

# The Enrollment Effects of Merit-Based Financial Aid: Evidence from Georgia's HOPE Program

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Introduced in 1993, Georgia's HOPE Program sponsors a merit-based scholarship for students attending in-state colleges and a grant for those entering technical schools. There are no income restrictions. Comparing Georgia with other southeastern states over the 1988–97 period, HOPE increased freshmen enrollment by 5.9%, or 2,889 students per year, which amounts to only 15% of freshmen scholarship recipients. Four-year colleges account for most of the gain; a reduction in students leaving the state explains two-thirds of the 4-year-school effect attributable to freshmen who have recently graduated from high school. White and black enrollments increased because of HOPE.

## I. Introduction

Until the late 1980s, only a small fraction of college financial aid was allocated on the basis of merit, and most of it was related to individual institutions' attempts to attract academically proficient students. However,

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in the past decade, state governments have distributed billions of dollars of assistance through a range of newly established, merit-based college scholarships, most of which have no means tests. Almost invariably the model for these programs is Georgia's "Helping Outstanding Pupils Educationally" (HOPE) Scholarship.

States have justified "HOPE-style" scholarships as a means to increase college enrollment, keep their best high school graduates in state for college, and promote academic achievement. Because students from middle- and upper-income households are the primary beneficiaries (Dynarski 2000), such programs enjoy considerable political support. Some contend that Georgia's lottery-cum-scholarship package was an attempt by then-governor Zell Miller to appeal to middle-class voters in his 1994 reelection campaign.

The HOPE Program, initiated in 1993 and funded by a state lottery, has two components—the merit-based HOPE Scholarship and the HOPE Grant. The scholarship covers tuition, fees, and book expenses for all eligible high school graduates attending Georgia public postsecondary institutions. Eligible students who attend in-state private institutions receive a fixed payment comparable to the value of the subsidy received by public school enrollees. To qualify for the scholarship, a high school student must graduate with a "B" average. There are no income restrictions.<sup>1</sup> The HOPE Grant has no income restrictions or merit requirements and can be applied only to nondegree programs at 2-year schools. Since the program's inception, more than \$3 billion in program funds have been disbursed to over 850,000 students.

This article examines the effects of the HOPE Program on enrollments in Georgia colleges and universities. Treating HOPE as a natural experiment, we contrast first-time freshmen enrollments in Georgia institutions with those in control-group states, most of which, like Georgia, are members of the Southern Regional Educational Board (SREB).<sup>2</sup> Using data

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<sup>1</sup> In the first year of the program, a household income cap of \$66,000 was imposed. This cap was raised to \$100,000 the following year and eliminated entirely thereafter.

<sup>2</sup> The 16 SREB member states are Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Delaware joined only recently and therefore was not included in the SREB sample.

from the Integrated Postsecondary Education Data System (IPEDS) administered by the National Center for Education Statistics (NCES), covering the period 1988–97, we estimate the overall policy effect on the logarithm of enrollments and decompose it by institution type, accounting for racial differences in the enrollment responses. In each case, we account for the sizes of the eligible population and age cohort, opportunity costs of attending college, and income.

We estimate that total college enrollment was 5.9% higher in Georgia than for the SREB as a whole because of the HOPE Program. This implies that the program added 2,889 freshmen per year to Georgia colleges, which amounts to 15% of freshmen scholarship recipients between 1993 and 1997. The overall gains are heavily concentrated in 4-year institutions, where almost 80% of the freshmen are recent (within 12 months) high school graduates.

By exploiting the IPEDS residency and migration data, we investigate the importance of HOPE's incentive to remain in state among recent-graduate freshmen attending 4-year colleges. We show that two-thirds of the HOPE effect for this group is accounted for by a decrease in residents leaving the state. However, recent-graduate freshmen represent only about 40% of the total 4-year-school enrollment rise. Thus, the greater enrollment response occurred among freshmen who delayed matriculation more than 12 months past their high school graduations.

We also find the estimated enrollment effects for whites are smaller than those for blacks. For blacks, the percentage increase in 4-year publics exceeds that in private colleges (in contrast to the pattern for whites), and there is a statistically significant program effect on technical school enrollment (where there is none for whites). These gains in black enrollment are primarily explained by the presence of many relatively large historically black colleges and universities (HBCUs) in Georgia.

The only other study to investigate the role of Georgia's HOPE Scholarship on college enrollment is Dynarski (2000). Based on data from the 1989–97 October Current Population Surveys (CPS), she concluded that HOPE raised the college attendance probability of 18–19-year-old Georgians by about 25%.<sup>3</sup> However, Dynarski does not examine college attendance by institution type and therefore does not distinguish scholarship from grant effects. Our analysis differs from Dynarski's in its focus on institutions instead of individuals. Comparing our findings to hers is difficult because the IPEDS institution data do not generally distinguish enrollments by residency. The one exception is 4-year schools, for which the migration of recent-graduate freshmen is tracked, and these students

<sup>3</sup> Dynarski's main control group is made up of the states in the South Atlantic and East South Central Census Divisions, which omits the SREB states of Arkansas, Louisiana, Oklahoma, and Texas but adds Delaware and Washington, DC.

make up the vast majority of scholarship recipients. We show that the effect of HOPE on Georgia-resident, recent-graduate freshmen attending 4-year schools is small (about 280 students per year) and statistically insignificant. This suggests that Dynarski's finding was generated by HOPE Scholars who delayed entry to college or HOPE Grant recipients.

## II. Georgia's HOPE Scholarship

To qualify for a HOPE Scholarship, entering freshmen must have graduated from an eligible Georgia high school since 1993 with at least a B average and be a Georgia resident. The award can be used at 83 degree-granting institutions in Georgia, of which 20 are 4-year public, 30 are 4-year private, 15 are 2-year public, 5 are 2-year private, and 13 are degree-granting technical schools. For HOPE Scholars in public colleges and universities, the award covers tuition, mandatory fees, and a book allowance. However, until fall 2000, HOPE-eligibles who also qualified for a Pell Grant had their Pell aid reduced dollar for dollar by their merit awards. Consequently, during our sample period, the scholarship provided no added incentive for low-income students to attend college. In the 2004–5 academic year, the maximum value of the award was up to \$4,500 at the state's top public universities. HOPE Scholars attending private schools received a standard award of \$3,000 per academic year toward tuition.<sup>4</sup> To retain their scholarships, students must maintain a 3.0 grade point average while in college.<sup>5</sup>

Eligibility for the HOPE Grant does not depend on high school grade point average and has no restrictions based on when a student graduated from high school. However, it applies only to nondegree programs at 2-year and "less-than-2-year" schools. (The appendix explains the distinction between 2-year and less-than-2-year schools.) Thus, enrollments at institutions that offer only diplomas and certificates will be unaffected by the scholarship. The grant covers tuition and mandatory fees, and students may receive it for all course work required by a certificate or diploma program of study. Moreover, a student may use the HOPE Grant to earn more than one diploma or certificate. Continued support under the grant is contingent on the satisfactory academic performance of students, which is determined by the individual institution.

<sup>4</sup>The private school award was initially set at \$500 in 1993 and rose to \$1,000 in 1994 and \$1,500 in 1995, but it was not tied to merit during these years. These awards supplemented a \$1,000 Tuition Equalization Grant for students attending in-state private schools. In 1996, the HOPE payment to students attending in-state private schools was increased to \$3,000, and the merit rules were imposed.

<sup>5</sup>Cornwell, Lee, and Mustard (2005) examine how the retention rules affect the academic choices of students in college. They find that HOPE induces students, especially in their first year, to enroll in fewer classes, withdraw from class more often, and shift more of their classes to the summer term.

