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The New Merit Aid

Susan Dynarski

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The New Merit Aid

Susan Dynarski[*]

Harvard University, Kennedy School of Government
and NBER

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Abstract

Since the early Nineties, over a dozen states have established broad-based merit aid programs. The typical program waives tuition and fees at public colleges and universities in one's home state. Unlike traditional, elite merit programs such as the National Merit Scholarship, the new merit aid requires relatively modest academic credentials and annually funds hundreds of thousands of students. This paper examines how merit aid programs in seven states have affected an array of schooling decisions, paying particular attention to how the effects have varied by race and ethnicity. I find that the new programs typically increase the attendance probability of college-age youth by five to seven percentage points. The merit programs also shift students toward four-year schools and away from two-year schools. Surprisingly, the Georgia HOPE Scholarship, which widened racial gaps in college attendance (Dynarski, 2000) is found to be atypical in its distributional impact. The other states' merit aid programs have actually *closed* racial and ethnic gaps in attendance. I attribute the Georgia program's unique distributional effect to its relatively stringent academic requirements and a recently-eliminated provision that channeled the most generous scholarships to higher-income students.

Introduction

Merit aid, a discount to college costs contingent upon academic performance, is nothing new. Colleges and private organizations have long rewarded high-achieving, college-bound high school students with scholarships. For example, the privately-funded National Merit Scholarship program, established in 1955, annually awards grants to 8,000 entering college freshmen who perform exceptionally on a standardized test. Private colleges have long used merit scholarships to lure students with strong academic credentials.

While merit aid has a long history in the private sector, it has not played a major role in the public sector. Historically, government subsidies to college students have not been merit-based. At the federal level, aid has been need-based and strongly focused on low-income students. Eligibility for the two largest federal aid programs, the Pell Grant and Stafford Loan, is determined by a complex formula that defines financial need on the basis of income, assets and family size. The formula is quite progressive: 90 percent of dependent students who receive federal grants grew up in families with incomes less than $40,000.[1]

At the state level, subsidies for college students have historically taken the form of low tuition at public college and universities. Most states have long had *some* form of merit aid, but these programs have traditionally been small and limited to the most elite students. For example, New York rewards each high school's top scorer on the Regents exam with a scholarship. While such small merit programs abound, the vast bulk of state spending on higher education takes the form of low tuition, made possible by the $50 billion in subsidies that states annually provide their post-secondary institutions. These institutional subsidies are highest at the flagship

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[1] Calculated from data in National Center for Education Statistics (1998), Table 314.

universities, which draw the highest-achieving students. In this sense, these institutional subsidies are, by far, the largest "merit aid" program in the US. Access to this state subsidy has traditionally been controlled not by state governments but by the schools, who decide which students are sufficiently meritorious to gain admission.

Recently, however, state legislatures have gotten into the business of defining academic merit and awarding merit aid to hundreds of thousands of students. Since the early Nineties, more than a dozen states have established broad-based merit aid programs. The typical program awards tuition and fees to young residents who have maintained a modest grade point average in high school. Many require a high school grade-point average of 3.0 or above, not a particularly high threshold: in 1999, 40 percent of high school seniors met this standard.[2] Georgia, for example, gives a free ride at its public colleges and universities to residents who have a GPA of 3.0 in high school.[3] In Arkansas, the GPA cutoff is 2.5, exceeded by 60 percent of high school students.

This new breed of merit aid differs from the old style in both its breadth and, plausibly, its effect on students' decisions. The old style of merit aid was aimed at top students, whose decision to attend college is not likely contingent upon the receipt of a scholarship. By design, if not by intent, this elite form of merit aid goes to students whose operative decision is not whether to attend college, but which high-quality, four-year college to choose. By contrast, the new,

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[2] As I will discuss later in the paper, this figure varies quite dramatically by race and ethnicity. Author's calculations from the 1997 National Longitudinal Survey of Youth. This is the share of students with a *senior year* GPA of at least 3.0, and so is likely an upper bound on the share of students who achieve this GPA for their entire high school career. Unfortunately, NLSY does not contain GPA data for the entire high school career.

