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This paper analyzes data from the National Postsecondary Student Aid Study (NPSAS) to examine the awarding of institutional need-based versus non-need-based grants to undergraduate students. The purpose of the study is to determine: 1) how the use of these different types of grants has changed in recent years; 2) the socio-economic characteristics of the students receiving them; and, 3) how institutional and student characteristics help predict who will receive an institutional grant.

Financial assistance for individuals attending college has existed in this country almost as long as higher education itself. Holtschneider (1997), McPherson and Schapiro (1998), and Wick (1997) describe how scholarships were established in a number of colleges as early as during the colonial era and in the 19th century. The earliest scholarships were often awarded based on the academic merit of individual students, with consideration often given to financial need (Hauptman, 1990).

This practice was carried into the 20th century largely by the elite private colleges and universities in the eastern part of the country. Recognizing the inequities of this system, and with no common method for determining financial need, many of these institutions banded together in 1954 to establish the College Scholarship Service (CSS) as part of the College Entrance Examination Board. The CSS developed a common formula for institutions to help determine the financial need of their applicants. With this action, most private institutions shifted their system for awarding of scholarships to one based solely on family financial need.

Since the 1980s, however, the use of financial need as the basis for awarding scholarships has been eroding. Colleges and universities have begun implementing new programs that rely less on need, or rely on changing definitions of financial need, as the key eligibility criterion. In addition, public institutions, which historically had relied on low tuition and federal and state scholarship programs to ensure affordability, began for the first time to award large numbers of scholarships from their own funds. Table 1 shows the increase in expenditures in four categories at public and private colleges and universities in the United States. Between fiscal years 1990 and 1996, total expenditures per student increased less than 40% in both sectors. Spending on scholarships from all sources increased 69% at public institutions and 67% at private institutions, while

TABLE 1
Change in Spending per Student (Current Dollars), FY 1990 to FY 1996

Institutional Control	Total Expenditures	Total Scholarship Expenditures	Federal Pell Grants	Institutional Scholarship Expenditures
Public	35%	69%	36%	105%
Private (non-profit)	33%	67%	23%	92%
Total	35%	69%	33%	98%

Source: Authors' calculations based on data from National Center for Education Statistics (various years).

spending on financial aid from institutional sources increased 105% and 92%, respectively.[1] Federal Pell Grants, the main source of federal grant aid, increased only 33% overall.

This study uses both bivariate analysis and logistic regression (a multivariate technique used with outcomes that are dichotomous in nature) to address these specific research questions:

- How did the awarding of need-based versus non-need-based grants from institutional funds change between the 1989-90 and 1995-96 academic years?
- How do institutional and student characteristics together help predict who will receive an institutional grant award?

Related Research

There has been little recent empirical research on the use of non-need-based grants awarded from institutional funds. Over a decade ago, Baum and Schwartz (1988) examined the use of merit aid in the students sampled in the High School and Beyond Survey of 1980. They found that while the majority of financial aid was still being awarded based on financial need, "at the margin, however, the system allocates aid to meritorious students" (p. 132). Ehrenberg and Murphy (1993) examined the provision of financial aid by elite colleges and universities in light of the Justice Department's investigation and subsequent lawsuit against the Overlap Group of colleges that met annually to compare the family income and other information provided by admitted students (*United States v. Brown University, et al.*, 1991). The authors concluded that "financial aid policies based solely on need at selective private colleges and universities in the United States are likely to be nearing their end" (p. 72).

[1] The IPEDS surveys do not collect data separately for undergraduate and graduate financial aid expenditures. However, there was little public or institutional policy change regarding the provision of financial aid for graduate education during this time period to account for such a large increase in spending (relative to overall expenditure increases). Thus, it seems fair to conclude that a major portion of the increase was due to increases in the provision of institutional financial aid for undergraduates.

Wick (1997) reviewed research conducted since the 1970s that examined the distribution of institutional aid between need-based and non-need-based components, but only one of these studies used nationally-representative samples of institutions and students (and very limited information was provided from that study). McPherson and Schapiro (1994, 1998) examined this issue, but their work examined the phenomenon at earlier time periods and with limited subsets of institutional types. Anecdotal stories about the financial aid efforts of individual institutions indicate that more of them may be using non-need-based aid as a way of attracting top students, or at the least, the practice is attracting more widespread media attention ("Cornell drifts closer to awarding merit scholarships," 1996; Gose, 1996; Shea, 1996). Researchers have yet to examine these questions with well-planned empirical research that goes beyond the anecdotes.

