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During the 1960s and early 1970s, public postsecondary education expanded dramatically to accomodate the "baby boom" cohorts. For the remainder of this century, the spector of demographically-induced enrollment declines haunt what may well become over-built systems of public postsecondary education. Governors and state legislators now face difficult policy decisions regarding the maintenance of accessible and diverse systems of postsecondary education within an ever-tightening set of fiscal and enrollment constraints.

One set of options available to these decision makers is to induce shifts in student enrollments from one type of public institution to other public colleges and universities. The most direct alternative is to place enrollment ceilings on state flagship institutions such as was done at the University of Maryland, College Park Campus. To be effective in redistributing enrollments, such an alternative must incorporate enrollment ceilings that decline faster than the projected decline in the number of high school seniors. Similarly, states could place minimum admissions criteria on state flagship institutions. Such an alternative would only be effective if the targeted institution were already dipping deep into its applicant pool *and* the proposed admissions floors again reduced the number of eligible applicants faster than the projected decline in high school seniors. In fact, this latter policy might have the reverse effect of making state flagship campuses even more attractive to students with higher academic achievement levels.

The final option, and the one to be discussed in this paper, is to offer financial incentives to students to matriculate at public institutions other than the state flagship campus. Such a policy requires two types of information; (1) the number of high school seniors who simultaneously consider public institutions of various types, and (2) estimates of student sensitivity to such financial incentives. Student financial aid is an important variable to be considered in financial incentives. This paper provides this information for a populous Eastern state, using data from two large samples of recent high school senior classes.

Conceptual Framework

The decision to matriculate at a particular college or university is one example of the class of "individual choice behavior" problems studied by a wide variety of social science disciplines (Luce, 1959; Lewis, et. al., 1974). Despite differences among disciplines, they share a common conception that these problems consist of two major components; (1) the set of options actually considered by the problem

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solver, and (2) the selection of one option from within this set. In the case of college-bound high school seniors, the set of colleges and universities to which they send test scores constitutes the widest possible set of institutions actively considered, while the college of matriculation is that one chosen from within this set.

Where the various social science disciplines diverge is in the assumptions they make about how this final selection is made. In this study, it was assumed that each prospective student acts in his/her own self interest and chooses the college which provides the best quality education at the least cost, as compared to the other colleges in his/her choice set. Seniors make these decisions by calculating (at least subconsciously) the present value of the monetary and non-monetary benefits and costs of attending each college actively considered and selecting that option with the highest net present value (Feldman and Hoenack, 1969).

Two variables are critical to a senior's (and his/her family's) assessment of an institution's desirability; the relative cost of attendance and its academic reputation. When considering the cost of attendance, two critical issues must be addressed. First, it is essential that the cost of attending a particular institution take into account subsidies to the senior in the form of financial aid. These subsidies include both non-repayable grants and scholarships and the provision of low interest, deferred repayment loans (Tierney, 1982). These subsidies must be estimated in order to properly adjust direct, out-of-the-pocket expenditures by the student and his/her family. Second, it is critical to recognize that a senior's decision to matriculate at an institution is affected by the *difference* in these adjusted institutional costs, not the absolute magnitude of a given instituion's adjusted costs (Tierney, 1980; 1982).

High school seniors' information on an instituion's academic reputation is limited and incomplete. Further, attempts to gather more information are likely to yield few benefits and be rather costly to obtain, particularly in terms of the direct costs of visiting prospective colleges and the wages foregone by the student and his/her parents in making these visits. Consequently, seniors are assumed to establish an acceptable academic reputation standard against which to evaluate options. This standard, however, is not an abstract standard but is embodied in a specific college or university. Presumably, this institution is the one with which the senior is most familiar, perhaps because a sibling, friend, or parent is an alumnus. This standard also is not immutable. When a senior is at the point of deciding where to matriculate, the admissions decisions of this more familiar institution can seriously affect (favorably or unfavorably) the senior's decision. In a very real sense, this institution will be known by whom it rejects.

Study Design

The data employed in this study is drawn from recently created samples of 43,413 and 50,406 Pennsylvania high school seniors in 1979 and 1981, respectively. The samples were created by merging the College Board's Comprehensive Undergraduate Enrollment Planning Project's (CUEPP) files with those of the Pennsylvania Higher Education Assistance Agency (PHEAA) files of financial aid applicants. The merged files include data on the actual institutional options to which the senior sent test scores, the actual direct costs of attending each option, and the senior's actual financial status in terms of adjusted family income, expected parental contribution, and actual state grants and loans at the institution of matriculation.