[3] As the paper will discuss, the merit programs require continued academic performance in college. In Georgia, a GPA of 3.0 must be maintained in college, a considerably higher hurdle than a 3.0 in high school.

broad-based merit aid programs are open to students with solid though not necessarily exemplary academic records. Such students may be uncertain about whether to go to college at all. When offered a well-publicized, generous scholarship, some of these students may decide to give college a try. Even among students who would have gone to college without the scholarship, the incentives of merit aid may have an effect on schooling decisions. For example, some may choose a four-year school over a two-year school, or a private school over a public school. [4] Those students planning to go to college out of state may instead decide to stay closer to home in order to take advantage of a merit scholarship.

This chapter will examine how merit aid affects this array of schooling decisions, using household survey data to measure the impact of the new state programs. I start with a case study of the Georgia HOPE Scholarship, the namesake and inspiration of many of the new state programs. I then extend the analysis to other states that now have broad-based, HOPE-like programs. In the empirical analysis, I pay particular attention to how the effect of merit aid has varied by race and ethnicity.

Merit aid might affect the decisions of not only students, but of institutions. Do colleges increase their tuition prices, in order to capture some of the subsidy? Do they reduce other forms of aid? Does the linkage of scholarships to grades lead to grade inflation at high schools and colleges? A number of studies have addressed these questions, and I will review the evidence on these topics. Finally, I will briefly discuss the political economy of merit aid. Why has it arisen where it has, and when it has? What are the prospects for its continuation and growth, given the current, poor fiscal prospects of the states?

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[4] Two-year colleges are generally cheaper than four-year colleges. Most merit aid programs make them both free.

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State Merit Aid: A Primer

Broad-based state merit aid became common in a very short span of time. In 1993, just two states, Arkansas and Georgia, had programs in place. By 2002, thirteen states had introduced large merit aid programs. Most of this growth has occurred quite recently, with seven programs starting up since 1999. As is clear from the map in Figure 1, merit aid is heavily concentrated in the southern region of the United States. Of the thirteen states with broad-based merit aid programs, nine are in the South. Table 1 summarizes the characteristics of the thirteen broad-based merit programs. As was discussed earlier, dozens of states have some form of merit aid in place. The state programs detailed in Table 1 were chosen because they have particularly lenient eligibility criteria, with at least thirty percent of high school students having grades and test scores high enough to qualify for a scholarship.[5]

<Figure 1 and Table 1 about here>

For example, the Arkansas award requires a GPA of 2.5, a standard met by 60 percent of high school students nationwide. The state also requires a minimum on the ACT of 19, a score exceeded by 60 percent of test-takers nationwide and well below the Arkansas state average of 20.4. Five other states, like Arkansas, condition eligibility on a minimum GPA and test score. Six states use only GPA to determine eligibility. Of the states that require a minimum GPA, four require a GPA of 3.0, while two make awards to those with a GPA of 2.5.

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[5] The eligibility estimates are based on national data from the NLSY97. Many of the states listed in Table 1 do not have enough observations in the NLSY97 to allow state-specific estimates of the share of students whose GPA qualifies them for their state's merit program. For all states, therefore, I use the national grade distribution to impute the share in a state that meet the eligibility criteria. When available, state-level data on the ACT and SAT are used to measure the share of students who meet these criteria. Note that these estimates are used only to choose the merit programs to be analyzed; they are not used in the paper's regression analyses.

Only one state – Michigan – bases eligibility solely on standardized test performance. For the class of 2000, 31 percent of Michigan students had test scores sufficiently high to merit an award. However, this overall eligibility rate masks substantial heterogeneity: just 7.9 percent of African American students met the Michigan requirement. Civil rights groups have protested that this wide gap in eligibility indicates that Michigan's achievement test is an inappropriate instrument with which to determine eligibility for a state-funded scholarship. Similar objections were raised in Arkansas, which initially based eligibility for its program only on performance on standardized tests but later broadened the criteria to include academic performance in high school.