Methodology

Data Sources

This study used data from the National Postsecondary Student Aid Study (NPSAS) surveys, conducted for the National Center for Education Statistics. The purpose of NPSAS is to provide information on how students across the U.S. pay for college, including data about financial aid awards. In each of the NPSAS years, data were collected for a stratified national sample of undergraduate and graduate students from over 800 institutions. The 1989-90 and 1995-96 NPSAS data were analyzed for this study to track the changes over time in the use of need-based versus non-need-based financial aid. For clarity of presentation, "1989" will be used to represent the 1989-90 survey, and "1995" to represent the 1995-96 survey. There were approximately 47,000 and 41,000 undergraduate respondents for the two collection years, respectively.

The NPSAS surveys were designed to be nationally representative of students attending postsecondary educational institutions in each year. Each survey uses a stratified multistage sample design, with the sample stratified by type and control of institution (first stage), and students within the selected schools (second stage). The estimated means and populations presented in the next section were calculated taking into account the sampling weights and stratification schema in each survey. The multivariate analyses were also conducted taking into account the sample weights and stratification schema. For more information about NPSAS see the methodology reports produced for each survey year (National Center for Education Statistics, 1992, 1997).

Measures

The NPSAS data sets contain numerous variables measuring need-based and non-need-based financial aid awards from a variety of sources (state government, federal government, pri-

vate, and institutional). This study focuses on the variables contained in each dataset that measure need-based and non-need-based grants awarded from institutional funds. In each data set, grants that are based solely on the determination of merit or other circumstances not related to financial need are categorized as institutional non-need-based grants. Such awards include grants and scholarships for academic, artistic, athletic, and other forms of merit. Institutional need-based grants are awards that are based on financial need, *but may include a non-need-based component.* The data sets also include important data about the institution at which each student is enrolled (e.g., tuition costs and institutional type) as well as information about each student's financial status (e.g., dependency status and family income) and other measures of socioeconomic status.

The sample used in this study includes students enrolled in public and private four-year institutions in the research, doctoral, comprehensive, and liberal arts Carnegie classifications. Only full-time dependent students are included in the sample, as these students represent the population of interest for this study. This population of students (full-time, dependent, in four-year institutions) received 59% of the institutional grant dollars awarded by all postsecondary institutions in 1989, and 69% of the dollars awarded in 1995. The final major limitation placed upon the sample was to exclude students who received athletic scholarships.

Results

Bivariate Analysis

This section addresses the changes in the awarding of institutional need-based and non-need-based grants to students of different races and genders in 1989 and 1995. In general, the number of awards and the average size of awards increased over these years. Increases varied substantially by award type, as well as by students' race and gender.[2]

According to the NPSAS data, the total number of full-time dependent students attending four-year institutions in the U.S. decreased 3% between 1989 and 1995, from 4,003,992 to 3,892,092. Table 2 presents the number of grants, and the average size of each, for all students and for students from each racial group who received: 1) any type of institutional grant; 2) a need grant; or 3) a non-need-based grant.[3] In contrast to the

[2] For information about institutional aid awards to students from different income groups, see Heller and Nelson Laird (1999).

[3] Students who received a need-based grant may also have received a non-need-based award, and vice-versa. The difference between the number of awards of any type, and the sum of the need and non-need-based grants, represents the overlap of students who received both a need-based and non-need-based grant. For the need-based and non-need-based panels, the mean amounts shown are for that type of grant only. For the panel showing students who received any grant, the means represent the sum of need-based and non-need-based grants.

The sample size of Native Americans included in the NPSAS surveys was too small to reliably estimate awards to these students. The "all races" totals do include Native American students, however.

TABLE 2
Institutional Grant Awards at 4-Year Institutions, by Race

	Number of Grants			Mean Grant Amount			Total Dollars Awarded
	1989	1995	Change	1989	1995	Change	Change, 1989 to 1995
Students Receiving Any Grant							
Asian American	43,435	87,876	102%	$3,589	$5,669	58%	220%
African American	74,606	96,257	29%	3,143	4,578	46%	88%
Hispanic	57,637	83,136	44%	2,320	3,772	63%	134%
Caucasian	666,000	801,934	20%	2,550	4,242	66%	100%
All races	846,583	1,089,770	29%	2,649	4,345	64%	111%
Students Receiving Need Grants							
Asian American	36,344	81,934	125%	$3,646	$5,477	50%	239%
African American	59,887	79,488	33%	3,057	4,486	47%	94%
Hispanic	48,841	76,520	57%	2,250	3,575	59%	149%
Caucasian	483,373	666,700	38%	2,631	3,806	45%	100%
All races	633,104	923,088	46%	2,709	3,994	47%	115%
Students Receiving Non-need-based Grants							
Asian American	9,701	8,405	(13%)	$2,408	$5,879	144%	112%
African American	20,735	22,950	11%	2,435	3,665	51%	66%
Hispanic	12,337	10,961	(11%)	1,935	3,648	89%	68%
Caucasian	254,716	227,292	(11%)	1,676	3,802	127%	128%
All races	298,541	272,856	(9%)	1,766	3,840	117%	99%

decrease in total enrollment, the number of students who received any type of institutional grant (shown in panel 1 of Table 2) increased 29% nationally, from 846,583 to 1,089,770, indicating that the proportion of all students who received an institutional grant increased during this period from 21% to 28%. The changes in the number of awards and amount awarded to each group are dependent upon the change in the enrollment of each group during this period. The effect of enrollment changes is accounted for in the multivariate analysis presented later in this study.