**Table 1**  
**The HOPE Scholarship and Grant Number of Awards and Aid Disbursed by Institution Type, 1993–99**

Program Components	Number of Awards (% of Total)	Aid Amount (% of Total)
HOPE Scholarship total	356,454 (49.4)	654.13 (77.5)
Public, 4-year	257,211 (72.1)	503.71 (77.0)
Public, 2-year	56,829 (15.9)	50.83 (7.8)
Technical schools	6,459 (1.8)	4.02 (.6)
Private, 4-year	30,098 (8.4)	81.67 (12.5)
Private, 2-year	5,857 (1.6)	13.90 (2.1)
HOPE Grant total:	364,792 (50.6)	190.12 (22.5)
Technical schools	348,104 (95.4)	176.67 (93)
All others	16,688 (4.6)	13.45 (7)
HOPE Program total	721,246	844.25

NOTE.—Aid amount is expressed in millions of dollars. Of the 34 technical schools that are HOPE eligible, 13 offer associate's degrees and therefore can enroll both the HOPE grant and scholarship recipients. A few public 4-year and 2-year institutions also offer technical certificates and diplomas.

Table 1 summarizes the number of awards and aid disbursed by program component and institution type between 1993 and 1999.<sup>6</sup> Over the period, HOPE awards were evenly divided between scholarships and grants, but the former accounted for 77.5% of total aid disbursed. Just over 72% of HOPE Scholars attended 4-year public institutions, which absorbed 77% of all scholarship aid. Another 8.4% attended private, 4-year colleges, which collected 12.5% of these funds. Thus, 4-year public and private schools together enrolled over 80% of HOPE Scholars, receiving almost 90% of all merit-based aid.

Figure 1 indicates that the share of program resources allocated to the scholarship grew rapidly. The number of HOPE-eligible high-school graduates rose over 50%, from 29,840 to 45,149, and the percentage of high school graduates satisfying the merit requirements increased from 48% to almost 65%. Over the same period, the rate of HOPE-eligible high school graduates enrolling in Georgia institutions jumped from 23% to 70%. By 1997, total non-need-based aid awarded by Georgia was

<sup>6</sup> These data were provided by special request of the Georgia Student Finance Commission.

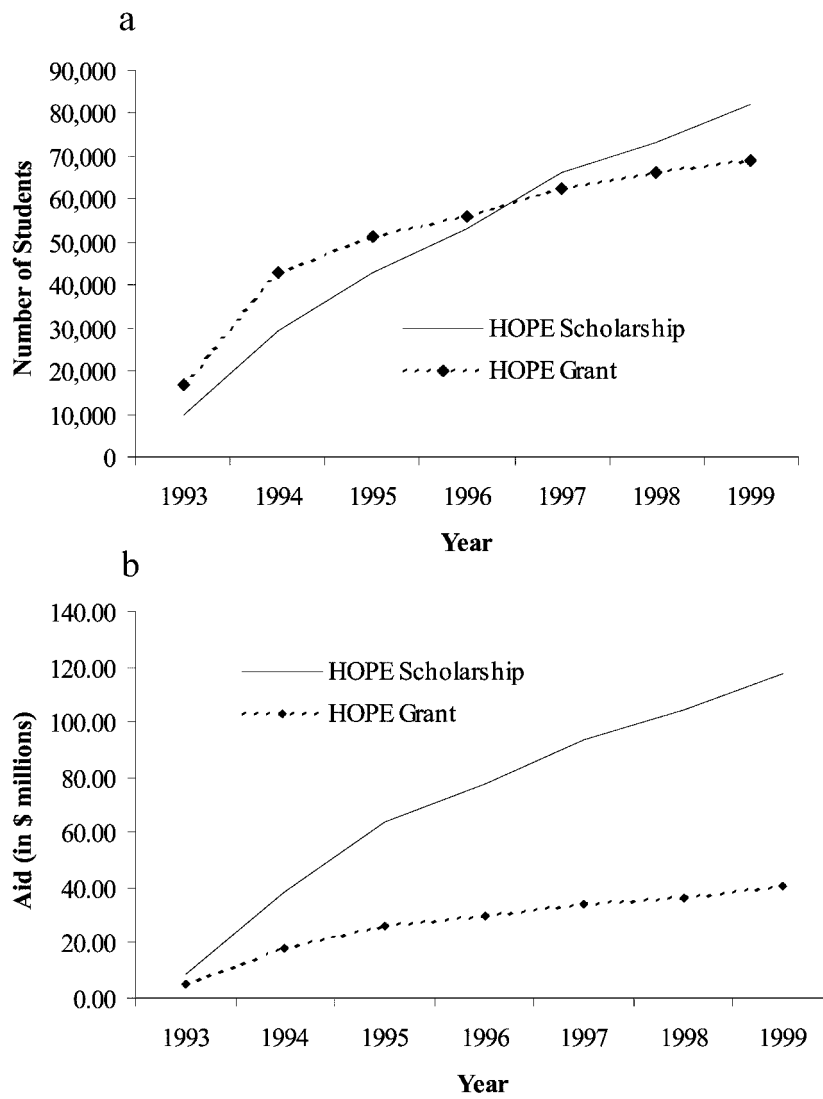


FIG. 1.—The HOPE Scholarship and the HOPE Grant trends in the number of recipients (a) and dollars disbursed (b), 1993–99. Source: Georgia Student Finance Commission by special request.

greater than that of the other 14 SREB states combined.<sup>7</sup> By 1999, HOPE had grown to roughly double the size and scope of the federal Pell Grant program in Georgia.<sup>8</sup>

The awards distributed through the HOPE Program change the relative prices of enrolling in different types of institutions. First, the scholarship reduces the price of 4-year public colleges relative to their out-of-state counterparts and 2-year publics. Thus, we expect a strong program response in 4-year-public enrollment given the incentives to stay in state and “move up” from a 2-year school.

Second, the scholarship decreases the price of Georgia’s 4-year private schools relative to those in other states, but the percentage change in price is small compared with the full-tuition award HOPE promises students attending 4-year publics. So, it is reasonable to expect that HOPE increases enrollment at private colleges, albeit by a smaller percentage, than it does public-school enrollment. However, this expectation is not as reasonable as it seems at first glance because there is a great deal of heterogeneity among Georgia’s private schools. They range from the low-tuition, for-profit DeVry Institute of Technology, which caters to part-time commuters, to the highly selective, high-tuition Emory University, which attracts only full-time residential students. Furthermore, the average tuition during the pre-HOPE period was less than \$7,600. Therefore, for some private colleges, the value of a HOPE award represents a large percentage reduction in tuition cost of attendance. For others, like the moderately selective liberal arts colleges, the scholarship does not constitute a substantial discount, but given the large number of such schools in the region, students who prefer them may be very price sensitive in choosing where to enroll. Both scenarios predict a stronger enrollment response than one might expect initially.

Finally, although 2-year schools are similarly affected along the in-state–out-of-state margin, students generally do not cross state lines to attend 2-year institutions. Dynarski (2000) reports that students attending 4-year colleges are eight times more likely to go out of state. Still, HOPE encourages those who would have otherwise entered the labor market to consider enrolling in 2-year institutions. However, this effect will be offset by students moving up to 4-year schools because of the reduction in 4-year–2-year relative price. Consequently, the net effect is ambiguous.

<sup>7</sup> See the National Association of State Scholarship and Grant Aid Programs, *19th Annual Survey Report, Academic Year 1987-88* and *29th Annual Survey Report, Academic Year 1997-98*. Georgia’s total 1998 aid is 55% higher than that of the second-ranked state, Florida.

