

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

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Abstract

This paper examines the effects of Georgia's merit-based HOPE Scholarship on college enrollment. Introduced in 1993, the HOPE Scholarship covers tuition, fees, and book expenses for students attending Georgia public colleges, and provides a subsidy of comparable value to students attending in-state private colleges, without any income restrictions. Treating HOPE as a natural experiment, we contrast college enrollment in Georgia with those in the other member states of the Southern Regional Educational Board using IPEDS data for the period 1988–97. We estimate that the HOPE increased total freshmen enrollment by 5.9 percent, with the gains concentrated in 4-year schools. For freshmen recently graduated from high school attending 4-year colleges, two-thirds of the program effect is explained by a decrease in students leaving the state. Both white and black enrollments increased because of HOPE, with the state's historically-black institutions playing an important role. Finally, the total HOPE-induced enrollment increase represents only 15 percent freshmen scholarship recipients.

1 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, in the last 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 re-election campaign.¹

The HOPE Program, initiated in 1993 and funded by a state lottery, has two components—the merit-based scholarship and the HOPE Grant. The scholarship covers tuition, fees and book expenses for all eligible high-school graduates attending Georgia public post-secondary 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.² The HOPE Grant has no income restrictions or merit requirements, and can be applied only to non-degree programs at 2-year schools. Since the program's inception, more than \$2.5 billion in program funds have been disbursed to over 770,000 students.

This paper examines the effects of the HOPE program on enrollments in Georgia colleges

¹ In early 1993, Miller angered many rural whites, who with blacks comprised his core constituency in the 1990 election, by suggesting that Georgia remove the Confederate emblem from its state flag. "So Miller changed his political strategy, abandoning his coalition of blacks and poor rural whites in favor of a new alliance between blacks and middle-class, traditionally Republican white suburbanites. . . . [H]e curried favor among middle-class voters with the HOPE Scholarship, one of the education initiatives funded by the new state lottery." ("Why Zell Screws Democrats", *The New Republic*, 12 February 2001.)

² 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.

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).³ Using data from the Integrated Postsecondary Education Data System (IPEDS) administered by the National Center for Education Statistics (NCES), covering the period 1988–1997, 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. Our preferred specification includes covariates accounting for the sizes of the eligible population and age cohort, opportunity costs of attending college, and income.

The SREB sample produces a statistically significant total HOPE effect estimate of .057, and shows that the gains are heavily concentrated in 4-year schools. Evaluated at the pre-HOPE mean enrollment level, this estimate translates into an additional 2889 freshmen per year in Georgia schools attributable to the program, which represents only 15 percent of freshmen scholarship recipients between 1993 and 1997.

We then turn to the IPEDS residency and migration data to determine how much of the enrollment gains can be traced to the HOPE’s incentive to remain in state. This exercise is restricted to first-time freshmen in 4-year schools who recently graduated from high school, data on whom are available for only four years of our sample. Nevertheless, for this group (which comprises 77.5 percent of all first-time freshmen at 4-year colleges in Georgia), about two-thirds of the HOPE effect is accounted for by a decrease in residents leaving the state. On the other hand, recent-graduate freshmen represent only about 40 percent the total 4-year-school enrollment rise. Thus, the greater enrollment response occurred among freshmen who delayed matriculation more than twelve months past their high-school graduations.

The estimated enrollment effects for whites (blacks) are smaller (larger) than those obtained from the entire sample. 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

³ The sixteen 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 only recently joined, and therefore was not included in the SREB sample.

significant program effect on technical school enrollment (where there is none for whites). In addition, HOPE increased the black share of Georgia college enrollment by 2.7 percentage points. 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 percent.⁴ However, Dynarski does not examine college attendance by institution type and therefore does not distinguish scholarship from grant effects. While our analysis differs from Dynarski’s in its focus on institutions instead of individuals, the IPEDS residency and migration data allow us to estimate the effect of HOPE on Georgia-resident, recent-graduate freshmen attending 4-year schools anywhere—the students who make up the vast majority of scholarship recipients. The estimate is small (only about 280 students per year), and statistically insignificant. We infer from our result that Dynarski’s CPS finding was not generated by a relative increase of Georgia-resident, recent-graduate freshmen attending 4-year schools.

2 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” (3.0 grade-point) average and be a Georgia resident. The award can be used at eighty-three degree-granting institutions in Georgia, of which twenty are 4-year public, thirty are 4-year private, fifteen are 2-year public, five are 2-year private, and thirteen 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

⁴ Dynarski’s main control group is comprised 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.

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 2003–04 academic year, the maximum value of the award was up to \$4100 at the state’s top public universities. HOPE Scholars attending private schools receive a standard award of \$3000 per academic year toward tuition.⁵ To retain their scholarships, students must maintain a 3.0 grade-point average while in college.⁶

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 non-degree programs at 2-year and “less-than-2-year” schools. (The distinction between 2-year and less-than-2-year schools is explained in the Appendix.) 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 coursework 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.

Table 1 summarizes the number of awards and aid disbursed by program component and institution type between 1993 and 1999.⁷ Over the period, HOPE awards were evenly divided between scholarships and grants, but the former accounted for 77.5 percent of total aid disbursed. Just over 72 percent of HOPE Scholars attended 4-year, public institutions, which absorbed 77 percent of all scholarship aid. Another 8.4 percent attended private, 4-year colleges, which collected 12.5 percent of these funds. Thus, 4-year public and private schools together enrolled over 80 percent of HOPE Scholars, receiving almost 90 percent of

⁵ The private school award was initially set at \$500 in 1993 and rose to \$1000 in 1994 and \$1500 in 1995, but was not tied to merit during these years. These awards supplemented a \$1000 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 \$3000 and the merit rules were imposed.

