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The Connection between Government Aid and College Pricing

By Bridget Terry Long

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While most of the literature on the impact of financial aid policy focuses on the reactions of individuals, researchers have long theorized that the policies may also impact the behavior of postsecondary institutions. This paper sheds light on this issue by utilizing the Georgia HOPE Scholarship as a unique natural experiment. The effects on tuition pricing, room and board charges, and institutional financial aid awards are investigated by comparing colleges within Georgia to institutions outside of the state. The results suggest that four-year colleges in Georgia did increase student charges by raising price and reducing institutional aid. These actions may have reduced the intended benefit of the HOPE Scholarship for recipients while also inadvertently increasing prices for the over 100,000 non-recipients attending Georgia colleges. However, the response is not large enough to suggest that increases in aid explain the substantial growth in tuition prices during the past several decades.

Financial aid has become an important issue in government policy due to the increasing significance of a college education. State and federal authorities have created numerous aid programs to increase access to postsecondary institutions. While many studies have examined the responses of potential students to these initiatives, the supply side of the market has been largely ignored. However, the impact of an aid program on the behavior of a college or university could have important implications for the effectiveness of a policy. As noted by former Secretary of Education William Bennett in his 1987 *New York Times* editorial "Our Greedy Colleges," government aid could induce schools to raise their tuition price because the increased aid enables students to pay more. In addition, a financial aid program could encourage colleges to reduce their own financial aid awards so that the government aid could act as a substitute. These types of institutional responses would diminish the overall impact of the aid policy by reducing the intended benefit for recipients. Furthermore, students who do not receive the aid would experience increases in cost and therefore would be made worse off than before the policy was enacted.

The introduction of the Georgia HOPE Scholarship provides a unique opportunity to analyze these possible institutional responses. As an isolated aid program in one state, HOPE serves as a good "natural experiment" in which the behavior of Georgia colleges can be compared with that of schools outside of the state. First awarded during the fall of 1993, the HOPE

Scholarship provides tuition, fees, and a book allowance to Georgia students with a B average who attend an in-state public college. Students choosing to attend an in-state private college are given comparably-valued compensation.¹ Although the program had income caps during its first two years, by the fall of 1995 these constraints had been removed, making HOPE part of a nationwide shift from traditional need-based aid to merit-based support.²

As the largest and most visible of the state merit-based scholarship programs, many researchers have scrutinized HOPE. For the most part, the research and debate have focused on the possible influence of the program on the behavior of individuals. Studies have estimated the enrollment and college persistence effects of the aid and the impact of the program on high school achievement (Dynarski, 2000; Cornwell, Mustard, and Sridhar, 2001). However, because the response of colleges to the creation of an aid program is important to understanding a policy's full effect, the complete ramifications of HOPE remain unclear. This paper focuses on the effect of HOPE on student charges. Have four-year colleges within Georgia tried to absorb the additional financial support from the state government by raising tuition or room and board fees? Additionally, has the Georgia HOPE program affected financial aid awards? Have colleges reduced the amount of institutional scholarships they give to students so that the state financial support is actually substituting for aid that otherwise would have been available? By examining the institutional impact of the Georgia HOPE Scholarship, this paper adds to the debate about the link between aid and college prices and addresses a gap in the larger literature about the behavior of postsecondary institutions.

Literature on the Supply Side of Aid

Most research on the effects of student aid policies has examined the factors that influence which individuals attend college. Far less is understood about the "supply side." As noted by Ehrenberg (2000a), empirical knowledge is deficient about both the determinants of entry and growth of higher education institutions and the characteristics of schools that change. Most work on institutions has focused on the behavior of selective

¹ The value was set at \$500 in 1993, \$1,000 in 1994, and \$1,500 in 1995 but did not have a merit component. These awards supplemented a \$1,000 Tuition Equalization Grant Georgia provided to students attending an in-state private college. Beginning in 1996, the value of the HOPE Scholarship was set at \$3,000 for private institutions with the same merit conditions as those attending public schools.