<sup>8</sup> In 1998-99, over \$189 million in scholarship funds were awarded to 141,000 Georgia undergraduates, compared with only \$113 million in Pell aid to 62,000 recipients.

### III. Empirical Strategy

#### A. Empirical Model

Our empirical strategy contrasts the logarithm of college enrollments in Georgia before and after the HOPE “treatment” with those in sets of similar states serving as control groups. We implement the strategy by estimating regression models of the form

$$\ln E_{it} = \alpha + \delta(S_{GA} \times H_t) + X'_{it}\xi + \gamma_i S_i + \beta_t Y_t + \epsilon_{it}, \quad (1)$$

where  $E_{it}$  is enrollment in state  $i$  in year  $t$ ,  $S_{GA}$  is a dummy variable for Georgia,  $H_t$  is a HOPE period indicator, equal to 1 when  $t \geq 1993$  and 0 otherwise,  $X_{it}$  contains a set of covariates,  $S_i$  and  $Y_t$  represent state and year fixed effects, respectively, and  $\epsilon_{it}$  is a random error. The focus in (1) is on  $\delta$ , the OLS estimator of which reflects the difference in differences (DD) between  $\ln E_{it}$  in Georgia and the control group states over the pre- and post-HOPE periods (net of the effects of the covariates).<sup>9</sup>

As a robustness check, we estimate both the simple DD, dropping the covariates, and the full specification given in (1). We include the covariates to control for state demographic characteristics and economic circumstances that may be correlated with the introduction of the program. For example, the number of high school graduates in Georgia was generally declining prior to 1993 and began to rise slowly soon thereafter.<sup>10</sup> Further, Card and Lemieux (2000) suggest that the number of high school graduates and cohort size (the 18–19-year-old population) do not move together in a 1 : 1 fashion. Thus, we account for each of these factors, as well as state differences in income and the opportunity cost of attending college.

#### B. Data

We utilize two primary control groups: the other 14 SREB states and the five states that border Georgia, which are also SREB members. Given the SREB’s coordinated regional focus on education,<sup>11</sup> as well as the absence of any significant HOPE-style interventions among the other mem-

<sup>9</sup> Bertrand, Duflo, and Mullainathan (2002) show that inference with the DD estimator is particularly vulnerable to serial correlation. Therefore, to calculate the  $t$ -ratios reported with our estimated HOPE effects, we use the robust covariance matrix estimator from sec. 4.1 of their paper. As an additional check, we follow their suggestion to estimate the policy effect using pre- and post-HOPE averages, which avoids the serial correlation problem by ignoring the time-series variation. While the results are less precise with this approach, the estimates that are significant in the full sample generally remain significant at the 10% level.

<sup>10</sup> However, there is little evidence of a program effect on high school graduates. A simple DD regression of the log of high school graduates produces an estimated HOPE effect of  $-.018$  with a  $p$ -value of  $.17$ .

<sup>11</sup> See the Southern Regional Education Board site at <http://www.sreb.org>.

bers during the sample period,<sup>12</sup> these states constitute an obvious control group. To gauge their suitability as controls, we removed Georgia from the sample and estimated (1) allowing every SREB state to take a turn as the treated group. For half of the 14 states, the estimates of  $\delta$  were not statistically significant, with  $t$ -ratios generally less than 1. When we exclude the states with an apparent program response, the estimated HOPE effects differ little from those produced using all SREB states. In addition, the false-treatment failures are not explained by state-specific trends that happened to be correlated with HOPE's introduction.

The data for our analysis come primarily from the 1988–97 IPEDS surveys conducted by the NCES (see the appendix for details). The enrollment variable is the number of first-time freshmen attending college in a state. We estimate HOPE's effect on total enrollment and separately on 4-year public, 4-year private, and 2-year public schools, accounting for racial differences in the response. Due to their prominence in Georgia, we also examine HOPE's influence on HBCU enrollment. Part-time students attending public institutions are included in the enrollment data because they can receive HOPE.

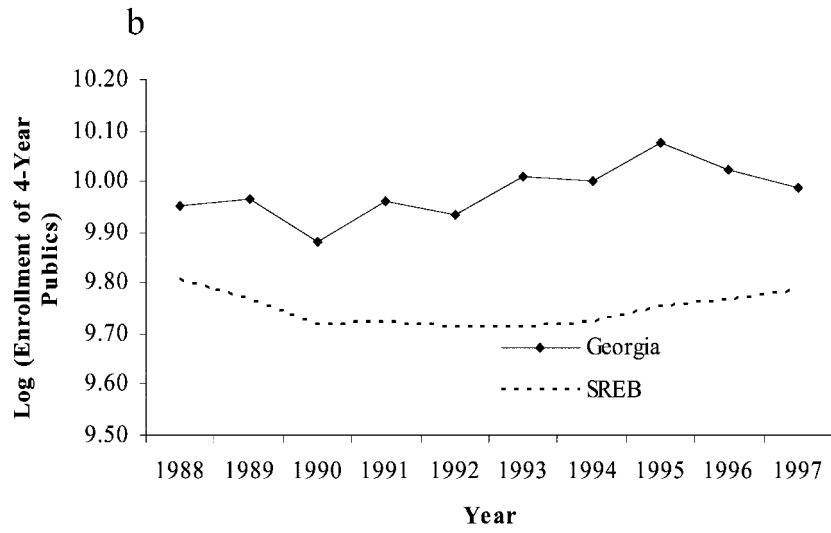
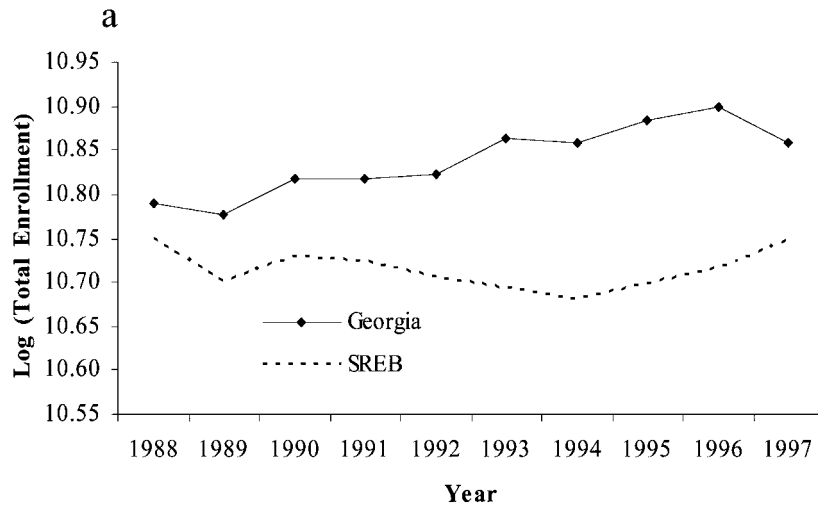
Figure 2 plots the total, 4-year public, 4-year private, and 2-year public school enrollment series for Georgia and the SREB. In each case, Georgia's enrollment levels are relatively higher after 1993. The private school contrast is particularly sharp, due in large part to the conspicuous 1989 decrease in Georgia enrollment. This drop coincides with a sharp decline in the number of students enrolled in Georgia HBCUs that can be traced to missing data for three private institutions.<sup>13</sup> We deal with this problem by including a Georgia-1989 interaction term ( $S_{GA} \times Y_{89}$ ) in our private school and HBCU enrollment regressions.<sup>14</sup>

The SREB conveniently provides the NCES data on the number of recent public and private high school graduates in each member state. The U.S. Census Bureau reports the 18–19-year-old population by race, which we use to control for the size of the college-going cohort. Our income variable is the per capita personal income measure provided by the Bureau of Economic Analysis. We measure the opportunity cost of attending

<sup>12</sup> Arkansas's Academic Challenge Scholarship was introduced prior to HOPE in 1991, but its benefits are limited to \$2,500 per year and to households with incomes less than \$50,000, while maintaining similar eligibility requirements. Consequently, the number of awardees during our sample period was relatively small. Florida's Bright Futures Scholarship is larger and was modeled directly after HOPE and initiated in the last year of our sample. Excluding these states from the analysis has virtually no impact on our findings.

