How College Enrollment Strategies Affect Student Labor Market Success

by

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I. Introduction

At the level of elementary and secondary schooling, the question of how the quality of one's classmates affects performance has long been viewed as vital to developing effective policies. The answer to this question helps determine the potential benefits and costs of policies such as tracking by ability or voucher systems. Because of the importance of the topic, it is not surprising that starting with James Coleman's influential report in the 1960s, *Equality of Educational Opportunity*, much time and research has been devoted to furthering our understanding of how one's peers affect performance at these levels of schooling.

Much less effort, however, has been devoted to understanding how one's fellow students affects performance within higher education. This disparity is not necessarily surprising because unlike lower levels of schooling, the government does play as large a role in assigning students to institutions. Students have historically enjoyed more freedom in choosing which public institution to attend, and the private sector in higher education is quite substantial in certain regions of the country. Nonetheless, state systems of higher education do regularly face policy decisions that require an understanding of how individual students are affected by the other students at their institution. For example, the allocation of state resources across institutions influence student choice and thereby affect both the variation in average student ability across institutions as well as the variation in student ability within each institution.

In addition to state systems, individual institutions often make decision that shape the composition of their student body, and consequently, the potential performance of their students. There are numerous examples of these decisions. Should more recruiting and aid dollars be spent to secure a substantial number of high ability students? When faced with financial troubles, should admission standards be lowered to increase enrollment? Should the number of transfer students on campus be increased to replace students lost through attrition? Should large amounts of resources be devoted to improving honors colleges in order to attract top students? To answer any of these questions optimally, institutions must understand the potential implications on student performance of adjusting the composition of their student body.

This paper analyzes how the composition of an institution's student body affects the performance of that institution's students. In particular, we investigate how the average student quality and the dispersion in student quality within the student body affects the future earnings of individual students. We begin in section II by examining the two primary reasons why one's fellow students would affect future labor market success: peer effects and employer screening. Peer effects are important because one's peers can augment or detract from human capital accumulation through numerous types of interactions. The literature examining these potential effects is growing, and we summarize the work and relate the findings to our specific question.

The second reason, employer screening, captures the role of one's fellow students in shaping the beliefs of employers about the quality of students at the institution. These beliefs may affect employers' actions in two manners. First, the level of student quality may affect the intensity by which employers recruit at that institution. Second, the dispersion in student quality may affect the degree to which employers screen by ability when interviewing the institution's students. We formalize this discussion of employer behavior with a screening model.

The analyses in Section II generate several predictions, and we turn next to tests of their validity. After reviewing past research on the topic in Section III, we use the 1982 cohort of the High School and Beyond survey in Section IV to provide additional evidence. Our findings are consistent with much of the previous literature. We find that the level of student quality at an institution is an important determinant of earnings; a 100 point increase in the median SAT is related to a 3 percent increase in a student's annual earnings. In addition, students with lower SAT scores appear to receive the highest premium from attending an institution with a high median SAT. We do not find that the range in ability of one's peers is a strong predictor of earnings. While some evidence suggests that that those at the bottom of the institution's ability distribution suffer a wage penalty from an increased spread in student ability, the relationship is fairly weak and not statistically significant.

II. Theoretical Motivation

To explain why the composition of an institution's student body may affect the later labor market success of a particular student at that institution, it is important to discuss the two primary reasons that a student's performance would be affected by her fellow students.[1] First, classmates may impact the amount of human capital accumulated during college because students are an important input into the educational process. Second, present and past students help form the view of employers about the future productivity of graduates from an institution. The discussion in this section analyzes both the peer effects and employer screening explanations in more detail. In addition, implications of these two explanations on the earnings effect of average student quality and the dispersion of student quality are outlined.

It is generally accepted that peer effects are an important part of higher education.[2] A student's interaction with her peers in class, study groups, student organizations, and social circles can potentially affect how much she learns as well as the values and habits she develops. In addition to these individual-level peer effects, the student body as a whole may create institutional-level peer effects that influence such factors as the speed and depth of the material covered in courses or the norms for behavior on campus.