The resulting data base thus represents a subset of college-bound high school seniors who applied to PHEAA for financial assistance in Pennsylvania, over 90 percent of college-bound high school seniors take the Preliminary Scholastic Aptitude Test (PSAT) or the Scholastic Aptitude Test (SAT). Because PHEAA is the state guarantee agency for Guaranteed Student Loans and a multiple data entry

(MDE) contractor for Pell Grant applications as well as the agency responsible for state grants, most state financial aid applicants are included. Specifically, 85.5 percent of the 1979 high school senior aid applicants are included, with a merge rate of 89.9 percent in 1981.

As part of the Comprehensive Undergraduate Enrollment Planning Project, seniors are classified according to how far away from home they send their test scores (Zemsky et. al., 1980). Of particular interest were those seniors considering colleges and universities within the Commonwealth but far away enough from home to preclude commuting. Hereafter, these seniors will be referred to as "in-state" seniors. There were 12,798 such seniors in the merged file for 1979 and 14,100 for 1981. These students constituted 55 and 64 percent of all such high school seniors in 1979 and 1981, respectively. Thus, while the merged files are representative of high school senior aid applicants, it is not the case that these applicants are representative of those high school seniors who consider leaving home for their collegiate education. Because most of the unmerged seniors come from more affluent families (i.e., 41 percent of these unmerged CUEPP records had family income in excess of $20,000), the Commonwealth has few options in the short run to affect their college choice behavior.

The two high school senior cohorts thus constitute cross-sectional research designs. A comparison of two cross-sectional studies has both strengths and weaknesses. Cross-sectional studies in general assume that the variable(s) under study would have its effect under equilibrium conditions. For instance, comparing the effect of institutional price differences across income levels assumes that seniors from relatively poor families would become as sensitive as seniors from more affluent families if the former seniors' family incomes were increased. However, if estimates of senior price sensitivity were limited to one cohort only in a period of stubstantial changes in student financial assistance programs, one could seriously question the use of policies derived from these estimates. If estimates of senior sensitivity to institutional price differences were substantially the same for two different groups of high school seniors during such a period, then such questions could easily be resolved. Hence the importance of having estimates from two different groups of high school seniors.

The dependent variables for these two samples were based upon the *actual* institutional combinations considered by in-state seniors. There were four such combinations: (1) public comprehensive college vs. public research university, (2) low cost, private vs. public comprehensive college, (3) low cost, private college vs. public research university, and (4) high cost, private college or university vs. public research university. (Appendix A provides a list of Pennsylvania high cost colleges and universities.) The dichotomous dependent variable was coded "1" if the in-state senior matriculated at the first type of institution named among the four preceding pairs, and "2" if he/she matriculated at the second named institution.

In the analyses presented below, five independent variables were included. These five independent variables were included either to control for initial differences among seniors considering any particular combination of institutions or because they were hypothesized to affect a given senior's assessment of the desirability of attending one institution or another. The two primary independent variables in this latter category — institutional price and academic reputation — will be discussed first.

As argued above, a senior's assessment of an institution's desirability is affected, in part, by the monetary costs of attending that college. Ordinarily, these costs include the direct, out-of-the-pocket expenses of tuition and fees, room and board, books and supplies, travel, and miscellaneous items. However, financial aid from federal, state, and institutional programs effectively reduce these costs for many

students. Essentially, these programs provide a price discount for eligible recipients. More importantly, these price discounts are as much a function of the direct costs of attending a particular college as they are the level of family resources available to meet these costs. Thus, financial aid programs serve to *reduce* existing *differences* in the direct cost of attending differentially priced institutions (Tierney, 1980).

The data on the merged files made it possible to calculate the net price — the direct costs less public subsidies — for each institution included in a senior's choice set. The actual state and Pell Grant awards at the institution of matriculation were known. In addition, PHEAA records contained data for college costs, senior and family incomes, and the expected parental contribution (EPC), as computed by the PHEAA need analysis system. Thus, it was possible to calculate the grant awards that seniors would have received at other institutions in their choice sets according to standard federal and PHEAA procedures.

The loan amounts borrowed to attend the institution of matriculation also were known. For each of the remaining instituions, the senior was assumed to borrow at the same rate relative to total student costs as was the case at the institution of matriculation, up to a maximum of $2,500. Unlike grants, however, Guaranteed Student Loan program loans must be repaid by the student borrower. Because these loans are subsidized by the federal government (through below market interest rates and in-school interest subsidies) and because seniors are assumed to calculate the present value of the cost of attending a particular institution, the present value of his/her total repayments associated with the amount borrowed is calculated. The difference between the loan principal and the present value of his/her total repayment is the amount that is subsidized by the federal government. The underlying logic is that the actual loan amount is not a direct offset to the student's college costs, only that portion paid by the federal government is.

