merit is narrowly defined by test scores.

INTRODUCTION

Several recent social and demographic trends have rekindled debate about what constitutes merit in higher education and whether ascriptive criteria should be considered in college admissions. First, as baby boomers' offspring reached college age, the demand for college education surged, with college enrollment rising from 5.8 to 9.4 million between 1970 and 2000 (NCES 2004, table 175). Moreover, the college enrollment rate of high school graduates has increased steadily in recent decades, from around 50 percent in the 1970s and early 1980s to over 60 percent since the 1990s (NCES 2004, table 182).[1] The expansion of postsecondary education systems did not keep pace with demographic trends, and the demand for a college diploma produced a college squeeze. Applications continue to pour into America's four-year colleges and universities, which has spurred competition in admissions, particularly at the most selective colleges (NACAC 2006). The most selective institutions in the United States—those that offer admission to fewer than 50 percent of applicants—received more than one-fourth of the total four-year college application volume in 2003 (NACAC 2006:11).[2] The surge in demand allows admissions officers to select students from a surplus of high quality applicants (Duffy and Goldberg 1998).

Second, the proliferation of selectivity rankings, first by Barron's and more visibly by *U.S. News and World Report* since the early 1980s, heightened public awareness about the stratification of postsecondary institutions and the criteria used to classify them. Third, the rising

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[1] This growth includes two-year institutions.

[2] The total number of applications for the 223 most selective four-year institutions (in which acceptance rate is lower than 50 percent) in 2003 was 1,400,646, whereas the 272 least selective schools (acceptance rate higher than 85 percent) received only 415,316 applications (NACAC 2006:12, table 9). The average number of applications per institution was 5,934 at the selective institutions, compared to 1,526 applications at the least selective schools. The total number of applications in 2003 was 4,981,052.

ethnic and racial diversification of the U.S. population added complexity to the college squeeze. In 1970, 16 percent of the college-age population was nonwhite, compared with 35 percent in 2000 (U.S. Bureau of the Census 1950–2000). In rapid growth states like Texas and California, fewer than half of high school graduates in 2004 were white, 49 and 40 percent, respectively (WICHE 2003).

As competition for slots at the most selective institutions climbed (NACAC 2006)—a trend reinforced by the large benefits of attending such schools (Alon and Tienda 2005; Bowen and Bok 1998; Karabel 2005)—reliance on achievement testing to evaluate a growing volume of highly qualified applicants rose (Karabel 2005; Lemann 1999; NACAC 2006). Although selective universities have always used multiple criteria in making admissions decisions, including test scores, high school grades, class rank, curriculum quality, extracurricular activities, and extenuating circumstances, in public discourse test scores have become a warranty for admissibility. Concurrently, selective colleges and universities have sought to diversify their student bodies (Bowen and Bok 1998; Karabel 2005; NACAC 2006). To achieve this goal, since the 1970s, but with increased commitment during the 1980s and 1990s, selective institutions gave qualified minority applicants an edge in admission. This edge was required because black and Hispanic students average lower scores on their College Board exams compared with Asians and whites (Fischer et al. 1996; Fishkin 1988; Sacks 2000).

We claim that the need to give minority students an admission boost to achieve campus diversity is an inevitable consequence of admission officers' growing reliance on test scores. Given the lower average test scores of minority students, the use of race-sensitive admission criteria predictably increases campus test-score dispersion, while color-blind admissions produce less diverse student bodies (Bowen and Bok 1998; Kane 1998; Koretz and Hamilton 2000; M. Long 2004). More heterogeneous applicant pools increased the difficulty of balancing academic quality and diversity and intensified the college squeeze (Clarke and Shore 2001; Duffy and Goldberg 1998; Klitgaard 1985). Not surprisingly, public support for the use of race-sensitive admissions waned (Steeh and Krysan 1996).

In this article, we evaluate the significance of changes in the relative weighting of merit criteria in college admissions for equalizing educational opportunity and increasing diversity. We extend the current state of knowledge about the determinants of college access in several ways. First, we offer *historical* evidence showing how the higher education "meritocracy" shifted, and we evaluate its consequences for the evolution of affirmative action practices. Other studies provide evidence based on college choice, aspirations, and enrollment for seniors from more than one cohort (e.g., Breland et al. 2002; Ellwood and Kane 2000; Jackson 1988; Karen 2002; B. T. Long 2004; Turley, Santos, and Ceja 2007). Most, however, are based on separate cross-sectional analyses that do not allow a direct assessment of temporal changes owing to the difficulty of comparing estimates across samples (for exceptions, see Alexander, Holupka, and Pallas 1987; Alexander, Pallas, and Holupka 1987). To overcome this predicament we pool two national surveys, the High School and Beyond (HS&B) and the National Education Longitudinal Survey (NELS), and explicitly assess temporal changes.

Second, we consider the postsecondary destinations of all high school graduates, including those who do not attend college. Because changes in admission practices are most pertinent to academically selective colleges and universities, we also analyze the 1989 cohort of the College and Beyond (C&B) database, which is based on a subset of the most selective institutions. Thus, we situate findings from selective institutions against trends for less selective institutions. Finally, to examine the significance of changes in admission criteria for equality of opportunity and institutional diversity, we evaluate several counterfactuals that constrain the relative weights of test- and performance-based admission criteria. The most radical counterfactual evaluates the implications of disregarding test scores in admission decisions for black and Hispanic students. This scenario was actually implemented in Texas with the top 10 percent law, which ignores test scores for applicants who graduate in the top decile of their senior class (Tienda 2006; Walker and Lavergne 2001). Using applicant and admission data from the University of Texas at Austin, we evaluated this natural experiment to corroborate findings from the national surveys.

Results show that selective institutions have increased their reliance on test scores to screen students, which we dub *"the shifting meritocracy."* The emergence of a test-score meritocracy amid pervasive test-score gaps required selective institutions to give underrepresented minorities an admission boost to achieve campus diversity. Our simulations, based on nationally representative data and from Texas after the implementation of the top 10 percent law, reveal that using class rank as a measure of merit requires smaller or no race preferences to achieve diversity and that ignoring test scores does not lower graduation rates.

MERITOCRACY IN COLLEGE ADMISSIONS

Meritocratic ideals are deeply entrenched in the consciousness of the U.S. public. A meritocracy is a social system where individual talent and effort, rather than ascriptive traits, determine individuals' placements in a social hierarchy. Although popularized in Young's *The Rise of the Meritocracy* (1958), the concept dates back to Plato. Two defining features of meritocratic systems are competition and equality of opportunity. In college admissions, the competition aspect exists when officers pick and choose what Thomas Jefferson described as "the aristocracy of talent." Equality of opportunity exists because the competition is fair and free, admission to selective institutions is open to all, and, according to Rawls's (1993) "difference principle," the system benefits the worst-off members of society (see Jencks 1988; Karabel 2005). In a truly meritocratic system, equal opportunity generates a high degree of social mobility because talent, unconstrained by social origin, rises to the top.

The use of merit in admission decisions should ensure that the most meritorious youth are selected for the most selective institutions. The existence of meritocratic ideals presumes there is a consensus on what merit is, and that the multidimensional construct of merit can be adequately, if not accurately, measured. When criteria used to sort students do not meet this challenge, competition is not fair and equality of opportunity is not achieved. We address this two-fold concern by examining two common measures of merit: class rank and test scores. Both have been the focus of intense public debate in contemporary discourse about fairness in college admissions, and both rest at the core of the debate about affirmative action and race-neutral admission regimes.

The definition of merit shifted fundamentally in the past century, from mastering Latin and Greek, to having the right "character" and proper social background, to high test scores and grades (Karabel 2005; Lemann 1999). Before World War II, colleges did not rely heavily on standardized exams, such as the Scholastic Achievement Test (SAT), although many institutions did stipulate entrance criteria.[3] Partly spurred by the G.I. Bill of Rights, which guaranteed war veterans tuition and a living allowance, the number of college applicants surged. As competition for slots at institutions with selective admissions rose, the use of testing to screen increasingly heterogeneous student pools gained greater acceptance (Jencks and Riesman 1968; Lemann 1999). Standardized scores were considered a valuable and objective tool to appraise the college readiness of students who attended high schools of varied quality (Katz 1978). Ironically, standardized tests were originally designed to allow selective institutions to identify talented students from disadvantaged backgrounds, yet today affirmative-action opponents use the tests as grounds for excluding them (Lemann 1999).[4]

Although relatively well-known today, the SAT became widespread as a screening instrument only after the Educational Testing Service (ETS) was founded in 1948. With increased demand for college education, the 1980s and 1990s witnessed a telescoping on standardized test scores as a criterion for admission to selective institutions, rendering the SAT a prominent measure of merit by default (NACAC

[3] Before 1900, every selective college administered its own admission tests to prospective students, but since its founding, the College Entrance Examination Board (CEEB) has administered entrance exams for applicants to leading private colleges. By 1915, the most selective institutions recognized the CEEB tests, which evolved into the contemporary SAT (Duffy and Goldberg 1998; Lemann 1999).

[4] In 1934, Harvard's representatives, seeking to screen candidates from the Midwest for a new merit scholarship, chose the SAT over other tests that measured subject-specific knowledge (Lemann 1999).