² During the first year of HOPE (1993), the income cap was \$66,000. It was \$100,000 for the second year. In addition to the HOPE Scholarship, Georgia created the smaller HOPE Grant program, which has no merit requirements and allows students to attend non-degree programs at two-year institutions for free.

private institutions. Clotfelter (1996) analyzes the escalation of spending at four elite, private universities and links this to the goals of the schools. Ehrenberg (2000b) also examines the behavior of elite universities, focusing on how admissions, financial aid, and college ranking systems affect how schools try to compete for students. While these reports have informed researchers about the considerations of elite private universities, this group is a small segment of the market. Much less is known from empirical work about other types of schools.

The pricing of colleges has gained the most attention concerning institutional behavior. Researchers have tested the Bennett Hypothesis by examining whether increases in aid translate into increases in tuition prices. McPherson and Schapiro (1991) use annual institutional data to relate changes in federal aid, such as the Federal Pell Grant, to institutional behavior. They find that, contrary to Bennett's predictions, increases in government aid are coupled with increases in institutional scholarship spending at private colleges. Li (1999) also focuses on the effects of the Pell Grant. Using the master files of the Pell Grant Information System to track Pell recipients and the tuition levels of their respective colleges, she finds, in contrast, some support for the Bennett Hypothesis. For every dollar increase in Pell, schools are estimated to have increased tuition by \$1.12.

One possible reason for these conflicting results is that it is difficult to isolate the effect of government aid on pricing from other factors. It is unclear whether changes in price are due to changes in the Pell Grant or other general trends in higher education. For example, during the past 20 years, colleges have increasingly practiced tuition discounting, under which institutions raise the list price of college while varying the actual price individual students pay. Additionally, colleges have substantially increased expenditures on student services and technology, which may have required them to raise tuition to cover the additional costs.

Furthermore, the nature of the Pell Grant makes it a difficult program to study to determine the impact on institutional behavior. First, there have not been large, discrete changes in the Pell Grant since its creation, and therefore it is difficult to perform a clear before-and-after analysis of its effect on colleges. Second, because the Pell Grant is a federal program, it is difficult to determine a comparable control group. Institutions with many Pell Grant recipients are different from those without many such recipients in ways likely to affect tuition pricing and trends. In contrast, the Georgia HOPE Scholarship is a generous and isolated state policy in which there are clearer treatment and control groups that can be compared over time to discern the institutional impact.

The nature of the Federal Pell Grant makes it a difficult program to study to determine the impact on institutional behavior.

Methodology and Data

To test the effects of the HOPE Scholarship on institutions, the study examines how pricing and aid expenditures evolved over time for colleges and universities within Georgia after the introduction of HOPE in 1993. To account for general trends that have affected all American universities, colleges in other states are used as a control group. The difference between schools in Georgia and schools elsewhere is considered the effect of the HOPE program. This "differences-in-differences" analysis technique is similar to that employed by Dynarski (2000) to study the enrollment effects of HOPE.³

The reactions of public versus private institutions may differ given the differential treatment of the scholarship (public college tuition is fully funded while private college students receive a flat amount). Furthermore, the influence of the state legislature in policies at public colleges may also cause differences by sector. For example, constraints imposed by the state government may not allow public colleges the flexibility to raise tuition significantly, and as a result they may increase other fees like room and board charges. The responses of higher education institutions are also likely to be influenced by the number of HOPE recipients enrolled at an institution. For example, one may observe a larger response at a school in which three-quarters of the student body are HOPE recipients when compared with a college in which only one-quarter are HOPE recipients. The former will have more students from which to receive the scholarship revenues than the latter. Therefore, distinctions in the sector of the school and the proportions of the student body that were HOPE recipients are made in the analysis.

The ideal control group for this experiment is the set of colleges that are impacted by similar trends and economic shocks. Therefore, similar to Dynarski, the study uses other colleges in the Southeast as the control group.⁴ However, given the competitive nature of the market for higher education, it is possible that colleges competing for Georgia students may respond to HOPE in the opposite manner as schools within Georgia in order to continue attracting Georgia students. For example, a competing school might lower its tuition, offer more financial aid, or try to improve quality by increasing educational expenditures. If these "competitor" colleges were included in the control group, the effect of HOPE would be overestimated.

