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# Does Financial Aid Help Students to Attend Higher Priced Colleges?

## **Disciplines**

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# Does Financial Aid Help Students to Attend Higher Priced Colleges?

By *Laura Walter Perna*

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A primary goal of the student financial aid programs authorized under the Higher Education Act of 1965 is to ensure that, to the extent possible, no academically qualified citizen is denied access to college because of limited financial resources. The extent to which student financial aid programs are achieving this goal may depend on the breadth of one's definition of access. Originally, access was interpreted to encompass opportunity for academically qualified, but financially needy, students to enter post-secondary education. Recently, access has been interpreted to include not only opportunity to enter, but also choice among American postsecondary educational institutions in terms of cost and quality, as well as persistence through graduation in the institution selected (Fife, 1975; Hansen, 1983; Huff, 1989; Scannell, 1992; Fenske and Gregory, 1994).

This study focuses on the effects of financial aid upon one aspect of access: student choice of which college or university to attend. Financial aid is only one of many factors that influences student choice. Therefore, this study examines the extent to which receiving financial aid influences the price level of the college or university attended after controlling for other important student characteristics such as academic ability, educational aspirations, socio-economic status, distance from home, gender, and racial identity.

## Research Review: What Influences Choice of School?

This literature review serves to identify the primary non-financial factors that may be related to student choice of institution. I also examine what has been learned from prior research about the effects of financial factors such as financial aid on choice and I describe the contribution of the current research to knowledge about the effects of aid on student choice.

Traditionally, sociological and econometric models have been employed to examine students' college-related decisions (Hossler, Braxton, and Coopersmith, 1989). Some researchers (e.g., Tierney, 1980; D. Chapman, 1981; Jackson, 1982; Hossler et al., 1989) have built on the strengths of sociological and econometric models and proposed social psychological models to examine student choice. More than one hundred research papers, reports, and monographs have used all or parts of these models to examine the student choice factors.

The findings from prior research suggest that the most important predictors of students' choice of institution are: academic ability and achievement, institutional selectivity, parental encouragement, and educational aspirations. A student's Scholastic Aptitude Test (SAT) score has been shown to be the single most important predictor of institutional choice (Manski and Wise, 1983; Zemsky and Oedel, 1983; Hearn, 1984; Ozden, 1993). Institutional selectivity as a predictor of student choice has been found to increase with

pre-college academic achievement (Jackson, 1978; Manski and Wise, 1983; Zemsky and Oedel, 1983; Ozden, 1993). Generally, individuals self-select into institutions that enroll students with ability levels similar to their own level (Spies, 1973; Nolfi et al., 1978; Fuller et al., 1982; Manski and Wise, 1983; Seneca and Taussig, 1987).

Prior research also reveals that parents' preferences and aspirations for their children's education are positively related to the choice of institution to attend (Jackson, 1978; Welki and Navratil, 1987). Parental education, a proxy for parental encouragement, has been found to be less influential than SAT score, but more important than parental income (Manski and Wise, 1983; Zemsky and Oedel, 1983; Hearn, 1988; Ozden, 1993). When defined as parents' willingness to contribute more money than expected by the federal need analysis formula in order for their child to attend a higher quality institution, however, parental encouragement has been shown to be unrelated to student choice of institution to attend (DeMasi, 1989).

Researchers (e.g., Zemsky and Oedel, 1983; Hearn, 1984, 1988) have also shown that students with higher educational aspirations prefer to attend more selective and more expensive institutions. Hearn (1988) found that, among a subsample from the High School and Beyond Study of 1980 high school seniors, educational expectations had the second largest total effect on choice, next to test scores. This was measured by institutional cost after controlling for socioeconomic characteristics, gender, and race.

Some evidence suggests that men preferred to attend more selective institutions than women in the early 1970s (e.g., Manski and Wise, 1983; Hearn, 1984), but that men and women in the early 1980s did not differ in their choice of institution to attend (e.g., Hearn 1988) or that women preferred to attend more selective institutions than men (Ozden, 1993). Nonetheless, prior research has generally shown that the effect of gender upon institutional selectivity is smaller in magnitude than the effects of SAT score, high school rank, parental education, and high school characteristics (Manski and Wise, 1983; Ozden, 1993).

The effect of labor market conditions and opportunities on student choice of institution to attend is unclear from prior research. Researchers who have modeled institutional choice as a choice between at least two postsecondary educational institutions have generally not controlled for labor market conditions and opportunity costs (e.g., Jackson, 1978; Hearn, 1984, 1988; Chapman and Jackson, 1987). Researchers who have defined the choice to be between the "best" college and the "best" non-college alternatives have included these factors, but have shown that labor market conditions are both related (e.g., Bishop, 1977; Nolfi et al., 1978; Fuller et al., 1982; Manski and Wise, 1983) and unrelated (Schwartz, 1985) to student choice.

### **Effects of Financial Aid on Student Choice of School**

Both descriptive (e.g., Muffo, 1987; Cockriel and Graham, 1988; Annis and Rice, 1993) and regression analyses (e.g., Nolfi et al., 1978; Fuller et al., 1982; Manski and Wise, 1983; Tierney, 1980; Tierney and Davis, 1985) have shown that financial aid and cost influence student choice of institution to attend. Receiving financial aid has been shown to be particularly effective in promot-

ing choice for lower-income students (Jackson, 1978; Seneca and Taussig, 1987; Leslie and Brinkman, 1988; Healy, 1991; Healy and Jellema, 1991). This is likely because of the need-based eligibility criteria for most financial aid.