The present value of a given institution's price is determined, therefore, by subtracting from the total student budget the sum of the following items; the Pell award, the PHEAA award, and the public subsidy portion of the Guaranteed Student Loan. This variable, hereafter referred to as the institution's "net price" was calculated for each institution to which a senior sent a test score.

The *difference* between the net price of the various pairs of institutional types was calculated by subtracting the latter from the former. (If a student sent a test score to two public comprehensive colleges, the value of this variable was averaged for these two institutions.) The important issue for the purposes of this study is that the minuend and subtrahend of the net price value variable follow the same sequence as the coding of the dependent variable (i.e., "1" and "2"). By consistently following this rule, the expected sign of the regression coefficient for the difference in institutional net price always should be positive.

Other variables besides net price differences also are important to the seniors' college choice. The most important of these is the institution's academic reputation. The academic reputation variable attempted to capture this aspect of the institution's image in the high school senior marketplace. In order to operationalize this reputation, two conditions must be met. First, the measure of academic reputation must reflect the image of the college as perceived by prospective students. Second, it must capture the difference in academic reputations between institutions. This latter condition emphasizes that an institution's academic image is perceived in relation to the images of other institutions, never as an attribute in and of itself. The following procedure was developed to satisfy these conditions.

For each institution, the arithmetic mean of all SAT scores (rounded to two digits) sent to that institution by prospective students in the merged files was calculated. If high school seniors with higher achievement levels tend to send their scores to a relatively small set of colleges, this concentration would indicate that

such seniors believe that they will receive a better "quality" education at these institutions. As such, this institutional mean score captures the institution's academic reputation as perceived by prospective students. It should be noted that the calculation of this variable was done for both 1979 and 1981 cohorts.

Following a procedure analogous to that employed in computing the net price variable, the average academic reputation was computed for all institutions of the same type to which a senior sent a test score. The difference between any two types of institutions was calculated following the same rule as outlined above; the minuend and subtrahend must occur in the same sequence as the coding of the dependent variable as "1" and "2". Unlike the case of the net price variable, this procedure does not lead to the expectation of a specific sign for the academic reputation regression coefficients. The sign of a regression coefficient does, however, indicate which type of institution in a particular analysis serves as the academic reputation standard for seniors with a particular choice set, if any.

Specifically, if the sign of the regression coefficient is positive, the second named institutional type serves as the academic reputation standard. In this case, senior matriculation behavior is affected by increases (or decreases) in the academic reputation of this institutional type. If the sign of the regression coefficient is negative, then the first named institutional options serve as the standard. If the academic reputation variable is not statistically significant, then no one type of institution serves as the standard for academic reputation.

Three independent variables were included to control for initial differences among prospective students. The first variable was student gender. While the decision processes involved in matriculating at a particular type of college are not expected to differ by gender, preferences for different types of institutions may. Controlling for gender removes any extant choice "bias" among various types of colleges.

The second variable, student academic achievement, was included for two reasons. On the one hand, it would differentiate between systematic choices made by students of different academic achievement levels. On the other hand, it also controls for the admissions standards of various types of colleges. One limitation to this study is not having data related to the admissions and financial aid awards from the individual institutions to which a student sent test scores. By including a measure of senior academic achievement, some measure of the likelihood of admission is controlled, i.e., the higher a student's academic achievement level, the more likely he/she was admitted to all institutions to which he/she applied. In this study, student academic achievement was measured by the student's SAT score, again rounded to two digits.

The third variable was the expected family contribution as estimated by PHEAA. While each analysis reported below is divided into three family income levels, it also was decided to include the actual contribution toward college expected of each family.

The sample was stratified into six subsamples along two dimensions; race and family income level. The race variable was dichotomous: white and non-white. Family income is divided into three levels. These three levels corresponded to families with adjusted gross income of less than or equal to $12,000, $12,001 to $24,000, and greater than $24,000, all in 1981 dollars. Because the results were reported in current dollars, the 1979 seniors were divided into comparable categories (the corresponding interval limits being $9,684 and $19,368 in 1979 dollars). Thus, not only is it possible to compare student sensitivity to institutional price differences

across levels in a given year, but it also is possible to compare price sensitivity for students in the same real income categories in 1979 and in 1981.