The increase in the number of students receiving awards is attributable to a substantial increase in the number of need-based grants awarded, shown in panel 2 of Table 2. While the number of grants for students of all races increased 46% during this period, the number of need-based grants for Asian American students grew the most and the number for African Americans the least. The number of students receiving non-need-based grants (panel 3) decreased 9% overall, with all students

other than African Americans seeing a decrease in the number awarded.

The pattern with respect to the size of the average grant awarded also differs by race. The mean need-based grant in 1989 ranged from a high of $3,646 for Asian American students to a low of $2,250 for Hispanic students. The increases in the average need-based award between 1989 and 1995 were fairly close for all the groups, ranging from 45% to 59%. For non-need-based awards, however, the range of increases over this period is larger. While the size of the mean non-need-based award to African American students grew only 51%, Asian American students saw a mean award increase of 145%.[4]

Overall, spending at four-year institutions on need-based grants to full-time, dependent students increased 115% from approximately $1.72 billion in 1989 to $3.69 billion in 1995. Non-need-based grant spending increased 99%.

The last column of Table 2 shows the change in the total dollars awarded to each group for each type of grant. Overall, the amount of institutional aid awarded to these students increased 111% from 1989 to 1995, with the amount awarded to each race increasing from a low of 88% for African American students to 220% for Asian American students. This total increase closely approximates the increase in overall spending on institutional scholarships at all colleges and universities shown in Table 1. Increases in the number of award recipients and the average amount of the awards resulted in increased spending by institutions on these types of grants. Overall, spending at four-year institutions on need-based grants to full-time, dependent students increased 115% from approximately $1.72 billion in 1989 to $3.69 billion in 1995. Non-need-based grant spending increased 99% from $0.53 billion in 1989 to $1.05 billion in 1995.

Table 3 presents the grant information for male and female students. For students receiving any type of institutional grant, females saw a larger increase in both the number of grants as well as the average size, from 1989 to 1995. While the total dollars awarded increased 111%, grants to female students increased 137% in value. For need-based grants, the rate of increase in total dollars awarded to female students (151%) was almost double that of male students (78%). Non-need-based grant dollars awarded doubled, approximately, from 1989 to 1995 for both male and female students.

Multivariate Analysis

The decisions institutions make in awarding financial aid are influenced by a number of factors, as described earlier. These include factors that are inherent to the institutions themselves, as well as characteristics of the students. Logistic regression was used to measure the effects of a number of these factors on the financial aid decisions made by institutions. Logistic regression is an appropriate multivariate technique for this

[4] The relationship between tuition prices and institutional grants is discussed in the next section.

TABLE 3
Institutional Grant Awards at 4-Year Institutions, by Gender

	Number of Grants			Mean Grant Amount			Total Dollars Awarded
	1989	1995	Change	1989	1995	Change	Change, 1989 to 1995
Students Receiving Any Grant							
Male	380,454	451,353	19%	$2,718	$4,145	53%	81%
Female	466,129	638,417	37%	2,593	4,486	73%	137%
All	846,583	1,089,770	29%	2,649	4,345	64%	111%
Students Receiving Need-based Grants							
Male	295,124	387,389	31%	$2,820	$3,796	35%	78%
Female	337,980	535,699	59%	2,612	4,137	58%	151%
All	633,104	923,088	46%	2,709	3,994	47%	115%
Students Receiving Non-need-based Grants							
Male	121,972	103,122	(15%)	$1,655	$3,884	135%	98%
Female	176,569	169,734	(4%)	1,843	3,813	107%	99%
All	298,541	272,856	(9%)	1,766	3,840	117%	99%

analysis, as the outcome in this study is whether or not a student received an institutional grant, with separate analyses conducted for need-based and non-need-based grants in the 1989 and 1995 samples.

The multi-stage nature of the sampling process requires an adjustment to standard logistic regression analysis. As in ordinary least squares, standard logistic regression assumes that the observations in the sample are independent of each other. In the second stage of the sampling process, students were drawn from each institution, thus violating the independence assumption. To account for this, the logistic regression models were fit using Huber/White estimators of variance, which allow observations that are not independent (Huber, 1967; White, 1980, 1982). The sample weights and sampling stratification schema were also used in the analysis.

The logistic models used in this study were fit by sequentially entering the groups of variables in blocks, with each block containing a series of predictor and/or control variables. The blocks and variables used are shown in Table 4.