⁶ Cornwell, Lee and Mustard (2004) 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.

⁷ These data were provided by special request of the Georgia Student Finance Commission.

all merit-based aid.

As indicated by Figure 1, the share of program resources allocated to the scholarship has grown. Between 1993 and 1999, the number of HOPE-eligible high-school graduates rose over 50 percent, 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 percent. By 1997, total non-need-based aid awarded by Georgia was greater than that of the other 14 SREB states *combined*.⁸ By 1999, HOPE had grown to roughly double the size and scope of the federal Pell Grant program in Georgia.⁹

3 Empirical Strategy

3.1 Empirical Model

To estimate the enrollment response to HOPE, we contrast college enrollments in Georgia before and after the HOPE “treatment” with those in sets of similar states serving as control groups. In a regression context, this means our focus is on the coefficient of an interaction between a HOPE dummy variable and a Georgia state dummy, δ , in an expression like

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

where E_{it} is the enrollment level in state i ($i = 1, \dots, N$) in year t ($t = 1, \dots, T$), Y_t is a dummy variable for year t , S_i is a dummy variable for control state i , H_t is a HOPE indicator, equal to 1 when $t \geq 1993$ and 0 otherwise, S_{GA} is a dummy variable for Georgia and ϵ_{it} is a random error. The ordinary least squares estimator of δ in (1) reflects the difference in

⁸ 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 percent higher than that of the second-ranked state, Florida.

⁹ 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.

differences (DD) between $\ln E_{it}$ in Georgia and the control-group states over the pre- and post-HOPE periods.¹⁰ This case is our baseline analysis.

Changes in a state’s demographic characteristics or economic circumstances that coincide with the introduction of the program represent a potential threat to the validity of the DD estimate. For example, the number of high-school graduates in Georgia was generally declining prior to 1993 and began to rise slowly soon thereafter.¹¹ 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.¹² Thus, we control separately for these factors. In addition, we control for state differences in income and the opportunity cost of attending college. We then assess the robustness of the baseline $\hat{\delta}$ to the estimate obtained in the augmented model

$$\ln E_{it} = \alpha + \beta_t Y_t + \gamma_i S_i + \delta S_{GA} H_t + X'_{it} \xi + \epsilon_{it}, \quad (2)$$

where X_{it} contains the covariates for high-school graduates, cohort size, income and opportunity cost, all measured in logs.

3.2 Data

We utilize two primary control groups: the other fourteen SREB states and the five states that border Georgia, which are also SREB members. Given the SREB’s coordinated regional focus on education¹³ and the absence of any significant HOPE-style interventions among the other members during the sample period,¹⁴ these states constitute an obvious control group.

¹⁰ Bertrand, et al. (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 section 4.4 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-percent level.

¹¹ 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 $.17$.

¹² We are grateful to a referee for emphasizing this point.

¹³ See <http://www.sreb.org>.

¹⁴ Arkansas’s Academic Challenge Scholarship was introduced prior to HOPE in 1991, but its benefits are limited to \$2500 per year and to households with incomes less than \$50,000, while maintaining similar

To gauge their suitability as controls, we removed Georgia from the sample and estimated (2) allowing every SREB state to take a turn as the treated group. For half of the fourteen states, the estimates of δ were *not* statistically significant, with t -ratios generally less than 1. When we drop the exceptions from the sample, the estimated HOPE effects differ little from those produced using all SREB states. For example, estimating (2) using the seven states that passed the false treatment “test” yields a statistically significant total HOPE effect estimate of 0.052, which is very close to the SREB-based estimate of .057 reported in column (2) of Table 3.

The data to estimate equations (1) and (2) come primarily from the 1988–97 IPEDS surveys conducted by the NCES (see the Appendix for details). The enrollment variable, E_{it} , 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 SREB provided data on the number of recent public and private high-school graduates in each state. The SREB combines public-school data from the NCES with private-school data from the Western Interstate Commission for Higher Education. The US 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 college with the average weekly manufacturing wages, computed by the Bureau of Labor Statistics from its Current Employment Statistics. Each of these variables is expressed in

eligibility requirements. Consequently, the number of awardees during our sample period was relatively small. Larger in size is Florida’s Bright Futures Scholarship, which was modeled directly after HOPE and initiated in last year of our sample. Excluding these states from the analysis has virtually no impact on our findings.

1998 dollars. Table 2 provides the means and standard deviations of our variables 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 percent higher in Georgia after 1993.

4 Results

4.1 Total Enrollment

We begin the analysis by examining HOPE's effect on total college enrollment in Georgia. Table 3 reports the estimates of δ obtained from (1) and (2), using both the SREB and border states as control groups. In the SREB case, the baseline $\hat{\delta}$ is .085 with a t -ratio over 5 (see column (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 estimated HOPE effect almost 3 percentage points to .057 (column (2)), which implies that total enrollment was 5.9 percent 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 2889 freshmen per year in Georgia schools.

