How do Financial Aid Policies Affect Colleges?
The Institutional Impact of the Georgia HOPE Scholarship

Bridget Terry Long

A B S T R A C T

This paper examines the effects of financial aid policies on the behavior of post-secondary institutions. Using the introduction of the Georgia HOPE Scholarship as a natural experiment, it investigates the impact of the policy on college pricing, institution aid, expenditures, and state appropriations. The results suggest that four-year colleges in Georgia, particularly private institutions, did respond by increasing student charges.
In the most extreme case, colleges recouped approximately 30 percent of the scholarship award. As a result, the institutional responses reduced the intended benefit of the scholarship and increased the cost of college for nonrecipients.

I. Introduction

As the value of a college education has grown, federal and state governments have initiated a series of financial aid policies to enable and encourage investments in post-secondary study. Although many researchers have examined the responses of potential students to these initiatives, the impact on the supply-side of the market has been largely ignored. However, the effect of an aid program on the

behavior of postsecondary institutions could have important implications for the effectiveness of a policy. As noted by William Bennett, the former Secretary of Education, in a 1987 *New York Times* editorial, because government aid enables students to pay more, it could induce schools to raise their tuition prices. This type of institutional response could diminish the overall impact of a policy by reducing the net reduction in cost to a student. Although several studies have tested Bennett's hypothesis, the question remains unresolved due to conflicting results and difficulty isolating the treatment effect. Additionally, there are questions about whether aid policies impact other important decisions made by an institution. A college may adjust its own financial aid awards so that the government subsidy acts as a substitute. Furthermore, if the government aid is designed in a way to favor some schools over others, the favored schools also may have less incentive to increase or maintain school quality, and as a result, expenditures on educational services could fall.

The introduction of the Georgia HOPE Scholarship provides a unique opportunity to analyze these possible institutional responses. As an isolated aid program, HOPE serves as a good natural experiment in which the behavior of Georgia four-year colleges can be compared with schools outside of the state. First awarded during the fall of 1993, the HOPE Scholarship provides full tuition, fees, and a book allowance to Georgia students with a B average who attend an in-state public college.[1] Those students choosing to attend an in-state private college are given comparably-valued compensation.[2] As the most visible of an increasing number of state merit-based scholarship programs, many researchers have examined the effects of HOPE. Until now the debate has focused on the possible behavioral influence on individuals. Studies have estimated the enrollment and college persistence effects of the aid and the impact of the program on high school achievement. 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 examines several related questions. First, the paper investigates whether the increase in student aid resulted in reductions in state appropriations to public four-year colleges. Then the impact of HOPE on student charges is examined. Have colleges within Georgia tried to absorb the additional financial support from the state government by raising tuition or room and board fees? Furthermore, have private colleges reduced the amount of institutional scholarships they give so that the state support substitutes for aid that would have otherwise been available? Finally, have other resources related to education quality, such as instructional expenditures, changed? By examining the institutional impact of the Georgia HOPE Scholarship on four-year colleges, this paper adds to the debate on the effects of state merit-based programs as well as addresses a gap in the larger literature about the behavior of postsecondary institutions.

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1. HOPE had an income cap of $66,000 in 1993 and $100,000 in 1994. It was removed in 1995.
2. The state grant for private colleges was effectively $1,500 in 1993, $2,000 in 1994, and $2,500 in 1995. This was made up of HOPE Scholarships for $500, $1,000, and $1,500, respectively, and a $1,000 Tuition Equalization Grant provided by the state for students attending an in-state private college. Beginning in 1996, the value of the HOPE Scholarship was set at $3,000 for private colleges with the same merit conditions as those attending public schools.

II. Literature Review

Several studies have examined the impact of Georgia HOPE on individual decisions. Dynarski (2000) and Cornwell, Mustard, and Sridhar (2001) found that the program increased enrollment rates. Other work has examined the effect of the Georgia HOPE scholarship on high school achievement (Henry and Rubenstein 2000). However, like the larger body of literature on higher education, far less is understood about the reactions of the supply side of the market. As noted by Ehrenberg (2000a), little is known about the behavior of colleges including the determinants of entry and growth and the characteristics of schools that change. Although recent work has focused on the behavior of selective private institutions (Clotfelter 1996 and Ehrenberg 2000b), this is only a very small segment of the market.

The pricing of colleges is the aspect of institutional behavior that has gained the most attention. 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 understand the effect of changes in federal aid such as the Pell Grant. They find that increases in government aid are coupled with increases in institutional scholarships at private colleges contrary to the predictions of Bennett. Li (1999) also focuses on the effects of the Pell Grant by tracking recipients and the tuition levels of their respective colleges. In contrast, she finds increases in Pell resulted in increases in tuition.[3]

One possible reason for these conflicting results is that it is difficult to isolate the effect of government aid on tuition pricing from other factors. It is unclear whether changes in tuition are due to changes in the Pell or other general trends in higher education. For example, during the past 20 years, colleges have increasingly participated in tuition discounting which raises the list price of a college while varying the actual price individual students pay. Furthermore, the nature of the Pell Grant makes it a difficult program to study in terms of determining the impact on institutional behavior. First, there have not been large, discrete changes in the Pell since its creation, and therefore, it is difficult to perform a clear before-and-after analysis of its effect on colleges. Second, because it is a federal program, it is difficult to determine a comparable control group. Institutions with and without many Pell recipients are different in ways likely to affect tuition trends. In contrast, Georgia HOPE is a generous and isolated state program in which there are clearer treatment and control groups that can be compared over time to discern the institutional impact.