The effect of each predictor on the outcome is expressed as a delta-*p* statistic, recommended by Petersen (1985) as a method for expressing the relationship between a unit change in a predictor and the estimated percentage change in the out-

TABLE 4
Logistic Regression Blocks and Variables

Block 1: Institutional Characteristics
Control (public)*
Tuition ($ hundreds)
Carnegie classification (Comprehensive I)*
Historically Black college or university (no)*

Block 2: Other Financial Aid ($ hundreds)
Federal Pell Grant
FSEOG grant
State need-based grant
State non-need-based grant
Other (private) grant
Total work study
Total loans (all sources)
Parental (PLUS) loan

Block 3: Student Characteristics – Demographic
Race (Caucasian)*
Gender (female)*
Mother's education level (HS graduate)*
Housing type (off-campus, not with parents)*
Year in school (first-time freshman)*

Block 4: Student Characteristics – Financial
Resident tuition status (in-state)*
Number in family enrolled in college
Family income ($ hundreds)
Family size

Block 5: Student Academic Performance
College GPA (0 to 4 scale)

Block 6: Interactions
Control X race
Region X race
Region X control

Note: Items marked with an asterisk were included as a single or series of dummy variables (the referent group is shown in parentheses).

come.[5] For example, a delta-*p* value of 0.025 indicates that a one unit change in the predictor is related to a 2.5 percentage point increase in the likelihood that a student would receive an institutional grant. The delta-*p* statistic is shown in each table only for those variables that were statistically significant at a level of $p \leq .05$.

Table 5 shows the results of the logistic regression models for 1989, when 18% of all students received need-based grants and 8% received non-need-based grants. Shown are the results for the fully-specified models predicting the awarding of need-based and non-need-based grants.[6] In both models, students in private institutions are predicted to be more likely to receive a grant, controlling for other factors. There was only a very small relationship between the tuition price and the probability that a student received a grant. A $1,000 increase in tuition was related to an increase of 0.6 percentage points in the likelihood of receiving a need-based grant and a decrease of 0.4 percentage points in the likelihood of receiving a non-need-based grant. Hispanics were the only racial group with a predicted likelihood of receiving a need-based grant that was statistically significantly greater than Caucasian students (the referent group),

[5] The logistic regression coefficients and Huber/White standard errors for each model are available from the author.
[6] Results of the intermediate, stepwise models are available from the author.

TABLE 5
Logistic Regression Results (delta-*p*) for 1989

Variable	Need-based Grants	Non-need-based Grants
Private institution	0.192	0.354
Baccalaureate I	0.057	
Tuition ($ hundreds)	0.0006	-0.0004
State non-need-based grant ($ hundreds)	0.002	
SEOG amount ($ hundreds)	0.005	
State need grant ($ hundreds)	0.003	
Other grants ($ hundreds)	0.002	0.001
Total loans ($ hundreds)	0.003	
Work study ($ hundreds)	0.007	
African American	0.096	
Hispanic	0.109	
Male	0.039	
Mother's education – GED	-0.056	
Mother's education – masters	0.041	
Housing type – with parents	-0.024	
Housing type – campus housing	0.073	
Year in school – 2nd year	-0.019	
Year in school – 3rd year	-0.018	
Year in school – 4th year	-0.024	
Family size	0.013	
Family income ($ hundreds)	-0.0002	-0.0001
College GPA	0.070	0.185
Private college – African American	-0.067	-0.055
Private college – Hispanic	-0.087	-0.038
Private college – Asian American	-0.045	
Western region	-0.039	
Northeast – African American	0.142	
Midwest – Asian American	-0.130	
West – African American	0.336	
Northeast – Private college	0.110	
Midwest – Private college	0.100	
Estimated population mean (percent receiving aid)	0.182	0.083
Number of observations (sample)	11,813	11,797
Estimated population size	2,750,023	2,744,293
Pseudo R^2	0.249	0.210
χ^2	1588.78**	954.25**
Percentage of cases properly classified	81.5%	89.3%

*Note: Delta-p statistics are shown only for those variables whose coefficients were significant at a level of $p \leq .05$. For tests of model fit: * $p \leq .01$ ** $p \leq .001$*

while African Americans were the only group with a greater likelihood of receiving a non-need-based grant. The fully-specified model of need-based grants explains approximately 25% of the error variance compared to an intercept-only model, while the non-need-based grant model explains 21%. In both models over 80% of the cases were properly classified.

Among the interesting findings in Table 5 is the role of academic achievement. As noted earlier, according to the NPSAS definition need-based grants are awards that are based on financial need but may include a non-need-based component. College GPA is shown to be positively and significantly related to the awarding of both need- and non-need grants. An increase of one point in GPA (i.e., from a B to an A) was related to an increase of 7 percentage points in the likelihood the student would receive a need-based grant and in increase of 19 percentage points in the likelihood of receiving a non-need-based grant.[7] Other interesting findings include the interaction between race and institutional control. For example, African American and Hispanic students in private colleges were less likely to receive either a need-based or non-need-based grant.