These controversies point to a shared characteristic of merit programs: their scholarships flow disproportionately to white, non-Hispanic, upper-income students. One reason is that Blacks, Hispanics and low-income youth are relatively unlikely to attend college, so *any* subsidy to college students will flow disproportionately to white, upper-income youth. But even among those non-white, Hispanic and low-income youth who do attend college, academic performance is a barrier to merit aid eligibility.

For merit programs that are based on standardized tests, it is unsurprising to see (as in Michigan) a large gap in the eligibility rates of whites and African-Americans, as the correlation between standardized test performance and race is well-documented. However, even those programs with only a GPA cutoff will experience large racial differences in eligibility, since academic performance in the classroom varies considerably by race and ethnicity. Forty percent of high school seniors have a 3.0 GPA or higher while only 15 percent of African Americans and Hispanics meet this standard. Further, Blacks and Hispanics receive relatively low grades in

college, which threatens their ability to keep any merit scholarship they are able to win with their high school grades.

Since non-white youth are less likely to qualify, it is plausible that merit aid programs will have little positive impact upon their college attendance. Further, if the new merit aid crowds out state spending on need-based aid or leads to higher tuition prices, the programs may actually *decrease* low-income, non-white college attendance, since these populations will face the resulting cost increases but will be disproportionately ineligible for the new merit scholarships. Merit aid would therefore tend to widen existing gaps in college attendance, as it flows to those who already attend college at the highest rates. A countervailing force is that Blacks and Hispanics may be relatively sensitive to college costs. Among those Blacks and Hispanics who are eligible, a merit program could have a relatively large impact on schooling decisions. It is therefore an empirical question, to be investigated by this chapter, whether merit programs narrow or widen existing racial and ethnic gaps in postsecondary schooling.
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Case Study: The Georgia Hope Scholarship

In 1991, Georgia Governor Zell Miller requested that the state's General Assembly consider the establishment of a state-run lottery, with the proceeds to be devoted to education. The Georgia General Assembly passed lottery-enabling legislation during its 1992 session and forwarded the issue to voters, who approved the required amendment to the state's constitution in November of 1992. The first lottery tickets were sold in June of 1993. $2.5 billion in lottery revenue has flowed into Georgia's educational institutions since 1993. The legislation and amendment enabling the lottery specified that the new funds were not to crowd out spending from traditional sources. While it is not possible to establish conclusively that such crowd-out

has not occurred, spending on education has risen substantially since the lottery was initiated, both in absolute dollars and as a share of total state spending. Roughly equal shares of lottery funds have gone to four programs: the HOPE Scholarship, educational technology for primary and secondary schools, a new pre-kindergarten program, and school construction.

Residents who have graduated since 1993 from Georgia high schools with at least a 3.0 grade point average are eligible for HOPE.[6] Public college students must maintain a GPA of 3.0 to keep the scholarship; a similar requirement was introduced for private school students in 1996. HOPE pays for tuition and required fees at Georgia's public colleges and universities. Those attending private colleges are eligible for an annual grant, which was $500 in 1993 and had increased to $3,000 by 1996. A $500 education voucher is available to those who complete a General Education Diploma (GED). The first scholarships were disbursed in the fall of 1993. Participation in HOPE during its first year was limited to those with family incomes below $66,000; the income cap was raised to $100,000 in 1994 and eliminated in 1995.

Two administrative aspects of HOPE differentially affected low- and upper-income youth. Since income is highly correlated with race and ethnicity, these administrative quirks may explain any racial and ethnic heterogeneity we observe in HOPE's effect. First, until 2001, HOPE awards were offset by other sources of aid. A student who received the maximum Pell Grant got no HOPE Scholarship but for a yearly book allowance of $400.[7] Insofar as Blacks and

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[6] The high school GPA requirement is waived for those enrolled in certificate programs at technical institutes. For high school seniors graduating after 2000, only courses in English, math, social studies, science and foreign languages count toward the GPA requirement.

[7] As a result of this provision and the scaling back of the state's need-based State Student Incentive Grants (SSIGs), some low-income students have actually seen their state aid reduced since HOPE was introduced (Jaffe 1997). This contemporaneous shift in SSIG spending has the potential to contaminate the paper's estimates. However, SSIG spending was so miniscule – $5.2 million in 1995, before the program was scaled back – that the impact of its elimination on the estimates is likely inconsequential.