III. Framework and Methodology

Four-year colleges seek to maximize quality in order to attract students and increase their prestige.[4] Resources enable colleges to meet these goals by hiring expert faculty, maintaining first-rate facilities, and offering financial aid. Therefore, colleges seek to maximize revenues including net student fees. However,

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3. See Kane (1999) and Hauptman and Krop (1997) for further discussion on the effects of Pell.

4. McPherson and Schapiro (1991) outline similar objectives: (i) maintain or improve educational quality; (ii) expand the applicant pool; and (iii) improve the institution's prestige and reputation.

the objective to maximize price is subject to downward pressure due to students' budget constraints and competition from other colleges. The introduction of HOPE, however, affected both of these dimensions by shifting out the budget constraint of recipients and increasing the demand for Georgia colleges. As a result, colleges in Georgia may have:

(i)   Increased student charges in order to capture the HOPE revenue. This could include increasing list tuition, room and board, and other student fees.

(ii) Reduced institutional financial aid so that HOPE acted as a substitute.

(iii) Reduced quality-enhancing investments such as instructional expenditures. Because HOPE created a competitive advantage for Georgia colleges over out-of-state schools, the Georgia institutions had less incentive to maintain or increase school quality.

The magnitude of the reactions should be related to the extent of the treatment, or the proportion of the student body with a HOPE Scholarship. For example, one may observe a larger response at a school in which the majority of students are HOPE recipients when compared to a college with fewer recipients. The former will have more students to capture the rents of HOPE than the latter.

The reactions of public and private four-year colleges are likely to differ given the way prices are set by each sector and the design of the scholarship. Tuition is set at public colleges through negotiation with the state legislature. Public colleges are generally discouraged by legislatures from increasing tuition above a certain percentage each year unless state appropriations are substantially reduced.[5] Furthermore, because the full tuition amount is covered by HOPE at in-state public colleges, the government has even greater incentive to keep tuition prices at these schools low to minimize the cost of the program. For these reasons, public colleges may not have the flexibility to raise tuition in response to HOPE like private colleges.

To discern the responses of Georgia colleges, the analysis uses data from several sources. First, the Integrated Postsecondary Education Data System (IPEDS) provides the necessary institutional detail. This data set documents extensive price, financial information, and enrollment on postsecondary institutions within the United States.[6] To capture the 1993 introduction of the Georgia HOPE program, IPEDS data from the 1989–90 to 1996–97 school years were used thereby allowing four years of observation both before and after policy introduction. More recent years are not used to avoid contamination from the introduction of other state merit-based programs in the South.[7] In addition, data from the Georgia Student Finance Commission were used to record the number of HOPE recipients at each Georgia college.

5. Empirically, the connection between state appropriations and public tuition levels is strong. The correlation between the mean tuition cost of four-year, public colleges and the mean amount of state appropriations received by such schools was −0.7 from 1977 to 1997 (source: IPEDS).

6. Measurement error is a particular concern with the IPEDS expenditure and revenue data. Therefore, institutions with extreme fluctuations in these figures that could not be verified with external sources were dropped from the sample. These institutions were an extremely small part of the sample and did not tend to be large four-year colleges.

7. Mississippi and South Carolina initiated small programs in 1996, Florida created a large program in 1997, and Louisiana and South Carolina followed with large programs in 1998. The small program created in Arkansas before HOPE is not thought to have had a major effect.

The advantages of using the Georgia HOPE as a natural experiment stem from the isolated nature of the policy. However, examining institutional responses to an aid policy in a single state also lends itself to the problems associated with a small sample size. The analysis is likely to be sensitive to the particular institutions included in the sample. Therefore, to have a complete and balanced panel of data, I imposed the restriction that at least seven of the eight possible years of data had to available for each college. This restriction allows the paper to avoid estimating results driven by yearly fluctuations in the composition of the sample rather than a true effect. Additional observations were dropped when large fluctuations in the data could not be confirmed with an outside source. See the Appendix Table A1 for a list of the colleges used for each variable. Summary statistics of the data before the policy change can be found in Table 1.

To test for the predicted institutional responses, the paper compares how pricing and expenditures evolved over time for colleges within Georgia relative to colleges outside of the state. By noting the policy change in 1993, I determine whether the introduction of the HOPE scholarship caused discontinuities in the variables of interest.[8] To account for any general trends that have affected all American universities, colleges in other states are used as a control group. This differences-in-differences (DD) methodology has been employed to study student demand responses to the HOPE program by Dynarski (2000) and Cornwell, Mustard, and Sridhar (2001).[9] Using ordinary least squares estimation, the calculation can be made:

$$(1) \quad y_j = \beta_1 + \beta_2 (Georgia_j * After_j) + \beta_3 Georgia_j + \beta_4 After_j + \varepsilon_j$$

where j is the jth college and y is the outcome of interest. The parameter β_2 is the reduced-form effect of the HOPE scholarship—it measures whether colleges in Georgia acted differently from other schools after the enactment of the aid policy. 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; otherwise, the variables are equal to zero.[10] Because the paper relies on serially correlated outcomes, the standard errors are adjusted using clustering methods.[11]

Theory dictates that if these price changes are due to HOPE, colleges with a larger proportion of their student bodies as scholarship recipients should react more strongly than colleges with fewer HOPE recipients. To test for this response, the following specification is utilized:

$$(2) \quad y_j = \gamma_1 + \gamma_2 (ManyHOPE_j * After_j) + \gamma_3 ManyHOPE_j + \gamma_4 (FewHOPE_j * After_j) + \gamma_5 FewHOPE_j + \gamma_6 After_j + \eta_j$$

8. In order for the HOPE Scholarship to be used as an appropriate natural experiment, it must be an exogenous policy. Stated another way, if HOPE was created in response to the power and preferences of Georgia colleges, the measured responses could reflect some endogenous effect. However, since HOPE was created at the behest of former Governor Zell Miller, there is little concern that the reactions of the Georgia colleges might be biased in some way. See Miller's 1993 *State of the State Address* for further information.