2006).[5] In 2006, 94 percent of four-year colleges and universities considered SAT scores in their admission decisions (NACAC 2006). A longitudinal survey of admission officers reveals that in response to swelling applicant pools, colleges have placed an increasing emphasis on test scores in admission decisions. For example, in 2005, 59 percent of institutions reported assigning "considerable importance" to test scores, a substantial rise from 46 percent in 1993 (NACAC 2006). Because the college squeeze was most pronounced at the most selective colleges, these institutions have placed greater weight on test scores in their admission decisions (NACAC 2006).

Perceptions of standardized test scores as a ticket to the most selective institutions spawned a small industry to prepare students, mainly middle and upper-middle class, to improve their test scores (Buchmann, Roscigno, and Condron 2006; McDonough 1994). Moreover, the saturation of selective colleges with high-scoring students led to using test scores to gauge institutional prestige (Duffy and Goldberg 1998). Because college rankings depend on colleges' success in enrolling high-scoring applicants, many institutions have reached the highest rank without corresponding changes in their quality (e.g., in their core curriculum, faculty resources, or physical infrastructure).[6] In fact, out of 64 institutions classified as most selective in 2003 (the highest selectivity category), only 43 were so classified in 1992, and fewer than half held this status in 1982.[7] In effect, the growing practice of using the mean SAT scores of entering freshmen to represent institutional quality has become a self-fulfilling prophecy and given legitimacy to the belief that achievement exams are a reliable measure of merit.

Against the backdrop of rising demand for slots at selective institutions, the growing reliance on test scores in college admissions fueled fierce debate. Critics argue that standardized tests do not measure abilities that are important for learning, such as motivation, imagination, and intellectual curiosity, and that the tests are biased against women, minorities, and students from low socioeconomic backgrounds (Blau, Moller, and Jones 2004; Camara and Schmidt 1999; Crouse and Trusheim 1988; Fischer et al. 1996; Freedle 2003; Sacks 2000; Wells 1978). A more substantive criticism is that they have low predictive validity for future academic success, particularly when compared with performance-based measures like grades or class rank (Bridgeman, Jenkins, and Ervin 2000; Camara and Echternacht 2000; Crouse and Trusheim 1988; Geiser and Studley 2002; Rothstein 2004; Stricker, Rock, and Burton 1991). For example, Rothstein (2004) finds that SAT scores explain only 2.7 percent of the variation in freshman grades after students' backgrounds are taken into account. Hoffman and Lowitzki (2005) find that high school grades are stronger predictors of college academic performance than are test scores for minority students.

High school grades not only measure students' achievements and cognitive ability, but they also capture important behavioral indicators of academic performance, such as ambition, tenacity, and work habits (Blau et al. 2004; Bowles and Gintis 1976; Farkas 2003). Compared with test scores, grades are better predictors of college academic performance and future labor market success (Farkas 2003; Rosenbaum 2001). The upward drift in grade point averages (GPAs) of high school graduates, which rose from an average of 2.68 in 1990 to 2.94 in 2000, mainly reflects grade inflation (Astin et al. 2002; NACAC 2006).[8]

Class rank, a standardized measure of grades that is relatively free from differences in high schools' grading policies and grade inflation, is more evenly distributed among racial and ethnic groups. Every school has a top X percent based on grades, yet because the distribution of

[5] Compared to 8,026 students who took the SAT in 1926, and 20,000 in 1942, 1.4 million took the test in 2003 (Carnahan and Coletti 2003). While these statistics suggest that the number of SAT takers rose about 70 fold from 1942 to 2003, the number of students enrolled in college rose only about seven times over the same time frame (from 2.3 million to 15.9 million students between 1947 and 2001).

[6] Yet a change in institutional ranking is possible if the average test scores of the student body change.

[7] Data from Barron's *Profile of American Colleges and Universities* (1982, 1992, and 2003).

[8] This is the primary reason why colleges rely more on grades in Advanced Placement courses in the admission process than on the overall GPA (NACAC 2006).

test scores is socioeconomically skewed, not every school has students in the top X percent based on standardized test scores. Using class rank rather than test scores to evaluate students increases the pool of qualified minorities (Tienda and Niu 2006). It is also a fairer criterion for purposes of college admissions because it reflects lifelong academic aspirations and motivation (Blau et al. 2004). Yet, while institutions relied more heavily on test scores to screen applicants, class rank has steadily declined in importance. The share of admission officers who considered class rank as an important factor in selecting students declined from 42 percent in 1993 to 31 percent in 2005 (NACAC 2006). Another problem is that only about 70 percent of U.S. high schools rank students according to GPA, with public schools five times more likely to do so than private schools (NACAC 2006).[9]

Nevertheless, the spread of percent plans in several states has revitalized the use of class rank in college admission decisions. In states that modified their admission regimes to circumvent statutory and judicial bans on the use of race-sensitive admissions, class rank has become a preferred measure of merit (Horn and Flores 2003; Walker and Lavergne 2001). Because Texas public institutions exclusively consider high school class rank and disallow the use of test scores for applicants who graduate in the top decile of their senior class, the state offers a unique opportunity to examine the consequences of this change for balancing the twin goals of excellence and diversity of freshmen admits.

We claim that heavy reliance on test scores in admission decisions requires giving minority students an edge to achieve diversity because blacks and Hispanics average lower scores on standardized tests, as do low-income students (Buchmann et al. 2006; Fischer et al. 1996; Fishkin 1988; Sacks 2000). Simply put, poor students, among who blacks and Hispanics are overrepresented, average lower test scores than their wealthy and nonminority counterparts because they are significantly more likely to attend underperforming, resource-poor schools (Schneider, Martinez, and Owens 2006). Consequently, they are also underrepresented at selective institutions and would be even more so in the absence of affirmative action (Bowen and Bok 1998; Carnevale and Rose 2004; Kane 1998). According to Jencks and Phillips (1998), if selective institutions based their admissions decisions entirely on test scores, fewer than 2 percent of their students would be black. Thus, to achieve diversity most selective institutions used race-sensitive admissions criteria during the 1980s and 1990s.[10]

Advocates of race-sensitive admission criteria argue for the need to broaden access to selective institutions because equality of opportunity is unattainable in a highly stratified society. The 1978 *Bakke* Supreme Court decision formally legitimated the use of race-sensitive admission criteria, and the diversity rationale of the Powell opinion became the rallying point for the most recent litigation leading to the 2003 *Grutter* decision. Yet during the 1990s, the controversy over affirmative action in college admissions continued to escalate. Rising discontent with affirmative action practices in higher education is evident from several indicators of public behavior: (1) public referenda opposing the use of race-sensitive admissions, such as Proposition 290 in California, Initiative I-200 in Washington State, and most recently, Proposal 2 in Michigan; (2) judicial bans on racial preferences in Texas and Florida; and (3) numerous law suits against affirmative action practices in higher education (*Gratz v. Bollinger* [2003] and *Grutter v. Bollinger* [2003] are the most notable, but there were many others before the historic 2003 decisions) following a long post-*Bakke* hiatus.[11] Since *Grutter* there have been numerous threats by the Center for Equal Opportunity to monitor any and every use of race-sensitive admission criteria.

Opponents of affirmative action argue that in a true meritocracy, ascribed characteristics, such as race or national origin, should not influence

[9] However, the implementation of percent plans in Texas and other states demonstrates that when exclusive weight is placed on class rank, all high schools comply with this request.

[10] According to a survey of admission officers, only 1 percent of institutions with moderate and low selectivity admissions (those who accept over 50 percent of the applicants) attribute "considerable importance" to race/ethnicity (NACAC 2006).

[11] *Regents of the University of California v. Bakke,* 438 U.S. 265 (1978).

educational opportunity. They believe the practice undermines the fundamental tenets of meritocracy by creating unfair competition (Glazer 1987; Sowell 2003; Thernstrom and Thernstrom 1997, 1999). Yet opposition to the use of race preferences is not merely ideological. Public perception about the value of test scores as admission criteria has fomented disapproval of affirmative action in college admissions, but so too has the rising demand for a relatively fixed number of slots at the most selective institutions. Our empirical analyses illustrate how the shifting meritocracy has aggravated the affirmative action debate by accentuating the tension between merit and diversity and increasing the admission boost required to diversify campuses.

DATA, METHODS, AND ANALYTICAL STRATEGY

Data Sets

We use two nationally representative cohorts of seniors who graduated from high school in 1982 and 1992. High School and Beyond (HS&B) surveyed 14,825 sophomores in 1980 and reinterviewed them in 1982. Respondents who did not graduate from high school (1,341), died (26), or identified as Native American or unknown race (516) were dropped, yielding an analytic sample of 12,942 graduates of the class of 1982. For the 1992 cohort of high school graduates, we use the National Education Longitudinal Survey (NELS) that began with a cohort of 8th graders surveyed in 1988 who were reinterviewed as high school sophomores and seniors. We obtained the analysis sample of 13,093 by deleting 1,586 seniors who did not graduate and 328 respondents whose race was either unknown or designated as Native American. To assess the temporal change we pool both data sets (creating a flag indicating the survey year [1992 = 1]), but we also report results from data-set-specific analyses. Before merging, we replaced the missing data in each data set with a multiple imputation (MI) technique and converted all variables into an identical form. Details on the MI procedure are provided in Section A of the Online Supplement on the *ASR* Web site: http://www2.asanet.org/journals/asr/2007/toc058.html.