An annual enrollment increase of 2889 students between 1993 and 1997 represents only 15 percent of freshmen scholarship recipients. However, total enrollment includes students at 2-year schools, many of whom are grant recipients, as Table 1 indicates. During these five years, about 230,000 students received the HOPE Grant. This is important to note 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 1. However, the 95 percent confidence interval for the border-state estimate completely contains the SREB estimate's confidence

interval. The imprecision is partly explained by the fact that three of the states that produced significant false treatment effects—Alabama, Tennessee and North Carolina—border Georgia. As mentioned in section 3, when the states that failed the false treatment test are removed from the sample, we obtain a statistically significant HOPE effect estimate of .052 with a t -ratio of 3.79. The confidence intervals for this estimate and the one reported in the top row of column (2) are virtually the same.

4.2 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 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 those 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 2-year-school effect 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 an 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 estimates imply that enrollment in Georgia’s 4-year public schools rose by 8.7–9.0 percent because of HOPE. Based on the average pre-HOPE enrollment in 4-year publics, a 9 percent effect translates into 1861 additional students per year in these schools. However, despite this increase, the 4-year publics’ share of total enrollment changed very little; it was 42.1 percent before HOPE and 42.6 percent after HOPE. Further, a DD regression of the fraction of total enrollment accounted for by 4-year public institutions indicates that HOPE did not affect the 4-year-publics’ share in Georgia relative to the rest of the SREB; the DD coefficient

estimate is .007 and statistically insignificant.

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 the 4-year public colleges, the private-school estimates using the SREB control group are robust to the inclusion of the covariates and are highly statistically significant in both cases. However, they are almost twice as large. Taking .170 (the estimate obtained from the full specification) as the HOPE effect, suggests a 18.5 percent increase in enrollment or 1723 extra students per year due to the program. The magnitude of this increase is reflected in a higher share of total enrollment in private institutions. The 4-year private-school share was .189 before HOPE and rose to .213 after the scholarship was introduced. A DD regression of the 4-year private school enrollment share produces a statistically significant HOPE effect of 1.7 percentage points.

The result in the top row of column (6) is robust to variations in the control group. The border-state estimate is essentially the same, .166, with a t -ratio of about the same magnitude. The estimate obtained from the sample of states that passed the false-treatment test is a little larger (.200) and also highly significant. 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 re-estimated equation (2). The resulting 4-year-private estimate was .162 with a t -ratio of 6.23.

Nevertheless, these effects seem large when private-college tuition often exceeds \$30,000 and the private-school award did not reach the \$3000 level until 1996.¹⁵ In response to the

¹⁵ As noted in section 2, the private school award's value was initially set at \$500 in 1993, increasing to

first point, the average private-school tuition in the pre-HOPE period averaged less than \$7600 (including Emory University, the state’s only highly selective private university) and some colleges in the bottom-half of the tuition distribution are for-profit institutions (such as the DeVry Institute of Technology), which cater to part-timers. However, eliminating for-profit institutions from the sample actually increases the estimated effect. For-profit enrollment in Georgia fell after HOPE was introduced, while those in the rest of the SREB rose slightly.

To address the second point, we re-estimated the full specification allowing δ to vary over time. Since the private-school award value increased from \$1500 to \$3000 between 1995 and 1996, there should be a jump in the estimated program effect in 1996. In general, the $\hat{\delta}_t$ s 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 pre-HOPE coefficient estimates except 1989’s are small and negative with t -ratios less than 1. Each $\hat{\delta}_t$ after 1992 is positive, and there is a conspicuous increase between the 1995 estimate (.049, $t = 1.51$) and 1996 estimate (.152, $t = 3.65$), as expected.

However, $\hat{\delta}_{89}$, which is $-.198$ with a t -ratio of 4.98, is a cause for concern. This coefficient estimate clearly corresponds to the 1989 drop in private-school enrollment evident in Figure 2. This drop coincides with a sharp decline in the number of students enrolled in Georgia HBCUs, which, in turn, can be traced to missing data for three private institutions.¹⁶ If we eliminate the 1989 data from the SREB sample and re-estimate specification (2), the private-school effect drops to .126, or in terms of added students, to 1248. The DD estimate of the effect of HOPE on the private-school share of enrollment remains significant, but drops to 1.3 percentage points. At the same time, omitting the 1989 data leaves the overall program estimate unchanged and only slightly lowers the 4-year-public estimate to .083.

Stayers and Leavers

Given the estimated program effects in 4-year schools, it is important to examine whether

\$1000 in 1994 and then to \$1500 in 1995. The merit requirements for eligibility were imposed in 1996 when the payment rose to its current value in 1996.

¹⁶ *Historically Black Colleges and Universities: 1976 to 1994*, NCES 96902.

they reflect the scholarship’s incentive to remain in state or its effect on the relative prices between 4-year and 2-year schools.¹⁷ 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 *recently graduated from high school* are tracked. HOPE-eligibles who delay entry into college past twelve months are excluded from this count. (See the Appendix for details.)

Recent-graduates comprised 77.5 percent 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 shed some light on 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 (1) and (3) yields the number of non-resident enrollees (“out-of-staters”) and the difference between (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.¹⁸ 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 obtained when the 1989 data are dropped imply that an average of 3042 extra students were enrolled in these institutions due to the scholarship.¹⁹ Thus, the estimate in column (1) of Table 4 accounts for only 40 percent of total 4-year-school enrollment gain. Even if the effect in column (1) is not very precise, the importance of the in-state–out-of-state margin depends more on “late

¹⁷ The interstate migration margin generally does not involve 2-year-school students. Students in 4-year schools are eight times more likely to attend college out-of-state (Dynarski (2000)).