9. Meyer (1995) discusses of the advantages of natural experiments and the use of DD.

10. Miller worked to establish the HOPE Scholarship from November 1992 to August 1993 with the first lottery ticket being sold on June 29, 1993 (the lottery amendment was passed on November 3, 1992). The announcement of the program would therefore have given colleges enough notice to adjust their prices and expenditures for the 1993-94 school year but would have been too late to affect decisions for 1992–93.

11. Bertrand, Duflo, and Mullainathan (2001) discuss how serial correlation affects analysis.

Table 1
Four-Year Colleges—1992–93 Summary Statistics (2,000 dollars)

	Georgia Colleges	Competitor Colleges	Other Southeastern Colleges
Public Four-Year Colleges			
Number	18	11	103
List in-state tuition price	$2,088	$2,196	$2,602
	(281)	(345)	(938)
Room and board charges	$3,166	$3,330	$3,986
	(332)	(450)	(834)
	[11]	[7]	[81]
State appropriations per FTE	$5,367	$5,256	$5,788
	(2,415)	(1,419)	(2,637)
Instructional expenditures per FTE	$4,256	$4,184	$4,774
	(1,136)	(847)	(2,090)
Private Four-Year Colleges			
Number	19	60	154
List in-state tuition price	$9,437	$10,138	$9,303
	(4,237)	(4,036)	(4,098)
Room and board charges	$4,524	$4,457	$4,428
	(1,082)	(1,090)	(1,267)
	[11]	[49]	[111]
Institutional scholarships per FTE	$2,518	$2,608	$2,020
	(1,816)	(1,571)	(1,414)
	[16]	[45]	[102]
Instructional expenditures per FTE	$5,311	$5,628	$4,708
	(4,412)	(5,599)	(4,504)
	[18]	[57]	[155]

Source: IPEDS data from 1989–90 to 1996–97.
Notes: Standard deviations are shown in parentheses. The number of observations are noted in brackets when less than the full sample. Competitor colleges are defined as schools outside Georgia with at least 5 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.

The parameters γ_2 and γ_4 measure the responses of Georgia colleges in the top versus bottom half of the distribution in terms of the proportion of the student body with a HOPE Scholarship. These can be thought of as dummy variables with the left out category being the control group. One drawback to this methodology is the possible endogeneity of which colleges fall into each group. However, as the results will show, it is unlikely that the estimated behavior of schools with many HOPE recipients caused these colleges to attract more scholarship students than they otherwise would

have. Nonetheless, these results should not be interpreted as causal and only demonstrate the behavior of colleges that for various reasons had many HOPE recipients.[12]

The ideal control group for this analysis is colleges that were impacted by similar trends and economic shocks. Therefore, similar to Dynarski (2001), this study uses colleges in other southeastern states as the control group.[13] However, given the competitive nature of the market for higher education, it is possible that out-of-state colleges that compete for Georgia students also may respond to HOPE. For example, a competing school might lower its tuition, offer more financial aid, or try to improve quality by increasing educational expenditures. Therefore, these "competitor" colleges, defined as having at least 5 percent of their students from Georgia pre-policy enactment, were excluded from the control group to avoid overestimating the effect of HOPE. As shown in Figures 1 and 2 in constant 2000 dollars, although all colleges share a common upward price trend, the Georgia and other southeastern colleges appear far different from schools in other states. First, on average they charged a lower tuition price than colleges in other regions, and second, the public colleges realized a smaller rate of price growth during the period. Because they are susceptible to the same regional trends and developments in higher education as colleges in Georgia as well as share their distinct tuition trends, these schools are the best control group for this analysis.

The empirical analysis includes additional controls to prevent the results from being driven by the composition of colleges in each group. 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*.[14] Finally, controls for the institution's Carnegie classification are used to account for possible differences in college mission (for example, 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.

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12. Colleges are defined as having "Many HOPE recipients" if they are in the top half of that sector's colleges in terms of average percentage of the student body that were HOPE recipients during the first nine years of the program. The groupings should be considered the mean extent of the treatment. See the Appendix for a list.