Prior research has also shown that financial aid has promoted choice, but has not eliminated all barriers. Although studies of the effects of state financial aid programs (e.g., Fenske and Boyd, 1971; Leslie and Fife, 1975; Fife and Leslie, 1976; Fenske, Boyd, and Maxey, 1979) are subject to some limitations (e.g., failure to control statistically for alternative explanations for the observed relationships), prior research generally indicates that, after controlling for student characteristics, financial aid enables recipients to attend institutions that are more selective (Shaut and Rizzo, 1980) and more expensive (Leslie and Brinkman, 1988; Flint, 1991). While financial aid may enable students to consider attending a more diverse set of institutions (Munday, 1976; Flint, 1991), the amount of aid received has been found to be insufficient to eliminate financial barriers to choice (Zollinger, 1984). In addition, the probability of enrolling (Schwartz, 1985, 1986; St. John, 1991) and the prestige and selectivity of the institution preferred (Spies, 1973; Zemsky and Oedel, 1983; Manski and Wise, 1983; Hearn, 1984; MacDermott, Conn, and Owen, 1987; Flint, 1992; Ozden, 1993) have been shown to increase with parental income. According to Schwartz (1985, 1986), the positive relationship between parental income and choice even after controlling for financial aid shows that choice is not "wealth neutral," where wealth neutrality is defined as equal probability of choosing to attend an institution, regardless of income, among students who are equally qualified.

The effects of the amounts, packages, types, and sources of aid on student choice are ambiguous. Some researchers have found that the probability of enrolling in one institution rather than another increased with the amount of aid received (Seneca and Taussig, 1987; Somers, 1993; Healy, 1991; Healy and Jellema, 1991), while others have shown that merely receiving aid, rather than the amount received, influenced choice (Jackson, 1978; St. John, 1991). Although researchers who have examined choice among high school seniors in the 1970s have found that grants, loans, and work-study have comparable-sized, positive effects (Nolfi et al., 1978; Tierney, 1980), researchers who have examined choice among students in the 1980s have found that grants, but not loans, promote choice (Schwartz, 1985; Chapman and Jackson, 1987; Jackson, 1990; Moore, Studenmund and Slobko, 1991). Although some evidence suggests that institutionally funded merit-based aid is more effective than federal need-based aid (Chapman and Jackson, 1987; DeMasi, 1989; Somers, 1993), few researchers have specifically examined the effects on choice of different sources of aid (e.g., federal and state governments and institutions).

### **Knowledge about The Effects of Aid On Choice**

This study builds on the findings of previous research while taking into account the limitations in at least four respects. First, prior researchers have often confined their samples to single institutions, thereby limiting the ability to generalize findings to students nationwide. In addition, they have typically used unreliable sources of information about financial aid, because of the absence of a national database focusing upon aid prior to the first National

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*“Financial aid has promoted choice, but has not eliminated all barriers.”*

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Postsecondary Student Aid Study, which was conducted in 1987. Moreover, given changes in aid programs that have occurred since the enactment of the Higher Education Act of 1965, the relevance of previous research findings is generally limited to a particular time period. For example, the total amount of resources allocated for student financial aid increased in constant 1995 dollars by 75% over the past ten years from \$28.3 billion in 1985-86 to \$49.7 billion in 1995-96. Over the past fifteen years, growth in institutional sources of aid has reduced the dominance of federal aid. After declining from 48% of the total in 1963-64 to 11% in 1975-76, the percentage of aid awarded from institutional sources rose again and stabilized at 20% in 1990-91. Federal sources accounted for more than 80% of all aid awarded during the mid-1970s and early 1980s, but only 74% of the total by 1995-96 (The College Board, 1996). In addition, the emphasis of financial aid has shifted from grants to loans. Grants were 80% of all aid awarded in 1975-76, but only 55% in 1980-81 (The College Board, 1996). Therefore, for this research, a subsample from the Beginning Postsecondary Student Survey (BPS) of 1989-90 first-time freshmen, the most recent nationally representative database with reliable financial aid data available, is used to examine the research question.

Second, differences among racial groups in their choice of institution as well as in the effects of financial aid on choice have not been sufficiently examined in previous research. Studies of the effect of race on choice are limited by the application of descriptive statistics only (e.g., Muffo, 1987), the use of non-representative samples (Hearn, 1984), the reliance on samples drawn from single institutions (e.g., Somers and St. John, 1993), the omission of race from the analyses (e.g., Chapman and Jackson, 1987), and the general lack of attention to racial groups other than Whites and Blacks. The BPS database includes sufficiently large sample sizes to examine the effects of financial aid for three racial groups: Whites, Blacks, and Hispanics.

Third, the regression model used in this study avoids two common problems found in previous research. A continuous dependent variable (price of the institution attended) avoids the methodological problem of using ordinary least squares regression with a dichotomous outcome (e.g., enroll at the institution: yes or no). The independent variables are drawn from sociological, econometric, and social psychological conceptual frameworks, thereby avoiding questions about the validity of the assumptions underlying econometric models.

Finally, this research will be used to inform the U.S. Department of Education about the strengths and weaknesses of the BPS database, including aspects of the college choice process that are not adequately addressed using the database. The Department has invested substantial resources into the development and maintenance of national databases such as the Beginning Postsecondary Student Survey. Because this database is superior to most others in terms of how representative the sample is, the minimization of missing data, and the reliability of financial aid data, researchers should use the database to identify necessary refinements and improvements. By informing the Department of the strengths and weaknesses, future data collection activities may be

altered to better serve the needs of educational researchers, and, consequently, of policy-makers.