Results

Four different choice sets were employed in the following analyses: Public comprehensive college vs. public research university, low cost private vs. public comprehensive college, low cost private college vs. public research university, and high cost private college or university vs. public research university. For each choice set, a separate analysis was performed for white and non-white students in each of three family income bands. However, non-white, in-state seniors did not send test scores to public research universities and either low cost or high cost private institutions in sufficient numbers to permit such analyses.

Appendix Table 1 presents the average characteristics of the dependent and independent variables for these seniors. The interpretation of this table is straightforward. The first column of numbers in Appendix Table 1 shows the average characteristics of white seniors who considered only public institutions in 1979. There were 1,320 (165 + 523 + 632) such seniors for whom complete information was available. For the 165 seniors whose adjusted gross income was less than $9,684 in 1979 dollars, slightly less than half were males, the average expected parental contribution (EPC) was $22, and the average academic achievement level was 88 (corresponding to a composite SAT score of 880). On average, it would cost these low income seniors $460 more to attend the more prestigious research university, a net price difference that contributes (as will be seen below) to 61 percent of these seniors matriculating at a public comprehensive college.

Several patterns emerge from an examination of Appendix Table 1. First, from the point of view of college-bound, high school seniors, the real decline in federal and state financial assistance between 1979 and 1981 means that the more expensive option has become even more so in just two years. Second, when examining the probability of matriculating at one type of college or another, one exception to the strong pattern across income levels, choice sets, ethnic categories, and year studied occurs. This exception involves the low probability that a low income, non-white student matriculates at his/her private option when considering a low cost private and public comprehensive college. These low probabilities contrast sharply with more affluent non-white students, particularly in 1981 when the more affluent non-white student was more likely than his/her white counterpart to matriculate at the private option. Why such a pattern occurs is not immediately apparent.

In order to examine in greater detail the probability of matriculating at one institutional type as opposed to another, 36 regression analyses were performed. These analyses for in-state students are summarized in Appendix Table 2. Three steps will be employed to review this summary table.

Comparing the R^2 values in this table indicates that the behavior of low income students is more predictable by this model than is the case for students from more affluent families. For instance, the R^2 is higher for low income white students considering public research universities and high cost, private colleges in 1979 than for high income white students. However, an anomaly occurs in the case of white students considering public comprehensive colleges and private research universities in 1981. In this latter illustration, the rank ordered R^2 values are inverted.

The R^2 values in Table 2 indicate that the behavior of students considering low cost, private institutions is least predictable among these samples. These results would indicate that variables other than the ones included in this model are more influential in the college choice decisions of students who consider such institutions.

One final point concerning these R^2 values is worth highlighting. These models do extremely well in explaining the behavior of non-white students in 1981, with one ex-

ception. Such high R^2 values are remarkable given the type of data involved in this study.

When examining the influence of a particular variable across these 36 analytic samples, it is clear that differences in institutional net price underlie student decisions regarding the desirability of a particular institutional type. This variable is statistically significant in 22 of these 36 equations and if one confined one's attention to the results for white prospective students, this variable is statistically significant in three out of four equations. In every case, the sign of this variable is positive. Thus, behavior of in-state students is as hypothesized.

No other variable even approaches the consistency with which net price differences affect student behavior. However, relative academic reputation is a significant factor in white student college choices particularly when the prospective student is considering a public comprehensive college and a public research university. The sign on this variable is always positive, indicating that research universities constitute the academic reputation standard for this particular choice set.

Public Policy Implications

The results in Appendix Table 2 clearly indicate that institutional net price differences are associated (in the statistical sense of the term) with seniors' assessment of the desirability of a given institutional type, particularly in the case of white seniors. When the in-state senior is considering public options only, his/her college choice also is associated with the relative academic reputation of the research university. This latter finding underlines the earlier comment that placing minimum admissions floors on these institutions could have the effect of making public research universities even more desirable to those seniors with higher academic achievement levels.

However, the statistical association of net price differences is a necessary but not sufficient condition for determining the extent to which the college choice decisions of in-state seniors can be manipulated. Central to this sufficient condition is the concept of senior sensitivity to existing net price differences. Estimates of this net price sensitivity is derived from the regression coefficients presented in the preceding section according to the following formula:

$$\text{Regression Coefficient for net Price Difference Variable} \times \frac{\text{Average Net Price Difference}}{\text{Average Dependent Variable}}$$

To illustrate the calculation of these sensitivity estimates, consider those low income, white students in 1981 who sent test scores to public institutions only. The regression coefficient of the net price difference variable was .0004 (Appendix Table 2). The average net price difference variable was -$674 (i.e., public research universities cost $674 more to attend than public comprehensive colleges) and the average value of the dependent variable was 1.41 (recall that the dependent variable was coded "1" or "2", not "0"or "1"). These latter two estimates are drawn from Appendix Table 1. Inserting these values in the above formula yields an estimated senstivity coefficient of .19.

