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Seeking every advantage: the phenomenon of taking both the SAT and ACT

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Abstract

Although the SAT has traditionally been the standardized test of choice for Texas students, nearly a third of the college-bound population in 1998 opted to take the ACT in addition to the SAT. Because most universities now accept both the SAT and the ACT, many testing experts believe taking both exams is a growing trend due to increased pressure students feel to obtain admission to selective colleges and universities (Cavanagh, 2003). Logit results using data from the Texas Schools Microdata Panel for over 98,000 students taking a college entrance exam indicate that Hispanic, Asian and male students are all less likely to take both the SAT and ACT, while first generation college students are more likely to take both exams. Separate models based upon likelihood of admission reveal that students with marginal grades and test scores are more likely to take both tests than high and low-performing students.

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1. Introduction

Deciding to take the SAT over the ACT used to be a simple matter of geography. Most colleges and universities on the east and west coasts required the SAT, while most colleges and universities in the Midwest required the ACT.[1] Today, most postsecondary institutions accept either exam, creating opportunities for students to choose which college entrance exam to take. College enrollments are swelling across the country and applicants to selective schools find themselves competing for slots that simply do not exist. For example, the University of Pennsylvania received 19,000 applications for only 2350 spaces in 2000, and The University of Miami received 14,700 applications for just 1890 places in the freshman class (Shea & Marcus, 2001). Students are seeking every advantage possible and that includes choosing the admissions exam that best showcases their abilities. Numerous Internet sites coach students on the differences between the SAT and ACT or encourage them to take both exams and pick their best score. Registration for both the SAT and ACT has surged in the past academic year, and many testing experts attribute the increase to the students signing up for both exams in hopes that one exam will yield a higher score (Cavanagh, 2003).

This study examines the characteristics of college-bound Texas high school graduates in 1998 who decide to take both the SAT and ACT. To my knowledge, this is the only study to examine the decision to take both college entrance exams instead of specializing in just

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[1] The headquarters of Education Testing Service (ETS), the parent organization that oversees the SAT are in Princeton. The first branch office was established in Berkeley in 1947. ACT, Inc., is headquartered in Iowa City (Lemann, 1999).

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one. Although Toutkoushian (2001) studies where college-bound students send their scores, and Clotfelter and Vigdor (2001) examine the phenomenon of taking the SAT multiple times, the economics literature is silent on the issue of taking both the SAT and ACT.

Data are from the Texas Schools Microdata Panel (TSMP), housed at the University of Texas at Dallas and include student SAT and ACT scores from 1991–1999, and high school performance measures and family background information for test-takers from 1998–1999. Fig. 1 shows the percentages of Texas students choosing to take the SAT, the ACT or both exams from 1991–1999. The fraction of students taking only the SAT is the same in 1999 as it was in 1991, while the percentage of students taking only the ACT declined by 5 percentage points. In contrast, the percentage of students choosing to take both the SAT and ACT rose from 26 to 30 percent.

Using logistic regression, I estimate the probability that students taking a college entrance exam and graduating high school in 1998 will choose to take both exams. Empirical results indicate that Asian, Hispanic and male students are less likely to take both the SAT and ACT. If the phenomenon of taking both exams is related to increased pressure on students to gain admission into the most selective colleges and universities (Cavanagh, 2003), either these groups of students are immune to that pressure or decreasing their chance of competing for the small number of slots available at selective institutions. Separate models based upon grades and test scores reveal marginal students are more likely to take both exams than either high performing students or low performing students. Furthermore, being a first generation college student is a positive and significant predictor of taking both exams for all three groups of students.

This paper proceeds as follows. Section 2 presents an empirical model of exam choice. Section 3 presents the empirical results from logistic regressions predicting the probability a student will choose to take both exams. Section 4 presents concluding remarks.