While approximately 18% of students received need-based grants in 1989, over 26% received them in 1995; the proportion of students receiving non-need-based grants increased from 8% to 11% during the same period.

Table 6 shows the results for 1995. An important point to note is the overall expansion in the use of institutional grants in 1995. While approximately 18% of students received need-based grants in 1989, over 26% received them in 1995; the proportion of students receiving non-need-based grants increased from 8% to 11% during the same period. Among the other changes in 1995 was the increased importance of enrollment in a private college on receiving a need-based grant (from 19 percentage points in 1989 to 32 points in 1995). For non-need-based awards by private institutions, however, the change was in the opposite direction; students in these institutions had a lower likelihood of receiving a grant in 1995 compared to 1989 (though still had a much larger likelihood than students in public institutions). Hispanic students, whose likelihood of receiving a need-based grant in 1989 was 10 percentage points greater than Caucasians, had no predicted advantage in 1995. African American students saw a slight decrease in their advantage over Caucasians in receiving a non-need-based grant during this period, declining from 10 percentage points to seven percentage points. Male students, who were slightly more likely than females to receive a need-based grant in 1989, had no advantage in 1995.

Again, the findings were interesting with respect to the role of academic achievement in predicting whether a student

[7] The NPSAS surveys contain SAT or ACT scores for a sub-sample of students. These scores, however, are highly correlated with college GPA ($r = 0.3523$, $p < .0001$ in 1989; $r=0.3803$, $p < .0001$ in 1995). Alternative models using SAT or ACT scores in place of college GPA were fit, with similar results estimated for SAT/ACT score as a predictor of the likelihood of receiving an institutional grant. Thus, it is fair to conclude that the college GPA measures in NPSAS are a reasonable measure of each student's pre-college academic achievement.

TABLE 6
Logistic Regression Results (delta-*p*) for 1995

Variable	Need-based Grants	Non-need-based Grants
Private institution	0.192	0.354
HBCU	-0.135	
Private institution	0.317	0.210
Research I	-0.051	
Comprehensive II	-0.105	0.099
Baccalaureate II	0.085	
Tuition ($ hundreds)	0.0008	
State non-need-based grant ($ hundreds)	0.003	
Work study ($ hundreds)	0.006	0.002
African American	0.073	
Hispanic	-0.077	
Native American	0.255	
Other race	-0.110	
Mother's education – no high school diploma	0.121	
Mother's education – bachelor's degree	-0.028	
Mother's education – 1st professional degree	-0.187	-0.088
Mother's education – doctorate	-0.114	-0.096
Housing type – campus housing	0.091	
Year in school – other 1st year	-0.070	-0.056
Year in school – 2nd year	-0.067	-0.046
Year in school – 3rd year	-0.085	-0.033
Year in school – 4th year	-0.097	
Year in school – senior or graduated in 1995/96	-0.054	
Year in school – other	-0.194	
Tuition jurisdiction – non-resident	0.096	
Family income ($ hundreds)	-0.0002	
College GPA	0.116	0.127
Private college – African American	-0.061	
Private college – Hispanic	-0.181	0.186
Private college – Asian American	0.214	
Northeast region	-0.139	
Northeast – African American	0.309	
Midwest – Asian American	0.273	-0.088
West – Hispanic	-0.075	
Northeast – Private college	0.184	
West – Private college	-0.170	
Estimated population mean (percent receiving aid)	0.269	0.110
Number of observations (sample)	8,713	8,699
Estimated population size	1,934,728	1,934,588
Pseudo R^2	0.257	0.228
χ^2	1005.45**	1947.07**
Percentage of cases properly classified	78.1%	87.3%

*Note: Delta-p statistics are shown only for those variables whose coefficients were significant at a level of $p \leq .05$. For tests of model fit: * $p \leq .01$ ** $p \leq .001$*

received an institutional grant in 1995. The likelihood of receiving a need-based grant increased from seven percentage points for every one-point increase in college GPA in 1989, to an increased likelihood of 12 percentage points in 1995. The change in the role of GPA in predicting the likelihood of receiving a non-need-based grant, however, was in the opposite direction. While in 1989 a one-point increase in GPA was related to a 19 percentage point increase in the likelihood of receiving a non-need-based grant, by 1995 this advantage had decreased to only 13 percentage points. In other words, a one-point increase in GPA had almost as large an effect on the predicted likelihood of receiving a need-based grant as on the likelihood of receiving a non-need-based grant in 1995. One can surmise that, by this time, institutions had begun to reward merit through their need-based grant programs nearly as much as through their programs that did not use financial need as a criterion.