The importance of peer effects in education was first suggested by the influential report *Equality of Educational Opportunity* which found that the characteristics of a student's peers was a stronger determinant of performance than other factors such as teacher characteristics (Coleman et. al., 1966). Other researchers continued to focus on peer effects in the K-12 setting and investigated more complex

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[1] Preferential treatment of an institution's students by successful alumni is a third reason not discussed here.

[2] This belief probably underlies the actions of institutions, which expend large amounts of resources to secure a high quality student body, and college rankings publications, which base rankings partially on

relationships between peers and performance. One influential paper is by Henderson, Mieszkowski, and Sauvageau (1978) who analyzed 7,000 Montreal students between the first and third grades and found that student gains in French and mathematics tests increased with average classroom IQ. These gains, however, slowed as mean IQ rises, suggesting that a weak student benefits more from a "peer rich" environment than a strong student is hurt by a "peer poor" environment.

Recent work improves upon earlier research by using more sophisticated methods that eliminate many of the concerns that make the identification of peer effects difficult. Identification is hard because students with highly able peers may be highly able in ways unobservable to the researcher. In addition, they may have access to better teacher and school resources that also are not observable. Beyond these concerns, the estimation is further complicated by the fact that student and peer achievement are determined simultaneously.

Hanushek et. all (2001) uses a large panel data set, the Texas Schools Microdata Sample, that follows the performance of successive cohorts of students in Texas schools during the 1990s.[3] The richness of this data set allows them to compare changes from one cohort to another within a specific school, which eliminates some of the above concerns because much of the year-to-year variation in the quality of students is not likely to be correlated with strategic parental location decisions or school inputs. Using school-by-grade fixed effects, they find that

student quality measures. For an insightful and more general discussion of peer effects in higher education, see Goethals, Winston, and Zimmerman (1999).

[3] Hoxby (2000) also uses this data set in her analysis of how the gender and race composition of an individual's cohort affects his or her performance. She finds that one's performance does increase with the ability of their classmates, but she does not discover any non-linearities.

throughout the ability distribution, test scores improve with better peers; they also present evidence that those in the top of the ability distribution gain the least. In addition, they examine how the dispersion of ability within the student cohort affects performance and find a non-linear relationship. Greater dispersion has no effect for the top half of the ability distribution and has a statistically significant negative effect for the bottom quartile of students.

While historically much less research has focused on peer effects in higher education, there has been a recent surge in this area of research. Several authors have recognized that the method of assigning students to campus housing at many institutions presents a natural experiment where students do not self-select their own peers but instead are randomly assigned roommates and dormmates. Therefore, estimates of the effect of one's peers in a housing unit should not be contaminated by selection bias. This line of research produces convincing evidence on peer effects produced in housing and social situations. However, the evidence may not accurately describe other important peer effects that take place at the classroom or campus level.

There have been three studies using this methodology. Sacerdote (2000, 2001) examines students at Dartmouth College, Zimmerman (1999) examines students at Williams College, and Kremer and Levy (2000) examine a large state university that is considered "highly competitive" in Barron's Profiles of American Colleges. Because all three institutions are highly selective, one should be cautious in applying the findings to less selective schools.

In his analysis of students at Williams College, Zimmerman (1999) finds limited evidence of peer effects on student grade point average (GPA). He does, however, find some small, but statistically significant results. First, he finds that students in middle 70 percent of the distribution of SAT scores at Williams achieve a lower GPA when assigned to a room with a student with a verbal SAT score in the bottom 15 percent of the distribution as opposed to a student in the top 15 percent. When he examines the effect of one's average entry (cluster of nearby rooms) SAT score, he finds that students in the bottom 15 percent of the distribution are now the group hurt by having low quality peers. Students in the top 15 percent of the distribution are never found to be affected by their peers.