The debate about affirmative action focuses on access to selective institutions, but relatively few students attend institutions classified as highly or most selective. This makes it difficult to track them with nationally representative data sets. Therefore, we also analyze the 1989 cohort of the College and Beyond (C&B) restricted-access database, which was compiled by the Andrew W. Mellon Foundation between 1995 and 1997 (Bowen and Bok 1998, Appendix A). The core of the C&B database are "institutional data files," which consist of individual records of all undergraduate students who enrolled in the fall of 1989 at one of 29 academically selective colleges and universities.[12] The institutional file draws information from students' applications and transcripts, including race, sex, SAT scores, college grade point average, major field of study, and graduation status. The final sample consists of 29,741 four-year students attending very, highly, or most selective institutions.

We also analyze data from the University of Texas at Austin (UT) to examine the impact on minorities' admission likelihood before and after the implementation of the top 10 percent law. We focus on UT-Austin for three reasons: it has the most selective admissions policy among Texas public institutions (ranked as highly selective in the Barron's classification); admissions officers considered race and ethnicity in admissions decisions prior to the 1996 *Hopwood* decision; and it has the highest demand for slots among public four-year institutions in the state (THECB 1998). We use the administrative data component of the Texas Higher Education Opportunity Project (THEOP) for the years 1990 to 2000 to examine admission and graduation likelihood. The data consist of individual student records from in-state applicants. In all, the administrative data files analyzed contain 148,076 applicants.

Variables

College destinations. We portray postsecondary destinations using a more detailed

[12] For most institutions, the C&B data files include entire entering cohorts. For some institutions, however, the data are derived from samples (Bowen and Bok 1998). In these cases, sample weights are equal to the inverse of the probability of being sampled. We use appropriate sample weights so that the results accurately represent the entering cohort at each institution.

approach than is commonly used in the literature. Most studies of college attendance simply consider whether or not students matriculated and fail to address the stratification that exists among postsecondary destinations. Furthermore, analyses of college destinations that ignore the selection regime governing enrollment produce biased estimates of race and ethnic differences because of underlying differences in the propensity to attend college. Therefore, for comparisons based on the national cohorts, we use a multiple response category with five outcomes: (1) no postsecondary education; (2) two-year, open-door colleges (those offering programs that require two or fewer years to complete, including community colleges); (3) four-year nonselective colleges; (4) four-year selective colleges (median SAT 900 to 1050); and (5) four-year more selective colleges (median SAT above 1050).

In the C&B data, which exclude nonselective institutions, the mean combined SAT score of the 1989 entering freshmen exceeded 1050 for all institutions. Because of the larger proportion of the NELS sample who attended a four-year institution, it is possible to further differentiate the selective institutions. Analyses of the upper-tier institutions based on NELS and C&B data disaggregate "more selective" institutions into three strata: very selective (median SAT 1050 to 1150); highly selective, such as UT-Austin (median SAT 1150 to 1250); and most selective (median SAT above 1250). In all three data sets, college ranking is based on the Barron's classification (Barron's 1982, 1992).[13] Table 1 provides definitions and descriptive statistics for this classification. We use the enrollment, rather than admission, data from all three data sets to characterize the shifting meritocracy. Section B of the Online Supplement on the *ASR* Web site discusses the decision to use enrollment versus admission data in greater detail.

COVARIATES. We model college destinations as a function of race and Hispanic origin, SAT scores,[14] class rank, family background (income and parental education), high school characteristics (public/private), geographic region, and sex. Table 1 provides detailed definitions and descriptive statistics for the variables analyzed from the four data sets. Both class rank and SAT scores are transformed to their percentile distribution to allow a direct comparison of their relative weight and temporal change. Even if the distributions of both measures differ across cohorts, a standard metric permits comparisons between measures both within and across periods. Interestingly, the correlation between test scores and class rank—.54 among the HS&B students and .58 among the NELS students—is not very high overall, but it is substantially lower among students attending the more selective institutions (.39 and .35, respectively).

ESTIMATION STRATEGY

Using a discrete choice model, we evaluate whether, how much, and for which demographic groups the terms of admission changed.

$$\Pr(Y_{t=k} = m \mid S = s_i,\ C = c_i,\ R = r_i,\ \underline{X} = x_i) = \frac{\exp(\alpha_m S_i + \lambda_m C_i + \delta_m R_i + \beta_m \underline{X}_i)}{\sum_{j=1}^{5} \exp(\alpha_j S_i + \lambda_j C_i + \delta_j R_i + \beta_j \underline{X}_i)} \quad (1)$$

Y is a stratified array of j college destinations arranged according to selectivity tier, where j = 1 indexes "no postsecondary education" and j = 5 denotes the most selective destination; m is a college destination. Because identification of the multinomial logit model requires constraining the coefficients of a reference category to zero, two-year institutions is the best substantive choice (Long 1997). As the least selective postsecondary destinations, two-year institutions are open to all high school seniors, rarely consider test scores in admission decisions, and are essentially color blind. As such, they serve as the ideal reference category.

[13] Each school receives a Barron's exclusive academic rating, which indicates relative academic competitiveness, from "Noncompetitive" to "Most Competitive." The Barron's classification ranks institutions by their "competitiveness," but we use the term "selective" because it is more intuitive. Barron's selectivity index is determined by several factors, including: the median SAT or median composite ACT entrance exam score; students' high school class rank; average grade GPA of enrolled students, and the percentage of applicants accepted. For more details see Barron's (1982, 1992).

[14] ACT scores were converted to their SAT equivalents before applying the imputation procedures.

Table 1. Descriptive Statistics for High School Graduates of the High School and Beyond (HS&B) and National Education Longitudinal Survey Samples (NELS), and for Students Attending College and Beyond (C&B) Institutions or UT-Austin

	Data:	HS&B	NELS	C&B	UT-Austin
	College Entry Cohort:	1982	1992	1989	1990 to 2002
Variable	Definition	Mean	Mean	Mean	Mean
College Destination					
No Postsecondary Education		37.0	25.4		
2-Year Open Door		30.2	35.0		
4-Year Nonselective		8.1	10.2		
4-Year Selective	median SAT 900–1050	18.6	16.2		
4-Year More Selective:	median SAT above 1050	6.1	13.2		
Very	median SAT 1050–1150	4.4	8.0	37.6	
Highly	median SAT 1150–1250	1.1	3.3	42.1	100
Most	median SAT 1250–1600	.8	1.8	20.3	
Grad6	6-year graduation (4-year students only)	56.1	58.2	87.5	69.9
White	White, not of Hispanic origin	.65	.68	.80	.64
Black	Black, not of Hispanic origin	.15	.11	.08	.05
Hispanic	Hispanic, regardless of race	.16	.13	.04	.17
Asian	Asian or Pacific Islander	.04	.08	.08	.14
Parents B.A.	At least one parent with a B.A. degree	.26	.34	.86	
Parental Income	In categories (HS&B:6; NELS:6; C&B:in $K)	3.40	3.45	51.54	
Class Rank	HS class rank (C&B & UT: in top 10 percent)	52.0 (28.00)	54.6 (28.00)	.56	.44
SAT[a]	SAT score (HS&B & NELS: all HS grads; C&B: students; UT: applicants)	826.5 (206.08)	813.2 (222.43)	1224.5 (156.85)	1137.5 (178.05)
Female	Female = 1, Male = 0	.52	.52	.50	
Public	If attended a public HS	.77	.82	.46	
South	If home region in South	.30	.33	.25	
Midwest	If home region in Midwest	.27	.26	.19	
West	If home region in West	.18	.19	.09	
N		12,942	13,093	29,741	148,076

Note: Standard deviations in parentheses.
[a] ACT scores were converted to their SAT equivalents before applying the imputation procedures.

We observe Y at *t* points in time T ranging from 1 to k. S represents the test scores of the *i*th individual; C denotes the *i*th individual's class rank; and α and λ denote the test score and class rank coefficients, respectively. R represents group membership (i.e., black, Hispanic, or Asian), and $\underline{X}$ is a vector of observed attributes that influence college destinations. The pooled data set includes a flag indicating the survey year (1992 = 1) and the product terms between this flag and the race, test scores, and class rank variables. Empirically, we test one set of hypotheses about the shifting meritocracy and another set about affirmative action.

Shifting Meritocracy Hypotheses: Rising demand for postsecondary education suggests three testable hypotheses with respect to the weight of test- and performance-based merit criteria and college destinations: (1) the magnitude of both test scores (α) and class rank (λ) increases monotonically with institutional selectively, implying that selective institutions rely on these merit criteria in selecting students more

than nonselective schools do; (2) test scores receive a higher weight than class rank in admission decisions, especially at selective institutions ($\alpha > \lambda$); and (3) the weight of test scores increased over time—in 1992 the reliance on test scores was higher than in 1982 ($\alpha_{82} < \alpha_{92}$).