<sup>13</sup> The schools were Clark College and Atlanta University, which merged in the second half of 1989, and Morris Brown College (NCES 2004).

<sup>14</sup> Because they represent a small fraction of total enrollment, the missing HBCU data have no impact on the estimated total enrollment response.



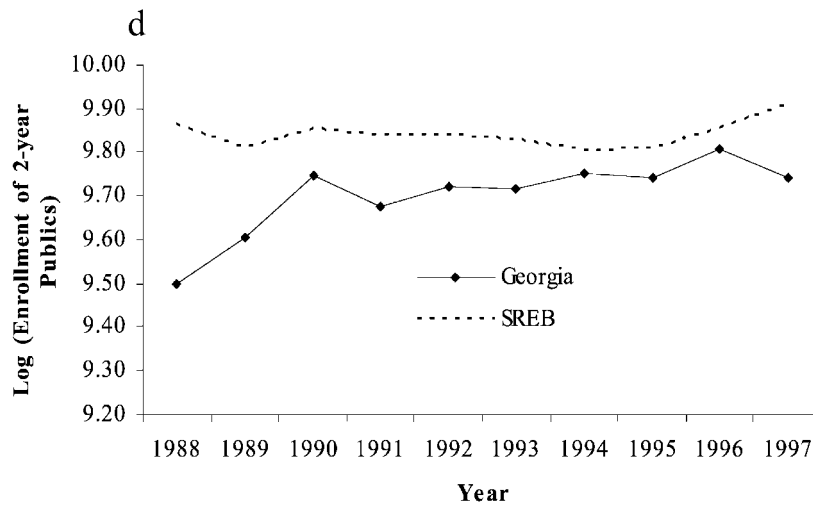
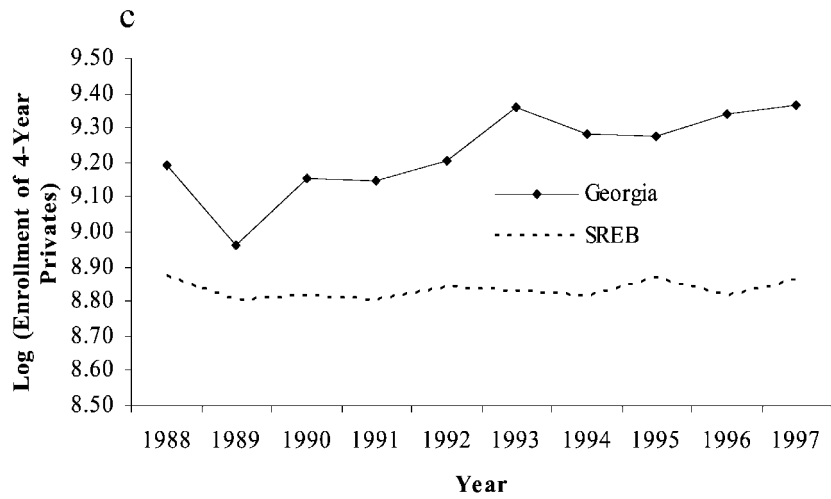


FIG. 2.—Trends in log enrollment levels, Georgia versus SREB states, 1988–97. *a*, total enrollment; *b*, 4-year publics; *c*, 4-year privates; *d*, 2-year publics.

**Table 2**  
**Means and Standard Deviations of Variables in SREB Sample**

Variable	1988–92		1993–97	
	Georgia	SREB	Georgia	SREB
Overall enrollment	49,249 (977)	45,320 (30,443)	52,715 (979)	44,648 (30,435)
4-year public enrollment	20,726 (704)	17,085 (9,801)	22,479 (769)	17,116 (9,646)
4-year private enrollment	9,297 (864)	6,810 (4,824)	11,223 (472)	6,885 (4,724)
2-year public enrollment	15,565 (1,503)	18,758 (16,646)	17,174 (580)	18,772 (16,384)
High school graduates	64,890 (2,502)	55,717 (39,377)	62,716 (1,513)	55,635 (41,690)
18–19-year-olds	208,947 (7,917)	171,159 (123,517)	204,931 (8,439)	167,060 (127,933)
Per capita income	21,038 (166)	19,736 (3,040)	22,803 (1,010)	21,181 (2,865)
Weekly manufacturing wage	463 (10)	497 (62)	478 (14)	499 (58)
<i>N</i>	5	70	5	70

NOTE.—The enrollment figures represent the number of first-time freshmen in each institution category. High school graduates include students from both public and private high schools. Per capita income and the weekly manufacturing wage are measured in 1998 dollars.

college with average weekly manufacturing wages, computed by the Bureau of Labor Statistics from its Current Employment Statistics. Each of these variables is expressed in 1998 dollars. Table 2 provides their means and standard deviations for Georgia and the other SREB states, both pre- and post-HOPE. To preview the empirical results, the simple DD implies that average total enrollment was about 9% higher in Georgia after 1993.

#### IV. Results

##### A. Total Enrollment

We begin by examining the total enrollment response to HOPE. Table 3 reports the estimates of  $\delta$  obtained from the baseline and full specifications, using both the SREB and border states as control groups. In the SREB case, the baseline estimate is .085 with a *t*-ratio over 5 (col. 1). Controlling for the number of high school graduates, the 18–19-year-old population, per capita income, and average weekly manufacturing wages reduces the baseline estimate almost 3 percentage points to .057 (col. 2), which implies that total enrollment was 5.9% higher in Georgia during the 1993–97 period because of the program. Evaluated at the mean pre-HOPE enrollment level (see table 2), this estimate translates into an additional 2,889 freshmen per year in Georgia schools.

An annual enrollment increase of 2,889 students between 1993 and 1997 represents only 15% of freshmen scholarship recipients. However, total enrollment includes students at 2-year schools, many of whom are grant

**Table 3**  
**Estimated HOPE Effect on First-Time Freshmen Enrollments in Georgia Colleges, 1988–97**

Control Group	Overall		4-Year Publics		4-Year Privates		HBCUs		2-Year Publics		2-Year Publics + Technical	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SREB controls ( <i>N</i> = 150):												
$S_{GA} \times H_t$	.085	.057	.083	.086	.126	.132	.200	.234	.063	-.045	.060	-.039
	(5.27)	(3.63)	(2.97)	(2.61)	(6.18)	(5.62)	(6.46)	(6.82)	(.84)	(.60)	(.98)	(.92)
$R^2$	.99	.99	.98	.99	.99	.99	.98	.98	.95	.96	.96	.97
Border state controls ( <i>N</i> = 60):												
$S_{GA} \times H_t$	.104	.032	.047	.045	.143	.131	.211	.265	.156	-.008	.119	-.052
	(3.74)	(1.09)	(.63)	(.72)	(4.72)	(4.91)	(5.63)	(5.11)	(1.83)	(.09)	(1.34)	(.71)
$R^2$	.97	.99	.91	.96	.99	.99	.93	.94	.93	.97	.94	.98
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

NOTE.—Robust *t*-ratios are given in parentheses. In each case, the dependent variable is the log of first-time freshmen enrollment. The covariates are the number of high school graduates, the number of 18–19-year-olds in the population, per capita personal income, and average weekly manufacturing wages, all in logs.

recipients, as table 1 indicates. During these 5 years, about 230,000 students received the HOPE Grant. This is important because it suggests that the total HOPE-induced enrollment rise amounts to a much smaller fraction of all first-year program (scholarship + grant) beneficiaries.