## **How Does Financial Aid Contribute to Choice?**

This study uses regression analyses to isolate the effects of financial aid on student choice of institution to attend by employing a subsample from the most recent, nationally representative database with reliable financial aid data available, the Beginning Postsecondary Student Survey of 1989-90 freshmen. Because prior research has not provided a current assessment of the influence of different amounts, packages, types, and sources of financial aid on student choice, the regression analyses are repeated using each of seven different measures of financial aid.

Based on the conclusions drawn from the literature review, particularly the uncertain contribution of different amounts, types, and sources of financial aid to students' choice of institution to attend, the most important question to be addressed is:

What is the contribution of financial aid to student choice based on the *price of four-year institution attended* after controlling for important student characteristics such as academic ability, educational aspirations, socioeconomic status, distance from home, gender, and racial identity?

## **Study Sample**

A subsample from the first follow-up to the BPS is used to address the research question. Sponsored by the U.S. Department of Education's National Center for Education Statistics, the BPS is representative of all undergraduate students nationwide who began their postsecondary education in 1989-90. For the BPS first-follow-up in 1992, interviews were conducted with 6,520 of the 7,932 first-time enrollees identified in the 1990 National Postsecondary Student Aid Study (NPSAS:90). The overall response rate for the first BPS follow-up was 91% (Burkheimer et al., 1994). For the NPSAS:90, financial data were collected from students, parents, and institutions in order to increase the accuracy of the data and to minimize the amount of missing data.

The subsample includes only students who meet the following criteria: initially enrolled in a bachelor's degree program at their first choice four-year college or university on a full-time basis, dependent (as defined by financial aid eligibility criteria), and American citizen. The size of the final subsample is 1,916 students. Students with a "flag" in the BPS database denoting questionable data are also excluded.

The BPS database does not include data describing the characteristics of the alternative institutions from which students were choosing. In order to correct for this limitation, only students who reported that they were attending their first choice institution are included in the analyses. Chi-square tests show that students who were and who were not attending their first choice institution differ in terms of their race, socioeconomic status, and educational aspirations. Among freshmen who were attending their first choice, Blacks were under-represented, while students in the lowest socioeconomic status quartile were

over-represented. Students who were attending their first choice also had lower educational aspirations than students who were not attending their first choice.

## Analyses

Ordinary least squares regression analyses are used to isolate the effects of financial aid on student choice based on the price of institution attended (the "choice indicator") after controlling for factors predicted by previous research to be related to student choice. To more fully examine the effects of financial aid on choice, the regression analyses are repeated using each of seven different measurements of financial aid. The total amount of aid received is measured as a continuous variable. In each of the other six specifications, the effects of financial aid are measured using a series of dummy variables and are evaluated relative to receiving no aid. In other words, receiving no aid is the reference category, and, therefore, is omitted from the regression analyses. The seven specifications are:

- Any financial aid received.
- Total amount of aid received. The total amount of aid received squared is also included to test whether the relationship between the amount of aid and the price of institution attended is linear.
- Package of financial aid received: 1. grants only, 2. loans only, 3. grants and loans only, or 4. grants, loans, and work-study.
- Different types of aid received: 1. grants, 2. loans, and/or 3. work-study.
- Emphasis of the aid package on a particular type of aid: 1. grants represented 51% or more of total aid, 2. loans represented 51% or more of total aid, or 3. neither grants nor loans were dominant.
- Different sources of aid received: 1. federal Title IV, 2. state, and/or 3. institutional.
- Emphasis of the aid package on a particular source of aid: 1. federal Title IV aid represented 51% or more of total aid received, 2. state aid represented 51% or more of total aid received, 3. institutional aid represented 51% or more of total aid received, or 4. no source was dominant.

To ensure that the sample is representative of the population of first-time full-time dependent freshmen who were attending their first choice four-year institution while also correcting for the influence of large sample sizes on standard errors and t-statistics, each case is weighted by the sample divided by the average weight for the sample. The size of the weighted sample is 474,252 and the size of the adjusted weighted sample used in these analyses is 1,916. To reduce the probability of finding a statistically significant relationship by chance, the standard threshold of statistical significance ( $p < .05$ ) is adjusted by dividing .05 by 17, the number of variables in the regression "family." In the analyses presented in this study, only effects that meet the adjusted threshold of  $p < .003$  are considered to be different from zero.

## Variables

The choice of institution attended (i.e., the dependent variable) is measured by the total tuition and fees charged in the 1989-90 academic year at the institution attended. "Tuition and Fees" is measured as a natural logarithm so that the antilog of each unstandardized regression coefficient minus one represents the



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*“The relationship between financial aid and the price of institution attended also depends on the package of aid.”*

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percent change in price associated with a one unit change in each independent variable. Measuring tuition and fees as a natural logarithm also corrects for the positively skewed distribution.

Institutional price is an important indicator of student choice of institution to attend for at least three reasons. First, costs of attending college have been rising at a faster rate than personal income and financial aid awards (The College Board, 1996). Second, as McPherson and Winston (1993) have argued, price is an appropriate measure of institutional quality. Finally, the price and quality of an institution attended have been shown to influence students' future economic and occupational attainment (Pascarella and Terenzini, 1991; Pascarella, Smart, and Smylie, 1992) and, consequently, their decisions about where to attend college.