Estimated sensitivity coefficients for all in-state seniors in both years are presented in Appendix Table 3. As a rule of thumb, a sensitivity coefficient of less than one indicates that seniors are insensitive to existing net price differences while a value of greater than one indicates that they are relatively sensitive to net price differences. (Note that when using a dichotomous dependent variable, the sign of the sensitivity coefficient can be ignored.) An inspection of this table confirms that in-

state high school seniors are insensitive to net price differences in both years.

This lack of price sensitivity has numerous policy implications. Returning to the problem raised earlier, attempts to induce high school seniors who considered public institutions to choose between the two types according to net price will not substantially redistribute enrollments among these institutions. First, less than 12 percent of the merged in-state seniors consider this particular choice set. Thus, state policies intended to redistribute enrollments among public comprehensive colleges and public research universities are affecting only a small portion of in-state seniors at this stage in the college choice process.

Second, the general price insensitivity of those in-state seniors who do consider such a choice set indicates that manipulating net price differences would have limited impact on student college choice decisions. For example, 61 percent or 1,242 of the total 2,036 PHEAA aid applicants in 1981 who considered a public comprehensive college and a public research university eventually chose the former type of college. (Note that the estimated 2,036 aid applicants reflects adjustments for the overall merge rate and missing values.) When the net price sensitivity coefficients in Appendix Table 3 are applied to the data for these seniors under the assumption of a $100 increase in net price of attending a public research university relative to a public comprehensive college (see the footnote for an illustration of this computational procedure), approximately 63 percent or 1,293 would now matriculate at a public comprehensive college.[1] Thus, only 41 students would be induced to matriculate at a public comprehensive college when they would otherwise have chosen a public research university. Simultaneously, the 753 high school seniors who would still decide to enroll at the public research university would each be expected to pay an additional $100 for this decision, resulting in an overall $75,300 reduction in their economic well-being.

Two concluding comments are in order. First, the example in the preceding paragraph focused on state financial aid policies to induce shifts in student enrollments. The rationale underlying this example is as follows. While the merged samples of 43,413 and 50,406 students capture almost the entire population of high school seniors who believed they needed assistance in financing a college education, there remain 10,488 and 8,080 high school seniors who do not apply for any such assistance. Obviously, the unmerged seniors would not be affected by changes in state financial aid policies, and would probably be even less sensitive to changes in relative net prices than displayed in Appendix Table 3. Thus, if states attempted to redistribute student enrollments by manipulating direct institutional appropriations, one would expect fewer additional seniors to decide to matriculate at public comprehensive colleges. However, all students — undergraduates and graduates alike — would be expected to bear an additional $100 cost to finance very modest enrollment shifts. Clearly, the use of state financial aid policies are by far the more efficent approach to shifting student enrollments should states decide to adopt such policies.

Second, a more fundamental question is raised by such policies. By increasing net price differences among public institutions, states are *raising* financial barriers to the matriculation decisions of students. In the preceding example, 41 high school seniors would no longer feel they could afford to attend a public research university due to

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[1]Continuing with the example of low income, white students in 1981 who sent test scores to public institutions only, Table 1 indicates that the probability of matriculating at a public, comprehensive college was .59 when the net price difference was $674. If this difference in net price were increased by $100 or 14.8 percent, then the probability of matriculating at a public comprehensive college would increase by 2.82 percent (14.8 x .19, where the .19 is the sensitivity coefficient from Table 3), or to a new probability of matriculating of .61. At this new probability, 87 rather than 84 high school seniors now would matriculate at a public comprehensive college.

From this example, it is clear that the sensitivity coefficients in Table 3 indicate the percentage change in the probability of matriculating at a particular institutional type for each one percent change in net price difference between institutional types. One is cautioned that uncertainty resulting from changes in the number of matriculating seniors increases as larger changes in net price differences are contemplated.

changes in state financial aid policies. The basic question facing governors and legislators is whether they believe surrendering some equality of choice is more than offset by the resulting redistribution of student enrollments.

References

Feldman, P., and S.A. Hoenack. "Private Demand for Higher Education in the United States." *The Economics and Financing of Higher Education in the United States.* Washington, D.C.: 91st Congress, 1st Session, joint Economic Committee, 374-395. 1969.