Hispanics are disproportionately represented in the ranks of those who receive need-based aid, their HOPE awards would have been reduced more frequently than those of their white, non-Hispanic peers. Second, also until 2001, students from families with low incomes faced a more arduous application process for HOPE than did other students. Georgia education officials, concerned that students would forgo applying for federal aid once the HOPE Scholarship was available, mandated that applicants from families with incomes lower than $50,000 complete the Free Application for Federal Student Aid (FAFSA). The rationale for the $50,000 income threshold was that few students above that cutoff were eligible for need-based, federal grant aid.[8] The four-page FAFSA requests detailed income, expense, asset and tax data from the family. By contrast, those with family incomes above $50,000 filled out a simple, one-page form that required no information about finances other than a confirmation that family income was indeed above the cutoff. As a consequence of the two provisions just discussed, low-income students faced higher transaction costs and lower average scholarships than did upper-income students.

In 2000-2001, 75,000 students received $277 million in HOPE Scholarships. Georgia politicians have deemed HOPE a great success, pointing to the steady rise in the number of college students receiving HOPE. The key question is whether the program actually changes schooling decisions or simply subsidizes inframarginal students. In the next section, I discuss the data and empirical strategy I will use to answer this question.

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[8] In 1995, only 3.7 percent of dependent students from families with incomes over $40,000 received federal grant aid, while 57 percent of those from families with income under $20,000 did so (National Center for Education Statistics 1998a).

Data

Any empirical analysis of state financial aid policy quickly comes face to face with frustrating data limitations. The data requirements appear minor, since eligibility for merit aid is determined by a very short list of characteristics: state of residence at the time of high school graduation, high school grade point average, standardized test score and, in some states, parental income. In order to use this information in an evaluation of the effect of merit aid, we would want these characteristics for repeated cohorts of high school students, both before and after merit aid is introduced in their state, so that schooling decisions of eligible and ineligible cohorts could be compared.[9] Finally, we need a dataset with state-level samples large enough to allow for informative analysis.

No publicly-available dataset meets all of these requirements. Surveys that are limited to college students do not, by their nature, allow us to examine the college attendance margin. For example, the National Postsecondary Student Aid Survey (NPSAS) surveys college students about their aid packages and contains detailed information from students' aid applications. By design, this dataset cannot inform us about those students who decided to *not* go to college. Without making strong assumptions about how those who do not go to college differ from those who do, we cannot use NPSAS to examine how aid affects the college attendance rate.

NPSAS can be used to answer other questions of interest, however. For example, we might be interested in whether merit aid leads to higher tuition prices, or more or less government spending on other forms of aid. Or, we might be interested in how the racial

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[9] Alternatively, we could make use of the sharp discontinuities in the eligibility requirements to estimate the effect of merit aid from a single cohort. Kane (2003) uses this approach in an evaluation of California's CalGrant program, comparing the college attendance of those very slightly above and very slightly below the grade point cutoff. This approach requires very large samples; Kane uses an administrative dataset that is a near-census of potential college entrants.

composition of a state's schools changes, if at all, after the introduction of a merit aid program. NPSAS, as well as data that institutions gather about their students and report to the government through the Integrated Postsecondary Data System (IPEDS), can answer questions of this type.[10]

The National Longitudinal Surveys of Youth of 1979 and 1997 are particularly rich sources of data, containing information about academic performance on standardized tests, grades, parental income, and schooling decisions.[11] In a few years, the NLSY97 will be a useful resource for evaluating the newer merit aid programs, in particular those introduced in the late Nineties. The only weakness of the NLSY97 is that it is unlikely to interview enough youth in any one state to allow for detailed examination of a single merit aid program. Observations from multiple merit states could be pooled, however, as is done with the Current Population Survey in this paper.