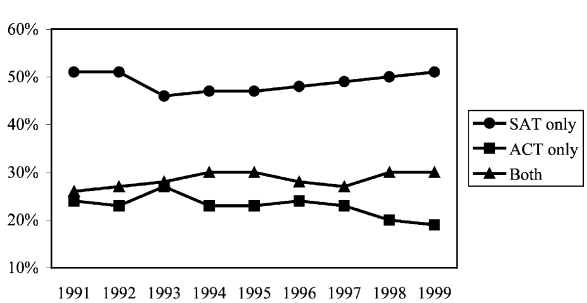

Fig. 1. Percentages of Texas students taking a college entrance exam: 1991–1999

2. Modeling exam choice

Despite recent controversy over the use of standardized tests in college admissions, only 391 colleges and universities, mostly less selective institutions, deemphasize or do not use the SAT or ACT to make admissions decisions (Fair Test: The National Center for Fair and Open Testing, 2001) out of about 1,650 accredited four-year colleges (Barron's Profiles of American Colleges, 2000). Consequently, students are likely to be aware of the importance of standardized test scores in gaining admission to the college of their choice. Not only do test-takers want to score as high as they can, many hope taking both exams will place them in a better position in the admissions process.

Because the college-bound Texas population is dominated by SAT-takers and has been for several years, choosing to take the ACT is in opposition to the status quo.[2] Taking both exams doubles the explicit costs due to additional registration fees and is likely to increase implicit costs as well (e.g. driving further distances to ACT testing centers, smaller choices of ACT test administration dates, etc.). If most colleges and universities accept both exams, why would students choose to take both unless they perceived an additional benefit to doing so? In fact, a more sensible strategy might be to retake the SAT multiple times and improve the score due to familiarity with the test (Clotfelter & Vigdor, 2001). Many students are certainly making this choice, but they are also choosing to take both the SAT and ACT, often with the hope of scoring better on one exam. This perception that the SAT and ACT are fundamentally different are promoted by both ETS and ACT, Inc. ACT touts its exam as being more curricula-based while SAT is more of an aptitude test. That the tests probably share more similarities than differences is not the point. What matters is perception and whether or not students believe they might score higher due to the nature of the test. Taking both the SAT and ACT is one way students can ensure they will not miss out on any gains obtained by correctly matching their knowledge with college entrance exam.

To estimate the probability that a student chooses to take both the SAT and ACT, I utilize a logit model. A student chooses between taking either one college entrance exam or both. I assume the student derives the greatest utility from the chosen option and therefore the decision can be formulated as a random utility model. The model for choosing both exams conditional on a set of individual characteristics is:

[2] As further evidence of the institutional influence of the SAT in Texas, the southwest regional office for the SAT is located in Austin, Texas.

$$\Pr(Y_i = 1|X) = \frac{e^{\beta' X_i}}{1 + e^{\beta' X_i}}, \quad (1)$$

where, X is a set of characteristics for the ith individual, and β is the vector of parameters for the chosen alternative.

I expect a student's decision to take both exams depends upon the following factors: self-assessment of ability, previous test-taking behavior (Clotfelter & Vigdor, 2001) and background characteristics. I use the student's SAT score, high school GPA and dummy variables for the number of years the student studied math or science to control for academic performance. Except for the SAT score, these variables are self-reported by the student on the Student Data Questionnaire (SDQ) distributed by ETS.

I expect previous test-taking behavior to be an important predictor of which exam students choose to take in any given year. Clotfelter and Vigdor (2001) report that of those students taking the SAT out of the U.S. graduating class of 1997, nearly half did so more than once. Unfortunately, the SAT and ACT data in the TSMP only identify the scores for the latest administration date of the test for the students projected to graduate that year. For example, a student taking the SAT twice, as a junior in 1997 and as a senior in 1998, would appear only in the 1998 data with the score from the 1998 administration. Consequently, I cannot control for previous test-taking behavior.

Parental education is an important determinant of college application (Savoca, 1990) and college aspirations (Toutkoushian, 2001; Hossler, Schmit, & Vesper, 1999). I control for this using data from the SDQ, where students report the highest level of education attained by both parents. *First Generation College Student* is a dummy variable equal to one if both parents never attended college. Choosing to take both exams might also be driven by the student's ambition and drive to succeed. Perhaps the more ambitious students are more likely to take the time and effort to prepare for two college entrance exams. I proxy for ambition with SDQ information regarding the student's intended terminal degree. *Ambition* is equal to one if the student intends to pursue a master's degree or beyond.

Other control variables include gender, family income, race/ethnicity, and graduating from a private high school. Because students taking both the SAT and ACT must pay an additional test registration fee, I expect family income to be positively correlated with the probability of taking both exams. In addition, because only 816 Native Americans took a college entrance exam in 1998, I combine Native Americans, foreign students, those reporting their race as *Other* and those not responding to the question in the same racial/ethnic category. The omitted category is white. A complete description of the independent variables can be found in Table 1.