Using the border states as a control group, the estimated HOPE effect is .104 in the baseline case and .032 when the covariates are added; the first estimate is statistically significant, while the latter’s *t*-ratio is just slightly bigger than one. However, the 95% confidence interval for the border-state estimate completely contains the SREB estimate’s confidence interval. The imprecision arises partly because three of the border states—Alabama, Tennessee, and North Carolina—are in the group that produced significant false treatment effects. When the states that failed the false treatment test are removed from the sample, we obtain a statistically significant HOPE effect estimate of .055 with a *t*-ratio of 3.73. The confidence intervals for this estimate and the one reported in the top row of column 2 are virtually the same.<sup>15</sup>

### B. Enrollments by Institution Type

Next, we decompose the total effect by college type, repeating the analysis from the first two columns of table 3. Given the distribution of

<sup>15</sup> As mentioned in Sec. III, the false-treatment failures are not explained by state-specific trends that are correlated with HOPE’s introduction. When we allow for state-specific trends, the overall program effect estimate is a statistically significant .067, a percentage point higher than the estimate reported in col. 2 of table 3.

awards, we expect the scholarship's influence to be concentrated in 4-year schools. Because the data do not distinguish degree from diploma and certificate seekers in 2-year institutions, the effects of the scholarship and the grant will be conflated in these schools. However, the data identify the less-than-2-year schools that offer only diplomas and certificates and enroll the majority of grant recipients. Therefore, we estimate the HOPE effect for 2-year-schools with and without these institutions to assess the grant's contribution to the total increase in enrollment.

#### *4-Year Public Colleges*

Columns 3 and 4 of table 3 provide the results for 4-year public institutions. The basic specification produces a HOPE effect estimate of .083 with a *t*-ratio of almost 3. In this case, introducing the covariates has little effect on  $\hat{\delta}$ , pushing it up only slightly to .086. These results imply that enrollment in Georgia's 4-year public schools rose by 8.7%–9.0% because of HOPE. Based on the average pre-HOPE enrollment in 4-year publics, a 9% effect translates into 1,861 additional students per year in these schools.

When the border states are used as a control group, the estimated HOPE effect is cut almost in half and becomes statistically insignificant. This is similar to the pattern observed in column 2 of table 3. Again, although imprecise, the confidence interval for the border state estimate fully encompasses that of the SREB estimate. Further, using only the states that passed the false treatment test as a control group produces an estimated effect of .075 with a *t*-ratio of almost 1.5, which is much closer to the result reported for the entire SREB.

#### *4-Year Private Colleges*

Columns 5 and 6 of table 3 present the estimated HOPE effects for 4-year private schools. As with public college enrollment, the private school estimates using the SREB control group are robust to the inclusion of the covariates and are highly statistically significant. However, they are about 50% larger in magnitude. The estimate obtained from the full specification, .132, implies a 14.1% increase in enrollment, or 1,311 extra students per year due to the program. The magnitude of this increase is reflected in a rising share of total enrollment in private institutions. A DD regression of the 4-year private school enrollment share produces a statistically significant HOPE response of 1.2 percentage points.

The result in the top row of column 6 is robust to variations in the control group. The border state estimate (.131 with a *t*-ratio of about the same magnitude) is essentially the same, as is the estimate obtained from the sample of states that passed the false-treatment test. As an additional robustness check, we constructed an alternative control group of SREB

and midwestern states that should be less affected by HOPE (enrolled fewer than 50 Georgia residents in 1992) and reestimated equation (2). The resulting 4-year-private estimate was .123 with a  $t$ -ratio of 5.39.

Despite the robustness of the private school effect, its magnitude may still be surprising. One possible explanation is that HOPE increased enrollments at for-profit institutions, where the value of the scholarship constitutes a large percentage price reduction. However, eliminating for-profit institutions from the sample actually increases the estimated HOPE effect. For-profit enrollment in Georgia fell after HOPE was introduced, while those in the rest of the SREB rose slightly. Another possibility is that the small, moderately selective liberal arts colleges, which make up a large fraction of the states' private schools, face relatively elastic demands. This is plausible because many close substitutes operate in close proximity to Georgia. For example, the 1995 *Barron's Guide to Colleges* rated about 70 private colleges in Georgia and its border states as "very competitive" or "competitive" (the third and fourth highest categories out of six). Colleges in these categories accept roughly one-third to one-half of their applicants. Nine of these schools are in Georgia, and eight of them experienced enrollment increases from 11% to 97% between 1993 and 1997.<sup>16</sup> Evidence for price sensitivity can also be found in Singell, Waddell, and Curs (2006), which reports that the enrollment of students who are not Pell eligible increased five times more at private than public institutions.

Finally, the timing of the private school effect is consistent with expectations. Reestimating the full specification and allowing  $\delta$  to vary over time by including a full set of Georgia-year interactions shows a large increase between 1995 and 1996, when the award value doubled. The year-specific coefficient estimates follow very closely the pattern depicted in Georgia's private school enrollment series in figure 2. Using 1992 as the base year, all of the Georgia-year interactions prior to 1993 (except  $S_{GA} \times Y_{89}$ ) have small, negative coefficient estimates, with  $t$ -ratios less than one. Each interaction after 1992 has a positive estimated coefficient, and there is a conspicuous increase between the 1995 and 1996 estimates (.049 with  $t = 1.51$  vs. .152 with  $t = 3.65$ ).

#### *Stayers and Leavers*

Given the estimated program effects in 4-year schools, it is important to examine whether they reflect the scholarship's incentive to remain in

<sup>16</sup> One of the nine is Clark Atlanta University, an HBCU. HBCUs contributed significantly to the private school enrollment increase. For example, Clark Atlanta and Morehouse College (which was rated as "less competitive" in 1995) had the second and fourth largest enrollment gains (in terms of the number of students) during the HOPE period. We separately examine the effect of HOPE on HBCUs below.

**Table 4**  
**Estimated HOPE Effect on the Number of Resident and Out-of-State**  
**Enrollees in 4-Year Schools, SREB Control Group, 1988, 1992, 1994,**  
**and 1996**

Variables	Students in State (1)	Residents in College (2)	Stayers (3)	Out-of-Staters (4)	Leavers (5)
$S_{GA} \times H_t$	1,216 (1.44)	280 (.41)	840 (1.39)	376 (1.28)	-560 (3.09)
$R^2$	.99	.99	.99	.97	.99
Covariates	Yes	Yes	Yes	Yes	Yes

NOTE.— $N = 60$ . Robust  $t$ -ratios are given in parentheses. “Students in state” are all recent freshmen enrolled in 4-year schools within a state. “Residents in college” are state residents enrolled as recent freshmen in any 4-year school. “Stayers” are state residents enrolled as recent freshmen in 4-year schools within a state. “Out-of-staters” are the difference between col. 1 and col. 3. “Leavers” are the difference between col. 2 and col. 3.

state or its effect on the relative prices between 4-year and 2-year schools. Unfortunately, the NCES student residency and migration data make this difficult in two ways. First, they provide only two pre-HOPE (1988 and 1992) and two post-HOPE (1994 and 1996) observations. Second, in 4-year schools, only first-time freshmen who are recently graduated from high school are tracked. HOPE eligibles who delay entry into college past 12 months are excluded from this count. (See the appendix for details.)