¹⁸ We used the level specification here to simplify the discussion. It is more intuitive to talk about the number of students moving across state lines to attend college and the levels specification avoids percent-to-level conversion. The results are similar when the log specification is employed.

¹⁹ Using the entire sample (i.e., the estimates reported in Table 3) produces an implied increase of 3584. Basing estimation only those four years available in the residency and migration data, we obtain an implied increase in 4-year-school enrollment of 3468.

matriculators”.

Skipping to column (3), the DD regression of residents enrolled within the state indicates that HOPE added an average of 840, but its t -ratio is only 1.39. The estimate in column (4), the difference between the effects in columns (1) and (3), implies the program attracted an average of 376 students from out-of-state. However this estimate, like the other two, is imprecise.

Column (2) presents the result for residents in college. The estimate is small (280), with a very low t -ratio (.41), suggesting that the scholarship has *not* increased 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 percent. Although Dynarski does not distinguish college attendance by institution type, one can infer from the result 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) shows the estimate of HOPE’s effect on leavers is –560, the difference between the column (2) and (3) coefficient estimates. This implies 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 in 4-year schools may explain only 40 percent of the overall program effect, the in-state–out-of-state margin is nevertheless important for this group.

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 the

recent-graduate freshmen, 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 US. The increases in SAT scores of Georgia freshmen stand out, rising almost 40 points after HOPE, while the scores of high-school seniors rose more modestly. Since 1993 Georgia's rate of retaining students with SAT scores greater than 1500 has climbed from 23 to 76 percent.²⁰

Historically-Black Colleges

Georgia's HBCUs comprise 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 the pre-HOPE period, HBCUs accounted for 12.5 percent of all enrollments in 4-year-schools and 45 percent of all blacks enrolled in college.

The importance of these institutions is 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 .319 in the baseline regression and .358 when the covariates are included and both are highly statistically significant. When the border states are used as controls, the findings are very similar. However, as noted above, the NCES data indicate a sharp drop in Georgia's HBCU enrollments 1989 that can be explained by missing data for three private schools.²¹ Omitting the 1989 data from the sample dramatically reduces the estimated HOPE effect to .237, although its *t*-ratio remains above 7. This estimate implies a 1004-student average annual increase in

²⁰ "A Celebration of HOPE: Barnes, UGA mark 500,000th scholarship," *Athens Banner Herald*, 17 Oct 00.

²¹ These schools were Clark College and Atlanta University, which merged in the second half of 1989, and Morris Brown College.

HBCU enrollment because of HOPE.

This result is likely attributable in part to the scholarship's incentive to remain in state for college. 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 percent between 1992 and 1994.²² HOPE's influence on the HBCU enrollments could also reflect rising admission standards at the state's flagship universities. In contrast to the University of Georgia and Georgia Tech, in 1997 *Barron's Guide to Colleges* rated all but one Georgia HBCUs as "less competitive," the fifth highest category (out of six). As their entrance requirements increased, the black share of freshmen enrollments at the University of Georgia and Georgia Tech fell from averages of 9.6 and 8 percent between 1990 and 1995 (the year the income cap was lifted) to 6.5 and 5.4 percent in 1996 (the year the value of the award rose to \$3000 for students attending in-state private colleges). At the same time, the share of 4-year-school enrollments associated with HBCUs rose after HOPE. One potential concern with this explanation is whether the drop in black enrollment at the top state institutions was caused by a lawsuit against the University of Georgia over racial preferences in admissions. However, the three plaintiffs were denied admission to the university in 1999, two years after our sample period ends, so this legal action cannot account for the drop.²³

2-Year Public 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.

²² Using only the four years of data corresponding to the residency and migration sample, we estimate an HBCU program effect of .264.

²³ The University of Georgia's admissions protocol had been to accept about 90 percent of its class based solely on high-school academic performance and test scores. The remaining 10 percent were evaluated under the Total Student Index (TSI), in which students who met any of 12 criteria, including race, were awarded extra points. A three-judge panel of the 11th Circuit Court of Appeals ruled unanimously that the UGA admissions policy violated the equal protection clause of the Fourteenth Amendment in August 2001.

Using the SREB controls, the baseline $\hat{\delta}$ is .063, but with a t -ratio less than 1. Adding the covariates drives the estimated HOPE effect below zero to $-.045$, though it still has a very small t -ratio. We find basically the same 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.

Finally, 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. The last two columns of Table 3 present 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.

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 non-resident admissions. Data from the Georgia Board of Regents suggest this has not happened in the state's public colleges. In the five 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 percent of all freshmen in Georgia; in 1996, 82 percent.

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 capitalization in privates. These results are generally consistent with Long (2003), but her 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 private schools decreased institutional aid, in response to HOPE.

4.3 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, but the high-school graduate variable remains the same, because the NCES does 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 under-reported 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 pattern 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 1275 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 (column (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 significant. These estimated coefficients imply a total of 1981 additional students, 1107 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 both in 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 non-degree schools' programs offerings are more likely eligible for Pell assistance.²⁴ One possible explanation for the significant and sizeable 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, 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.²⁵

5 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. HOPE has two components a merit-based scholarship and a grant targeted to technical schools. The scholarship, which accounts for almost 80 percent of aid disbursed, covers tuition, fees, and book expenses at Georgia's public colleges and universities, and provides a subsidy comparable in value for students attending in-state private institutions. To qualify, a student must have graduated from an eligible high school since 1993 with a "B" average and there is no income cap. The grant has no income or merit requirements, but can be applied only to non-degree programs. Treating the program as a natural experiment, we estimated its effect on (log) enrollments in Georgia colleges by institution and race, using IPEDS data covering 1988–97 and a primary control group composed of the other member states of the SREB.