3. Empirical results

Table 2 provides the marginal effects from a logistic regression of choosing both exams as well as descriptive statistics. The marginal effects are evaluated at the means for continuous variables, while the effects for dichotomous variables represent a discrete change from zero to one. Tables 3 and 4 provide the predicted probabilities and marginal effects from separate models based upon probability of admission. If the theory that more students are taking both the SAT and ACT to increase their chances of admission to selective colleges and universities is correct, then I would expect this behavior to be more prevalent for students at the margin. Students with high grades and test scores who believe their admission to the top schools is assured have less need to take both exams, while students with low grades and test scores are less likely to even attempt admission to a selective university. However, marginal students with either high grades and low test scores, or low test scores and high grades may feel more pressure to take both exams in hopes of improving their chances of admission to more selective schools.

Admissions criteria are based upon guidelines published in Barron's Profiles of American Colleges (2000). According to Barron's, the most competitive colleges and universities report a median SAT score around 1310 and cut off admission to students with high school GPAs below B+. Therefore, I define high performing students as those with at least a 1300 on the SAT and a GPA of 3.33 or better. Less competitive institutions report median SAT scores of less than 1000 and many admit students with less than a C average. Therefore, I define low performing students as those with SAT scores less than 1000 and a high school GPA of C+ or less. I define marginal students to be those with SAT scores between 1000 and 1300 and high school GPAs between 2.67 and 3.0. According to Barron's the highly competitive colleges and universities report a median SAT between 1240 and 1290 and cut off admission to students with a GPA below a B. Some competitive schools admit students with GPAs as low as a B-. The median SAT scores range from 1126–1220. Students in this category can obtain admission to more selective schools and are probably more likely to attempt to do so than students with lower test scores and lower grades. But they face stiff competition from the students who test well and graduate with high grades.

The results in Table 3 give credence to the testing experts' theory. Thirty-nine percent of the marginal students decide to take both the SAT and the ACT compared to only 36 percent of the high performing students and 28 percent of the low-performing students. The general pattern holds after controlling for academic performance and family background. The overall results reported in Table 2 indicate that students with lower grades and

Table 1
Description of variables used in multinomial logit model

Variable	Description
Test score	Combined SAT math and verbal score; ACT scores have been converted to an equivalent SAT score
High school GPA	High School GPA on a 4-point scale
Ambition	Equal to one if student intends to pursue a master's degree or higher
Family income	Midpoint of each range reported by SAT and ACT (in thousands)
Private high school	Equal to one if student graduated from a private high school
First generation college student	Equal to one if both parents never attended college
Native American, other or no response	Equal to one if student is Native American, foreign, of another race or did not respond
Asian	Equal to one if student is Asian
Black	Equal to one if student is African American
Hispanic	Equal to one if student is Mexican/Mexican American, Puerto Rican, Latin American, South American, Central American or other Hispanic or Latino
Male	Equal to one if student is male
Studied math four or more years	Equal to one if student studied math four or more years in high school
Studied science four or more years	Equal to one if student studied science four or more years in high school

Table 2
Marginal effects from logit estimation

	Both tests	Means	Std. deviation
Predicted probability	0.34		
Test score (00's)	0.02∗∗	9.55	2.14
High school GPA	−0.01∗∗	3.41	0.54
Ambition	0.02∗∗	0.54	0.50
Family income (000's)	0.001∗∗	49.09	28.95
Private high school	0.05∗∗	0.07	0.25
First generation college student	0.13∗∗	0.19	0.39
Asian	−0.09∗∗	0.05	0.21
Black	0.04∗∗	0.11	0.31
Hispanic	−0.04∗∗	0.23	0.42
Native American, other or no response	0.01	0.05	0.21
Male	−0.09∗∗	0.45	0.50
Years studied math	0.10∗∗	0.64	0.48
Years studied science	0.12∗∗	3.28	0.50

Source: Texas Schools Microdata Panel $N = 98{,}333$. Marginal effects for dummy variables represent a discrete change from zero to one. ∗∗Significant at 1-percent level; ∗significant at 5 percent level.

higher SAT scores tend to take both the SAT and ACT. Students who do well on standardized tests but have lower grades may decide to take both exams in hopes one score will be high enough to offset their GPA. These signs reverse for high performing and marginal students.