Lewis, G.H.; Morris, S.; Penz, A.; and Wicinas, B. *Nonroutine Decision Making.* Pittsburgh: School of Urban and Public Affairs, Carnegie-Mellon University, 1974.

Luce, R. *Individual Choice Behavior.* New York: Wiley, 1959.

Pennsylvania Higher Education Assistance Agency, *A Matter of Choice: A Study of the Use of Grants Administered by the Pennsylvania Higher Education Assistance Agency by Students Attending Institutions in Another State.* Harrisburg, PA: Pennsylvania Higher Education Assistance Agency, 1975.

Tierney, M.L. 1980, The Actual Tuition Gap: Differential Pricing by Public and Private Institutions *Journal of Education Finance, 5* (Spring, 1980) 375-390.

Tierney, M. L. "The Impact of Institutional Net Price on Student Demand for Public and Private Higher Education." *Economics of Education Review, 2* (Fall, 1982) 363-383.

Zemsky, R.; Shaman, S.; and Berberich, M.A. "Toward An understanding of collegiate enrollments: a first test of the market segment model." *Journal of Education Finance, 5* (Spring, 1980) 335-374.

APPENDIX A
High Cost* Pennsylvania Colleges

Albright College
Allegheny College
Beaver College
Bryn Mawr College
Bucknell University
Carnegie-Mellon University
Cedar Crest College
Chatham College
Dickinson College
Franklin & Marshall College
Gettysburg College
Hahnemann Medical College
Harverford College
Jefferson Medical College
Juniata College
Lafayette College
Lebanon Valley College
Lehigh University
Medical College of Pennsylvania
School of Nursing
Moore College of Art
Muhlenberg College
Pennsylvania College of Optometry
Philadelphia College of Art
Philadelphia College of Osteopathic Medicine
Philadelphia College of the Performing Arts
Susquehanna University
Swarthmore College
Ursinus College
Villanova University
Washington & Jefferson College
Wilson College

* For purposes of this study the division point between "high cost" and "low cost" private colleges was arbitrarily set at $3,575 tuition and fees (1979) and $4,375 tuition and fees (1981) as reported by the colleges to PHEAA.

Appendix Table 1
Average Characteristics for In-State Seniors:
Public Comprehensive College vs.
Public Research University

	1979				1981			
	Whites		Non-Whites		Whites		Non-Whites	
Variable	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Low Income	N=165		N=56		N=143		N=41	
Pct. Male	.47	.50	.48	.50	.43	.50	.39	.49
EPC	22	82	5	36	324	1439	70	131
Acad. Ach	88	17	66	16	87	15	71	15
Net Price	−460	278	−484	370	−674	620	−959	831
Acad. Rep	−9.80	10.00	−6.70	15.00	-5.60	20.60	.40	28.70
Probibility (Comp. College)	.61	.49	.55	.50	.59	.49	.61	.49
Middle Income	N=523		N=48		N=483		N=59	
Pct. Male	.43	.49	.48	.50	.44	.50	.56	.50
EPC	966	800	654	748	1672	1211	1186	1048
Acad. Ach	91	15	79	16	89	16	75	18
Net Price	−484	324	−468	339	−721	527	−610	455
Acad. Rep	−9.20	10.70	-10.40	11.60	−7.30	19.90	−7.90	16.10
Probability (Comp. College)	.54	.50	.62	.48	.58	.49	.54	.50
High Income	N=632		N=37		N=654		N=44	
Pct. Male	.42	.49	.57	.50	.44	.50	.52	.50
EPC	3074	1321	3213	1214	4280	1833	3919	1167
Acad. Ach	92	15	80	17	91	15	79	17
Net Price	−522	372	−769	465	−880	558	−1191	852
Acad. Rep	-9.60	10.90	-7.70	12.00	6.70	20.80	6.50	33.10
Probability (Comp. College)	.63	.48	.62	.48	.63	.48	.70	.46

(Continued)

Appendix Table 1
Average Characteristics for In-State Seniors:
Low Cost Private vs Public Comprehensive College