²⁴ Systematically reported data on Pell receipt is not available during our sample period, but since 2000, when the HOPE rules were changed to allow the "stacking" 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.

²⁵ The application for the grant (and scholarship) can be found at http://www.gsfc.org/HOPE/dsp_hope.cfm.

The findings can be summarized as follows.

First, HOPE raised the total first-time freshmen enrollment in Georgia colleges by 5.9 percent, which translates into an additional 2889 students per year. This estimated annual enrollment increase represents only 15 percent of 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 a 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 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 percent in 4-year public and 13 percent 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 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.

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 percent of all first-time freshmen at 4-year colleges in Georgia). However, recent-graduate freshmen represent only about 40 percent 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 in the post-HOPE period, while the scores of high-school seniors in Georgia and the rest of the US rose only slightly. Further, since 1993 Georgia's rate of retaining students with SAT scores greater than 1500 climbed three-fold.

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 percent. 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 fifteen 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. In Georgia, the reduction in leavers and increase in freshmen quality associated with HOPE is related to the prior existence of two large public universities (Georgia and Georgia Tech) that represented desirable alternatives to selective out-of-state institutions.

6 Appendix: IPEDS Enrollment Data

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 onward. Because HOPE-style programs began to proliferate after 1997, we restrict our sample period to 1988–97.

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). For our purposes, we established the following institution groups and aggregated the enrollment data accordingly: all degree-granting, 4-year public, 4-year private (for-profit and nonprofit), 2-year public 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 only offer diploma and certificate programs that take less than two 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* 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 vs Recent-Graduate Freshmen

IPEDS also distinguishes freshmen who recently graduated high school from all first-time freshmen. Recent-graduate freshmen graduated from high school within the previous 12 months. First-time freshmen includes these individuals plus those who are more than twelve 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 freshmen 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 student 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.

References

- [1] Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan (2002), How Much Should We Trust Differences-in-Differences Estimates?, NBER working paper 8841, Cambridge MA.
- [2] Bugler, Daniel T., Gary T. Henry and Ross Rubenstein (1999), An Evaluation of Georgia's HOPE Scholarship Program: Effects of HOPE on Grade Inflation, Academic Performance and College Enrollment, Council for School Performance, Georgia State University, Atlanta, GA.
- [3] Card, David and Tomas Lemieux (2000), Dropout and Enrollment Trends in the Post-War Period: What Went Wrong in the 1970s? NBER working paper W7658, Cambridge MA.
- [4] Cornwell, Christopher, Kyung Hee Lee and David B. Mustard (2004), The Effects of Merit-Based Financial Aid on Course Enrollment, Withdrawal, and Completion in College. University of Georgia Economics Department working paper.
- [5] Dynarski, Susan (2000), HOPE for Whom? Financial Aid for the Middle Class and Its Impact on College Attendance, *National Tax Journal* 53(3), 629-661.
- [6] Long, Bridget T. (2003), How do Financial Aid Policies Affect Colleges? The Institutional Impact of the Georgia HOPE Scholarship. Harvard University Graduate School of Education working paper.
- [7] Sridhar, Deepa J. (2001), *Postsecondary Enrollment Effects of Merit-Based Financial Aid: Evidence from Georgia's HOPE Scholarship Program*, PhD Dissertation, Department of Economics, The University of Georgia, Athens, GA.

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 ^a (% of total)
<i>HOPE Scholarship Total</i>	356,454 (49.4)	654.13 (77.5)
Public, 4-year	257,211 (72.1)	503.71 (77)
Public, 2-year	56,829 (15.9)	50.83 (7.8)
Technical Schools ^b	6,459 (1.8)	4.02 (0.6)
Private, 4-year	30,098 (8.4)	81.67 (12.5)
Private, 2-year	5,857 (1.6)	13.90 (2.1)
<i>HOPE Grant Total</i>	364,792 (50.6)	190.12 (22.5)
Technical Schools	348,104 (95.4)	176.67 (93)
All others ^c	16,688 (4.6)	13.45 (7)
<i>HOPE Program Total</i>	721,246	844.25

^aIn millions of dollars.

^bOf the 34 technical schools that are HOPE-eligible, 13 offer associate's degrees and therefore can award both the scholarship and grant.

^cA few public, 4-year and 2-year institutions also offer technical certificates and diplomas.

Table 2
Means and Standard Deviations of Variables in SREB Sample

Variable	1988-92		1993-97	
	Georgia	SREB	Georgia	SREB
Overall Enrollment ^a	49,249 (977)	45,320 (30,443)	52,715 (979)	44,648 (30,435)
4-Year Public Enrollment ^b	20,726 (704)	17,085 (9801)	22,479 (769)	17,116 (9646)
4-Year Private Enrollment ^c	9297 (864)	6810 (4824)	11,223 (472)	6885 (4724)
2-Year Public Enrollment ^d	15,565 (1503)	18,758 (16,646)	17,174 (580)	18,772 (16,384)
High-school Graduates ^e	64,890 (2,502)	55,717 (39,377)	62,716 (1,513)	55,635 (41,690)
18-19-year-olds ^f	208,947 (7,917)	171,159 (123,517)	204,931 (8,439)	167,060 (127,933)
Per Capita Income ^g	21,038 (166)	19,736 (3,040)	22,803 (1,010)	21,181 (2,865)
Weekly Mfg Wage ^g	463 (10)	497 (62)	478 (14)	499 (58)
<i>NT</i>	5	70	5	70

^aNumber of first-time freshmen in public and private colleges and universities.