There are several other factors that influence the decisions of colleges about prices, expenditures, and enrollment.

³ The difference-in-differences calculation is: $y_j = \alpha + \beta_1 (GA_j * After_j) + \beta_2 GA_j + \beta_3 After_j + \epsilon_j$ where j is the j^{th} college and y is price or the aid amount. The parameter β_1 measures whether colleges in Georgia acted differently from other schools after policy enactment. The variables "Georgia" and "After" are dummy variables equal to one if the college is located in Georgia or the year is 1993 or after.

⁴ The other southeastern colleges are located in Alabama, the District of Columbia, Delaware, Florida, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

The preferences, wealth, and economic conditions of a particular state are likely to affect the general offerings and price of colleges within the state.

First, the preferences, wealth, and economic conditions of a particular state are likely to affect the general offerings and price of colleges within the state. To account for these factors, the analysis controls for state characteristics such as annual per capita income, the percentage of the population with a bachelor's degree, and the annual unemployment rate. These data were collected from the U.S. Census Bureau and the Bureau of Labor Statistics. The market segment of the college and its likely competitors could also affect its pricing and expenditures. The most selective colleges offer more institutional financial aid and spend more on instruction and student services than less selective schools, and each group faces different competitive pressures from other institutions. For this reason, the models take into consideration the selectivity level of the college by using groupings from Barron's *Profiles of American Colleges*.⁵ Finally, controls for the institution's Carnegie classification are used to account for possible differences in college mission (e.g., research institutions versus liberal arts colleges). In summary, the following results explore the relative institutional responses of Georgia four-year colleges using year fixed effects and controls for state characteristics and college attributes.

The data for this analysis come from several sources. First, the Integrated Postsecondary Education Data System (IPEDS) provided the necessary institutional detail. These survey data, which are collected annually by the National Center for Education Statistics of the U.S. Department of Education, document extensive information on postsecondary institutions within the United States, including financial expenditures (broken down by purpose), list tuition prices, and enrollment figures. In order to capture the 1993 introduction of the Georgia HOPE program, IPEDS data from the 1989-90 school year through the 1996-97 school year were used. More recent years were not used to avoid contamination from the introduction of other state merit-based programs in the South.⁶ All figures were inflated to 2000 dollars using the Consumer Price Index for Urban Areas (CPI-U). A second source, Barron's *Profiles of American Colleges*, provides selectivity groupings for institutions based on student body grades and test scores as well as admission policies. Data on state characteristics such as the annual unemployment rate, per capita income, and the percent of the population with a bachelor's degree were taken from the U.S. Census Bureau and the Bureau of Labor Statistics. Finally, data from the Georgia Student Finance Commission were used to record

⁵ Colleges that were not ranked by Barron's were categorized according to the survey's criteria. No colleges changed selectivity group during the time period of this analysis.

⁶ Although Mississippi and South Carolina initiated small programs in 1996, Florida created a large state merit-based program in 1997. Large programs in Louisiana and South Carolina followed in 1998.

the number of HOPE recipients at each Georgia college. Combined with enrollment data from IPEDS, the average percentage of the student body receiving HOPE was determined.

Because of the isolated effect of the policy, there are many advantages to using HOPE as a natural experiment. However, examining institutional responses to a financial aid policy in a single state also introduces problems associated with a small sample size. The analysis is likely to be sensitive to the particular institutions included in the sample. Therefore, beyond controlling for some of the important characteristics of the colleges, such as sector and competitiveness level, considerable effort was made to have a complete and balanced panel of data. To avoid estimating results driven by yearly fluctuations in the composition of the sample rather than a true effect, the study imposes a restriction that at least seven of the eight possible years of data had to be available. For this reason, the sample of institutions for some of the variables is incomplete. Summary statistics of the data before the policy change are printed in Table 1. See Appendix A for a list of the colleges used for each variable. Because significant gaps exist in the information available on institutional aid at public, four-year institutions, the analysis does not include this variable.