13. The Southeast control group is made up of colleges in Alabama, the District of Columbia, Delaware, Florida, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

14. 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.
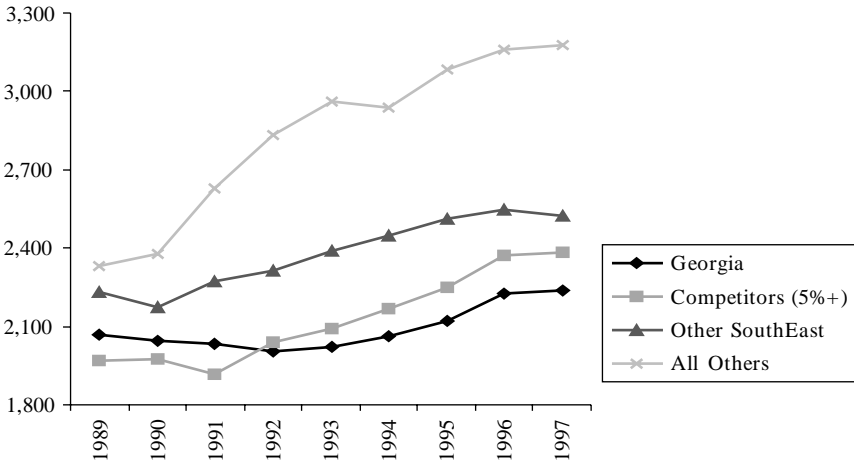
Figure 1
Median List Tuition: Public Four-year Colleges
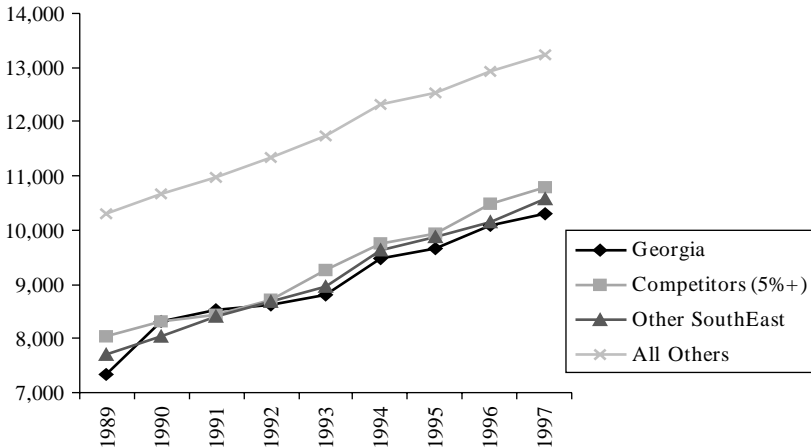
Figure 2
Median List Tuition: Private Four-year Colleges

Source: IPEDS data from 1989–90 to 1996–97.
Notes: Figures are in 2000 dollars. Competitor colleges are defined as schools outside Georgia with at least 5 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.

IV. Results

The reactions of colleges are expected to differ by sector given the pressure exerted by state legislatures on public institutions through the appropriation of operational subsidies. However, HOPE may have impacted not only institutional behavior but also the generosity of the legislature. While the introduction of HOPE may have signified a shift away from support for colleges towards more direct aid for students, this was not the case in Georgia. As shown in Table 2, state appropriations to Georgia public four-year colleges did not change in general relative to other schools and may have increased at schools that benefited the most from the HOPE program. Colleges with a greater proportion of HOPE recipients experienced at 6.6 percent relative increase in state appropriations in real terms after the creation of HOPE (Specification 2). The lack of a substitution between HOPE and state appropriations may be due to the fact that HOPE is funded by lottery rather than out of the state budget. Furthermore, the creation of HOPE signified Georgia's desire to increase postsecondary enrollments, and the government may have been unwilling to reduce state appropriations.

The governmental focus on increasing access to Georgia colleges also may explain the relative decreases in tuition price experienced by public four-year colleges.[15] Although the policy increased the incentives for institutions to raise student charges, public colleges experienced a relative 3 percent decrease in real list tuition price (Specifications 4 and 5) that was even larger during the first two years after HOPE (Specification 6). Because the amount of state appropriations awarded by the state legislature greatly influences public college prices, Specification 7 adds this as an additional control. However, its inclusion does not erase the effect suggesting that the reduction in tuition at public colleges cannot be explained by changes in state support. Although these results are contrary to the Bennett Hypothesis, they are not surprising given that the legislature had strong incentives to prevent public colleges from increasing prices and may have even induced them to reduce tuition charges in real terms (or freeze charges in nominal terms) to increase college access.

While public colleges may have lacked the flexibility to increase tuition prices, the constraints on room and board charges appear to be less binding.[16] After HOPE, public four-year colleges raised these costs 5 percent faster than other southeastern colleges even after accounting for differences in college and state characteristics (Specification 8). As theory would predict, this effect was concentrated at the schools most affected by HOPE (Specification 9) and increased over time as the number of participants in the aid program grew (Specification 10). These results translate into a nearly $220 increase at colleges with many HOPE recipients. Stated another way, these public colleges recouped 10 percent of the value of the scholarship by raising room and board fees.[17]

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15. List tuition price is the amount charged to students before institutional aid is applied. Required fees are "those charged to students for items not covered by tuition and required of such a large proportion of all students that the student who does not pay the charge is an exception" (Broyles 1995).

16. Room and board fees are charges for accommodations and meals for a full-time, first-time undergraduate living on campus. Data is not available for the entire sample because some schools do not have on-campus residences.

17. These calculations are based on the group's mean pre-policy room and board fees ($3,515) and an average HOPE value of $2,257 after 1993 based on tuition price.