Recent graduates made up 77.5% of all first-time freshmen in Georgia’s 4-year colleges pre-HOPE. If they primarily determine the 4-year-school effect, analyzing where they attend college should clarify the importance of the in-state–out-of-state margin. For recent-graduate freshmen in 4-year schools, the NCES reports: (1) the number enrolled in each state (“students in state”), (2) the number of each state’s residents enrolled anywhere (“residents in college”), and (3) the number of each state’s residents enrolled in the state (“stayers”). The difference between groups 1 and 3 yields the number of nonresident enrollees (“out-of-staters”), and the difference between groups 2 and 3 gives the number of residents attending college in other states (“leavers”).

Table 4 presents the results of DD regressions of the number of students in each category. Here we use a level specification to simplify the discussion, because it is more intuitive to talk about the number (rather than the percentage) of students moving across state lines. First, the DD regression on students in state parallels the estimated program effects reported in table 3. The sum of the 4-year public and private school effects implies that an average of 3,173 recent high school graduates enrolled in these institutions due to the scholarship.<sup>17</sup> Thus, the estimate in column 1 of table 4, while imprecise, accounts for only 40% of this enrollment

<sup>17</sup> Basing estimation only on those 4 years available in the residency and migration data, we obtain an implied increase in 4-year-school enrollment of 3,468.

increase, which implies that the overall 4-year-school response depends more on “late matriculators.”

Skipping to column 3, the DD regression of residents enrolled within the state indicates that HOPE added an average of 840 students, but its *t*-ratio is only 1.39. Column 4 reports the estimated HOPE effect on out-of-staters as 376 students, but it is also not statistically significant.

Column 2 of table 4 presents the result for residents in college. The estimate is small (280), with a very low *t*-ratio (.41), suggesting that the scholarship did not increase the number of recent-graduate Georgians attending a 4-year college. In contrast, using data from the 1988–97 October CPS, Dynarski (2000) concludes that HOPE raised the college attendance probability of 18–19-year-old Georgians by about 8 percentage points, or 25%. Although Dynarski does not distinguish college attendance by institution type, one can infer from the results in column 2 that her CPS finding was not generated by recent-graduate freshmen in 4-year schools, which is surprising because they represent the vast majority of scholarship recipients. Indirectly, this result also suggests that Dynarski’s estimated program effect could reflect the influence of the grant in her sample.

Column 5 of table 4 shows the estimate of HOPE’s effect on leavers is –560, the difference between the column 2 and column 3 coefficient estimates. This implies that the scholarship reduced the number of students leaving Georgia to attend college by 560 per year. Unlike the other four coefficient estimates in table 4, the leavers effect is highly significant with a *t*-ratio over 3. Further, it represents two-thirds of the stayer effect reported in column 3. Thus, while the influence of HOPE on recent-graduate freshmen may explain only 40% of the overall 4-year-school enrollment increase, the in-state–out-of-state margin is nevertheless very important for students who proceed to college soon after high-school graduation.

Because the NCES does not provide the same residency and migration information for all freshmen in 4-year schools, we cannot draw any clear inferences about the behavior of the students that account for the majority of the enrollment gain in 4-year-schools. However, if the incentive to remain in state is less important for these late matriculators than for the recent-graduate freshmen, then the greater share of the total enrollment effect would be due to HOPE’s reduction of the 4-year–2-year relative price.

Finally, HOPE’s influence on the migration margin is not captured entirely by the drop in the number of leavers; the composition of leavers has also changed. Figure 3 plots the SAT series for freshmen enrolled in Georgia institutions and those of high school seniors in Georgia and the rest of the United States. The increases in SAT scores of Georgia freshmen stand out, rising almost 40 points after HOPE, while the scores of high

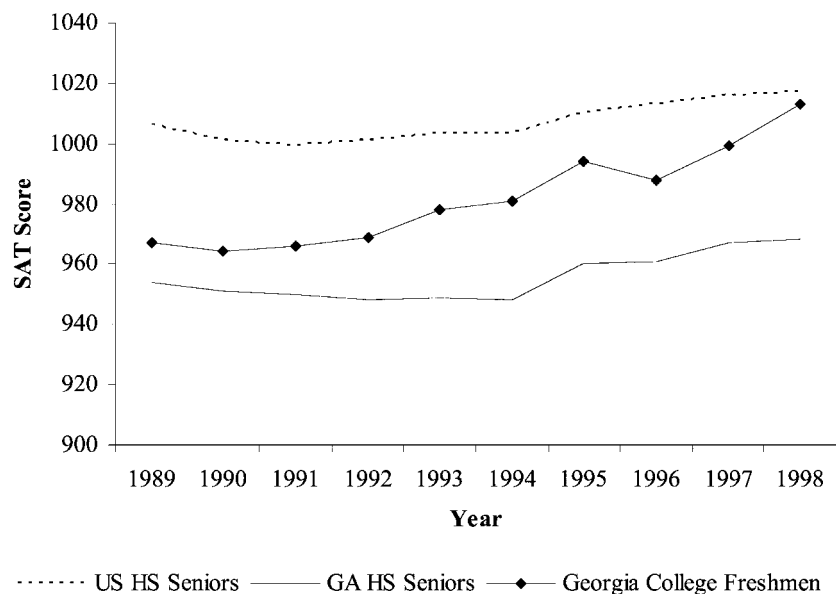


FIG. 3.—Trends in SAT scores: freshmen in Georgia public colleges versus U.S. and Georgia high school seniors, 1989–98. Sources: Average SAT scores of freshmen in Georgia public colleges were provided by the University System of Georgia (<http://www.usg.edu>). High school senior SAT data were obtained from the College Board. All scores are displayed on the recentered scale.

school seniors rose more modestly. Since 1993, Georgia’s rate of retaining students with SAT scores greater than 1,500 has climbed from 23% to 76%.<sup>18</sup> Cornwell and Mustard (2005) show that HOPE increased the SAT scores of entering freshmen in Georgia colleges and the fraction graduating in the top 10% of their high school class. In addition, they find acceptance rates declined and yield rates rose in Georgia colleges relative to their out-of-state peers. These effects were largely concentrated at the most selective schools.

#### *Historically Black Colleges*

Georgia’s HBCUs make up an important subset of the state’s 4-year colleges and universities. Three HBCUs are public (Albany State University, Fort Valley State University, and Savannah State University), and five are private (Clark Atlanta University, Morehouse College, Morris Brown College, Paine College, and Spelman College). In Georgia, during

<sup>18</sup> “A celebration of HOPE: Barnes, UGA mark 500,000th scholarship,” *Athens Banner Herald*, October 17, 2000.

the pre-HOPE period, HBCUs accounted for 12.5% of all enrollments in 4-year-schools and 45% of all blacks enrolled in college.

There are at least three reasons to expect a strong HOPE effect on HBCU enrollment. First, prior to the scholarship, many blacks from Georgia attended the out-of-state HBCUs in states that border Georgia. Enrollments in the five most popular out-of-state HBCUs—Florida A&M, Alabama State, Tuskegee University, Alabama A&M, and Hampton University—dropped 34% between 1992 and 1994. Second, blacks have lower average income and wealth than whites and may be especially sensitive to the changes in relative prices that the program generates.