Affirmative Action Hypotheses: The use of race-sensitive admissions implies that minority students receive a boost in admission compared to whites ($\delta > 0$), everything else being equal. We hypothesize that the magnitude of this advantage increases monotonically with institutional selectively, and that the admission boost received by minority students increased over time ($\delta_{92} > \delta_{82}$), as race-sensitive practices became more widespread among the most selective institutions. To assess whether the weight of merit criteria was uniform among demographic groups, we introduce two product-terms between minority status and test scores/class rank to Equation 1, $\phi S_i R_i$ and $\eta C_i R_i$, to determine whether minorities' advantage increases uniformly with test scores and class rank or whether their advantage is constant across the test scores/class rank distributions (the formal test is whether $\phi > 0$ or $\eta > 0$).

Finally, to appreciate the significance of the shifting meritocracy for the affirmative action debate, we simulate several counterfactuals about minority students' enrollment advantages at the more selective institutions by constraining the temporal changes in the weight of test- and performance-based merit criteria.

RESULTS

Table 2 reveals substantial change in the college destinations of the 1982 and 1992 cohorts of high school graduates. In 1992, about 25 percent of all high school graduates did not pursue any type of postsecondary education, compared with 37 percent of the 1982 cohort. That more students chose the two-year option in 1992 reflects the rapid expansion of community colleges during this period. At the other end of the college spectrum, the share of students enrolled in selective institutions declined slightly, while the relative numbers attending more selective institutions (comprised of very, highly, and most selective colleges) rose. These data support the trend of increasing competitiveness of college admissions and the rise in the number of selective institutions since the 1980s.

All demographic groups participated in these changes, but disparities in college destinations persist. For both cohorts, white and Asian students were more likely than blacks and Hispanics to pursue postsecondary education. Hispanic high school graduates benefited from the expansion of two-year colleges—where nearly half enrolled in 1992—up from about 31 percent in 1982. That black students were most

Table 2. College Destinations of 1982 and 1992 High School Graduates by Race/Ethnicity

College Destinations	Total	White	Black	Hispanic	Asian
1982					
No Postsecondary Education	37.0	34.3	47.2	51.0	16.2
2-Year Open Door	30.2	30.2	29.3	31.1	32.2
4-Year Nonselective	8.1	8.2	10.0	4.6	4.6
4-Year Selective	18.6	20.5	11.3	10.6	26.0
4-Year More selective	6.1	6.8	2.3	2.9	21.1
N	12,942	8,383	1,968	2,121	470
1992					
No Postsecondary Education	25.4	24.3	31.7	31.2	14.3
2-Year Open Door	35.0	33.8	32.6	44.6	40.2
4-Year Nonselective	10.2	9.5	18.8	6.5	7.0
4-Year Selective	16.2	18.0	10.2	10.6	15.1
4-Year More Selective	13.2	14.4	6.7	7.2	23.5
N	13,093	8,926	1,392	1,735	1,040

Sources: High School and Beyond (HS&B) and National Education Longitudinal Survey 1988 (NELS:88).

likely to attend nonselective four-year institutions in both periods partly reflects the large shares enrolled in Historically Black Colleges and Universities (HBCUs), where admissions are typically nonselective. HBCUs appeal to many black candidates, even those who are admissible to more selective institutions (Bennett and Xie 2003).

Minority representation at the more selective colleges reveals major disparities. For both cohorts, whites, but especially Asians, were more likely than blacks and Hispanics to enroll at selective institutions. The *relative* change in group representation at selective institutions, however, is larger for black and Hispanic students compared with whites and Asians, partly because the base share was lower. Representation of black students at more selective institutions tripled during the decade, compared with a doubling for whites. Asian representation increased only slightly because their 1982 enrollment share was already relatively high.

Increased minority enrollment at the more selective institutions partly reflects deliberate efforts to diversify their student bodies using race-sensitive criteria. But whether this was associated with a trade-off between merit and diversity is an empirical question. Table 3 characterizes both national cohorts based on the two merit measures of interest: test scores and class rank. For both measures we provide the raw and percentile means along with the percentage of students in the top and bottom decile. Inter-cohort changes in the distributions of SAT scores and class rank were minimal, but within-cohort group differences are considerable. In 1982, the percentile mean of white and Asian SAT scores was around 55, compared with 27 and 31 for black and Hispanic students, respectively. Moreover, 14 and 20 percent of whites and Asians were in the top decile of the SAT distribution, compared with only 2 and 3 percent, respectively, of black and Hispanic students. Almost one in three black and Hispanic college students placed in the lowest decile of the test-score distribution, compared with fewer than 10 percent of whites and Asians. Although minority students slightly improved their SAT rankings, test disparities persist through 1992. Group differences in class rank are smaller than those in test scores, especially in 1992, indicating more equal group distributions on this measure of merit.

Multivariate Analyses

Cross-sectional results. Table 4 reports odds ratios for the group dummies and the two merit criteria on the polytomous college destination outcome (two-year is the comparison group). To capture the net preferences of predominantly white institutions for black students, we exclude all HBCUs from the analyses.[15] In 1992, black and Hispanic high school graduates were more likely than whites to attend a two-year institution versus opting out of postsecondary education, but in 1982 this only applied to Hispanics. Not only are more selective institutions most likely to use race preferences to diversify their student bodies, but this practice increased over time. Specifically, in 1982 black and Hispanic students were, respectively, 2.8 and 1.3 times more likely than whites to enroll at the more selective institutions, but they were 4.1 and 1.5 times more likely to do so in 1992. For both cohorts the relative influence on enrollment of test- and performance-based merit indicators was similar across college destinations except for the more selective institutions, where the test-score weights are higher than those of class rank. Taken together, the results corroborate our hypotheses that the magnitude of the two effects corresponding to the use of race/ethnicity and merit criteria in admissions increases monotonically with institutional selectively.[16]

[15] Results based on all institutions show that blacks are more likely than whites to attend a nonselective school relative to a two-year institution, plausibly because of the HBCU effect. Because most HBCUs are classified as nonselective, once they are excluded from the analysis, blacks' overrepresentation at nonselective institutions disappears. This suggests that the former results for this destination merely capture the effect of HBCUs on blacks' attendance patterns. We therefore decided to exclude all HBCUs from the multivariate analysis because other groups do not compete for these options.

[16] As a sensitivity analysis we rotated the base category to obtain all possible contrasts. The results show that all the coefficients of interest (race/ethnicity and the two merit criteria) are significant in all contrasts. These results provide additional evidence to the monotonic nature of these effects.

Table 3. Academic Achievement Indicators of 1982 and 1992 High School Graduates

	1982					1992				
	All	White	Black	Hispanic	Asian	All	White	Black	Hispanic	Asian
SAT										
Mean	826.5	864.3	672.0	699.1	881.3	813.2	849.6	661.5	685.6	890.2
(SD)	(206.08)	(196.59)	(170.02)	(176.37)	(219.40)	(222.43)	(210.93)	(192.12)	(206.10)	(236.43)
Percentile Mean	49.7	55.2	27.3	31.2	56.4	50.4	55.2	31.0	33.9	58.3
Minority/White Ratio	—	—	*0.5*	*0.6*	*1.0*	—	—	*0.6*	*0.6*	*1.1*
Percent in Top Decile	11.6	14.0	1.8	2.6	20.1	9.8	11.5	1.5	3.0	18.7
Percent in Bottom Decile	11.4	6.8	30.2	27.1	6.8	9.6	5.9	23.8	23.0	4.6
Class Rank										
Mean	52.0	53.9	45.6	41.4	66.2	54.6	56.1	47.6	49.1	61.3
(SD)	(28.00)	(27.89)	(26.25)	(27.53)	(28.15)	(28.00)	(27.79)	(27.05)	(28.03)	(28.81)
Percentile Mean	48.9	50.8	42.3	38.2	63.1	51.0	52.4	43.8	45.3	57.4
Minority/White Ratio	—	—	*0.8*	*0.8*	*1.2*	—	—	*0.8*	*0.9*	*1.1*
Percent in Top Decile	9.5	10.6	4.5	4.2	22.4	10.1	10.5	6.5	7.7	16.9
Percent in Bottom Decile	11.0	9.8	13.2	20.5	5.9	9.5	8.5	13.4	13.6	6.0

Sources: High School and Beyond (HS&B) and National Education Longitudinal Survey 1988 (NELS:88).

Table 4. Determinants of College Destinations Multinomial Logistic Odds Ratios

	Base Category = Two-Year Institutions			
	No Postsecondary Education	Nonselective	Selective	More Selective
HS&B 1982 (N = 12,754)				
Black	.905	.877	1.428**	2.839**
Hispanic	.870*	.942	1.146	1.329
Asian	.669**	.851	1.640**	4.025**
SAT Percent	.992**	1.010**	1.017**	1.048**
Class Rank Percent	.990**	1.013**	1.017**	1.034**
Constant	1.078	–2.994	–1.933	–6.184
NELS 1992 (N = 12,861)				
Black	.787**	1.076	1.264	4.081**
Hispanic	.701**	.882	.945	1.548**
Asian	.547**	.880	1.174	2.104**
SAT Percent	.993**	1.014**	1.021**	1.061**
Class Rank Percent	.984**	1.013**	1.020**	1.028**
Constant	1.864	–2.826	–3.472	–7.584
Merged Data (N = 25,615)				
Black	.868	.909	1.427**	2.702**
Hispanic	.845*	.933	1.200*	1.300
Asian	.659**	.795	1.704**	3.936**
SAT Percent	.993**	1.011**	1.017**	1.048**
Class Rank Percent	.990**	1.013**	1.016**	1.032**
Year	.884	.901	.490**	1.094
SAT × Year	.999	1.002	1.003	1.011**
Rank × Year	.995**	1.001	1.004*	.998
Black × Year	.976	1.176	.838	1.467*
Hispanic × Year	.873	.983	.734*	1.143
Asian × Year	.875	1.165	.640*	.514**
Constant	1.217	–2.855	–2.067	–6.443

Notes: HBCUs (historically black colleges and universities) are excluded from the analysis. Models control for parental education, family income, type of high school, geographic region, and sex. Year: 1 = 1992; 0 = 1982. None of the 3-way interaction terms among groups, year, and the two merit indicators are statistically significant.
* $p < .05$; ** $p < .01$.