The analyses of Dartmouth roommates by Sacerdote (2000, 2001) finds similar results in that peer effects are found to be small, but statistically significant in many instances. The GPA of Dartmouth students increases when they are assigned to a roommate that is in the top 25 percent of the ability distribution and intends to graduate with honors. Those in the bottom and top 25 percent of the ability distribution are affected most by the characteristics of their roommate. Sacerdote also finds that the fraternity and sorority membership as well as high school alcohol use of one's roommates and dormmates are highly predictive of whether one joins the Greek system. These results suggest that peer effects in housing may be most influential in one's social life.

Kremer and Levy (2000) find that the past drinking behavior of one's roommates actually influences academic performance. Males earn lower GPAs when they were assigned to roommates who claim they drank frequently or occasionally in high school. Quantile regressions demonstrate that this effect is especially strong for men at the lower end of the GPA distribution. Interestingly, they find little evidence that the academic pre-college characteristics of one's roommate affects one's GPA. However, they use numerous background characteristics simultaneously (high school GPA, standardized test scores, parents income and education) unlike the other two papers which focus on fewer characteristics.

The literature on peer effects reviewed to this point demonstrate some commonalities that can be used to predict how a student's future labor market earnings could be affected by the level and spread of student ability at their institution. These papers consistently find that the academic background of one's peers do influence performance in a positive manner suggesting that as the average ability of the student body of one's institution increases, one's academic performance (and subsequent earnings) should increase. Students with less ability may experience the largest gain as much of the research detailed above finds these students are especially sensitive to their peers.

The literature on peer effects does not provide much evidence that helps one predict how the spread of student ability at an institution impacts a student's future earnings. To make a reliable prediction, one needs to understand whether students in the top of the campus ability distribution have a greater or lesser influence on their peers than students in the bottom of the distribution. Either scenario seems plausible. For example, top students could disproportionately affect the speed and quality of classroom lectures by participating more than their peers in classroom discussions. Alternatively, less able students could be more influential by causing professors to slow the pace of lectures to ensure that all students are comprehending the material.

Each type of student could also disproportionately affect the campus norms for academic and social behavior.

While the average impact of increased dispersion of student ability may be unclear given our current knowledge of peer effects in higher education, some predictions on how different groups of students are impacted relative to others can be made. Most likely, students disproportionately spend time with other students in the same part of the institution's ability distribution because they self-select themselves into the same courses, groups, and organizations. Therefore, one would expect the high ability students on campus to benefit most from the increased dispersion of student ability because they are more likely to spend time in and out of the classroom with students in the upper tail of the institution's ability distribution. Likewise, one would expect the low ability students to suffer most from a worsened lower tail.[4] In addition, if students at the bottom of the ability distribution are more sensitive to peer effects than other students as suggested in the research reviewed above, then the increased dispersion of ability may hurt the bottom students more than it would help students in the top of the distribution.

Even if peer effects are not important, one's fellow students can still influence future labor market success by shaping employers' beliefs. Employers will be likely to judge an individual's future productivity by the institution he or she attended if they consistently find that students of some institutions are of different quality than those at other institutions. Even in the absence of prior experience with graduates from a

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[4] In the research summarize above, Hanushek et. all (2001) provides the only evidence on the effect of the range of student ability on performance. Their results support these predictions; students in the

particular institution, employers might differentiate employees by institution attended if they believe that more human capital accumulation takes place at some institutions, that these institutions require more ability to persist to graduation, or that the strictness of admission officers at some institutions ensures that that their students are of high ability.

The ability of an institution's student body might alter employers' behavior in two ways. First, employers may change the amount of recruiting they do at an institution, and second, they might adjust the intensity by which they screen by ability when recruiting an individual from that institution. Because screening by ability is costly, employers will only increase the intensity of the screen when there is a large benefit to the activity.