Third, HOPE-induced increases in entrance requirements at the state's flagship institutions may have led some blacks to attend in-state HBCUs. At the end of the sample period, *Barron's Guide to Colleges* ranked both the University of Georgia and Georgia Tech as highly competitive, the second highest category. In contrast, *Barron's Guide to Colleges* rated all but one of Georgia's HBCUs as "less competitive," its fifth highest category. As the entrance requirements of the University of Georgia and Georgia Tech increased, the black share of freshmen enrollments at these two fell from averages of 9.6% and 8%, respectively, between 1990 and 1995 (the year the income cap was lifted) to 6.5% and 5.4%, respectively, in 1996 (the year the value of the award rose to \$3,000 for students attending in-state private colleges). At the same time, the share of 4-year-school enrollments associated with HBCUs rose after HOPE.

These expectations are borne out when we compare changes in HBCU enrollment in Georgia with those in the SREB and border states; columns 7 and 8 of table 3 report the results. In the SREB case, the estimated HOPE effect is .200 in the baseline regression and .234 when the covariates are included, and both are highly statistically significant. When the border states are used as controls, the findings are very similar.<sup>19</sup> An estimate of .234 implies that an average of 990 additional students were enrolled in Georgia's HBCUs because of the scholarship.

### 2-Year Colleges

Our ability to determine the scholarship's influence on 2-year school enrollments is hindered by the failure of IPEDS to distinguish degree from diploma and certificate seekers. However, we can identify the less-than-2-year (technical) schools that do not offer degrees. Excluding them from the analysis removes the vast majority of grant recipients, allowing us to focus more narrowly on the effects of the scholarship. Columns 9 and 10 of table 3 show the results for degree-granting, 2-year publics.

Using the SREB controls, the baseline  $\hat{\delta}$  is .063, but with a *t*-ratio less

<sup>19</sup> Using only the 4 years of data corresponding to the residency and migration sample, we estimate an HBCU program effect of .264.

than one. Adding the covariates drives the estimated HOPE effect below zero to  $-.045$ , though it still has a very small  $t$ -ratio. We find the same basic pattern with the border state control group. Thus, there is no direct evidence of a statistically significant HOPE scholarship effect (in either direction) at 2-year schools.

To gauge the impact of the grant, we repeat the analysis, adding the enrollments from less-than-2-year (purely technical) schools that do not offer degrees. Columns 11 and 12 of table 3 present the results of this exercise. The estimated program effects do not change in any meaningful way from those reported in columns 9 and 10. Again, the story is essentially the same in the border state case.

However, as we pointed out in Section II, HOPE not only affects those deciding between work and postsecondary schooling but also encourages students who might otherwise attend a 2-year college to move up to a 4-year school. Thus, while our results suggest no significant net increase in 2-year school enrollment, HOPE raised enrollment enough in these institutions to offset the scholarship's 4-year–2-year relative price effect. This is important for understanding Dynarski's findings, because her estimated increase in college attendance likely reflects the influence of both the scholarship and grant.

#### *Other Possible Adjustments*

The increased demand for in-state schools caused by the scholarship could spark other institutional adjustments, particularly in 4-year colleges, where the enrollment response is concentrated. One possibility is that institutions may reduce nonresident admissions. Data from the Georgia Board of Regents suggest that this has not happened in the state's public colleges. In the 5 years prior to HOPE, the mean in-state share was  $.897$ ; after 1993, it was only slightly higher at  $.903$  (Bugler, Henry, and Rubenstein 1999). The residency and migration data show that the resident share of freshmen in all Georgia schools also varied little before and after HOPE. In 1988, residents accounted for 80% of all freshmen in Georgia; in 1996, 82%.

Another possibility is that Georgia colleges responded to HOPE by raising tuition. We estimated HOPE's effect on 2-year public, 4-year public, and 4-year private tuition prices and found no evidence for such behavior in the public schools and only weak evidence of capitalization in privates. These results are generally consistent with those in Long (2003), but Long's analysis goes beyond tuition responses to examine other categories of college costs, such as room and board charges and institutional aid. She finds that public schools raised room and board fees and that private schools decreased institutional aid in response to HOPE.

**Table 5**  
**Estimated HOPE Effect on First-Time Freshmen Enrollments in Georgia**  
**Colleges, by Race SREB Control Group, 1988, 1990-97**

Racial Group	Overall (1)	4-Year Publics (2)	4-Year Privates (3)	2-Year Publics (4)	2-Year Publics + Technical (5)
Whites:					
$S_{GA} \times H_t$	.036 (2.30)	.043 (2.24)	.088 (3.44)	-.010 (.14)	.056 (1.23)
$R^2$	.99	.98	.99	.95	.95
Blacks:					
$S_{GA} \times H_t$	.147 (9.22)	.232 (6.33)	.155 (3.89)	.053 (.75)	.110 (2.83)
$R^2$	.99	.99	.98	.98	.98
Covariates	Yes	Yes	Yes	Yes	Yes

NOTE.—For whites,  $N = 135$ ; for blacks,  $N = 135$ . Robust  $t$ -ratios are given in parentheses. In each case, the dependent variable is the log of first-time freshmen enrollment.

### C. Enrollments by Race

Finally, we estimate the total and institution-specific HOPE effects separately for whites and blacks. Table 5 presents the results from the full specification applied to the SREB. The cohort size variable is now either the white or black population. The high school graduate variable remains the same because the NCES did not decompose it by race before 1992. In addition, because the racial breakdown of freshmen for 1989 is missing in IPEDS, we use only four pre-HOPE observations. As a consequence, the concern about the underreported Georgia HBCU data in 1989 is eliminated in this analysis.

Whites have a statistically significant estimated HOPE effect of .036 on total enrollment, .043 on 4-year public schools and .088 on 4-year private schools; the estimate for 2-year publics is negative and very imprecise. This is the same pattern that was displayed in table 3. Translating these effects into numbers of additional students implies that HOPE raised the enrollment of white students in Georgia colleges by an average 1,275 students per year, with 673 of them going to 4-year public schools and 474 entering 4-year private schools.

The estimated effects are systematically larger for black enrollments, and their pattern is different in two respects. First, the estimated percentage gain at 4-year publics is greater than at 4-year-private institutions. Second, there is evidence of a program response in technical school enrollment (col. 5).

The HOPE effect estimates for blacks are .147 for total enrollment, .232 for 4-year publics, and .155 for 4-year privates. All are highly statistically significant. These estimated coefficients imply a total of 1,981 additional students, 1,107 in public colleges and 659 in private institutions.

Corresponding to the relatively large estimates for black enrollments was a significant rise in the black share of total (white + black) enrollment in Georgia. The estimated effect on this share is 2.7 percentage points. The earlier discussion of HOPE's influence on HBCUs suggests that they figure prominently in both the gains in black enrollment at 4-year schools and the increase in the share of total enrollment.

The HOPE effect estimate for black enrollment in 2-year public schools is positive, but its *t*-ratio is only .75. However, when the technical schools are included in the sample, the point estimate doubles to .110 and the *t*-ratio jumps to 2.83. Thus, unlike for whites, there is strong evidence that the HOPE Grant increased black participation in diploma and certificate programs. Nevertheless, the response is a little surprising because black enrollees in these nondegree schools' program offerings are more likely to be eligible for Pell assistance.<sup>20</sup> One possible explanation for the significant and sizable HOPE effect is the transactions costs associated with the Pell Grant. To receive Pell, a student must complete the Free Application for Federal Student Aid (FAFSA). The FAFSA requires W-2 Forms or other records of earned income, a federal income tax return (and spouse's or parents', if married or a dependent), records of untaxed income such as welfare benefits, current bank statements, and records of investments and business records (if applicable). No records are needed to apply for the HOPE Grant, which can be claimed with a signature on a one-page application.<sup>21</sup>

## V. Conclusions

With the introduction of its HOPE Program in 1993, Georgia radically altered its college financial aid policy and set an example that many other states have followed. States have justified policy shifts toward merit aid as a mechanism to raise college enrollments and retain their best high school students. In this article, we have examined HOPE's effects on enrollments, treating the program as a natural experiment using IPEDS data covering the 1988–97 period. Our findings can be summarized as follows.