We also test whether the weights of the two merit-based criteria are uniform across groups in both periods. That none of the 2-way product terms between race and merit are statistically significant indicates that minority students' admissions advantage is uniform across the test score and class rank distributions.[17] We revisit this issue when assessing differences within the more selective schools using the C&B data. Our findings about the weight of test scores and the size of the advantage accorded to minority students at the more selective institutions may be an underestimation because the more selective category is heterogeneous in the national samples. Below, we examine variation in weights *within* this selectivity tier, after addressing whether the weights assigned to race and test scores increased over time.

TEMPORAL CHANGE. To formally test for temporal change in the weight of class rank and test scores, we use the pooled data, adding an index for survey year and compute product terms year × SAT, year × rank, and year × race (year: 1 = 1992). Results in the lower panel of Table 4

[17] Results are available from the authors. Our results corroborate those of Espenshade, Chung, and Walling (2004) and M. Long (2004), but are at variance with Blau and colleagues (2004) who find flatter SAT slopes for blacks' probability of college attendance.

confirm an upward shift in the valuation of test scores in determining enrollment at the more selective institutions. Moreover, the year × SAT product term reaches statistical significance only for the more selective destinations. Because we use a percentile measure of SAT scores, this temporal shift in the weight accorded test scores cannot be attributed to a secular rise in test scores between 1982 and 1992. A similar result does not obtain for class rank; its influence on enrollment in the more selective institutions remained constant over time, although this admission criterion also gained some power in determining access to selective institutions during the 1980s.

The year × race product terms formally test whether minority students' enrollment advantage at the more selective institutions increased. The positive and statistically significant point estimate for the year × black term for the more selective institutions indicates a higher enrollment advantage for them during the 1980s, but not for Hispanics.[18] Asians witnessed an erosion of their enrollment advantage over white students in access to the more selective institutions during the 1980s. None of the 3-way interaction terms among groups, year, and the two merit indicators attain statistical significance, which indicates uniform temporal changes in the weight of class rank and SAT scores for the four groups.

Figure 1 summarizes the temporal changes in the weights of test scores and class rank across the selectivity spectrum and portrays the edge minority students received over the same period. The two graphs in the top panel (Figure 1a) clearly depict the shifting meritocracy. Although SAT scores and class rank had a similar impact on enrollment at most college destinations for both cohorts, test-score weights exceed those for class rank at the more selective institutions, and this gap widened substantially over time. The bottom panel graphically displays the temporal increase in the admission bonus underrepresented minorities received at the more selective institutions.

[18] The point estimate for the year × Hispanic term is significant only at $p < .10$. Because Hispanic students are more likely than whites to attend two-year colleges, we reestimated this model with four-year nonselective institutions as the base category, but the product term fails to reach statistical significance in this specification as well.

DIFFERENCES AMONG TOP-TIER INSTITUTIONS. Because the controversy over the use of race-sensitive admission criteria largely revolves around the most selective institutions, we replicate some of the previous analyses using a more fine-grained selectivity classification that distinguishes among very, highly, and most selective institutions using the NELS 1992 and the C&B 1989 cohorts (sample size constraints preclude this fine-grained classification with HS&B data). Among students enrolled in more selective institutions in 1992, 8 percent of the cohort attended *very* selective schools, 3 percent attended *highly* selective institutions, and fewer than two percent attended the *most* selective institutions (see Table 6).

Table 5 reproduces the analysis reported in Table 4 for the 1992 college cohort using the full spectrum of college destinations. In addition to corroborating the increased weight placed on race/ethnicity and test scores in admission decisions by the more selective institutions, this specification uncovers several findings concealed by the relatively coarse selectivity strata used in Table 4. One is the monotonic rise in the magnitudes of the merit coefficients *among* more selective institutions. Although the magnitudes of both the class rank and test score coefficients rise with institutional selectivity, the slope of class rank is flatter than that of test scores. Selective institutions (900 to 1050 median SAT) place approximately equal weight on class rank and test scores, but very selective schools value test scores more than class rank; moreover, the gap in their relative weight rises with institutional selectivity. Clearly, admissions officers at the most selective institutions use *both* merit criteria, but they accord greater weight to test scores compared with class rank.

As hypothesized, this shifting meritocracy is accompanied by a monotonic rise in the magnitudes of the race coefficients, which confirms that affirmative action is largely used by the most selective institutions and to a lesser extent by the highly selective schools. This is especially so for blacks, who are 12 times as likely as comparable white students to enroll at the most selective institutions; Hispanics are 3.8 times as likely to do so. Because only a tiny share of the 1992 cohort

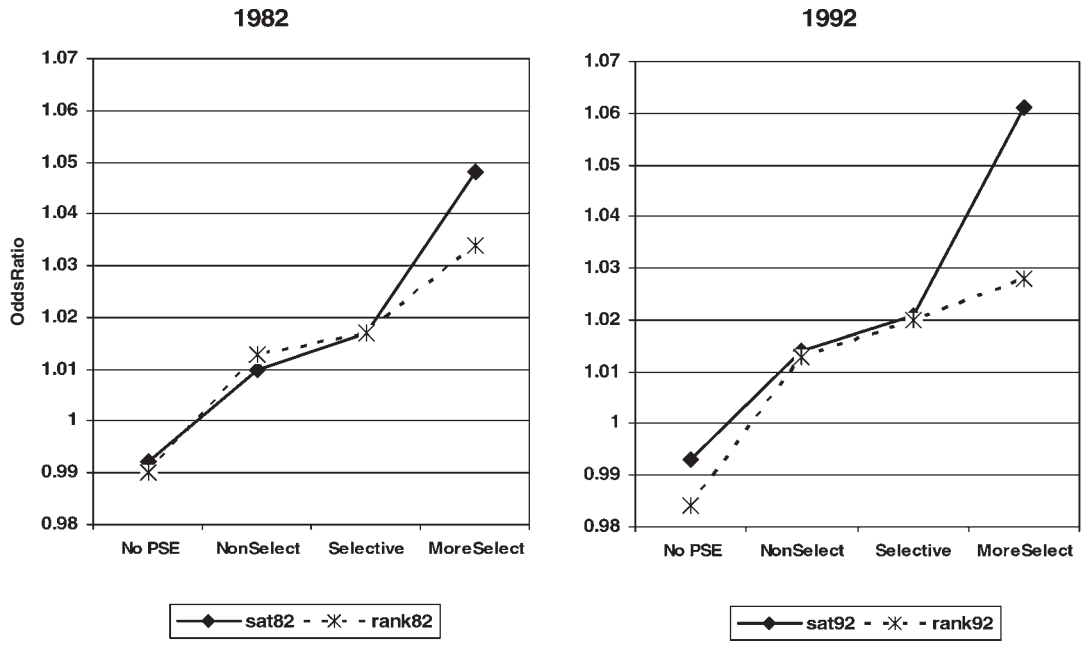

Figure 1a. The Weight of SAT Scores and Class Rank, Odds Ratios

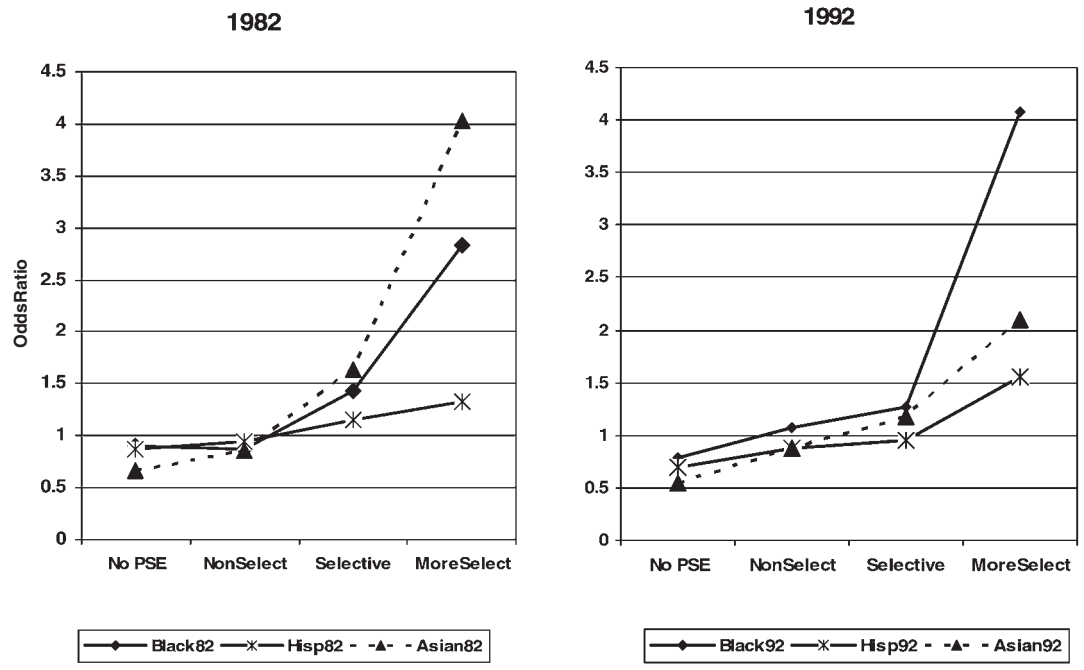

Figure 1b. Minorities' Enrollment Advantage, Odds Ratios

Note: Base category = two-year institutions. No PSE = no postsecondary education.