Table 2

The Relative Response of Georgia Public Four-year Colleges—College Costs. Control Group: Public Colleges in the Southeast except for Competitor Colleges

Dependent Variable	Log (State Appropriations)			Log (List Tuition Price and Required Fees)				Log (Room and Board Fees)		
	With Controls (1)	HOPE Recipients (2)	Timing (3)	With Controls (4)	HOPE Recipients (5)	Timing (6)	Adding State Appropriations (7)	With Controls (8)	HOPE Recipients (9)	Timing (10)
Georgia * After	0.018 (0.027)			−0.032** (0.013)				0.051** (0.016)		
Many recipients * after		0.066* (0.035)			−0.032** (0.014)				0.062** (0.016)	
Few recipients * after		−0.029 (0.027)			−0.033** (0.014)				0.037 (0.023)	
Georgia * 1993			0.014 (0.029)			−0.083** (0.011)	−0.082** (0.012)			0.016 (0.016)
Georgia * 1994			0.007 (0.029)			−0.076** (0.014)	−0.075** (0.014)			0.047** (0.015)
Georgia * 1995			0.036 (0.030)			−0.029* (0.015)	−0.027* (0.015)			0.080** (0.020)
Georgia * 1996			0.017 (0.035)			0.071** (0.024)	0.073** (0.022)			0.075** (0.025)
State appropriations	no	no	no	no	no	no	yes	no	no	no
R-squared	0.4752	0.4760	0.4755	0.6831	0.6833	0.6970	0.7022	0.6144	0.6150	0.6254
Observations	966	966	966	955	955	955	953	718	718	718
Number of colleges	121	121	121	121	121	121	121	92	92	92

Notes: ** denotes significance at the 0.05 level. * denotes significance at the 0.10 level. Robust standard errors are shown in parentheses. All models include a year trend and 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).

In contrast to the public colleges, private institutions had far more freedom to alter their tuition pricing. As shown in Table 3, private four-year colleges in Georgia are estimated to have increased list tuition prices 3.2 percent faster than comparable schools. As would be expected if the change were due to HOPE, this effect was concentrated at colleges that had greater numbers of recipients. These schools experienced a 5.7 percent relative increase in price which translates into an approximately $375 increase evaluated at the pre-policy mean. 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 private scholarship amount grew from $2,000 to $2,500 and $3,000, respectively, but the estimate is only statistically significant in 1995.

With the ability to adjust tuition costs, private colleges do not appear to also have raised room and board fees (Specifications 4 through 6). However, HOPE created incentives to reduce institutional aid, and as shown in Specification 8, private four-year colleges with many HOPE recipients responded by reducing awards by 19.4 percent relative to comparable schools. [18] With a pre-policy mean of $1,592 per student, this translates into a $309 reduction in aid. This may suggest an aid substitution effect in which the increase in student support from HOPE was met with a reduction in the amount of institutional student support. However, institutions may have reduced total aid awards while redistributing more support to nonrecipients thereby leaving them "held harmless." The characteristics of the nonrecipients (that is, lower GPAs) makes this response unlikely, but more detailed data is necessary to shed light on this possibility. In total, private colleges, particularly those with greater numbers of HOPE recipients, are estimated to have recouped 30 percent of the scholarship by raising price and reducing institutional aid.[19]

Because HOPE gave Georgia colleges a competitive advantage in attracting residents to attend, it may also have reduced the incentive to maintain or increase college quality. However, there is no evidence to support this notion among private colleges. As shown in Table 4, some public colleges did reduce instructional expenditures, but the reductions are not concentrated at the schools most affected by HOPE (Specification 2) suggesting HOPE may not have caused this.

In summary, the analysis lends support to the idea that colleges, particularly those most affected by HOPE, acted strategically to capture rents created by the scholarship program. Table 5 demonstrates that these results are extremely robust to the control group chosen. The results generally mirror those discussed above although some of the estimates using states that border Georgia as the control group are not statistically significant due to insufficient sample size.

Table 6 presents an even stronger test of whether the results are due to the introduction of HOPE. While the true date of enactment was 1993, the models were re-estimated using false policy dates to test whether the effects would disappear. As

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18. This aid is defined as scholarships or fellowships from revenues that were generated by the institution including matching funds for federal, state, or local grants (Broyles 1995). Unfortunately, there is little information available for public four-year colleges. However, at the two schools with such information (University of Georgia and Albany State College), aid awards fell 55 percent using controls for state and school characteristics. Several years after the introduction of HOPE, a majority at these schools were recipients thereby making this logical.

19. During the period of the study, the average HOPE scholarship at private colleges was $2,250.

Table 3

The Relative Response of Georgia Private Colleges—College Costs. Control Group: Public Colleges in the Southeast except for Competitor Colleges

Dependent Variable	List Tuition Price & Required Fees			Room and Board Fees			Institutional Financial Aid		
	With Controls (1)	HOPE Recipients (2)	Timing (3)	With Controls (4)	HOPE Recipients (5)	Timing (6)	With Controls (7)	HOPE Recipients (8)	Timing (9)
Georgia * after	0.032* (0.018)			0.027 (0.032)			-0.119 (0.083)		
Many recipients * after		0.057** (0.022)			0.009 (0.036)			-0.194* (0.116)	
Few recipients * after		-0.001 (0.020)			0.038 (0.053)			-0.063 (0.099)	
Georgia * 1993			0.021 (0.016)			0.015 (0.018)			-0.097 (0.073)
Georgia * 1994			0.019 (0.019)			0.033 (0.035)			-0.120 (0.088)
Georgia * 1995			0.046** (0.022)			0.025 (0.038)			-0.139 (0.091)
Georgia * 1996			0.041 (0.028)			0.036 (0.046)			-0.058 (0.144)
R-squared	0.3365	0.3510	0.3367	0.5404	0.5533	0.5412	0.2968	0.2970	0.3015
Observations	1,357	1,357	1,357	946	946	946	891	891	891
Number of colleges	173	173	173	122	122	122	118	118	118

Notes: ** denotes significance at the 0.05 level. * denotes significance at the 0.10 level. Robust standard errors are shown in parentheses. All models include a year trend and 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).