To further analyze employer's behavior, I present here a screening model in the tradition of Spence (1973). This model analyzes the student body of a single institution and assumes that all students are of two types, A and B, which have a productivity level of A and B respectively, with $A > B$. Students of type A represent h percent of the student body and students of type B represent the remaining (1-h) percent. Upon leaving the institution, students are hired by employers who can utilize available information to make their determination whether a student is of type A or B. The employer can vary their effort to improve this "screen"; Q represents the probability that the employer correctly identifies the student's type while (1-Q)

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bottom quartile of the ability distribution are the only students who are hurt by an increase in the range of ability.

represents an incorrect assessment. The employer suffers a screening cost, C(Q), which increases with the amount of information obtained.

With these definitions, the productivity of the hired employee when employers do not screen is:

$$W_1 = Ah + B(1-h) \qquad (1)$$

The productivity of a student hired when the employer screens for type A students is denoted by:

$$W_2 = AF[h,Q] + B\{1-F[h,Q]\} \qquad (2)$$

where

$$F[h,Q] = \frac{hQ}{hQ + [1-h][1-Q]} \qquad (3)$$

An employer would decide to screen when the benefits of screening, equation (2) minus equation (1), are greater than the costs, $C(Q_S)$. Therefore, a firm would screen when:

$$C(Q) < (A-B)\{F[h,Q]- h\} \qquad (4)$$

Using similar logic, a firm would increase the strength of its screen from Q_W to Q_S (where $Q_S > Q_W$) when:

$$C(Q_S)-C(Q_W) < (A-B)\{F[h,Q_S]-F[h,Q_W]\} \qquad (5)$$

Equations (4) and (5) suggest that firms are more likely to employ strong “screens” when there is a wide variation in ability between students on campus and when the cost of increasing the screen by ability is small.

If one assumes that each type of student is correctly identified as their true type Q percent of the time and that employers pay workers their average productivity level minus any screening costs, one can show how changes in the level and spread of student ability affect the wages of each type of student.[5] First, the average wage of both types of students will rise when the ability of either type A or B students increases and h does not change. Second, the average wage of type A students increases relative to the average wage of type B students when firms increase the intensity by which they screen by ability at an institution. This result is not surprising because one would expect A students to benefit from increased screening because their probability of being correctly identified and assigned the higher wage rises with stronger screens. This result suggests that increases in the spread of ability, which causes ability screens at the institution to strengthen, will help type A students relative to type B students. Interestingly, the two prediction outlined in this paragraph are identical to those suggested by the peer effects literature.

This screening model also provides insights into the difference in earnings for any other two groups that can be distinguished by employers and have different productivity levels. For example, an institution's pool of transfers and direct attendees could have different levels of ability on average. For this special case, assume that the more productive group has the average productivity level of A while the other group's productivity level is B. In addition, assume that when the firm decides to screen, they can screen perfectly and correctly identify students 100 percent of the time while incurring a cost of $C(Q_T)$. Using the same logic as above, one can determine that employers screen when:

$$C(Q_T) < (A-B)\{1-h_A\} \qquad (6)$$

[5] Proofs for the results outlined in this paragraph are available from the authors.

This questions suggests that firms will be more likely to differentiate between the two groups of students when there is a wide variation in ability between the groups, when the lower productivity group is a large percentage of the student body, and when the cost of screening between the groups is lower. In addition, it can be shown that the wages of the more productive group increase relative to the other group when employers screens.

This section demonstrates that both student peer effects and employer behavior can cause the composition of an institution's student body to affect the labor market success of its students. Both concepts predict that an individual's earnings will increase as the average ability of the institution's student body improves. In addition, they both suggest that while an increase in the spread of ability of one's classmates has an uncertain effect on performance in general, it should hurt students at the bottom of the institutions ability distribution relative to students in the top of the distribution.