	1979				1981			
	Whites		Non-Whites		Whites		Non-Whites	
Variable	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Low Income	N=77		N=26		N=81		N=16	
Pct. Male	.27	.45	.42	.49	.43	.50	.56	.50
EPC	35	81	18	54	170	518	214	713
Acad. Ach	85	16	67	15	86	15	59	26
Net Price	814	660	1157	716	1907	985	1923	1068
Acad. Rep.	4.90	7.30	4.90	13.20	4.50	7.20	2.40	9.10
Probability (Prv)	.51	.50	.19	.39	.52	.50	.19	.39
Middle Income	N=216		N=21		N=233		N=26	
Pct. Male	.37	.48	.48	.50	.32	.47	.50	.50
EPC	995	947	820	655	1580	1143	1198	1099
Acad. Ach	86	14	73	25	88	17	81	15
Net Price	961	700	865	784	1815	923	1499	596
Acad. Rep	4.90	8.80	5.40	13.00	3.10	9.40	5.20	7.30
Probability (Prv)	.42	.49	.43	.49	.46	.50	.58	.49
High Income	N=277		N=18		N=324		N=27	
Pct. Male	.39	.49	.33	.47	.39	.49	.48	.50
EPC	2865	1342	2309	1020	4211	1729	4297	1810
Acad. Ach	90	16	75	13	86	13	83	13
Net Price	934	605	1017	432	1863	833	2087	624
Acad. Rep	4.40	9.40	4.20	8.00	3.40	8.90	4.30	6.20
Probability (Prv)	.43	.50	.39	.49	.42	.49	.63	.48

(Continued)

Appendix Table 1
Average Characteristics for In-State Seniors:
Low Cost Private vs. Public Research University
(Whites Only)

Variable	1979 Mean	1979 Std. Dev	1981 Mean	1981 Std. Dev
Low Income	N=59		N=58	
Pct. Male	.63	.48	.48	.50
EPC	109	431	72	207
Acad. Ach	100	16	95	16
Net Price	473	850	886	989
Acad. Rep	.80	12.00	11.60	28.60
Probability (Prv)	.49	.50	.45	.50
Middle Income	N=180		N=161	
Pct. Male	.54	.50	.57	.49
EPC	903	767	1548	1121
Acad. Ach	97	16	96	16
Net Price	533	648	994	1061
Acad. Rep	-.60	13.00	7.40	27.40
Probability (Prv)	.48	.50	.50	.50
High Income	N=205		N=230	
Pct. Male	.55	.50	.57	.50
EPC	2974	1395	4157	1878
Acad. Ach	97	15	96	17
Net Price	534	703	894	801
Acad. Rep	1.10	14.00	7.40	26.50
Probability (Prv)	.54	.50	.56	.50

(Continued)

Appendix Table 1
Average Characteristics for In-State Seniors:
High Cost Private vs. Public Research University
(Whites Only)

Variable	1979 Mean	1979 Std. Dev	1981 Mean	1981 Std. Dev
Low Income	N=45		N=33	
Pct. Male	.60	.49	.67	.47
EPC	23	68	90	134
Acad. Ach	104	18	98	16
Net Price	1303	738	3441	1239
Acad. Rep	15.60	13.70	14.20	17.10
Probability (Prv)	.36	.48	.36	.48
Middle Income	N=148		N=127	
Pct. Male	.70	.46	.61	.49
EPC	931	841	1862	1377
Acad. Ach	105	15	105	16
Net Price	1522	794	3473	1412
Acad. Rep	14.30	13.60	16.60	24.30
Probability (Prv)	.29	.45	.31	.46
High Income	N=182		N=199	
Pct. Male	.69	.46	.59	.49
EPC	3300	1500	4586	1994
Acad. Ach	107	17	110	15
Net Price	1402	737	2874	1250
Acad. Rep	12.80	13.00	16.30	23.80
Probability (Prv)	.35	.48	.36	.48

(Continued)

Appendix Table 2
Regression Coefficients for
In-State Seniors: Public Comprehensive Colleges vs.
Public Research Universities

Variable	1979 Whites	1979 Non-Whites	1981 Whites	1981 Non-Whites
Low Income				
Constant	1.88	1.83	1.68	1.84
Gender	.008	.006	.08	.16
EPC	.0008*	—.004*	.00002	—.001*
Acad. Ach	.0002	—.001	—.0004	—.004
Net Price	.0007*	.0006*	.0004*	.0004*
Acad. Rep	.02*	.002	.01*	.006
R^2	.34	.20	.19	.28
Middle Income				
Constant	1.66	1.68	1.80	1.97
Gender	—.06	—.11	—.07	—.09
EPC	—.00002	—.00005	.0000009	—.0001
Acad. Ach	.004*	—.0001	.002*	.002
Net Price	.0006*	.0002	.0006*	.0006*
Acad. Rep	.02*	.001	.01*	.009*
R^2	.22	.04	.21	.32
High Income				
Constant	1.45	1.67	1.52	1.41
Gender	—.06	.16	—.06	.19
EPC	—.0000005	—.0001	.00004*	.00006
Acad. Ach	.003*	—.0007	.003*	—.004
Net Price	.0003*	—.00007	.0005*	.0003
Acad. Rep	.01*	.006	.01*	.004
R^2	.14	.12	.25	.24