Table 4

Percent Change in Instructional Expenditures per Student. Dependent Variable: Log (Instructional Expenditures per FTE Student). Control Group: Other Colleges in the Southeast except for Competitor Colleges

Sample	Public Four-Years			Private Four-Years		
	With Controls (1)	HOPE Recipients (2)	Timing (3)	With Controls (4)	HOPE Recipients (5)	Timing (6)
Georgia * after	−0.038 (0.024)			0.003 (0.041)		
Many recipients * after		−0.007 (0.032)			0.007 (0.055)	
Few recipients * after		−0.069** (0.028)			−0.001 (0.055)	
Georgia * 1993			−0.055** (0.023)			0.006 (0.035)
Georgia * 1994			−0.033 (0.024)			0.006 (0.053)
Georgia * 1995			−0.036 (0.029)			−0.013 (0.049)
Georgia * 1996			−0.034 (0.031)			0.013 (0.052)
R-squared	0.4913	0.4917	0.4985	0.5490	0.5505	0.5509
Observations	967	967	967	1,365	1,365	1,365
Number of colleges	121	121	121	173	173	173

Notes: ** denotes significance at the 0.05 level. * denotes significance at the 0.10 level. Robust standard errors are shown in parentheses. All models include a year trend and 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).

shown in Panels A and B, the state appropriation and tuition results for public colleges remain significant thereby suggesting that the results may be due to differences in trends across the groups rather than the introduction of HOPE. However, the room and board results for the public colleges, which were more in accord with the Bennett Hypothesis, change noticeably when using 1992 as the policy date. The estimated increase in room and board charges found for all public institutions in Table 2 is not statistically significant in Panel C. Additionally, the effect found for schools with many HOPE recipients falls in magnitude by one-third and loses some of its statistical significance. However, the lack of the effect disappearing completely and the significance when using 1991 as the policy date suggests that part of the result may be due to differences in trends across the groups of schools. Moreover, I cannot reject that hypothesis that the relative reduction found in instructional expenditures at public colleges is due to trended data. In contrast, the private college results appear to be strengthened by this exercise. The main results for the private colleges disappear or

Table 5
Different Control Groups (Regular Group: Southeastern States)

Public Four-Years

A. Log (State Appropriations)

	Georgia Border States		All States	
Georgia * after	0.018		0.072**	
	(0.031)		(0.024)	
Many recipients * after		0.066*		0.119**
		(0.038)		(0.032)
Few recipients * after		-0.029		0.025
		(0.031)		(0.024)
R-squared	0.6954	0.6967	0.3098	0.3101
Observations	432	432	4,069	4,069
Number of colleges	54	54	510	510

B. Log (List Tuition and Fees)

	Georgia Border States		All States	
Georgia * after	-0.019		-0.175**	
	(0.022)		(0.009)	
Many recipients * after		-0.018		-0.174**
		(0.022)		(0.011)
Few Recipients * after		-0.021		-0.177**
		(0.022)		(0.010)
R-squared	0.6121	0.6134	0.3033	0.3034
Observations	421	421	3,984	3,984

Private Four-Years

E. Log (Institutional Aid)

	Georgia Border States		All States	
Georgia * after	-0.086		-0.127*	
	(0.108)		(0.076)	
Many recipients * after		-0.163		-0.187*
		(0.134)		(0.106)
Few recipients * after		-0.035		-0.071
		(0.123)		(0.094)
R-squared	0.2677	0.2687	0.3117	0.3120
Observations	406	406	5,360	5,360
Number of colleges	54	54	701	701

F. Log (List Tuition and Fees)

	Georgia Border States		All States	
Georgia * after	0.010		0.018	
	(0.023)		(0.014)	
Many recipients * after		0.037		0.048**
		(0.026)		(0.018)
Few Recipients * after		-0.022		-0.015
		(0.024)		(0.016)
R-squared	0.5119	0.5287	0.3844	0.3854
Observations	601	601	6,844	6,844

C. Log (Room and Board)

	(1)	(2)	(3)	(4)
Number of colleges	54	54	506	506
Georgia * after	0.054** (0.018)		0.058** (0.012)	
Many recipients * after		0.065** (0.018)		0.070** (0.012)
Few recipients * after		0.039 (0.024)		0.042** (0.020)
R-squared	0.5877	0.5892	0.5727	0.5730
Observations	335	335	2,542	2,542
Number of colleges	43	43	326	326

D. Log (Instructional Expenditures)

	(1)	(2)	(3)	(4)
Georgia * after	-0.029 (0.029)		-0.019 (0.021)	
Many recipients * after		0.002 (0.036)		0.012 (0.030)
Few recipients * after		-0.060* (0.032)		-0.050** (0.025)
R-squared	0.5236	0.5253	0.3864	0.3866
Observations	432	432	4,063	4,063
Number of colleges	54	54	509	509

G. Log (Room and Board)

	(1)	(2)	(3)	(4)
Number of colleges	77	77	870	870
Georgia * after	-0.009 (0.033)		0.019 (0.029)	
Many recipients * after		-0.025 (0.037)		0.002 (0.034)
Few recipients * after		0.004 (0.055)		0.029 (0.049)
R-squared	0.5723	0.5854	0.5121	0.5144
Observations	420	420	4,526	4,526
Number of colleges	54	54	581	581

H. Log (Instructional Expenditures)

	(1)	(2)	(3)	(4)
Georgia * after	-0.028 (0.048)		-0.003 (0.038)	
Many recipients * after		-0.024 (0.061)		0.002 (0.053)
Few recipients * after		-0.031 (0.061)		-0.006 (0.054)
R-squared	0.5242	0.5262	0.4361	0.4361
Observations	615	615	6,887	6,887
Number of colleges	78	78	869	869

Notes: ** denotes significance at the 0.05 level. * denotes significance at the 0.10 level. The Dependent variable is denoted in each panel. Robust standard errors are shown in parentheses. All models include a year trend and 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).