One consistent result across all of the models is that first generation college students tend to take both exams. Even among high performing students, where only 4.5 percent of the students have parents who never attended college, being a first generation college student increases the probability of taking both the SAT and ACT by 10 percentage points.[3] Parents have been shown to exert significant influence on the predisposition of their children to pursue postsecondary education (Hossler, Schmit & Vesper, 1999; Somers, Cofer & Vander Putten, 2001). Perhaps those parents who never attended college them-

[3] SAT score is assumed to measure the underlying ability of students in the sample. Alternatively, a model using expected test score (Manski, 1993) yields similar results and provides evidence of the robustness of the current specification.

Table 3
Predicted probabilities from logit estimations by high school GPA and SAT score

Models	Actual percentage	Predicted probability
High performing students	0.36	0.35
Marginal students	0.39	0.38
Low performing students	0.28	0.26

Source: Texas Schools Microdata Panel.

selves are ill equipped to advise their children about which college entrance exam to take, and consequently, their children are more likely to decide to take both. First generation college students also cannot benefit from legacy status—another possible reason these students might take both exams in hopes of increasing their chances of admission.

In all of the models, being Hispanic reduces the probability of taking both exams relative to white students, and being Asian reduces the probability in every model but the one for low performing students. Male students are also less likely to take both exams than female students. Being male and a marginal student reduces the probability of choosing both the SAT and ACT by 10 percentage points. If taking both exams actually gives students an edge in the admissions process, females are more likely to reap the benefits. Overall, being black increases the probability of choosing both exams, although being black is not statistically significant for high performing or marginal students. However, being black increases the probability of taking both exams by 8 percentage points for low performing students.

4. Conclusions

Years ago, choosing to take the SAT or the ACT used to be dictated primarily by the location of the college or university a student hoped to attend. Today, increased competition for fewer slots at selective schools has changed the decision process for many college-bound students. Many testing experts believe more students are deciding to take both the SAT and ACT in hopes of increasing their likelihood of obtaining admission to more selective colleges and universities. Results from this study support that view, because marginal students have a greater tendency of taking both exams than either high performing or low performing students. Furthermore, being a first generation college student plays a large role in the decision to take both exams. These students cannot benefit from the first-hand experience of their parents in the college choice process or receive the special consideration given legacies and may be trying to improve their odds of admission in other ways.

Educators need to examine this phenomenon of choosing to take both the SAT and ACT, especially if it confers advantages to some groups and not to others. Being Asian, Hispanic or male all reduce the probability of taking both tests. Do teachers or guidance counselors

Table 4
Marginal effects from logit estimations by GPA and SAT score

	High performing students		Marginal students		Low performing students	
Variables	MFX	Means	MFX	Means	MFX	Means
Test score (00's)	−0.11**	13.94	−0.04**	11.02	0.03**	7.67
High school GPA	0.12*	3.94	0.08**	3.12	0.16**	2.11
Ambition	0.02	0.78	0.001	0.58	0.005	0.35
Family income (000's)	−0.001**	69.25	0.001**	60.16	0.001**	42.87
Private high school	0.04	0.11	0.08**	0.11	0.06**	0.08
First generation college student	0.10**	0.04	0.05**	0.14	0.04**	0.30
Asian	−0.15**	0.14	−0.12**	0.06	−0.03	0.03
Black	−0.05	0.02	0.01	0.06	0.08**	0.26
Hispanic	−0.10**	0.06	−0.05**	0.14	−0.04*	0.30
Native American, other or no response	0.09**	0.05	0.07**	0.05	0.04	0.05
Male	−0.08**	0.56	−0.10**	0.58	−0.06**	0.57
Years studied math	0.19**	0.93	0.10**	0.72	0.04**	0.42
Years studied science	0.11**	0.78	0.13**	0.49	0.08**	0.21
Number of observations	4691		11,538		4501	

Source: Texas Schools Microdata Panel. Marginal effects for dummy variables represent a discrete change from zero to one. **Significant at 1 percent level; *Significant at 5 percent level.

encourage certain students to take both exams and discourage others? What role do private counseling services play in a student's choice of exam? What guidance, if any, do students seek themselves? Answers to these questions would require surveys of high school teachers, counselors, administrators and students and would be an excellent avenue for future research.

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