TABLE 1
Four-Year Colleges - Mean 1992-93 Summary Statistics
(in 2000 dollars)

	Public Four-Year Colleges			Private Four-Year Colleges		
	Georgia Colleges	Competitor Colleges	Other Southeastern Colleges	Georgia Colleges	Competitor Colleges	Other Southeastern Colleges
Number	18	11	103	19	60	154
List in-state tuition price	\$2,088 (281) [18]	\$2,196 (345) [11]	\$2,602 (938) [103]	\$9,437 (4,237)	\$10,138 (4,036)	\$9,303 (4,098)
Room and board fees	\$3,166 (332) [11]	\$3,330 (450) [7]	\$3,979 (843) [80]	\$4,524 (1,082) [11]	\$4,457 (1,090) [49]	\$4,428 (1,267) [111]
Institutional aid per FTE				\$2,518 (1,816) [16]	\$2,608 (1,571) [45]	\$2,020 (1,414) [102]

Notes: Standard deviations are in parentheses. The numbers of observations are in brackets. All monetary amounts are reported in 2000 dollars. Competitor colleges are defined as schools outside Georgia with at least five percent of their first-time freshman from Georgia. The Other Southeastern Colleges are located in Alabama, the District of Columbia, Delaware, Florida, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Proprietary colleges are not included in the sample. See Appendix A for a complete list of the Georgia colleges.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.

The Effect of HOPE on College Pricing and Aid Awards

Tables 2 through 4 summarize the results of analysis on whether Georgia colleges reacted to incentives to increase their prices or lower their institutional aid awards. Each numbered model was estimated using a separate regression, and the coefficients should be interpreted as the relative percent change experienced by Georgia colleges after enactment of the HOPE Scholarship in comparison to other southeastern colleges not considered to be competitors (the full regression models are displayed in Appendix B). The asterisks denote statistical significance or the amount of confidence in the estimate.

Table 2 focuses on the estimated changes in list tuition prices. After the introduction of HOPE, public four-year colleges are estimated to have experienced relative reductions in price.

TABLE 2
Estimated Change After the HOPE Scholarship – List Tuition Price Relative to Other Colleges in the Southeast (except for competitor colleges)

	Public Four-Year Colleges			Private Four-Year Colleges		
	(1)	(2)	(3)	(4)	(5)	(6)
All Georgia colleges	-0.032** (0.013)			0.032* (0.018)		
Georgia colleges with many recipients		-0.032** (0.014)			*0.057** (0.022)	
Georgia colleges with few recipients		-0.033** (0.014)			-0.001 (0.020)	
1 st year (1993)			-0.083** (0.011)			0.021 (0.016)
2 nd year (1994)			-0.076** (0.014)			0.019 (0.019)
3 rd year (1995)			-0.029* (0.015)			0.046** (0.022)
4 th year (1996)			0.071** (0.024)			0.041 (0.028)
R-squared	0.6831	0.6833	0.6970	0.3365	0.3510	0.3367
Number of colleges	121	121	121	174	174	174

* Significant at the 10% level **Significant at the 5% level

Notes: Each model was estimated using a separate regression and should be interpreted as the relative percentage increase/decrease experienced by the group of Georgia colleges after enactment of the HOPE Scholarship. Robust standard errors are shown in parentheses. All models include year fixed effects. Furthermore, there are controls for state and college characteristics (unemployment rate, per capita income, 1990 percent of the population with a bachelor's degree, college selectivity group, and Carnegie classification). Colleges with "many recipients" are defined as being in the top half of the distribution of Georgia four-year colleges in terms of the proportion of the student body with HOPE scholarships.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.