^bNumber of first-time freshmen in 4-year public institutions.

^cNumber of first-time freshmen in 4-year private institutions.

^dNumber of first-time freshmen in 2-year public institutions.

^eNumber of public and private high-school graduates.

^fNumber of 18-19-year-olds in the population.

^gIn 1998 dollars.

Table 3

Estimated HOPE Effect on First-time Freshmen Enrollments in Georgia Colleges, 1988-1997^a

Control Group	Overall ^b		4-Year Publics ^b		4-Year Privates ^b		HBCUs ^b		2-Year Publics ^b		2-Year Publics + Tech ^b	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<u>A. SREB Controls</u>												
$S_{GA} \times H_t$	0.085 (5.27)	0.057 (3.63)	0.083 (2.97)	0.086 (2.61)	0.162 (7.52)	0.170 (6.90)	0.319 (9.48)	0.358 (10.31)	0.063 (0.84)	-0.045 (0.60)	0.060 (0.98)	-0.039 (0.92)
R^2	0.99	0.99	0.98	0.99	0.99	0.99	0.98	0.98	0.95	0.96	0.96	0.97
NT	150	150	150	150	150	150	150	150	150	150	150	150
<u>B. Border State Controls</u>												
$S_{GA} \times H_t$	0.104 (3.74)	0.032 (1.09)	0.047 (0.63)	0.045 (0.72)	0.183 (6.71)	0.166 (6.54)	0.337 (7.00)	0.376 (6.26)	0.156 (1.83)	-0.008 (0.09)	0.119 (1.34)	-0.052 (0.71)
R^2	0.97	0.99	0.91	0.96	0.99	0.99	0.93	0.94	0.93	0.97	0.94	0.98
NT	60	60	60	60	60	60	60	60	60	60	60	60
Covariates ^c	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

^aRobust t -ratios in parentheses.

^bThe dependent variable is the log of first-time freshmen enrollments in institutions of this type.

^cThe number of high-school graduates, 18-19-year-old population, per capita personal income and average weekly manufacturing wages, all in logs.

Table 4

Estimated HOPE Effect on the Number of Resident and Out-of-state Enrollees in 4-Year Schools
SREB Control Group, 1988, 92, 94 and 96^a

Variables	Students in State ^b	Residents in College ^c	Stayers ^d	Out-of-staters ^e	Leavers ^f
	(1)	(2)	(3)	(4)	(5)
$S_{GA} \times H_t$	1,216 (1.44)	280 (0.41)	840 (1.39)	376 (1.28)	-560 (3.09)
R^2	0.99	0.99	0.99	0.97	0.99
NT	60	60	60	60	60
Covariates	Yes	Yes	Yes	Yes	Yes

^aRobust t -ratios in parentheses.

^bAll recent freshmen enrolled in 4-year schools within a state.

^cState residents enrolled as recent freshmen in any 4-year school.

^dState residents enrolled as recent freshmen in 4-year schools within a state.

^eColumn (1)- Column (3).

^fColumn (2) - Column (3).

Table 5

Estimated HOPE Effect on First-time Freshmen Enrollments in Georgia Colleges, by Race
SREB Control Group, 1988, 1990-1997^a

Racial Group	Overall ^b	4-Year Publics ^b	4-Year Privates ^b	2-Year Publics ^b	2-Year Publics + Tech ^b
	(1)	(2)	(3)	(4)	(5)
<u>A. Whites</u>					
$S_{GA} \times H_t$	0.036 (2.30)	0.043 (2.24)	0.088 (3.44)	-0.010 (0.14)	0.056 (1.23)
R^2	0.99	0.98	0.99	0.95	0.95
NT	135	135	135	135	135
<u>B. Blacks</u>					
$S_{GA} \times H_t$	0.147 (9.22)	0.232 (6.33)	0.155 (3.89)	0.053 (0.75)	0.110 (2.83)
R^2	.99	0.99	0.98	0.98	0.98
NT	135	135	135	135	135
Covariates	Yes	Yes	Yes	Yes	Yes

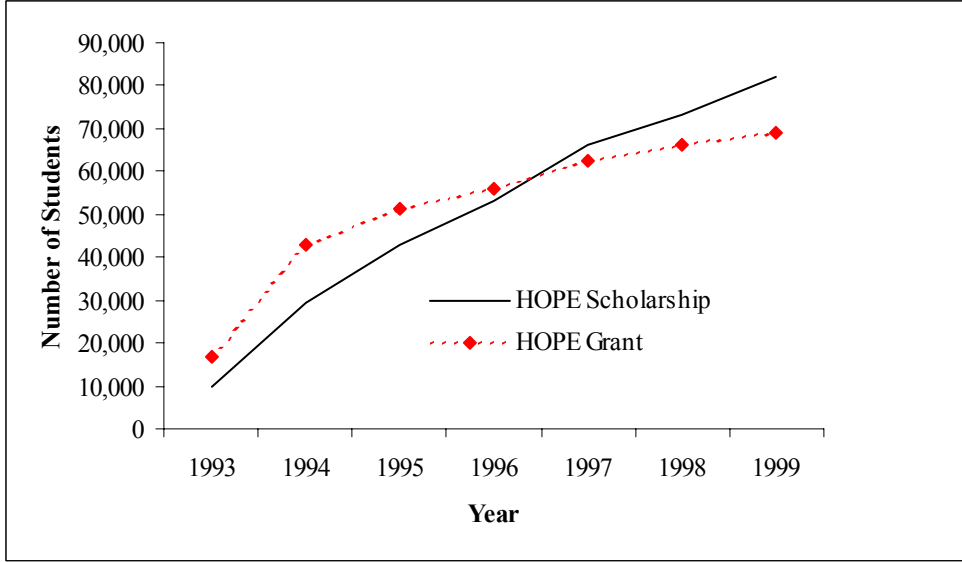
^aRobust t -ratios in parentheses.