(1.8 percent) attends institutions where race-sensitive admissions are sizeable (see Table 6), public discontent with affirmative action does not stem from the *prevalence* of racial and ethnic preferential admission practices. More likely, the discontent reflects fierce and growing competition for a limited number of seats at elite schools—in short, the "college squeeze."

Using this fine-grained classification, we focus on the more selective institutions using the NELS and C&B surveys. A comparison of the NELS with the C&B respondents reveals the limitations of nationally representative data to

Table 5. Determinants of College Destinations in 1992, Multinomial Logistic Odds Ratios

	Base Category = Two-Year Institutions					
				More Selective		
	No Postsecondary Education	Nonselective	Selective	Very Selective	Highly Selective	Most Selective
Black	.787	1.079*	1.275**	3.290*	5.439*	11.964**
Hispanic	.700**	.885**	.957**	1.281*	2.000**	3.867*
Asian	.547**	.886	1.195	1.706**	2.827**	2.974**
SAT Percent	.993	1.014**	1.022**	1.047**	1.088**	1.194**
Class Rank Percent	.984**	1.013**	1.020**	1.026**	1.029**	1.038**
Constant	1.864	–2.836	–3.513	–6.768	–11.288	–21.768
N	12,861					

Source: National Education Longitudinal Survey 1988.
Note: HBCUs (historically black colleges and universities) are excluded from the analysis. Models control for parental education, family income, type of high school, geographic region, and sex.
* $p < .05$; ** $p < .01$.

Table 6. Academic Achievement Indicators of 1992 and 1989 High School Graduates Enrolled in More Selective Institutions by Selectivity Tier

	1992			1989		
Selectivity Tiers	Very	Highly	Most	Very	Highly	Most
Tier Median SAT[a]	1050–1150	1150–1250	1250–1600	1050–1150	1150–1250	1250–1600
Percent of More Selective Tier	61.0	25.1	13.9	37.6	42.1	20.3
Percent of Total Sample	8.0	3.3	1.8			
Student Characteristics						
Percent White	81.6	79.6	77.4	85.5	80.3	75.4
Percent Black	6.8	4.5	4.7	7.2	6.5	7.3
Percent Hispanic	5.2	6.3	4.8	2.4	4.1	5.6
Percent Asian	6.5	9.6	13.1	4.9	9.1	11.8
SAT						
Mean	1023.8	1112.8	1226.3	1131.5	1232.1	1333.1
(SD)	(175.5)	(156.6)	(136.5)	(153.0)	(128.2)	(121.9)
Percent Students with SAT Scores						
below 1050	53.4	28.7	9.5	26.1	7.8	2.4
1050–1150	21.3	28.2	20.3	22.3	15.0	5.5
1150–1250	13.8	26.1	18.1	22.7	26.7	12.8
1250–1600	11.5	16.9	52.1	29.0	50.5	79.3
Class Rank						
Percent in Top Decile	24.6	38.3	54.3	49.1	54.2	68.8
N	1,829			29,741		

Source: National Education Longitudinal Survey 1988 and College and Beyond 1989 cohort.
[a] Based on Barron's for entering freshmen.

capture variation among students enrolled at the top-tier schools. The 1989 C&B cohort permits in-depth analyses of students enrolled in more selective institutions. That the C&B cohort is not a random sample of more selective universities is a limitation, but one partly overcome through comparisons with the national data. Specifically, the C&B sample is probably not representative of Hispanic students because the institutional sample excludes the premier

public institutions in California and Texas, the two states with the largest Hispanic populations.

It is noteworthy that all but three C&B institutions are private. The three public institutions are classified as very selective (the lowest selectivity tier among the C&B schools). This is not surprising given that the vast majority of institutions classified as most selective are private. Of the 64 colleges and universities classified by Barron's as "most selective" in 2003, only seven are public (four military academies, two University of California institutions [Berkeley and UCLA], and University of Virginia).[19] Comparing the institutional characteristics of the most selective, public nonmilitary institutions to their private counterparts suggests that the California and Virginia flagships share several characteristics with private institutions.[20] Beyond institutional differences in cohort size and student/faculty ratios, the main differences are financial. These financial differences are reflected in the size of the endowment, the availability of financial aid, and dependence on tuition revenues relative to state funding.

As is evident from the similarity of the academic profiles of the entering classes, there are no significant differences between public and private institutions' ratings of the top factors considered in the admission process—namely grades in AP courses, test scores, and high school GPA (NACAC 2006). In other words, private and public selective institutions both rely on test scores in admission decisions (Clarke and Shore 2001). Historically, the emphasis on test scores stems from the admission practices of private institutions seeking to recruit the brightest and richest students (Duffy and Goldberg 1998). Owing to the intensification of the college squeeze and growing competition for top students, however, public institutions with selective admissions also have increased their reliance on test scores. The burgeoning college ranking and test preparation industries have contributed to the growing emphasis on test scores.[21] The fact that none of the California or Virginia public flagships were classified as most selective in 1992 or 1982, but all were so ranked by 2003, further illustrates the rising selectivity of public institutions.

Table 6 characterizes students attending very, highly, and most selective institutions based on the NELS and C&B data. Despite concerted efforts to diversify selective college campuses through the use of race-sensitive admission criteria, the data in Table 6 show that student bodies at the top-tier institutions are predominantly white. Within tiers, however, the ethnoracial composition is quite similar across samples. Over half of the NELS cohort attending the most selective schools reported test scores above 1250, compared with almost 80 percent of comparably enrolled C&B students. Just over half of the NELS respondents who attended the most selective institutions graduated in the top decile of their high school class, compared with almost 70 percent of similarly enrolled C&B students.

We estimate the likelihood of attending the most selective relative to very or highly selective institutions, and for comparability between samples, we restrict the NELS sample to students attending at least a very selective institution. We replace the percentile measure of class rank with a dummy variable indicating whether students were at the top decile of their class rank. This measure better reflects the censored variation of class rank at the most elite institutions (see Table 6) and also mimics the threshold used in the Texas 10 percent plan. To maximize comparability between the merit measures, we also replace the percentile measures of test scores with a dummy designating top decile. Logistic odds ratios in Table 7 (Models 1 and 3) show that the main effects of both indicators are similar across data sets, indicating that

[19] Yet, because public institutions typically have large enrollment cohorts, we find that in both the HS&B and the NELS data sets about 18 percent of the students attending a most selective institution enrolled at a public institution.

[20] These similar characteristics include: cost of attendance, percent of first-year students with financial need, percent of international students, average age of students, acceptance rate, SAT bounds, first-year retention, six-year graduation rate, and percent minority faculty. Data are from Barron's *Profile of American Colleges and Universities* (2003).

[21] In a recent *New York Times* article (Lewin 2006) that documents the rising selectivity of public institutions, J. Bernard Machen, president of the University of Florida, a public institution, said, "We need a top-10 university, so our kids can get the same education they would get at Harvard or Yale."

Table 7. Odds of Attending a Most Selective Institution in 1992 and 1989

	Base Category = Very and Highly Selective			
	1992: Most Selective		1989: Most Selective	
	Model 1	Model 2	Model 3	Model 4
Black	2.078*	2.193	1.962**	1.560**
Hispanic	2.310**	2.503	1.709**	1.352*
Asian	1.620**	.661	1.174**	.869
SAT: Top 10 Percent	4.950**	4.773**	5.400**	5.312**
Rank: Top 10 Percent	2.490**	2.333**	2.607**	2.353**
Black × SAT10		.744		.967
Hispanic × SAT10		.572		.833
Asian × SAT10		2.442		1.197
Black × Rank10		.992		1.589**
Hispanic × Rank10		1.494		1.462**
Asian × Rank10		1.232		1.446**
N	1,829	1,829	29,741	29,741

Source: National Education Longitudinal Survey 1988 and College and Beyond 1989 cohort.
Note: Logistic Regression Models control for parental education, family income, type of high school, geographic region, and sex.
* $p < .05$; ** $p < .01$.

admissions officers weigh test scores more heavily than class rank.[22]

With confidence in the robustness of the main effects, we direct our attention to the multiplicative model based on the C&B data (Model 4). Consistent with empirical evidence showing that grades are better predictors of college success, we find that elite institutions pay special attention to minority students' high school academic performance. All product terms between race and class rank are positive and highly significant, while product terms with test scores are statistically trivial.[23] Substantively, these results indicate that a large share of the advantage granted to minority students at the most selective institutions stems from the special weight institutions place on their class rank.