The evidence here demonstrates that college GPA, controlling for other factors, is associated with an increased probability of receiving even need-based institutional grants.

Table 7 summarizes the complex relationships demonstrated in Tables 5 and 6. Shown are the key predictors in each year (for each type of grant) that were associated with an increased likelihood of receiving a grant and those associated with a decreased likelihood. One important finding is that GPA is a factor associated with the awarding of both need-based and non-need-based grants. The effect of a one point increase in GPA is greater for non-need-based grants, which is what one would expect if GPA is indeed an indicator of merit. But the evidence here demonstrates that college GPA, controlling for the other factors, is associated with an increased probability of receiving even need-based institutional grants. This indicates that merit, at least as measured by college grade point average, appears to play an important role in the awarding of need-based aid as well.

Race was also an important factor in the awarding of institutional grants, and the effect of race differed by type of institution and region of the country. African Americans were more likely to receive non-need-based grants in both years, and this effect was particularly pronounced in public institutions (African Americans in private institutions were *less* likely to receive non-need-based awards). Hispanics in private colleges were less likely than other students to receive either type of award in 1989 and were less likely to receive need-based awards in 1995. While Hispanics overall were less likely to receive non-need-based awards in 1995, those in private colleges saw a shift in their preference between 1989 and 1995. While in 1989 Hispanics in these institutions were less likely to receive a non-need-based grant, by 1995 they were more likely than other students to receive one (though Hispanics in the West were less likely to receive a non-need-based grant). African Americans in the Northeast region of the country were more likely to receive need-based awards, and their likelihood of receiving such a grant increased greatly between 1989 and

TABLE 7
Summary of Relationship Between Predictors and Likelihood of Receiving an Institutional Grant

	Need-based Grants		Non-need-based Grants	
	1989	**1995**	**1989**	**1995**
Positive Factors	Private (19) GPA (7) Baccalaureate I (6) African Americans (10) Hispanics (11) Males (4) African Americans in the Northeast (14) African Americans in the West (34)	Private (32) GPA (12) Native Americans (26) African Americans in the Northeast (31) Asian Americans in the Midwest (27)	Private (35) African Americans (10) GPA (19)	Private (21) African Americans (7) GPA (13) Hispanics in private colleges (19) Asian Americans in private colleges (21) Comp. II (10) Bacc. II (9) Out-of-state (10)
Negative Factors	African Americans in private colleges (7) Hispanics in private colleges (9) Asian Americans in the Midwest (13)	Hispanics in private colleges (18) HBCU (14) Comprehensive II (11) Northeast (14) Private colleges in the West (17)	Asian Americans in private colleges (5) African Americans in private colleges (6) Hispanics in private colleges (4)	Hispanics (8) Other race (11) African Americans in private colleges (6) Asian Americans in the Midwest (9) Hispanics in the West (8) Research I (5)

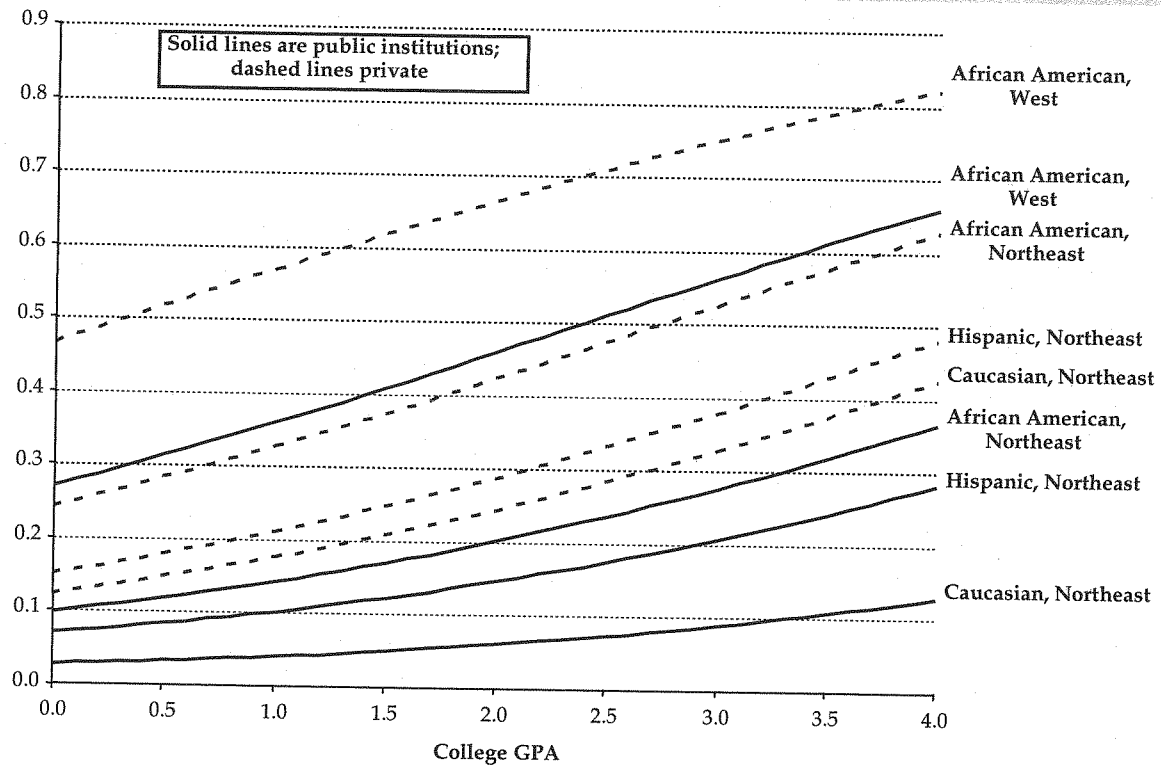
Note: The percentage point size of the effect is shown in parentheses.