III. Related Literature

Past work has provided some insights into the effect on earnings of both the average ability and the dispersion of ability within an institution's student body. The former characteristic has been investigated in detail in the literature investigating the returns to college quality. While this literature is interested in the effects of attending institutions of different quality in general, they often use the quality of an institution's student body as a proxy for overall school quality. The relevant part of this research can be put into two groups.[6] One group of papers directly measures student quality with the average or median SAT score of the freshman class of an institution (James et al, 1989; Daniel, Black, and Smith, 1995; Loury and Garman, 1995, Kane, 1998; Dale and Krueger, 1999; Hilmer, 2000b). Other researchers indirectly measure student quality by using rankings from college publications such as Barron's *Profiles of American Colleges* (Fox, 1993, Brewer, Eide, and Ehrenberg, 1999; Hoxby, 1999). These publications incorporate student test scores in their ranking methodology and, hence, are heavily correlated with student quality.

Almost all of the literature finds that students who attend institutions with higher test scores or higher rankings have greater success in the labor market. For example, attending a college with a 100-point higher average SAT score is generally associated with 3 to 7 percent higher earnings later in life (James et al, 1989; Daniel, Black, and Smith, 1995; Loury and Garman, 1995; Kane, 1998). While part of this return may reflect that institutions with higher test scores also spend more per student or have other favorable characteristics, these strong results suggest that one's fellow students do affect later labor market performance.[7]

Much less attention has been paid to the effect of the *distribution* of student ability at an institution, although two papers investigate this briefly. Using the College and Beyond survey (which primarily consists of very selective institutions), Dale and

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[6] This review covers most of the recent literature. See Brewer and Ehrenberg (1996) for a thorough review of the entire literature.

[7] An additional concern is that the return to attending a more selective institution simply represents the greater ability of the students who attend these schools. All the papers cited try to control for this problem by including ability measures such as standardized test scores or family background variables. Only two of the papers specifically attempt to net out the effect of unobserved variables (Brewer, Eide, and Ehrenberg, 1999; Dale and Krueger, 1999). The results vary significantly with the method used.

Krueger (1999) find that greater dispersion in SAT scores is negatively associated with earnings for schools with the highest average SAT scores in the sample and positive associated with earnings for schools with the lowest SAT scores in the sample. Hoxby and Terry (1999) report similar results using the National Longitudinal Study of the Class of 1972 and the National Longitudinal Survey of Youth which both contain students who attend a more representative sample of institutions. However, neither paper investigates whether this dispersion has different effects on individuals of varying ability levels.

IV. New Evidence

The primary data used in this paper are from the *High School and Beyond* (HSB) survey. We use data on individuals in the 1982 cohort who have annual earnings of at least $5,000 for whom the restricted 1992 (fifth follow-up) survey covers up to six years in the labor market after college graduation. This data set is ideal for this paper because it identifies the institution that each student attended and because the students attended college during years in which we have access to credible measures of the distribution of student ability at each institution. In addition, individual ability measures are available in the form of standardized test scores for each student.[8]

Data on individual students are matched with data on the college or university they attended. These institutional data come from three sources and are collected from

[8] The High School and Beyond survey retrieved SAT scores from high school records, when such scores were available. For the remaining individuals, we estimate SAT scores from the HSB test

the year closest to 1982 when many of the HSB seniors were first entering college. The first source, Barron's *Profiles of American Colleges*, provides the median SAT scores of the institution's freshman class as well as the faculty-student ratio at the institution.[9] The College Board's *Annual Survey of Colleges* provides the 25^{th} and 75^{th} percentiles of SAT scores of that institution's freshman class. We use the difference between the 75^{th} and 25^{th} percentiles as our measure of the dispersion of student ability at an institution. The final variables for enrollment and expenditure levels come from CASPAR, which contains data gathered by the U.S. Department of Education in its Higher Education General Information System (HEGIS) and Integrated Postsecondary Education Data System (IPEDS) surveys. Summary statistics for the final sample are presented in Table 1.