In light of the persisting opposition to affirmative action based on test score disparities, these findings raises several questions. Specifically, why do these elite institutions pay special attention to minority students' class rank while placing less weight on this merit criterion for white applicants? And why is the group-specific impact of class rank observed only for the most selective private institutions? We think the answers partly reflect differences in admission practices. Private-college admissions are more "holistic," on average, and public-college admissions more formulaic because of differences in the volume of applications (Clarke and Shore 2001; NACAC 2006). Private colleges, conducting a comprehensive full-file review, assign a higher value to factors such as the essay or writing sample, interview, counselor recommendation, teacher recommendation, and work or extracurricular activities. Selective public institutions with large applicant pools, but proportionately smaller admission staffs than elite private institutions, often rely on objective formulas that draw heavily on students' high school achievements and test scores (NACAC 2006).

Full-file reviews permit a comprehensive, subjective evaluation of students' academic

[22] Since the C&B most selective schools are all private, we also fit the NELS models only for students attending private institutions. Results (not shown) yield point estimates for the merit criteria that are very similar to the C&B results. The minority advantage in the restricted sample is even larger, but these results may be sensitive to the small sample size of minority students attending a most-selective private institution in the NELS data.

[23] Although none of the product terms based on NELS (Model 2) are statistically significant—probably due to small sample sizes that cannot support a multiplicative model—the pattern of results largely corroborates those based on C&B.

achievements and background characteristics (Clarke and Shore 2001). Admission officers observe students' performance traits, such as work habits, attitudes, and motivation to succeed academically, through letters of recommendation, interviews, and information about obstacles overcome, especially for minority students. Because these attributes are unobserved in our specification, their influence is captured by class rank, the performance-based measure of academic merit, and the error term. The nonmechanical admission process at these private schools allows them to value minorities' characteristics that compensate for lower test scores. Further research is required to directly understand how differences between admission practices shape the joint consideration of test scores and race/ethnicity.

AFFIRMATIVE ACTION IN A SHIFTING MERITOCRACY

Plausibly, the shift in admission practices of the more selective institutions toward placing greater weight on test scores has direct implications for the representation of minority students at these schools. Because the gap in test scores is larger than that in class rank, and because this disparity continues to rise, the minority disadvantage will persist and even widen if the college meritocracy continues its shift toward greater emphasis on test-based, relative to performance-based, measures of achievement. A higher education meritocracy so defined requires affirmative action to achieve racial diversity.

To illustrate the affirmative action consequences of the shifting meritocracy, we simulate several counterfactuals about minority students' enrollment advantages at the more selective institutions (combining highly, very, and most selective) if the weights of performance- and test-based achievement criteria were different in 1992. In other words we simulate the required minority advantage at the more selective institutions to maintain the same racial composition if the educational meritocracy were not shifting. The scenarios are: (a) there was no temporal shift in the weight of test scores and class rank between 1982 and 1992 ($\alpha_{92} = \alpha_{82}$; $\lambda_{92} = \lambda_{82}$, where α and λ denote the test score and class rank coefficients, respectively); (b) weights accorded to test scores and class ranks were equalized in 1992 ($\alpha_{92} = \lambda_{92}$); and (c) test scores or class rank were not considered in 1992 ($\alpha_{92} = 0$ *or* $\lambda_{92} = 0$). We simulate these scenarios by constraining the temporal changes in the weight of test- and performance-based merit criteria and estimating minority students' advantage while keeping the same racial and ethnic composition.

Several other studies put forward counterfactuals concerning affirmative action, including Bowen and Bok (1998), Espenshade and Chung (2005), and Carnevale and Rose (2004). Our simulations, however, differ in several important ways. First, while all other analyses conduct cross-sectional simulations, ours are longitudinal, linking *changes* in the weighting of merit criteria to the increase in minorities' admission advantages. Second, these studies evaluate the admission advantage granted to underrepresented minorities based on SAT gaps with whites, which, by default, reinforces beliefs about test scores as the most meaningful measure of merit. We broaden the scope of assessment by examining both class rank and test scores. Third, our simulations are derived using probabilistic estimates that statistically allow all determinants to evolve as they actually did, except for the components of merit, to achieve the observed racial/ethnic composition of the enrollment cohorts at each point in time. Failure to fix the enrollment cohorts produces implausible estimates, in which the number of students exceeds the total enrollment, as in Carnevale and Rose (2004).

Table 8 reports results from our simulations based on NELS. The first column shows the actual minority advantage at the more selective institutions before imposing any constraints (results from Table 4, column 4). Constraining the point estimates of both test scores and class rank in 1992 to equal those of 1982 (i.e., no temporal change in weights) accords a smaller advantage to minority students to achieve the same level of racial diversity among the students attending the more selective schools (Scenario A). This advantage for blacks and Hispanics is slightly smaller if the weight accorded to test scores in 1992 is constrained to equal that of class rank in 1992 (Scenario B), but not for Asians. Because of the substantial group differences in the distribution of SAT scores (see Table 2), discarding the SAT altogether in 1992 dramatically reduces the necessary minority

Table 8. Simulation of 1992 Minority Advantage at More Selective Institutions, Multinomial Logistic Odds Ratios

		Scenario			
		(A)	(B)	(C1)	(C2)
	Actual Weights (Table 4)	$S_{92} = S_{82}$; $C_{92} = C_{82}$ no temporal shift in the weight of test scores and class rank between 1982 and 1992	$S_{92} = C_{92}$ weights accorded to test scores and class rank were equalized in 1992	$S_{92} = 0$ test scores were not considered in 1992	$C_{92} = 0$ class rank was not considered in 1992
Black	4.08	3.56	3.45	1.86	4.06
Hispanic	1.55	1.41	1.35	.87 (ns)	1.66
Asian	2.10	2.11	2.12	2.19	2.13

Notes: All point estimates are statistically significant, unless otherwise noted. S = standardized test scores; C = class rank.

students' advantage to produce the same racial and ethnic composition (Scenario C1). This suggests that the need for affirmative action diminishes when test scores are not considered in admission. Alternatively, disregarding students' class rank in 1992 leaves the required minority advantage unchanged (Scenario C2). Together, these simulations reveal the extent to which race preferences are produced by the greater emphasis placed on test scores.

Although these counterfactuals are limited in their capacity to simulate real world changes, they convey succinctly the affirmative action consequences of the shifting meritocracy toward greater reliance on test scores, almost rendering them sufficient for admissibility. Whether by design or default, this shift in the relative weight of test- and performance-based achievement criteria has made it difficult for institutions to achieve diversity without giving minorities a boost through race-sensitive preferences. Fortunately, we can examine data from a real world "experiment" because several states have adopted "percent plans" in response to judicial or legislative bans on race preferences in college admissions.

In particular, the Texas top 10 percent law stipulates that public institutions must ignore SAT scores for applicants who graduate in the top decile of their senior class (Walker and Lavergne 2001), which is analogous to our Scenario C1. Moreover, from 1997 to 2003 (when the Supreme Court ruled that narrowly tailored consideration of race is permissible to achieve campus diversity) institutions could not consider a student's race for admission purposes. SAT scores are considered only for students who do not graduate in the top decile of their class. Although the top 10 percent law guarantees admission *de jure* for top 10 percent graduates, they were admitted *de facto* before 1998, when the law went into effect. Because the Texas percent plan prohibits the use of race in admission decisions, this regime presents a harsher situation for minorities who do not achieve top 10 percent status than Scenario C1, which allows for race preferences.

We assess the consequences of the Texas top 10 percent law on the likelihood of admission of underrepresented minority applicants using administrative data from UT-Austin, the most selective of Texas's public postsecondary institutions. Specifically, we estimate changes in admission and graduation probabilities between 1990 and 2002, before and after the percent plan went into effect in 1998. Because Scenario C1 demonstrates that a small admission advantage for minority students is still required to maintain institutional diversity, we hypothesize that the ban on race-sensitive admissions will trigger an initial decline in minority students' admission probability. However, gradual recovery should follow for several reasons: (1) rising awareness and better adaptation of high school graduates to the change in admission rules; (2) a temporary increase in the number of freshman slots at UT-Austin (from 2000 to 2002) that eased the college squeeze (Faulkner 2000, 2002); and (3) vigorous recruitment efforts by UT-Austin at high schools with low college-going traditions (Walker and Lavergne 2001). To capture these individual and institutional adjustments, we divide the administrative data into three time periods: affirmative action (from

1990 to 1996) and two phases of the percent plan, 1998 to 1999 and 2000 to 2002. We exclude 1997 from the analysis because it was a transition period—the ban on affirmative action was already in effect, but the top 10 percent law had not been implemented.

Panel A in Table 9 reports group-specific logistic odds ratios for fall regular admissions at UT-Austin. The results show that in the first two years the percentage plan was in effect (1998 to 1999), the likelihood of admission declined for all groups except Asians. This drop was due to plummeting admission probabilities for non-top 10 percent students and a rise in the number of applicants. Moreover, because formerly admissible underrepresented minority students (URM) were more likely to graduate in the second decile of the class rank distribution, in the absence of affirmative action, the decline was more acute for black and Hispanic than for white applicants (respective odds ratios are .626, .561, and .932). After 1999, minority students' admission probability rebounded, reaching the pre-1996 level, when race-sensitive admissions were last used. These results, based on a natural experiment, reaffirm our simulations based on national data, which illustrate that ignoring SAT scores in admission decisions requires smaller admission boosts for minority students.