1995. In 1995, Hispanics and Asian Americans in private colleges were more likely to receive non-need-based awards than were other students.

The relative effects of these factors can be seen in Figures 1 and 2, which show the predicted probability that males would receive a grant in 1989 for varying levels of college GPA. Figure 1 demonstrates these relationships for need-based grants, and Figure 2 for non-need-based grants.[8] As described earlier, students with higher GPAs had a higher predicted probability of being awarded both need-based and non-need-based grants. In addition, the figures demonstrate some of the regional, race, and institutional control effects. In particular, one can see that African Americans were more likely to receive a grant than were Caucasian or Hispanic students. Figure 2 demonstrates the strong effect of GPA on the predicted probability of receiving a non-need-based grant at the higher end of the grade

[8] In both figures, other control variables were held constant at their means.

FIGURE 1
Predicted Probability of Males Receiving an Institutional Need-based Grant in 1989



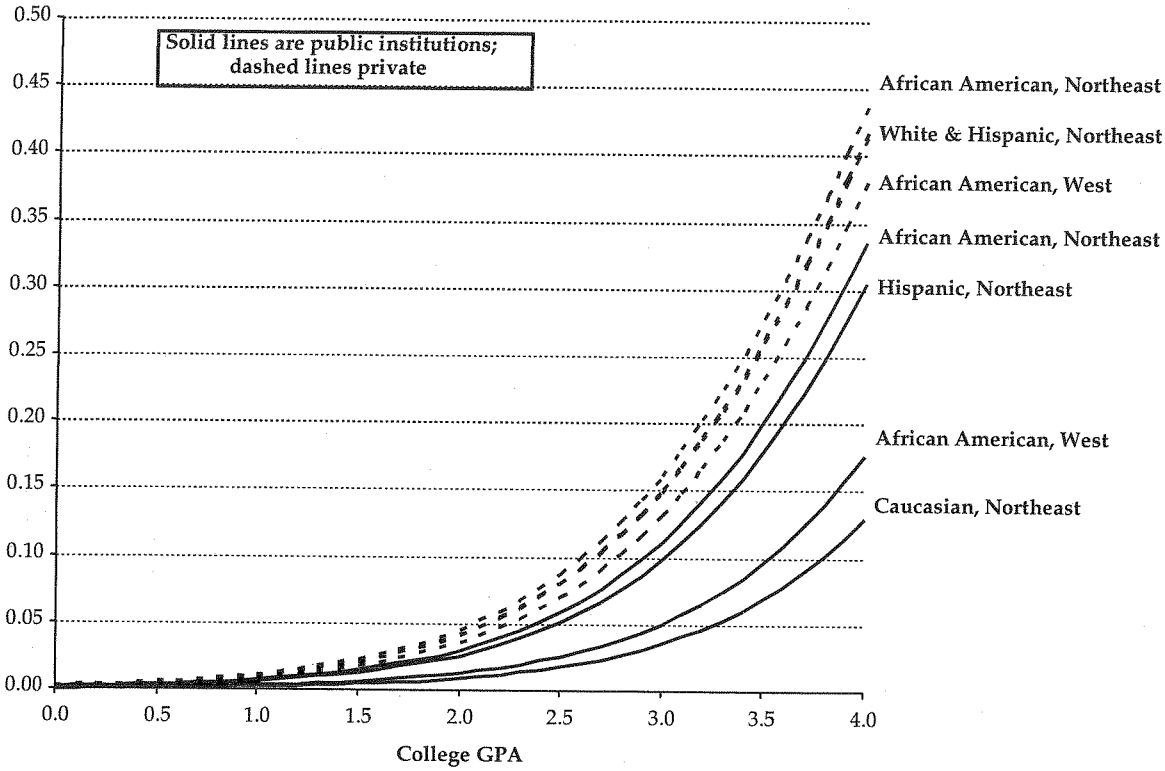
scale (the slope of each curve increases as GPA increases). Both figures demonstrate the difference in the predicted probability of receiving a grant between public and private institutions, with students in private institutions more likely to receive a grant.