*95 percent confidence

(Continued)

Appendix Table 2
Regression Coefficients for
In-State Seniors: Low Cost Private vs.
Public Comprehensive Colleges

Variable	1979 Whites	1979 Non-Whites	1981 Whites	1981 Non-Whites
Low Income				
Constant	1.91	1.94	.90	2.36
Gender	—.29*	.11	.17	—.44
EPC	.0007	.001	.0001	—.0002
Acad. Ach	—.001	—.009	.0002	.0002
Net Price	.0001	.0002	.0002*	.00003
Acad. Rep	.01	.005	—.005	—.01
R^2	.15	.29	.14	.49
Middle Income				
Constant	1.51	2.02	1.22	1.89
Gender	.15*	-.19	.007	—.15
EPC	.00006	.0001	.00001	—.00003
Acad. Ach	—.004	—.005	.00009	.005
Net Price	.00004	.00008	.0002*	.00008
Acad. Rep	.006	.006	—.003	—.01
R^2	.06	.15	.09	.04
High Income				
Constant	1.48	1.13	1.24	1.08
Gender	.08	.30	.002	—.14
EPC	.00000005	.00009	-.00002	-.00004
Acad. Ach	—.001	—.01	.001	—.005
Net Price	.00009	.0005	.0002*	.0005*
Acad. Rep	.001	.006	—.001	.01
R^2	.02	.19	.08	.44

(Continued)

Appendix Table 2
Regression Coefficients for
In-State Seniors: Low Cost Privates vs.
Public Research Universities
(Whites Only)

Variable	1979	1981
Low Income		
Constant	2.26	1.75
Gender	−.10	−.13
EPC	−.0002	−.0006
Acad. Ach	−.007	.0009
Net Price	.0002	.0000008
Acad. Rep	.0001	−.004
R^2	.13	.13
Middle Income		
Constant	1.48	1.76
Gender	−.08	−.14
EPC	.00002	.00006
Acad. Ach	.0007	−.003
Net Price	.0001*	.0001*
Acad. Rep	.0006	.001
R^2	.04	.08
High Income		
Constant	1.20	1.76
Gender	−.07	−.15*
EPC	.00001	−.00004*
Acad. Ach	.002	−.001
Net Price	.0002*	.0002*
Acad. Rep	.004	.001
R^2	.09	.10

(Continued)

Appendix Table 2
Regression Coefficients for
In-State Seniors: High Cost Privates vs.
Public Research Universities
(Whites Only)

Variable	1979	1981
Low Income		
Constant	1.78	1.43
Gender	−.02	−.15
EPC	−.0009	−.0003
Acad. Ach	−.004	−.002
Net Price	.0003*	.0002*
Acad. Rep	.001	.006
R^2	.16	.37
Middle Income		
Constant	1.99	1.57
Gender	−.12	−.09
EPC	.0001*	.00002
Acad. Ach	.0006*	−.004
Net Price	.0002*	.0002*
Acad. Rep	.008*	.004*
R^2	.22	.30
High Income		
Constant	1.73	1.80
Gender	.06	.002
EPC	−.00005*	−.00001
Acad. Ach	−.004	−.006*
Net Price	.0002*	.0002*
Acad. Rep	.003	.003
R^2	.16	.24

Appendix Table 3
Estimates of Sensitivity of
In-State High School Seniors to Institutional
Net Price Differences

1979

Student Group	Public Comp. vs Public Research	Low Cost Prv. vs Public Comp	Low Cost Prv. vs Public Research	High Cost Prv. vs Public Research
White				
Low Income	.23	nsd	nsd	.24
Middle Income	.20	nsd	nsd	.18
High Income	.11	nsd	nsd	.17
Non-White				
Low Income	.20	nsd	—	—
Middle Income	nsd	nsd	—	—
High Income	nsd	nsd	—	—

Local High School Seniors to Institutional
Net Price Differences

1981

Student Group	Public Comp. vs Public Research	Low Cost Prv. vs Public Comp	Low Cost Prv. vs Public Research	High Cost Prv. vs Public Research
White				
Low Income	.19	.26	nsd	.42
Middle Income	.30	.24	.66	.41
High Income	.32	.24	.12	.35
Non-White				
Low Income	.28	nsd	—	—
Middle Income	.25	nsd	—	—
High Income	nsd	.76	—	—