Figure 1 shows the hypothetical predictors of price of institution attended. Although based on David Chapman's (1981) social psychological model, the model in this study has been modified to reflect the relationships identified in the prior research review and variables in the BPS database. The model includes the addition of race and gender, two variables examined in Hearn's (1984, 1988) sociological model, and labor market conditions and opportunities, an important variable in econometric models (e.g., Manski and Wise, 1983; Schwartz, 1985).

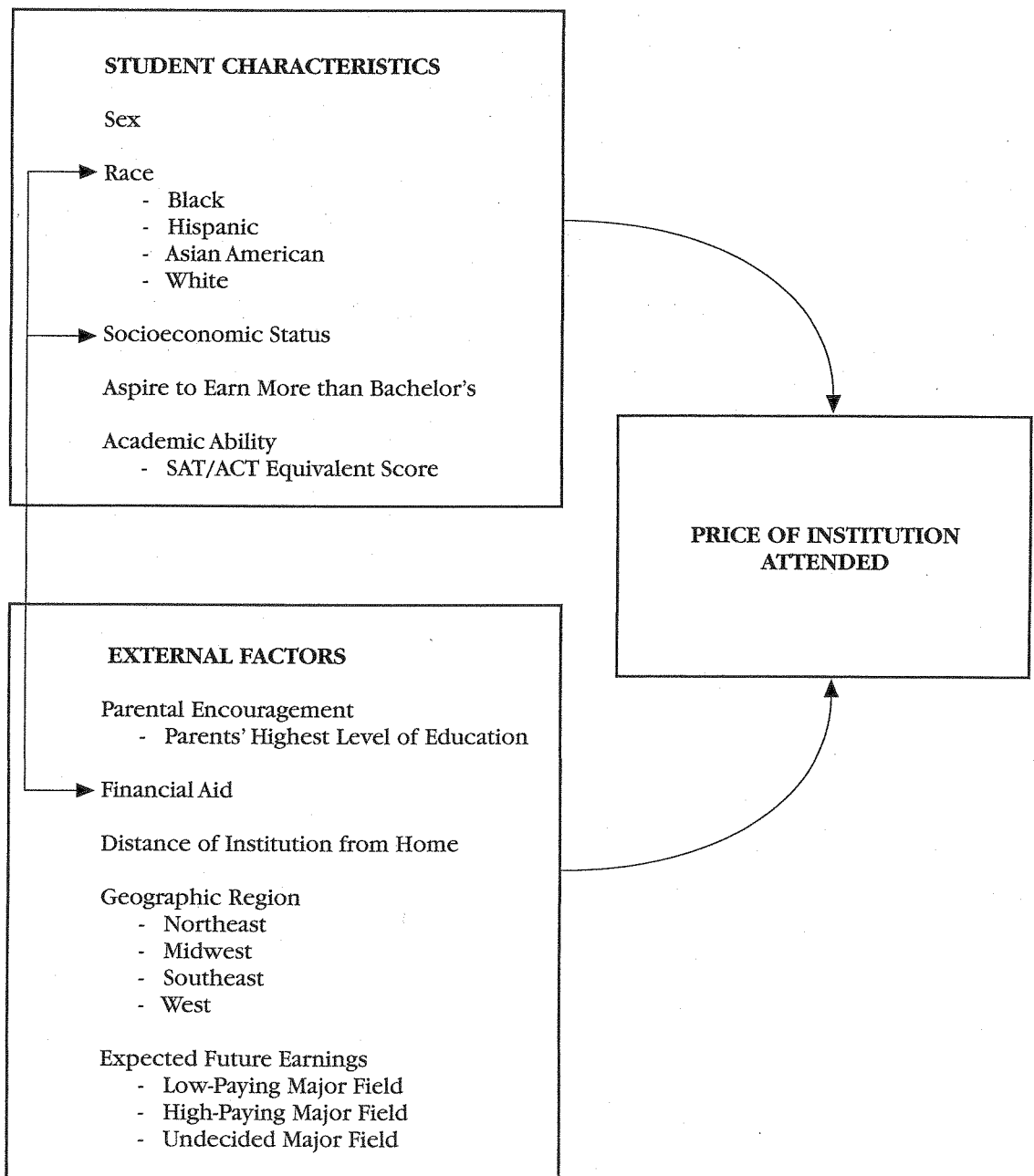
The lines between socioeconomic status (SES) and financial aid and between racial group and financial aid represent the possibility that lower-income students respond differently to aid than upper-income students (Jackson, 1978; Schwartz, 1986; Seneca and Taussig, 1987; Leslie and Brinkman, 1988; Healy, 1991) and that Black and Hispanic students respond differently than White students. Interaction terms between Asian American/Pacific Islander and financial aid are omitted due to the small number of Asian American/Pacific Islanders in the sample (adjusted weighted sample size = 48).

Socioeconomic status is measured using a factor composite included in the BPS database. This factor was constructed from the following survey items: mother's education, father's education, items in the home (e.g., dishwasher, VCR, two or more vehicles, computer, more than fifty books, reference books), and family income. In order to test whether the relationship between socioeconomic status and price of institution to attend is linear, both socioeconomic status and squared value are included in the regression analyses.

To control for the possibility that the relationship between SAT score and price of institution attended is non-linear (e.g., Spies, 1973; Nolfi et al., 1978; Fuller et al., 1982; Manski and Wise, 1983; Seneca and Taussig, 1987), both SAT score and squared value are included in the regression analyses. Students in the BPS database may have test score data for the ACT, the SAT, or both the ACT and the SAT. When available, ACT scores are converted to SAT scores. When both SAT and ACT scores are available, the actual SAT score rather than the SAT equivalent of the ACT score is used.