Discussion

This study has examined the factors related to the awarding of institutional need-based and non-need-based grants in 1989 and 1995. It has focused on students often described as "traditional" college students—those attending 4-year institutions, full-time, and still dependents of their parents. The primary question of interest is how race and gender are related to the awarding of these grants and how those relationships changed between 1989 and 1995.

Overall institutional financial aid spending increased 111% during this period, a rate more than four times that of inflation and more than three times that of the overall increase in institutional expenditures per student. The increase in grant awards also outpaced tuition increases during this period, which averaged 66% at public 4-year institutions and 42% at private colleges and universities (College Board, 1999).

FIGURE 2
Predicted Probability of Males Receiving an Institutional Non-need-based Grant in 1989



The pattern in the awarding of non-need-based grants, where there was a decrease in the number of grants but a large increase in the mean grant amount, may indicate that institutions were making more strategic use of non-need-based awards for enrollment management purposes in 1995 compared to 1989. Rather than giving a relatively large number of small grants, institutions appeared to be providing larger non-need-based grants to fewer students in 1995.

In the multivariate analyses, logistic regression was used to untangle the many factors that help determine who is awarded financial aid. The question of how institutional financial aid awards are made is complex. In their awarding of need-based institutional aid, most colleges and universities have historically followed the federal need analysis rules for determining eligibility for financial aid.[9] Colleges and universities

[9] Many private institutions use the Free Application for Federal Student Aid (FAFSA) as a starting point in conducting need analysis. Some ask students for additional financial information regarding their parents' income and assets, and this information is taken into account in determining eligibility for and awarding institutional financial aid.

have much more flexibility in the awarding of non-need-based aid, however, and many use non-need-based aid as an enrollment management and marketing tool to attract certain types of students to their institutions (and to keep them enrolled once they matriculate).

The 1989 data pre-date the *Podberesky v. Kirwan* (1991, 1994, 1995) court case at the University of Maryland and *Hopwood v. State of Texas* (1994, 1996) case, both of which restricted the ability of public colleges and universities in the 4th and 5th federal court circuits to use race in admissions and financial aid decisions. Financial aid decisions for the 1995-96 academic year were made in the midst of both *Podberesky* (which was being appealed to the Supreme Court by the University of Maryland in the spring of 1995) and *Hopwood* (which was between the federal circuit court decision and the federal appeals court decision). Thus, it can be argued that these two cases should have had little impact on the decisions institutions made regarding the use of race in financial aid in the winter and spring of 1995.

Overall institutional financial aid spending increased 111% during this period, a rate more than four times that of inflation and more than three times that of the overall increase in institutional expenditures per student.

The finding in this study of the increased prominence played by academic achievement (as measured by college GPA) reinforces much of the recent discussions regarding the role of need-based versus merit aid. The findings here demonstrate the simple fact that the two categories are not mutually exclusive, as merit is playing an increasingly important role in the awarding of even need-based aid.

Since the multivariate models include academic achievement as a control (along with all the other factors listed in Table 4), one conclusion that can be drawn is that the effect of race on the likelihood of receiving a non-need-based grant is a signal of institutional financial aid policies. If true, the results here would indicate that African Americans in both 1989 and 1995 were targeted for financial aid awards, relative to Caucasian students, with the advantage decreasing 2.3 percentage points between the two years. Hispanics overall were disadvantaged relative to Caucasian students in the awarding of non-need-based grants in 1995, though those in private colleges did receive a big boost in their likelihood of receiving a non-need-based grant.

These conclusions must be considered carefully, however. One possibility for the relative advantage received by African Americans is that these students were more likely to have some unmeasured characteristic (in this study) that colleges valued in their awarding of institutional grants.[10] In addition and as noted earlier, the need-based grants as defined in

[10] Since the tuition of the institution attended was included as a control variable in the multivariate models, one can discount the hypothesis that the increased likelihood that African American students would receive a non-need-based grant was due to the higher average price of the institutions attended by these students.

the NPSAS surveys can contain an element of merit. This may explain why Hispanics, who in addition to African Americans and Native Americans have been historically under-represented in four-year colleges and universities and have often been the targets of affirmative action efforts, were more likely to receive a need-based grant in 1989. Institutions may be using different scholarship programs, which are often separated into those with a financial need component and those without, for attracting certain types of students.

Additional research could further explore the complex relationships uncovered in this study. One method of testing these findings would be to examine the specific scholarship programs that were operated by different types of institutions during these years and to try to determine whether students from certain racial groups were targeted for particular types of financial aid awards.

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