First, HOPE raised the total first-time freshmen enrollment in Georgia colleges by 5.9%, which translates into an additional 2,889 students per year. This estimated annual enrollment increase represents only 15% of

<sup>20</sup> Systematically reported data on Pell receipt are not available during our sample period, but since 2000, when the HOPE rules were changed to allow "stacking" of HOPE and Pell aid, Georgia has recorded the number of students in each public institution receiving both. In schools with large black enrollments, the percentage of HOPE recipients with Pell Grants is higher; in the HBCUs, this percentage is over 65%.

<sup>21</sup> The application for the grant (and scholarship) can be found at [http://www.gsfc.org/HOPE/dsp\\_hope.cfm](http://www.gsfc.org/HOPE/dsp_hope.cfm).

freshmen scholarship recipients between 1993 and 1997. However, total enrollment includes students at 2-year schools, many of whom are grant recipients, which suggests that the total HOPE-induced enrollment rise amounts to an even smaller fraction of first-year program (scholarship + grant) beneficiaries.

Second, the total enrollment effect is concentrated heavily in 4-year schools, with the greater percentage gain being in private colleges. There is little direct evidence of a policy effect in 2-year-school enrollment. Specifically, we find statistically significant HOPE-induced enrollment increases of 9% in 4-year public and 13% in 4-year private schools. The program effect estimates for 2-year publics are small, negative, and statistically insignificant.

Third, the estimated HOPE effects for whites are smaller than for the entire sample, but they do follow the same pattern. The black enrollment responses are larger (in percentage terms), with a greater effect in 4-year public colleges and a positive program response in technical schools (where there is none for whites). Also, HOPE increased the black share of Georgia college enrollment by 2.7 percentage points. The black enrollment gains are primarily explained by the presence of many relatively large HBCUs in Georgia, which has the fourth largest black population and population share in the United States.

Fourth, using the available years of IPEDS student residency and migration data, which are restricted to first-time freshmen in 4-year schools who recently graduated from high school, we estimate that the program reduced the number of students leaving Georgia to attend college by an average of 560 per year. This is roughly two-thirds of the total effect for this group (which accounts for almost 77.5% of all first-time freshmen at 4-year colleges in Georgia). However, recent-graduate freshmen represent only about 40% of the total 4-year-school enrollment rise. Thus, the greater enrollment response occurred among freshmen who delayed matriculation a year past their high school graduations.

Fifth, in addition to reducing the number of leavers, HOPE changed their composition. The average SAT score of freshmen enrolled in Georgia's public colleges and universities rose almost 40 points after the HOPE Program was implemented, while the scores of high school seniors in Georgia and the rest of the United States rose only slightly. Further, since 1993, Georgia's rate of retaining students with SAT scores greater than 1,500 climbed threefold.

Finally, while IPEDS cannot be used to estimate the impact of HOPE on the college attendance rate of all Georgia residents, the residency and migration data do permit the identification of the program's effect on Georgia-resident, recent-graduate freshmen attending 4-year schools. The latter is small (only about 280 students per year) and statistically insignificant. In contrast, Dynarski (2000) concludes, based on data from the

1989–97 October CPS, that HOPE raised the college attendance probability of 18–19-year-old Georgian residents by about 25%. Placing our result alongside Dynarski's, we infer that her CPS finding was not generated by an increase of Georgia-resident, recent-graduate freshmen entering 4-year colleges, which is surprising because they make up the vast majority of scholarship recipients.

Our findings are obviously particular to Georgia and its merit-aid program, but to what extent do they generalize to the other states that have adopted HOPE-style scholarships? Programs with the basic features of the Georgia model will have their greatest influence in allocating students across institution types and state borders because they target students who will likely attend college anyway. The change in the 4-year-public–2-year-public relative price will favor enrollment in 4-year schools. More broadly, the distribution of enrollment gains will depend on the number and quality of institutions of each type. This is particularly important for the oft-cited goal of keeping the best high school graduates in state for college. The reduction in leavers and increase in freshmen quality associated with HOPE is related to the existence of two large public universities ranked among the top 20 in the United States (Georgia and Georgia Tech) that represent desirable alternatives to selective out-of-state institutions. Georgia is only one of four states with two public universities in the top 20.

Finally, programs like HOPE, which primarily affect the choice of where, rather than whether, to attend college call into question the social benefits of state-sponsored merit aid. For example, the gains in student quality in Georgia colleges may be offset by declines elsewhere as high-achieving Georgia students stay home. However, with the proliferation of HOPE-like scholarships in the southeast, the externalities created by Georgia's program will be muted, but the end result is an "arms race" equilibrium with each state competing to retain its best students, with students allocated to schools that would otherwise be less attractive to them.

## Appendix

Our enrollment data are drawn from annual IPEDS surveys conducted by the NCES, which cover all Title IV postsecondary institutions. IPEDS launched in 1986, but the first two surveys are not comparable to those after 1987. Because HOPE-style programs began to proliferate after 1997, we restrict our sample period to 1988–97.

### IPEDS Enrollment Data

#### Institution Types

IPEDS data are collected and reported at the institution level, and schools are classified by level (4-year, 2-year, or other) and control (public

or private). We established the following institution groups and aggregated the enrollment data accordingly: (1) all degree granting, (2) 4-year public, (3) 4-year private (for profit and nonprofit), (4) 2-year public, (5) and less-than-2-year public. The distinction between 2-year and less-than-2-year schools is that the former offer associate degrees, and the latter offer only diploma and certificate programs that take less than 2 years to complete. In Georgia, however, 13 of the 2-year schools are “technical” schools affiliated with the state’s Department of Technical and Adult Education (DTAE), and they are also accredited to offer degrees, so they have both kinds of programs. Thus, 20 DTAE institutions can be classified as less-than-2-year or purely technical. Unfortunately, it is not possible to separate degree from certificate seekers in the 2-year-school enrollment data.

#### First-Time versus Recent-Graduate Freshmen

IPEDS also distinguishes freshmen who recently graduated high school (within the previous 12 months) from all first-time freshmen. First-time freshmen include these individuals plus those who are more than 12 months removed from their high school graduations. Since the HOPE rules dictate that any Georgia resident who graduated from high school after 1993 can be eligible for the scholarship, the overall program effect will be captured by first-time freshman enrollments. More practically, recent-graduate freshman data are collected by IPEDS only in even-numbered years.

#### Residency and Migration Data

IPEDS also collects information on the residency and migration of college freshmen in even-numbered years. However, institution-level data are not available for 1988, although state-level aggregates are. For 1990, no migration data are available. Therefore, our analysis of HOPE’s influence on interstate migration is limited to the aggregate data reported for 1988, 1992, 1994, and 1996, which are compiled from IPEDS and published by the NCES in the *Digest of Education Statistics*. For students attending 4-year schools, only recent-graduate freshmen are tracked.

#### Data Correction for the University of Georgia

Finally, in the process of analyzing University of Georgia admissions data, we discovered that the 1995 and 1996 IPEDS enrollment figures for the university contained reporting errors. After consulting with the relevant personnel at IPEDS and the university’s Office of Admissions, we replaced the IPEDS figures with those provided by the admissions office. Because these corrections do not substantially change the average total or public 4-year post-HOPE enrollment levels, they alter our results only very slightly. The details of the corrections are available upon request.

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