Even after converting available ACT scores to SAT scores, however, one-third (33%) of the cases have no data for SAT score. For students who are missing both SAT and ACT scores, the average SAT/ACT equivalent score for students of the same socioeconomic status quartile and racial group is used.

**FIGURE 1**  
**Predictors of Price of Institution Attended**



Source: Model is an adaptation of D. Chapman (1981).

Calculating the SAT score based on both socioeconomic status and racial group is important since higher percents of Blacks and Hispanics than of Whites are missing these data, and because an analysis of variance test shows that the average SAT score varies by both socioeconomic status and racial group.

Distance from home is included in the analysis because distance may be related to the number of college and university alternatives located near a student's residence (e.g., Zemsky and Oedel, 1983) and to the psychological and monetary costs of traveling to an institution (e.g., Chapman and Jackson, 1987). Geographic region is included since both family income and institutional price vary by region, and because geographic region has been shown by other researchers to be related to institutional choice (e.g., Schwartz, 1986) and college enrollment (St. John, 1991).

Expected future earnings, an important variable in econometric models, are measured by students' intended major field in their first year of college attendance. Three dummy variables are constructed based on the average salary offered to 1989-90 bachelor's degree recipients with various major fields, as published by the National Association of Colleges and Employers. "Undecided" is omitted from the regression analyses to serve as the comparison group for the study.

## Study Findings

Tables 1 and 2 summarize the independent variables that were related to the price of institution attended at the  $p < .05$  level. Table 1 shows the standardized regression coefficients, illustrating the relative importance of the independent variables as predictors of the choice indicator. Table 2 shows the percentage change in the choice indicator that is associated with a one unit change in each of the independent variables.

The regression model accounts for 32.5% to 42.6% of the variance in the choice indicator, depending on the financial aid specification. On average, 1989-90 freshmen who attended institutions farther from home, lived in the northeast, southeast, or midwest, had higher SAT scores, had higher socioeconomic status, and received financial aid attended higher priced institutions than freshmen who attended institutions located closer to home, lived in the western United States, had lower SAT scores, had lower socioeconomic status, and received no aid.

## How Financial Aid And Price Affect Choice

After controlling for racial group, socioeconomic status, SAT score, distance from home, geographic region, educational aspirations, and parental encouragement, the regression analyses indicate that students who received financial aid attended higher priced institutions than their counterparts who did not receive aid. Model 1 of Table 2 shows that the price of institution attended was 59.7% higher for freshmen who received financial aid, on average, than for freshmen who received no aid. This suggests that aid promotes student choice.

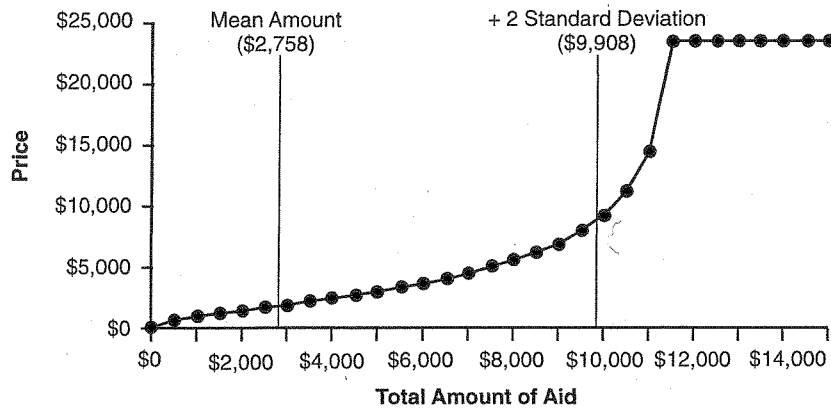
The price of institution attended was also related to the amount of aid received. Figure 2 illustrates the contribution of the total amount of aid to student choice based on the price of institution attended after controlling for other factors in the model. The upward slope of the line indicates that students

**TABLE 1**  
**Standardized Regression Coefficients for Predictors of the Price of Institution Attended**

Independent Variable	Model 1 Received Aid	Model 2 Amount of Aid	Model 3 Aid Package	Model 4 Type of Aid	Model 5 Dominant Type	Model 6 Source of Aid	Model 7 Dominant Source
Hispanic	-0.048*	-0.039*	-0.042*	-0.046*	-0.049*	-0.048*	-0.044*
Asian American	0.036	0.035*	0.043*	0.046*	0.036	0.045*	0.043*
Parents' Education	0.061**	0.051*	0.059*	0.062**	0.062**	0.054*	0.048*
SES Percentile	-0.139	-0.149	-0.147	-0.139	-0.121	-0.147	-0.171
SES, Squared	0.315**	0.377***	0.296**	0.307**	0.288**	0.286**	0.344**
SAT Score	-0.293*	-0.216	-0.323*	-0.302*	-0.282*	-0.290*	-0.303*
SAT Score, Squared	0.475**	0.357**	0.498***	0.474**	0.456**	0.442**	0.462**
Aspire More than BA	0.060**	0.032	0.054**	0.049*	0.055**	0.047*	0.058**
Distance from Home	0.168***	0.133***	0.161***	0.155***	0.174***	0.164***	0.172***
Northeast	0.441***	0.414***	0.422***	0.430***	0.448***	0.446***	0.448***
Midwest	0.216***	0.226***	0.209***	0.209***	0.221***	0.209***	0.216***
Southeast	0.127***	0.143***	0.124***	0.127***	0.135***	0.127***	0.130***
Received Aid	0.162***						
Aid x 1st SES	0.099*						
(Interaction between receiving aid and the lowest socioeconomic quartile)							
Aid x 2nd SES	0.086*						
Amount of Aid		0.413***					
Amount Aid, Squared		-0.086*					
Amount Aid x 1st SES		0.097*					
Grants Only			0.117***				
Grant, Loan, & Work			0.245***				
Grants & Loans			0.215***				
Received Grant				0.182***			
Received Loan				0.131***			
Received Work-study				0.091***			
Predominantly Grants					0.184***		
Predominantly Loans					0.148*		
No Type x 1st SES					0.082*		
No Type x 2nd SES					0.080**		
Received Title IV Aid						0.117***	
Received Institution						0.250***	
Predominant Title IV							0.224**
Predominant Institution							0.166***
Predominant Institution x 1st SES							0.083**
(Interaction between aid package consisting mostly of institutional sources and lowest socioeconomic quartile)							
No Source x 1st SES							0.097**
(Interaction between aid package with no dominant source and the lowest socioeconomic quartile)							
Predominant State x 2nd SES							0.096**
No Source x 2nd SES							0.088**
Adjusted R Square	0.325	0.426	0.352	0.361	0.327	0.372	0.341