To test the hypotheses presented in Section II, we regress the logarithm of annual earnings on the variables of interest as well as demographic and family background variables. The analyses in Table 2 examine how an individual's earnings is related to the median SAT score of the student body at their institution.[10] The specification in column (1) is similar to much of the literature that investigates the returns to attending a selective institution, and the results are consistent with past work; a 100 point increase in the school-median SAT score is associated with approximately 3 percent higher annual earnings. The results in Column (2)

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battery, using an ordinary least squares equation estimated for students who had both SAT and HSB scores. The regressions fit very well as the R-squared was around .60.

[9] SAT scores are imputed, using ACT scores, for the small number of schools that provide ACT scores but not SAT scores. We use the concordance tables in Astin (1971) for the transformation.

[10] The discussion earlier in the paper was based on the mean SAT score. We use the median score because the mean is not available in the data sets used. The mean and median are likely to be quite similar, so this should not create much measurement error.

demonstrate that the effect of the institution's median SAT score on annual earnings is larger for those who score lower on the SAT themselves. This result is similar to the finding in the peer effects literature that the performance of students in the bottom of the ability distribution is more sensitive to the quality of their peers.

The results found in the first two specifications may reflect a return to general institutional quality because school-median SAT scores are correlated with other aspects of institutional quality that might promote labor market success. When we control for other inputs into the educational process, such as the student/faculty ratio, total enrollment level, instructional expenditures per students, and institutional type (see columns (3)), the relationship between median SAT score and annual earnings remains relative unchanged.[11] This result suggests that the quality of the student body is more than simply a proxy for general institutional quality.

Table 3 investigates the relationship between one's earnings and the spread in student ability at that person's institution; the level of dispersion is measured by the 75th percentile minus the 25th percentile of an institution's freshman test scores. The results in column (1) demonstrates that, on average, the variation in SAT scores has little effect on one's earnings. Specification (2) interacts the spread in SAT scores with the median SAT score, and the results are similar to those found in the work reviewed in Section III. More range in student ability seems to have a positive effect for students who attend institutions with a lower median SAT score while students from institutions with a higher median SAT score earn less when there is greater

[11] The results suggest that students earn more when attending private institutions and institutions with higher enrollment. Interestingly, we do not find that student's earnings increase when they attend institutions that have higher educational expenditures per student or more faculty per student.

dispersion. This relationship, however, is weaker than found in previous papers and is not statistically significant.

The discussion in Section II predicts that the effect of the dispersion of student ability on an individual student's earnings will vary by the position of that individual student in her institution's ability distribution. In other words, students who are "undermatched" by having higher SAT scores than most of the student body will be impacted differently than "overmatched" students who have lower SAT scores than their fellow students. Before investigating how the variance of ability affects earnings for these students, we examine whether being undermatched or overmatched affects wages in general in column (3). A student is viewed as being poorly matched when their test score differs from the institution's median test score by 100 points. Using this definition, we find that approximately one-fourth of the sample is undermatched and another one-fourth is overmatched. The results provide weak evidence that there is a penalty to being undermatched, and there is no evidence that being overmatched affects earnings.

The analysis in column (4) tests whether the effect of the spread of student ability on earnings varies with the student's position in the institution's ability distribution. Our discussion in section II predicted that an increase in dispersion would hurt overmatched students and help undermatched students relative to the student of median ability on campus. We test this claim by interacting the spread in student ability with the indicator variables for having test scores 100 points from the institution's median score. The coefficients for both interaction terms have the predicted signs, but they are not statistically significant at conventional levels. While not significant, the coefficient for the interaction for overmatched students is of moderate size and suggests that a 100 point increase in the difference between the 75^{th} and 25^{th} percentile leads to a 1.6% drop in wages for overmatched students.

V. Conclusion

This paper investigates how two aspects of an institution's student body, the average student ability and the dispersion of student ability, impacts the earnings of individual students at the institution. We discuss how these two aspects could impact an individual's earnings by outlining the role one's fellow student play in human capital accumulation and in developing employer's beliefs about the quality of an institution's graduates. Our discussion produces several predictions which we test using data from the High School and Beyond survey. Our results mostly support our predictions. We find that earnings increase when one attends an institution with a high quality student body even when controls for other aspects of institutional quality are added. This increase appears to be highest for those of lowest academic ability. We do not find large and statistically significant effects for the dispersion in student ability, but the evidence suggests that students at the bottom of the institution's ability distribution are hurt by increased dispersion.