During the first two years, the list tuition prices of public four-year colleges in Georgia fell 8.3% and 7.6% (or grew less swiftly) compared to the control group (shown column 3). Although these results are contrary to the Bennett Hypothesis, they are not surprising given the political economy of the aid program and the method by which public tuition levels are set. The state legislature had strong incentives to prevent public colleges from increasing prices and may have even induced them to reduce tuition charges in real terms. Several years after HOPE, tuition prices began to increase faster than the control group.

In contrast, private colleges had far more freedom to alter their pricing. In general, private colleges increased their

TABLE 3
Estimated Change After the HOPE Scholarship - Room and Board
Relative to Other Colleges in the Southeast (except for competitor colleges)

	Public Four-Year Colleges			Private Four-Year Colleges		
	(1)	(2)	(3)	(4)	(5)	(6)
All Georgia colleges	0.051** (0.016)			0.027 (0.032)		
Georgia colleges with many recipients		0.062** (0.016)			0.009 (0.036)	
Georgia colleges with few recipients		0.037 (0.023)			0.038 (0.053)	
1 st year (1993)			0.016 (0.016)			0.015 (0.018)
2 nd year (1994)			0.047** (0.015)			0.033 (0.035)
3 rd year (1995)			0.080** (0.020)			0.025 (0.038)
4 th year (1996)			0.075** (0.025)			0.036 (0.046)
R-squared	0.6144	0.6150	0.6254	0.5404	0.5533	0.5412
Number of colleges	91	91	91	117	117	117

**Significant at the 5% level

Notes: Each model was estimated using a separate regression and should be interpreted as the relative percentage increase/decrease experienced by the group of Georgia colleges after enactment of the HOPE Scholarship. Robust standard errors are shown in parentheses. All models include year fixed effects. Furthermore, there are controls for state and college characteristics (unemployment rate, per capita income, 1990 percent of the population with a bachelor's degree, college selectivity group, and Carnegie classification). Colleges with "many recipients" are defined as being in the top half of the distribution of Georgia four-year colleges in terms of the proportion of the student body with HOPE scholarships.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.

list tuition prices 3.2% faster than the control group. As shown in the model in column 5 of Table 2, this relative increase happened principally at private four-year colleges that had greater numbers of HOPE recipients; list prices at these schools increased nearly 6% faster. This result translates into an approximately \$375 increase. When the response is broken down by year, tuition levels appear to have increased most in the third and fourth years of the program when the scholarship to private colleges grew from \$2,000 to \$2,500 and \$3,000, respectively, but the estimate is only statistically significant in 1995.

While public colleges may have lacked the flexibility to increase tuition prices, the constraints on room and board charges appear to be less binding. Table 3 investigates if four-year Georgia colleges experienced differential growth in these fees. In general, public four-year colleges in Georgia increased room and board charges 5.1% greater than other southeastern colleges. The model in column 2 further supports the notion that HOPE caused the change by showing that the positive increase in room and board was stronger for colleges with greater numbers of HOPE recipients (6.2%). An F-test confirms that the coefficients differ for colleges with many versus few recipients. These results translate into about \$220 on average based on pre-HOPE room and board fees. With an average HOPE value of \$2,257 for public four-year colleges after 1993 (based on tuition price), this suggests a 10 cent increase for each dollar of aid. Stated another way, these public colleges recouped 10% of the value of the scholarship by raising room and board fees. No statistically significant differential response in terms of room and board was found for four-year private colleges.

While the effects of the HOPE scholarship on tuitions and fees were significant for some institutions (although more modest than the Bennett Hypothesis would predict) the effects on institutional scholarships were more consistent. (See Table 4.) Private, four-year colleges in Georgia are estimated to have reduced the average institutional aid award by nearly 12% over the time period, although the result is not statistically significant at the 10% level. Among the schools with many HOPE recipients, institutional aid fell by over 19%. These results may suggest an aid substitution effect in which the increase in student support from the state with HOPE was met with a reduction in the average amount of institutional student support. However, it may also be the case that these institutions reduced total aid awards while redistributing more support to non-recipients thereby leaving them "held harmless" by the policy change. The characteristics of the non-recipients (i.e. lower GPAs) makes this response unlikely, but more detailed data is necessary to shed light on this possibility. The estimate of the decrease in aid translates into a \$309 reduction.