Only statistically significant ( $p < .05$ ) coefficients shown. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ . SES = Socio-economic status quartile.

**FIGURE 2**  
**Contribution of Total Amount of Aid Received to Student Choice**  
**Based on the Price of Institutions Attended**



who received financial aid attended higher priced institutions than students who did not receive aid and that the price of institution attended increased with the amount of aid received. A reciprocal causality may also be true: that a student is more needy at a higher priced institution. However, the analyses and theoretical framework of this research assume the direction of causality to be from aid to price.

The positive relationship between the amount of aid received and the price of institution attended does not continue upward indefinitely, however. As noted by the line showing the mean plus two standard deviations, about 95% of all students received total aid awards of \$9,908 or less. As shown by the flat portion of the line, the contribution of aid to student choice based on the price of institution attended did not continue to increase, but remained stable, for the small percentage of students who received \$11,500 or more in total aid.

The relationship between financial aid and the price of institution attended also depended on the package of aid. Model 3 of Table 2 shows that, compared with those who received no aid, students who received packages that included grants, loans, and work-study attended 126.4% higher priced institutions, students who received packages that included grants and loans attended 69.8% higher priced institutions, and students who received packages that were composed of only grants attended 30.4% higher priced institutions. On average, students who received packages composed of only loans did not attend higher priced institutions than those students who received no financial aid. Amount of aid received was not controlled for.

Model 4 shows that, compared with freshmen who received no aid, freshmen who received grants attended institutions with 39.4% higher prices, students who received loans attended institutions with 29.6% higher prices, and students who received work-study attended institutions with 28.4% higher

**TABLE 2**  
**Percentage Increase in the Price of Institution Attended Associated with a**  
**One Unit Increase in Each Independent Variable**

Independent Variable	Model 1 Received Aid	Model 2 Amount of Aid	Model 3 Aid Package	Model 4 Type of Aid	Model 5 Dominant Type	Model 6 Source of Aid	Model 7 Dominant Source
Hispanic	-18.3%*	-16.4%*	-17.7%*	-18.9%*	-20.1%*	-19.8%*	-18.3%*
Asian American	28.4%	23.2%*	29.0%*	31.1%*	23.7%	30.5%*	28.4%*
Parents' Education	3.9%**	4.1%*	4.8%*	5.0%**	5.0%**	4.4%*	3.9%*
SES Percentile	-0.8%	-0.7%	-0.7%	-0.7%	-0.6%	-0.7%	-0.8%
SES, Squared	0.0%**	0.0%***	0.0%**	0.0%**	0.0%**	0.0%**	0.0%**
SAT Score	-0.2%*	-0.1%	-0.2%*	-0.2%*	-0.2%*	-0.2%*	-0.2%*
SAT Score, Squared	0.0%**	0.0%**	0.0%***	0.0%**	0.0%**	0.0%**	0.0%**
Aspire More than BA	11.6%**	6.2%	10.8%**	9.7%*	10.9%**	9.2%*	11.6%**
Distance from Home	13.6%***	10.3%***	12.6%***	12.1%***	13.7%***	12.9%***	13.6%***
Northeast	148.2%***	131.5%***	135.4%***	139.2%***	148.2%***	146.9%***	148.2%***
Midwest	54.4%***	57.5%***	52.2%***	52.2%***	56.0%***	52.3%***	54.4%***
Southeast	33.9%***	37.9%***	32.2%***	33.1%***	35.4%***	32.9%***	33.9%***
Received Aid	59.7%***						
Aid x 1st SES	-21.7%*						
Aid x 2nd SES	53.6%*						
Amount of Aid		0.0%***					
Amount Aid, Squared		0.0%*					
Amount x 1st SES		0.0%*					
Grants Only			30.4%***				
Grant, Loan, & Work			126.4%***				
Grants & Loans			69.8%***				
Received Grant				39.4%***			
Received Loan				29.6%***			
Received Work-study				28.4%***			
Predominantly Grants					42.6%***		
Predominantly Loans					53.2%*		
No Type x 1st SES					53.8%*		
No Type x 2nd SES					54.3%**		
Received Title IV Aid						24.5%***	
Received Institution Aid						62.3%***	
Predominant Title IV							59.7%**
Predominant Institution							53.6%***
Predominant Institution x 1st SES							73.7%**
No Source x 1st SES							63.0%**
Predominant State x 2nd SES							92.3%***
No Source x 2nd SES							55.3%**

Only statistically significant ( $p < .05$ ) coefficients shown. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ . SES = socio-economic status quartile.

prices. Model 5 shows that freshmen who received packages that emphasized grants attended institutions with 42.6% higher prices and freshmen who received packages that emphasized loans attended institutions with 53.2%

higher prices than freshmen who received no financial aid and freshmen who received packages in which neither grants nor loans constituted more than one-half of all aid received.