Table 6
False Policy Dates (Actual Date: 1993)

Public Four-Years

	False Date 1992		False Date 1991	
A. Log (State Appropriations)				
Georgia * after	0.017 (0.033)		−0.049 (0.041)	
Many recipients * after		0.079** (0.038)		0.027 (0.043)
Few recipients * after		−0.044 (0.042)		−0.127** (0.054)
R-squared	0.4752	0.4760	0.4726	0.4739
Observations	960	960	959	959
Number of colleges	120	120	120	120
B. Log (List Tuition and Fees)				
Georgia * after	−0.119** (0.019)		−0.138** (0.022)	
Many recipients * after		−0.097** (0.012)		−0.117** (0.016)
Few recipients * after		−0.141** (0.031)		−0.159** (0.034)
R-squared	0.6459	0.6461	0.6346	0.6347
Observations	950	950	941	941

Private Four-Years

	False Date 1992		False Date 1991	
E. Log (Institutional Aid)				
Georgia * after	−0.107 (0.086)		−0.008 (0.080)	
Many recipients * after		−0.159 (0.107)		−0.071 (0.099)
Few recipients * after		−0.059 (0.119)		0.049 (0.108)
R-squared	0.3023	0.3029	0.3047	0.3048
Observations	976	976	1,177	1,177
Number of colleges	127	127	153	153
F. Log (List Tuition and Fees)				
Georgia * after	0.013 (0.016)		−0.003 (0.026)	
Many recipients * after		0.034* (0.018)		0.011 (0.026)
Few recipients * after		−0.017 (0.024)		0.001 (0.031)
R-squared	0.3469	0.3619	0.3232	0.3398
Observations	1,349	1,349	1,279	1,279

C. Log (Room and Board)

	(1)	(2)	(3)	(4)
Number of colleges	120	120	119	119
Georgia * after	0.025		0.049**	
	(0.019)		(0.024)	
Many recipients * after		0.041*		0.084**
		(0.024)		(0.030)
Few recipients * after		0.004		0.013
		(0.024)		(0.024)
R-squared	.6192	.6196	.6287	.6302
Observations	689	689	691	691
Number of colleges	88	88	88	88

D. Log (Instructional Expenditures)

	(1)	(2)	(3)	(4)
Georgia * after	−0.057**		−0.114**	
	(0.028)		(0.034)	
Many recipients * after		−0.023		−0.078*
		(0.035)		(0.040)
Few recipients * after		−0.091**		−0.150**
		(0.037)		(0.044)
R-squared	0.4911	0.4918	0.4956	0.4970
Observations	960	960	960	960
Number of colleges	120	120	120	120

G. Log (Room and Board)

	(1)	(2)	(3)	(4)
Number of colleges	172	172	163	163
Georgia * after	0.038		0.064**	
	(0.026)		(0.026)	
Many recipients * after		0.023		0.037
		(0.029)		(0.024)
Few recipients * after		0.051		0.097**
		(0.043)		(0.038)
R-squared	.5488	.5607	.5302	.5417
Observations	946	946	928	928
Number of colleges	122	122	120	120

H. Log (Instructional Expenditures)

	(1)	(2)	(3)	(4)
Georgia * after	0.007		−0.003	
	(0.052)		(0.060)	
Many recipients * after		0.007		0.011
		(0.078)		(0.078)
Few recipients * after		0.008		−0.014
		(0.067)		(0.086)
R-squared	0.5351	0.5367	0.5135	0.5169
Observations	1316	1316	1312	1312
Number of colleges	166	166	165	165

Notes: ** denotes significance at the 0.05 level. * denotes significance at the 0.10 level. The Dependent Variable is denoted in each panel. Robust standard errors are shown in parentheses. All models include a year trend and 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). For the false policy date of 1992, the data are from 1988–89 to 1995–96. For the false policy date of 1991, the data are from 1987–88 to 1994–95. Each allows for four years of observations both before and after the policy date.

dissipate when using 1992 or 1991 as the policy enactment year. While still generally negative, the institutional aid results are not statistically significant (Panel E), and the tuition results are much smaller and barely significant for 1992 and insignificant for 1991 (Panel F). This strengthens the claim that the introduction of HOPE was the cause of the private institutional responses.

V. Conclusion and Implications

This paper provides evidence that colleges do respond to the incentives created by financial aid policies. After the introduction of the Georgia HOPE Scholarship, four-year colleges within the state responded by increasing student charges at a faster rate than similar schools in nearby states. More specifically, there is strong evidence that private colleges increased list tuition prices while reducing institutional aid. For every dollar of aid, some private colleges recouped as much as 30 cents. In addition, there is some evidence that public colleges increased room and board fees by ten cents more than the comparison group.[20] The analysis provides further support that these responses were due to HOPE by demonstrating that their magnitudes were larger the greater the treatment (the proportion of the student body that were aid recipients at the college) and that they are robust to different control groups.