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Table 1: Descriptive Statistics

Individual Characteristics:	
Annual Earnings	26226
	(14603)
Own SAT	935
	(163)
Male	0.4809
Black	0.1211
Hispanic	0.1778
Other Race	0.0008
Attending school full time	0.0142
Family Income:	
$8,000 to $14,999	0.1174
$15,000 to $19,999	0.1219
$20,000 to $24,999	0.1332
$25,000 to $29,999	0.1405
$30,000 to $39,999	0.1817
$40,000 to $49,999	0.1058
Greater Than $50,000	0.1496
Institution's Characterisitics	
50th SAT	950
	(123)
75th-25th SAT	265
	(129)
% Own - 50th > 100	0.2870
% Own - 50th < -100	0.2222
Public Control	0.4782
Instructional Exp. Per Student (in 1,000s)	8.4752
	(9.7405)
Faculty/Student Ratio	0.0485
	(0.0401)
Total Enrollment	11017
	(9242)

Notes: Means and standard deviations (in parenthesis) are reported.

Table 2: Effect of Institution's Level of Stude Quality on Future Earnings

	(1)	(2)	(3)
Own SAT / 100	0.0312**	0.0444**	0.0440**
	(0.0050)	(0.0081)	(0.0081)
50th SAT / 100	0.0332**	0.0570**	0.0536**
	(0.0076)	(0.0138)	(0.0145)
Own SAT / 100 * 50th SAT / 100		-0.0020*	-0.0020*
		(0.0010)	(0.0010)
Public Control			-0.0657**
			(0.0205)
Total Enrollment, logged			0.0172**
			(0.0044)
Instructional Exp. Per Student			-0.0016
			(0.0011)
Faculty/Student Ratio			-0.0933
			(0.2904)
Adj. R^2	0.1032	0.1038	0.1070

Notes: Coefficients and standard errors (in parenthesis) are reported. * (**) denotes statistical significance at a 95 (99) percent level of confidence. Dependent variable is log of 1991 annual earnings. Regressions also include indicator variables for sex, race/ethnicity, attending school full-time, and family income (eight categories). Dummy variables included for missing values, in which case those variables are set to 0.

Table 3: Effect of Institution's Heterogeneity of Student Quality on Future Earnings

	(1)	(2)	(3)	(4)
Own SAT / 100	0.0311**	0.0310**	0.0372**	0.0372**
	(0.0050)	(0.0050)	(0.0068)	(0.0068)
50th SAT / 100	0.0343**	0.0419**	0.0274**	0.0282**
	(0.0076)	(0.0102)	(0.0096)	(0.0096)
(75th SAT - 25th SAT) / 100	-0.0018	0.0291	-0.0017	0.0009
	(0.0066)	(0.0285)	(0.0066)	(0.0087)
50th SAT / 100 * (75th - 25th) / 100		-0.0031		
		(0.0028)		
Own - 50th > 100			-0.0338	-0.0462
			(0.0237)	(0.0361)
Own - 50th < -100			0.0088	0.0454
			(0.0248)	(0.0393)
(75th - 25th) / 100 * Own - 50th > 100				0.0056
				(0.0126)
(75th - 25th) / 100 * Own - 50th < -100				-0.0169
				(0.0139)
Adj. R^2	0.1031	0.1031	0.1031	0.1031

Notes: Coefficients and standard errors (in parenthesis) are reported. * (**) denotes statistical significance at a 95 (99) percent level of confidence. Dependent variable is log of 1991 annual earnings. Regressions also include indicator variables for sex, race/ethnicity, attending school full-time, and family income (eight categories). Dummy variables included for missing values, in which case those variables are set to 0.