The Texas experiment demonstrates that by ignoring SAT scores, elite institutions can broaden access to selective postsecondary institutions comparable to what an affirmative-action admission regime achieves. Generalizing to the entire nation from the Texas experience, however, requires caution because of the state's large and residentially segregated minority population. Institutions that draw from national pools cannot replicate this condition. Still, this evidence calls into question the wisdom of the growing emphasis on test scores in college admission decisions relative to the costs of restricting educational opportunities for two fast-growing segments of the college-age population.

Of course, there remains a concern that ignoring SAT scores will lower academic quality and graduation likelihood.[24] Our calculations based on the national data sets suggest that, despite the upward drift in the influence of SAT scores on enrollment, the six-year graduation rate for students attending more selective schools fell over time. Moreover, consistent with other studies, in both years class rank remains a stronger predictor of six-year graduation compared to SAT scores.[25] The UT-Austin data also reinforce our claims that SAT scores are overrated measures of merit because the pre- and post-1996 cohorts have academically equal performances.

Panel B in Table 9 shows that the likelihood of graduation actually rose under the new admission regime, although the increase is only statistically significant for blacks. The increased graduation likelihood is particularly evident for top ten percent enrollees, for whom SAT scores were not considered after 1996. These findings corroborate institutional reports that the first-year academic performance (GPAs) of top 10 percent graduates exceeded that of students not in the top decile of their high school class (UT-Austin 2005, table 6). In fact, top 10 percent admits routinely outperform students with lower class rank but with test scores 200 to 300 points higher (Faulkner 2000, 2002; Walker and Lavergne 2001). Thus, findings from other studies about the lower predictive validity of test scores, and from our analysis of national surveys and administrative data from UT-Austin, all accede that ignoring SAT scores does not have deleterious consequences for timely graduation likelihood.

CONCLUSIONS

Higher education is expected to serve democratic societies and promote social mobility. In the last century, the postsecondary system in the United States made huge advances toward the twin goals of promoting excellence and equality of opportunity. At the turn of the twentieth century only about 2 percent of the college-age population attended college. Today the United States is among the leading nations in the world in the percentage of citizens (36 per-

[24] In fact, critics of the Texas top 10 percent law note the decline in average scores of automatically admitted students and use this to argue for declining student quality.

[25] Results are not reported here but are available upon request. Similar results were obtained when simultaneously modeling enrollment and graduation.

Table 9a. Fall Admission Odds Ratios at UT-Austin 1990–2002, by Group

	URM (1)	Black (2)	Hispanic (3)	Asian (4)	White (5)
Before (1990 to 1996)	reference				
After (1998 to 1999)	.575**	.626**	.561**	1.062	.932**
	(.018)	(.040)	(.021)	(.046)	(.018)
After (2000 to 2002)	.961	1.097	.922*	1.801**	1.267**
	(.029)	(.066)	(.032)	(.077)	(.024)
N	32,210	7,311	24,899	21,153	94,713

Table 9b. Graduation Odds Ratios Conditional on Enrollment at UT-Austin 1990–1999, by Group

All Enrollees	URM (6)	Black (7)	Hispanic (8)	Asian (9)	White (10)
Before (1990 to 1996)	reference				
After (1998–1999)	1.137**	1.463**	1.066	1.043	1.003
	(.055)	(.158)	(.057)	(.058)	(.028)
N	11,078	2,253	8,825	8,753	37,593

Top Ten Percent Enrollees	URM (11)	Black (12)	Hispanic (13)	Asian (14)	White (15)
Before (1990 to 1996)	reference				
After (1998 to 1999)	1.206*	1.500*	1.150	1.233*	1.102
	(.092)	(.273)	(.097)	(.119)	(.058)
N	4,657	805	3,852	4,412	14,720

Notes: Fall regular admission, not including provisional admission. URM = Underrepresented Minorities (blacks + Hispanics). We exclude 1997 because it is a transition period—affirmative action was not practiced but the top 10 percent law was still not implemented. Standard errors in parentheses
* $p < .05$; ** $p < .01$.

cent) who are college graduates (NCES 2004). Other indicators, like the number of Nobel Prize winners, support the worldwide superiority of the United States' postsecondary system (Bowen, Kurzweil, and Tobin 2005). These advances were made possible by opening the gates of opportunity and allowing talent to rise, regardless of social background. The use of standardized tests facilitated the search for talent in the past, but today the fierce competition for slots at the most selective institutions threatens to undermine progress toward broadening educational opportunity (Karabel 2005). In the words of Delbanco (2005): "The struggle to get into America's leading colleges is, of course, the dark side of a bright historical development."

In this article we consider the impact of changes in the relative weighting of two merit criteria in college admissions for equalizing educational opportunity and increasing diversity. We document the shifting meritocracy—over time institutions have relied more heavily on standardized test scores to screen applicants. This shift occurred despite the mounting evidence that test scores have low predictive validity for future academic success, particularly when compared with performance-based measures like grades or class rank (Bridgeman et al. 2000; Camara and Echternacht 2000; Crouse and Trusheim 1988; Geiser and Studley 2002; Rothstein 2004; Stricker et al. 1991).

Questioning the growing reliance on test scores in admission decisions is important because the definition of merit that prevails in a given society generally expresses the interests of its dominant groups (Karabel 2005). The emphasis on test scores in college admissions notably benefits those with more resources and the power to influence how merit is defined, while disadvantaging others. Our analyses demonstrate that the emergence of a test-score meritocracy amid pervasive test-score gaps required selective institutions to give underrepresented minorities an admission boost to achieve campus diversity. The seemingly inevitable tension between merit

and diversity exists only when merit is narrowly defined by SAT scores.[26] Our simulations and the Texas natural experiment show that defining merit using performance-based criteria, rather than test scores, is more compatible with institutional diversity.

The increasing reliance on standardized test scores in college admissions is most salient at the most selective institutions. Our literature review suggests that there are two main factors underlying this shift. First is the increasing competition for every slot in the more selective institutions, as growing numbers of prospective students submit multiple applications. The intensifying college squeeze demanded a metric of merit to identify the "aristocracy of talent," and test scores assumed this role. Second, selective institutions' attempts to climb the pecking order in various college ranking systems, such as the *U.S. News and World Report* and Barron's, tipped the weights placed on student test scores. This change began with private institutions, for which placement in the ranking hierarchy is important to attract the best students who can afford the soaring tuition costs, and public institutions seeking to maintain their rank followed suit.

Because the college squeeze is expected to intensify—the number of applications will continue to rise faster than openings at most colleges through about 2010 (College Board 2006)—researchers and policy makers should think of ways to recover the philosophy of equal opportunity that was derailed by the myth that test scores are the premier measure of merit. Possible suggestions include improving the quality of elementary and secondary education for disadvantaged students or closing racial and socioeconomic gaps in test scores. It takes many years for these strategies to achieve their goals. Our results, however, suggest a course of action that can be taken immediately by selective institutions of higher education.

First, detachment from the college-ranking business can have an immediate liberating effect on selective institutions' admission practices. Colin Diver (2005:137), president of Reed College, who is not cooperating with the ranking system, stated these benefits succinctly:

> By far the most important consequence of sitting out the rankings game, however, is the freedom to pursue our own educational philosophy, not that of some newsmagazine. Consider, for example, the relative importance of standardized tests. The SAT or ACT scores of entering freshmen make up half of the important "student selectivity" score in the *U.S. News* formula. Although we at Reed find SAT and ACT scores useful, they receive a good deal less weight in our admissions process. We have found that high school performance (which we measure by a complex formula that weighs GPA, class rank, quality and difficulty of courses, quality of the high school, counselor evaluation, and so forth) is a much better predictor of performance at Reed. Likewise, we have found that the quality of a student's application essay and other "soft variables," such as character, involvement, and intellectual curiosity, are just as important as the "hard variables" that provide the sole basis for the *U.S. News* rankings. We are free to admit the students we think will thrive at Reed and contribute to its intellectual atmosphere, rather than those we think will elevate our standing on *U.S. News's* list.

Diver goes on to argue that attempts to improve one's position in these rankings undermine institutional diversity, reinforce a view of higher education as strictly instrumental to extrinsic goals, and create powerful incentives to manipulate data and distort institutional behavior for the sole purpose of inflating one's score (Diver 2005).

Second, when making admission decisions, admissions officers should constantly remind themselves that test scores are unevenly distributed across groups and are imperfect predictors of student success. Even The College Board (2002:9) recommends that institutions "use SAT scores in conjunction with other indicators, such as the secondary school records (grades and courses), interviews, personal statements, writing samples, portfolios, recommendations, etc., in evaluating the applicant's admissibility at a particular institution." Plausibly, a full-file review, where test scores are considered but interpreted using the applicant's background information, better serves the ideal of equality of opportunity since noncognitive behaviors are difficult to ascertain in a formulaic admission process. This is, no doubt, a costly process, but its value should

[26] Using the SAT II subject tests, which focus mainly in measuring knowledge and skills in a particular subject or discipline, are unlikely to equalize opportunity more than the SAT I tests because of school-based variation in academic preparation of students.

be considered in light of the societal quest for both excellence and equity.

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