It is important to note that the evidence does not suggest the level of college exploitation insinuated by Bennett in his "Our Greedy Colleges" editorial. Furthermore, the estimates of this paper are likely to be an upper bound of possible institutional responses because most other aid programs are less transparent, and therefore, it is less clear how institutions might capture the rents from scholarship recipients. Moreover, since most aid programs are funded through general government revenues rather than a lottery, colleges are likely to be subject to even greater pressure by legislatures to maintain price levels.

Nonetheless, even a small response could strongly influence the effectiveness and ramifications of the HOPE program. First, the estimated increase in student costs would have reduced the intended benefits of the program for recipients. Using the estimated growth in fees at public four-year colleges and the student responses found by Dynarski (2000), the enrollment rate of 18-19 year olds in Georgia was nearly one percentage point less than what it could have been without an institutional response. This suggests that the student enrollment impact of HOPE would have been 11 percent larger than it was if colleges had not raised their prices.[21] The negative impact of the institutional response to HOPE would have been felt greatest at private four-year colleges, which charged more and gave out less aid after the program was created.

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20. While this price increase only directly affected those living on campus, it is also possible that they influenced the rents of student apartments in the private market. As the price of alternatives increased (for instance, college dormitories), so should have the rents of the private market.

21. Dynarski (2000) estimates that each $1,043 in aid (2,000 dollars) increased the attendance rate in Georgia by 3.7 to 4.2 percentage points. A $220 decrease would translate into nearly one percentage point less in enrollment. Dynarski estimates that HOPE increased the attendance rate of all 18- to 19-year-olds by 7 to 8 percentage points.

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 full benefit intended by HOPE, nonrecipients were the real victims. Unless institutional aid was redirected to these students, they inadvertently experienced increases in prices of as much as nearly $700 due to a program designed to lower costs. If these nonrecipients were excluded because they received the Pell Grant, and so were from lower-income families, this increase may have had an even larger enrollment impact.[22] The same would be true for weaker students who were unable to get the HOPE Scholarship due to its merit component.

Figures from the last year of data for this study further illustrate the point. Nearly two-thirds of the first-year students at public Georgia colleges in 1997 were nonrecipients.[23] This means that approximately 33,000 incoming public college students (along with additional students at private colleges) were affected by the increases in college costs without additional financial aid. Furthermore, because only 31 percent of the 1994 HOPE beneficiaries kept their scholarship throughout college, the proportion of nonrecipients was even larger among upperclass students. In total, over 100,000 students are estimated to have been affected each year by the price increases brought on by the institutional response HOPE. The results highlight the importance of the design of a program in ensuring that students, rather than institutions, realize the full benefit of a program. Moreover, special attention is needed so that students who do not receive the aid are not adversely affected.

Table A1
Sample of Four-year Georgia Colleges

		State Appropriations	List Tuition	Room and Board	Instructional Expenditures
Public Four-Year Colleges					
Highly and very competitive	*Georgia Institute Of Technology	+	+	−	+
Competitive	*University Of Georgia	+	+	+	+
	Fort Valley State College	+	+	+	+
	Georgia State University	+	+	−	+
	*Georgia Southern University	+	+	+	+

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22. The literature suggests low-income students are more sensitive to price in enrollment decisions than other students. See McPherson and Schapiro (1991) and (1998).

23. Sources: Georgia Student Finance Commission and National Center of Education Statistics.

Table A1 (*continued*)

		Institutional Aid	List Tuition	Room and Board	Instructional Expenditures
	Georgia Southwestern College	+	+	+	+
	Kennesaw State College	+	+	−	+
	Southern Polytechnic State University	+	+	+	+
Less competitive	Albany State College	+	+	+	+
	Armstrong State College	+	+	−	+
	Augusta College	+	+	−	+
	*Clayton State College	+	+	−	+
	*Columbus College	+	+	−	+
	*Georgia College	+	+	+	+
	*North Georgia College	+	+	+	+
	Savannah State College	+	+	+	+
	*State University of West Georgia	+	+	+	+
	*Valdosta State University	+	+	+	+
Private Four-Year Colleges					
Highly and very competitive	Agnes Scott College	+	+	−	+
	Covenant College	+	+	+	+
	Emory University	+	+	+	+
	Oglethorpe University	+	+	−	+
	Spelman College	−	+	+	+
Competitive	*Berry College	+	+	+	+
	Brenau University	+	+	−	+
	*La Grange College	−	+	+	+
	*Mercer University	+	+	+	+
	Morehouse College	+	+	+	+
	*Shorter College	+	+	+	+

Table A1 (*continued*)

		Institutional Aid	List Tuition	Room and Board	Instructional Expenditures
	Toccoa Falls College	+	+	−	+
	Wesleyan College	+	+	−	+
Less competitive	*Atlanta Christian College	+	+	−	+
	*Emmanuel College	+	+	+	+
	Paine College	+	+	+	+
	*Reinhardt College	+	+	−	+
Non competitive	*Brewton-Parker College	+	+	+	+
	*Thomas College	−	+	−	−

Source: IPEDS data from 1989–90 to 1996–97.
Notes: "+" indicates the college was included in estimation. * indicates in the top half of that sector's colleges in terms of the proportion of students that were HOPE recipients Colleges of a specialized nature (art, music, nursing, etc.) are excluded. Colleges without at least seven of the eight possible years of information were also not included in the models. To account for measurement error in the finance variables, values greater than 150 percent of the mean for the period were changed to missing. Room and Board information is missing for many institutions due to a lack of residential options.

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