While the effects of the HOPE scholarship on tuitions and fees were significant for some institutions, the effects on institutional scholarships were more consistent.

TABLE 4
Estimated Change After the HOPE Scholarship –
Institutional Aid
Relative to Other Colleges in the Southeast
(except for competitor colleges)

	Private Four-Year Colleges		
	(1)	(2)	(3)
All Georgia colleges	-0.119 (0.083)		
Georgia colleges with many recipients		-0.194* (0.116)	
Georgia colleges with few recipients		-0.063 (0.099)	
1 st year (1993)			-0.097 (0.073)
2 nd year (1994)			-0.120 (0.088)
3 rd year (1995)			-0.139 (0.091)
4 th year (1996)			-0.058 (0.144)
R-squared	0.2968	0.2970	0.3015
Number of colleges	98	98	98

* Significant at the 10% level

Notes: Each model was estimated using a separate regression and should be interpreted as the relative percentage increase/decrease experienced by the group of Georgia colleges after enactment of the HOPE Scholarship. Robust standard errors are shown in parentheses. All models include year fixed effects. Furthermore, there are controls for state and college characteristics (unemployment rate, per capita income, 1990 percent of the population with a bachelor's degree, college selectivity group, and Carnegie classification). Colleges with "many recipients" are defined as being in the top half of the distribution of Georgia four-year colleges in terms of the proportion of the student body with HOPE scholarships.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.

Conclusion and Implications

This paper provides evidence that colleges do respond to the incentives created by financial aid policies. Four-year colleges in Georgia responded to the HOPE program with relative increases in student charges (either through list tuition or room and board) and reductions in institutional aid. Furthermore, as theory would dictate, the magnitude of the effect of HOPE increased with the proportion of the student body that received aid. More specifically, although public four-year colleges in

The HOPE Scholarship is a unique opportunity for colleges to capture state revenue because it is highly transparent (it is easy to determine who the recipients are) and very generous.

Georgia initially experienced relative reductions in list tuition price, perhaps due to pressure from the state legislature, room and board fees increased by as much as \$220 more than the control group or 10% of the value of HOPE. Private colleges instead increased list tuition price while reducing institutional aid. At colleges with greater numbers of HOPE recipients, the average net cost increased by as much as 30 cents for each dollar of aid.

While the estimates suggest that colleges did try to recoup some of the scholarship aid, the results do not reach the levels suggested by Bennett in his "Our Greedy Colleges" editorial. At the extreme, colleges recouped less than one-third of the aid amount. Moreover, it is unlikely that the size of this response would be found with other government aid programs. The HOPE Scholarship is a unique opportunity for colleges to capture state revenue because it is highly transparent (it is easy to determine who the recipients are) and very generous. In contrast, most aid programs, such as the Pell Grant, involve complex rules and eligibility criteria so that recipients are not as easily identifiable to institutions. They also are less generous, particularly when considering the small year-to-year changes in maximum aid amounts that institutions might react to today. Therefore, these results most likely represent an upper bound on the response of colleges to financial aid programs.

However, the estimated magnitudes of the college responses do suggest serious implications for the effectiveness and ramifications of the HOPE program. First, the increase in student costs reduced the intended benefits of the program for recipients. HOPE recipients at some private four-year colleges would have actually benefited by only \$2,100 of the intended \$3,000 in aid. Although some students did not receive the intended benefit of HOPE, non-recipients of the aid were the real losers. They inadvertently experienced increases in prices as the result of a program ironically designed to lower costs. Using program information from the last year of the data for this study, it is estimated that over 100,000 non-recipients were affected each year by the price increases brought on by HOPE. This includes students who did not initially receive HOPE as well as upperclassmen who lost their scholarship in later years of college. If these non-recipients were excluded due to receiving the Pell Grant, and so were from lower-income families, this increase may have had a large impact on enrollment.⁷ These results highlight the importance of the design of an aid program in ensuring that students, rather than institutions, realize the benefit.