^bThe dependent variable is the log of first-time freshmen enrollments in institutions of this type.

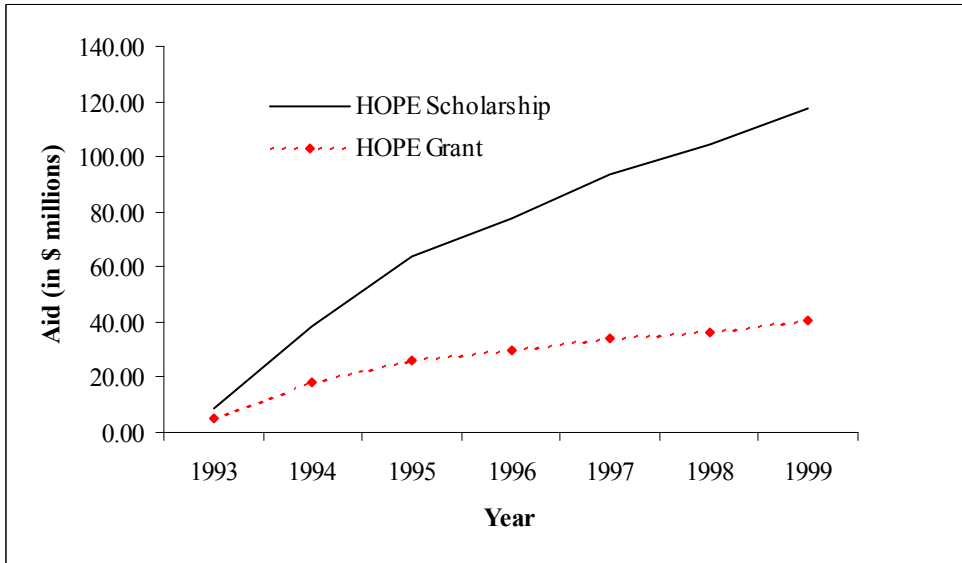
Figure 1

The HOPE Scholarship and the HOPE Grant
Trends in the Number of Recipients and Dollars Disbursed, 1993-99^a

Panel (a)



Panel (b)



^a Data by the Georgia Student Finance Commission by special request.