The choice indicator was also related to the source of aid received. Model 6 shows that, on average, students who received Title IV aid attended 24.5% higher priced institutions and students who received institutional aid attended 62.3% higher priced institutions than students who received no aid. Model 7 shows that students who received the majority of their aid from Title IV programs attended institutions with 59.7% higher prices and students who received the majority of their aid from institutional sources attended institutions with 53.6% higher prices than students who received no financial aid. The price of institution attended was not related to receiving any amount of state financial aid (Model 6) or to receiving the majority of aid from state government sources (Model 7).

### **Socioeconomic Status and Price**

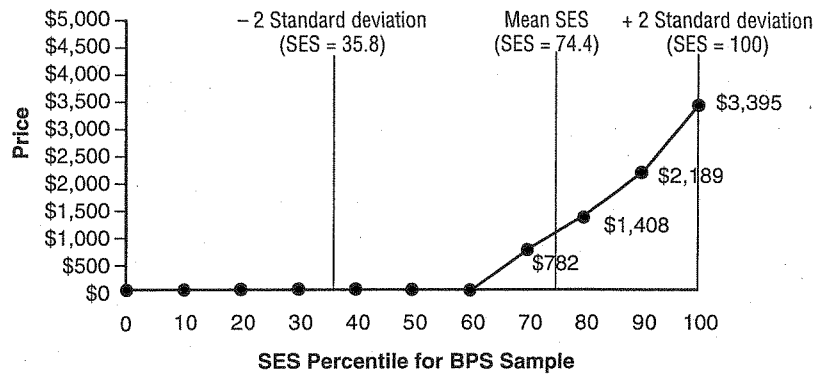
The coefficient for socioeconomic status squared was a statistically significant predictor, indicating that the relationship between socioeconomic status and the choice indicator is not linear. Figure 3 illustrates the contribution of socioeconomic status to student choice based on the price of institution attended. If socioeconomic status were unrelated to the price of institution attended (i.e., if access to higher priced institutions were not limited for students with lower socioeconomic status), the line in Figure 3 would be horizontal. This is true up to the 60th percentile of socioeconomic status. For students with socioeconomic status above the 60th percentile, however, the line slopes upward as socioeconomic status increases. This relationship suggests that, for freshmen with socioeconomic status between 0 and the 60th percentile, the price of institution attended was not related to socioeconomic status. For freshmen with socioeconomic status above the 60th percentile (about 75% of all freshmen in the subsample), the price of institution attended increased with socioeconomic status. In other words, even with the availability of financial aid, students with lower and middle socioeconomic status attended lower priced institutions than their counterparts with upper socioeconomic status after controlling for other differences.

The interaction between receiving an aid package in which institutional sources of aid comprised more than one-half of total aid and the lowest socioeconomic status quartile was statistically significant at  $p < .003$ . The positive sign of the coefficient indicates that, after controlling for other differences, packages of financial aid that were composed primarily of institutional sources had a larger positive effect upon the price of institution attended for students with the lowest socioeconomic status than for their counterparts with higher socioeconomic status.

### **Effects of Racial Group on Price of Institution Attended**

The regression coefficients for Asian and Hispanic were statistically different from zero at the  $p < .05$  level, but not at the more stringent  $p < .003$ . These findings suggest that, even after controlling for other factors, Asian American/Pacific Islanders may attend higher priced institutions while Hispanics

**FIGURE 3**  
**Contribution of Socioeconomic Status to Student Choice**  
**Based on the Price of Institution Attended**



may attend lower priced institutions than Whites. However, the interaction terms for Asian American/Pacific Islanders and financial aid were not tested due to the small number of Asian American/Pacific Islanders in the sample.

The coefficient between Black students and price of institution attended was negative, but not statistically different from zero at the  $p < .05$  level. None of the interactions between racial group and financial aid were statistically significant, suggesting that the effects of different amounts, types, packages, and sources of financial aid on the price of institution attended did not vary by racial group. Nonetheless, these findings may be attributable to the relatively low statistical power to detect these interactions since the adjusted weighted sample sizes were small for Blacks ( $n = 117$ ) and Hispanics ( $n = 80$ ).

### **Students Who Received Financial Aid Attended Higher Priced Institutions**

Like the findings from prior research (e.g., Leslie and Brinkman, 1988; Flint, 1991), the analyses in this study show that students who received aid attended higher priced institutions than students who received no aid, suggesting that aid promoted student choice. The analyses also showed that the effect of aid on student choice based on institutional price depended on the amount of aid awarded. But the relationship between the choice indicator and the amount of aid received appears to be non-linear. Specifically, the price of institution attended increased at an accelerating rate as the amount of aid received rose. Although opponents of financial aid may use this finding to suggest that institutions raise their prices to collect more financial aid, the effect of the amount of aid on institutional price appears to have an upward limit. Specifically, the analyses showed that the contribution of aid to student choice based on the price of institution attended remained stable and did not continue to increase for the small percentage of students who received more than \$11,500 in aid.