⁷ The literature suggests low-income students are more sensitive to price in enrollment decisions than other students. See McPherson and Schapiro (1991).

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APPENDIX TABLE A
Sample of Four-Year Georgia Colleges

Four-Year Public Colleges	Tuition	Room and Board	Four-Year Private Colleges	Tuition	Room and Board	Aid
Highly and Very Competitive			Highly and Very Competitive			
*Georgia Institute of Technology	+	-	*Agnes Scott College	+	-	+
*University of Georgia	+	+	Covenant College	+	+	+
Competitive			Emory University	+	+	+
Fort Valley State College	+	+	Oglethorpe University	+	-	+
Georgia State University	+	-	Spelman College	+	+	-
*Georgia Southern University	+	+	Competitive			
Georgia Southwestern College	+	+	*Berry College	+	+	+
Kennesaw State College	+	-	*Brenau University	+	-	+
Southern Polytechnic State Univ.	+	+	*La Grange College	+	+	-
Less Competitive			*Mercer University	+	+	+
Albany State College	+	+	Morehouse College	+	+	-
Armstrong State College	+	-	*Shorter College	+	+	+
Augusta College	+	-	Toccoa Falls College	+	-	+
*Clayton State College	+	-	*Wesleyan College	+	-	+
*Columbus College	+	-	Less Competitive			
Georgia College	+	+	*Atlanta Christian College	+	-	+
*North Georgia College	+	+	*Emmanuel College	+	+	+
Savannah State College	+	+	*Paine College	+	+	-
*State University of West Georgia	+	+	*Reinhardt College	+	-	+
*Valdosta State University	+	+	Noncompetitive			
			*Brewton-Parker College	+	+	+
			*Thomas College	+	-	-

+ indicates the college was included in the estimation

* indicates the college was in the top half of the distribution in the proportion of its student body who were HOPE recipients

Source: Integrated Postsecondary Education Data System (IPEDS) and Barron's Educational Series (1997).

APPENDIX TABLE B-1
The Complete Regression Results
Response of Georgia Colleges
Dependent Variable: Log (List Tuition Price)

Control Group: All other colleges in the Southeast except for competitor colleges

	Public Four-Year Colleges			Private Four-Year Colleges		
Georgia	-0.1478**		-0.1410**	-0.0834		-0.0829
	(.0317)		(.0329)	(.0880)		(.0883)
After	.0539**	.0540**		.0012	.0037	
	(.0147)	(.0147)		(.0266)	(.0266)	
Georgia x After	-.0321**			.0315*		
	(.0131)			(.0176)		
Many recipients		-.1344**			-.3129**	
		(.0367)			(.0665)	
Many recipients x After		-.0315**			.0565**	
		(.0142)			(.0218)	
Few recipients		-.1624**			.1468	
		(.0363)			(.1364)	
Few recipients x After		-.0330**			-.0012	
		(.0138)			(.0197)	
Year 1993			-.0831**			.0210
			(.0114)			(.0157)
Year 1994			-.0762**			.0194
			(.0137)			(.0187)
Year 1995			-.0292*			.0457**
			(.0150)			(.0217)
Year 1996			.0709**			.0411
			(.0236)			(.0283)
Georgia x 1993			.1081**			.0019
			(.0233)			(.0426)
Georgia x 1994			.2003**			.0303
			(.0430)			(.0779)
Georgia x 1995			.2606**			.0301
			(.0592)			(.1024)
Georgia x 1996			.3087**			.0300
			(.0729)			(.1236)
R-squared	.6831	.6833	.6970	.3365	.3510	.3367
Observations	955	955	955	1,357	1,357	1,357
No. of colleges	121	121	121	173	173	173

*Significant at the 10% level **Significant at the 5% level.

Notes: Each column is a separate regression. Robust standard errors are shown in parentheses. All models include year fixed effects. Furthermore, there are controls for state and college characteristics (unemployment rate, per capita income, 1990 percent of the population with a bachelor's degree, college selectivity group, and Carnegie classification). Colleges with "many recipients" are defined as being in the top half of the distribution of Georgia four-year colleges in terms of the proportion of the student body with HOPE scholarships. Coefficients summarized in Table 2 are bolded.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.