Figure 2
Trends in Log Enrollment Levels
Georgia vs SREB States, 1988-1997

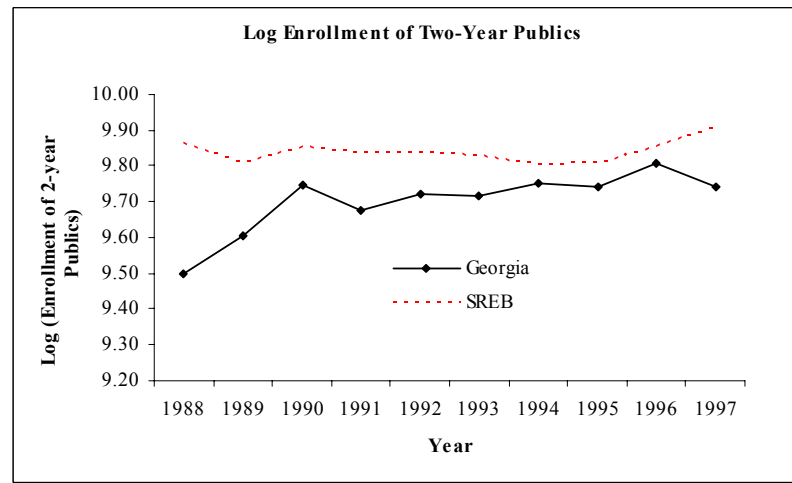
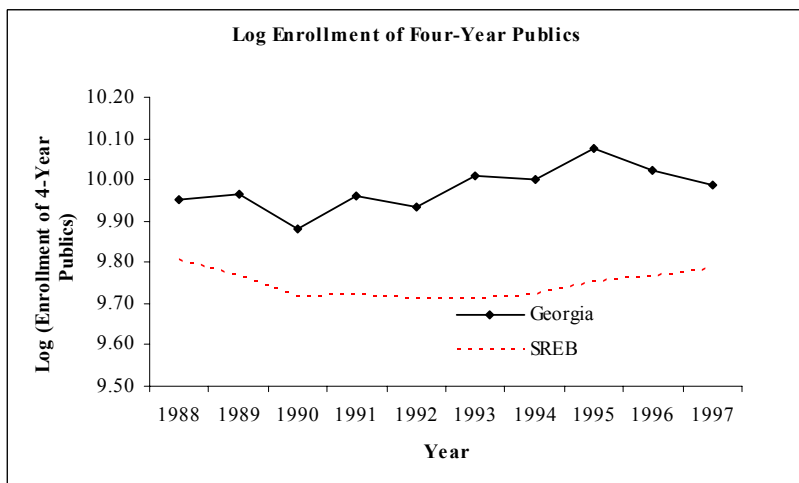
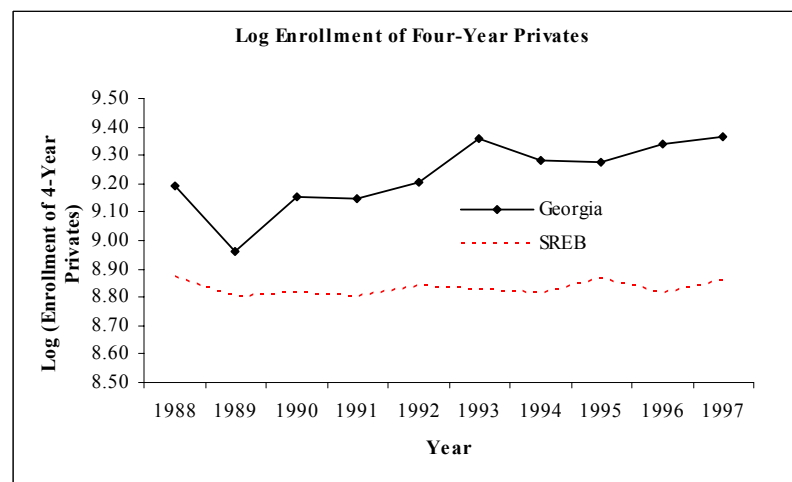
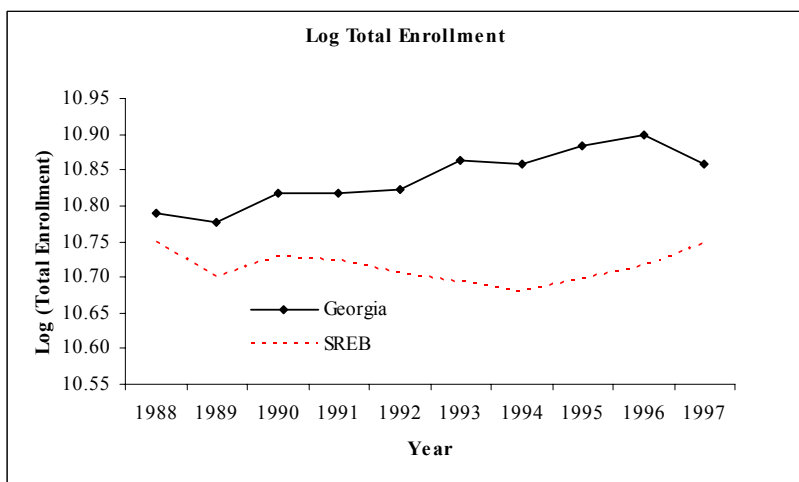
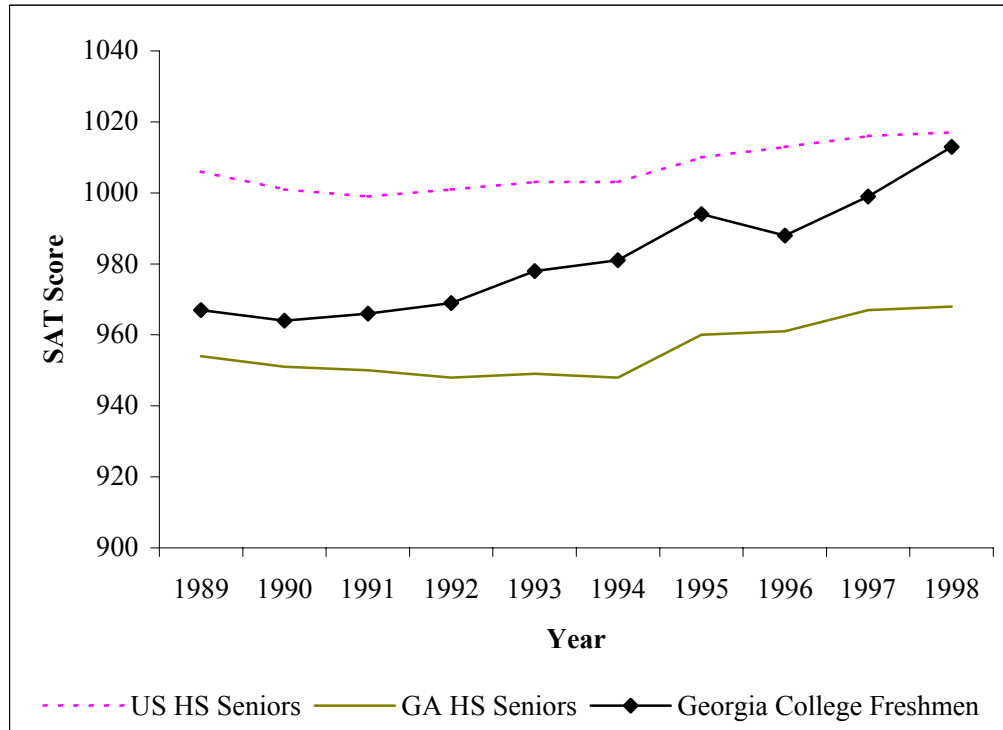


Figure 3

Trends in SAT Scores:
Freshmen in Georgia Public Colleges
vs US and Georgia High School Seniors, 1989-1998¹



¹ Average SAT scores of freshmen enrolled in Georgia public colleges were provided by the University System of Georgia (www.usg.edu). High-school senior SAT data were obtained from the College Board. All scores are displayed on the re-centered scale.