### **Students Who Received Loans Attended Higher Priced Institutions**

Researchers (Schwartz, 1985; Chapman and Jackson, 1987; Jackson, 1990; Moore et al., 1991) who have examined choice among students in the early 1980s have found that grants, but not loans, promote choice. But researchers (Nolfi et al., 1978; Tierney, 1980) who examined choice of institution among high school seniors in the 1970s, when federal financial aid programs were in their infancy, generally found that grants and loans had comparable-sized, positive effects on choice.

Taken together, the findings from this study and prior research seem to reflect the characteristics of financial aid programs in effect when students in the sample were enrolled. For instance, loans constituted only 17% of all aid in 1975-76 but 49% of all aid in 1985-86 (The College Board, 1996). These patterns suggest that students must be willing to borrow to attend the nation's higher priced institutions, and that the shift in the emphasis of financial aid policy from grants to loans has generally not deterred students from attending the higher priced institutions for which they are qualified.

### **Students of Lower Socioeconomic Status Attended Lower Priced Institutions**

Prior research has shown that financial aid has promoted institutional choice but has not eliminated economic barriers (Spies, 1973; Zemsky and Oedel, 1983; Manski and Wise, 1983; Hearn, 1984; Zollinger, 1984; Schwartz, 1985, 1986; MacDermott et al., 1987; St. John, 1991; Flint, 1992; Ozden, 1993). The analyses in this study showed that, after controlling for other factors, the relationship between socioeconomic status and the price of institution attended is non-linear. When only freshmen with socioeconomic status below the 60th percentile are considered, financial aid appears to have eliminated differences in institutional choice due to socioeconomic status. For freshmen with socioeconomic status above the 60th percentile, however, the price of institution attended increased as socioeconomic status increased, suggesting that students with the highest socioeconomic status attended higher priced institutions than other students.

The extent to which socioeconomic status influences students' choice is underscored by the fact that 75% of the 1989-90 first-time, full-time dependent freshmen attending their first choice institution have socioeconomic status above the 60th percentile.

The findings of this research show that the goal of student choice was not achieved among 1989-90 first-time, full-time dependent freshmen. While freshmen who received aid attended higher priced institutions than freshmen who received no aid, students with lower socioeconomic status were still less likely than their counterparts with higher socioeconomic status to attend higher priced institutions, even with the availability of financial aid and after controlling for other differences (e.g., race, educational aspirations, academic ability, parental encouragement).

### **Limitations and Study Strengths**

This research has at least five limitations. First, the low representation of Blacks (adjusted weighted sample size = 117), Hispanics (adjusted weighted sample size = 80), and Asian Americans (adjusted weighted sample size = 48) restricts

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*“This study showed that students who received aid attended higher priced institutions than students who received no aid.”*

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the statistical power to detect true differences in student choice among students of different racial groups and variations in the effects of aid by racial group.

A second limitation is related to the way in which values were imputed for cases missing SAT and ACT scores. While imputing values based upon the average SAT score for students of the same socioeconomic status and racial group minimizes the amount of missing data, this practice results in an underestimation of the standard errors by 10% to 20%. As a result, the regression coefficients for SAT score may falsely appear to be different from zero and, therefore, should be interpreted with caution.

Third, the analyses are limited by the omission of several hypothetically important predictors from the regression analyses because the variables are not included in the BPS database. As a result, this study does not control for some of the variables predicted by sociological models to be related to the price of institution attended, such as high school achievement, high school characteristics, high school experiences, and encouragement of significant others. Moreover, the absence of a statistically significant effect for expected labor market opportunities on price suggests that students' intended major field was an inadequate proxy. Finding an appropriate proxy for expected future earnings is complicated because the ways in which individuals form their expectations has not been tested (Manski, 1993).

A fourth limitation is the use of cross-sectional data to examine the effects of aid on student choice. Although the BPS is a longitudinal database, the data that describe choice are cross-sectional. With the exception of the four-year longitudinal study of students who attended 21 high schools in Indiana conducted by Hossler and his colleagues, most researchers have used data collected at one point in time to examine student choice. In the absence of longitudinal data, however, the causal order of perceptions, preferences, and choice cannot be ascertained, as illustrated most clearly by attempts to examine the effects of institutional recruitment activities on student choice (e.g., Dembowski, 1980; Chapman and Jackson, 1987; Kellaris and Kellaris, 1988).

Finally, only one aspect of the college choice process is examined: the characteristics of the actual institution attended. According to Hossler and Gallagher (1987), there are three stages in the college choice process:

1. predisposition or interest in attending any college,
2. search for information about college characteristics and selection of institutions to which to apply, and
3. decision of which institution to attend.

The regression analyses do not reveal whether students with lower socioeconomic status attended lower priced institutions because they felt they could not afford to attend higher priced institutions even though they had applied to and been accepted for admission to higher priced institutions, or if they attended lower priced institutions because their financial concerns deterred them from applying to higher priced institutions.

Nonetheless, the analyses presented in this study have at least three strengths. First, this research demonstrates the importance of periodically examining the effects of aid on student choice. Second, the analyses demonstrate that the effects of financial aid should be considered not only in terms of

whether students receive aid, but also in terms of the amounts, packages, types, and sources of aid that students receive. Third, these analyses are useful not only to federal policy-makers, but also to financial aid directors at higher education institutions. By considering the effects of different amounts, packages, types, and sources of financial aid, these analyses provide insights into the varying effectiveness of different financial aid packaging policies.

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