APPENDIX TABLE B-2
The Complete Regression Results
Response of Georgia Colleges
Dependent Variable: Log (Room and Board Charges)

Control Group: All other colleges in the Southeast except for competitor colleges

	Public Four-Year Colleges		Private Four-Year Colleges		
Georgia	-.1608** (.0335)		-.1592** (.0338)	-.0070 (.0551)	-.0061 (.0556)
After	.0455** (.0107)	.0456** (.0107)		.0072 (.0164)	.0093 (.0164)
Georgia x After	.0512** (.0158)			.0269 (.0324)	
Many recipients		-.1546** (.0368)		-.0961* (.0498)	
Many recipients x After		.0624** (.0164)		.0085 (.0360)	
Few recipients		-.1718** (.0553)		.1032 (.0862)	
Few recipients x After		.0366 (.0227)		.0379 (.0528)	
Year 1993			.0770** (.0156)		.0160 (.0257)
Year 1994			.1282** (.0311)		.0336 (.0466)
Year 1995			.1747** (.0425)		.0498 (.0611)
Year 1996			.1987** (.0516)		.0546 (.0741)
Georgia x 1993			.0159 (.0163)		.0147 (.0184)
Georgia x 1994			.0470** (.0150)		.0333 (.0354)
Georgia x 1995			.0801** (.0198)		.0252 (.0381)
Georgia x 1996			.0750** (.0247)		.0356 (.0463)
R-squared	.6144	.6150	.6254	.5404	.5533
Observations	718	718	718	946	946
No. of colleges	92	92	92	122	122

*Significant at the 10% level **Significant at the 5% level

Notes: Each column is a separate regression. Robust standard errors are shown in parentheses. All models include year fixed effects. Furthermore, there are controls for state and college characteristics (unemployment rate, per capita income, 1990 percent of the population with a bachelor's degree, college selectivity group, and Carnegie classification). Colleges with "many recipients" are defined as being in the top half of the distribution of Georgia four-year colleges in terms of the proportion of the student body with HOPE scholarships. Coefficients summarized in Table 3 are bolded.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.

APPENDIX TABLE B-3
The Complete Regression Results
Response of Georgia Colleges
Dependent Variable: Log (Institutional Aid per FTE)

Control Group: All other colleges in the Southeast except for competitor colleges

	Private Four-Year Colleges		
Georgia	.1339 (.1458)		.1339 (.1466)
After	-.0873** (.0437)	-.0869** (.0432)	
Georgia x After	-.1189 (.0832)		
Many recipients		.1737 (.1653)	
Many recipients x After		-.1942* (.1157)	
Few recipients		.1018 (.2130)	
Few recipients x After		-.0630 (.0993)	
Year 1993			-.0248 (.0627)
Year 1994			-.0102 (.1136)
Year 1995			-.0840 (.1522)
Year 1996			.1621 (.2001)
Georgia x 1993			-.0965 (.0715)
Georgia x 1994			-.1199 (.0875)
Georgia x 1995			-.1386 (.0910)
Georgia x 1996			-.0583 (.1435)
R-squared	.2968	.2970	.3015
Observations	891	891	891
No. of colleges	118	118	118

*Significant at the 10% level **Significant at the 5% level

Notes: Each column is a separate regression. Robust standard errors are shown in parentheses. All models include year fixed effects. Furthermore, there are controls for state and college characteristics (unemployment rate, per capita income, 1990 percent of the population with a bachelor's degree, college selectivity group, and Carnegie classification). Colleges with "many recipients" are defined as being in the top half of the distribution of Georgia four-year colleges in terms of the proportion of the student body with HOPE scholarships. Coefficients summarized in Table 4 are bolded.

Source: Integrated Postsecondary Education Data System (IPEDS), 1989-90 to 1996-97.