Another potentially fruitful option for research in this area is data from administrative sources. Kane (2003) and Henry and Rubinstein (2002) take this approach in evaluations of programs in California and Georgia, respectively.[12] Kane matches enrollment data from California's public universities and colleges to federal aid applications and high school transcripts. He then uses regression-discontinuity methodology to estimate the effect of California's merit program on schooling decisions. Henry and Rubinstein use data from the

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[10] Papers that use college-based surveys in this way include Long 2002 and Cornwell, Mustard and Sridhar 2002, both of which evaluate the Georgia HOPE Scholarship.

[11] The US Department of Education's longitudinal surveys of the high school cohorts of 1972, 1982 and 1992 contain similarly rich data. But because each survey contains a single cohort, we cannot use these data to observe schooling decisions in a given state both before and after merit aid is introduced.

[12] California's program is not among the programs discussed in this chapter, as it is relatively narrow in its scope due to income provisions that exclude many middle- and upper-income youth.

College Board on high school grades and SAT scores in order to examine whether Georgia HOPE has led to grade inflation in high schools.

The Current Population Survey and the Analysis of State Aid Policy

The bulk of the analysis in this paper is based on a publicly-available survey dataset, the Current Population Survey (CPS). The CPS is a national household survey that each October gathers detailed information about schooling enrollment. Data on type of school attended, as well as basic demographics such as age, race and ethnicity, are included in the CPS. While the CPS is the world's premier labor force survey, from the perspective of this chapter it has some key limitations.

First, the CPS lacks information about academic performance. We therefore cannot narrow the analysis to those whose academic performance makes them eligible for merit aid, and thereby measure the effect on schooling decisions of offering a merit scholarship among those who qualify (an effect I will denote π). From a policy perspective, the question we *can* answer is quite relevant: How does the existence of a merit aid program affect the schooling decisions of a state's youth? To answer this question, I will estimate a program effect (denoted β) that is the product of two interesting parameters: 1) π, the behavioral response to the offer of aid of youth eligible for the scholarship and 2) δ, the share of youth eligible for the scholarship:[13]

$$\beta = \pi\delta$$

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[13] This formulation ignores any heterogeneity in π, the effect of the offer of aid on those who are eligible. It is almost certain that this effect is not homogeneous. For example, the offer of aid will likely have a different effect on those whose grades place them just on the margin of eligibility and those whose grades are so strong that they are well within this margin.

When considering the effect of a financial aid program such as the Pell Grant, we generally are interested only in π. We assume that the parameters that determine Pell eligibility, such as family size and income, cannot easily be manipulated by those eager to obtain the grant. By contrast, merit aid is a program that *intends* to induce behavior that will increase the share that is aid-eligible. Policy-makers consistently cite their desire to give students a financial incentive to work hard in high school and college as their motivation for establishing merit aid programs. Estimating π while ignoring δ would therefore miss half the story. Fortunately, data constraints prevent us from making this mistake!

A more serious weakness of the CPS is it provides family background data for only a subset of youth. Highly relevant variables such as parental income, parental education and other measures of socio-economic status are available only for those youth who live with their families or who are temporarily away at college.[14] The probability that a youth has family background information available is therefore a function of her propensity to attend college. Under these circumstances, we cannot limit the analysis to those who have family background data without inducing bias in analyses in which college attendance is an outcome of interest.[15] In the analysis, therefore, I will make use only of background variables that are available for all youth.

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Is State of Residence of Youth Systematically Mismeasured in the CPS?

A final weakness of the CPS is that it explicitly identifies neither the state in which a person attended high school nor the state in which she attends college. In this paper, I proxy for

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[14] These youth appear on their parents' CPS record, and so can be linked to parental data. Other youth will show up in the CPS as members of their own households.

[15] Cameron and Heckman (1999) discuss this point.

the state in which a person attended high school with current state of residence. This is a reasonable proxy, for two reasons. First, among 18- to 19-year-olds, the group studied in this chapter, migration across state lines for reasons other than college is minimal. Second, when a youth *does* go out of state to college, CPS coding standards are that she is recorded as a resident of her state of origin, rather than the state in which she attends college.

The key question is whether these standards are followed in practice. We are confident that this protocol has been followed for those youth (78 percent of the sample) who appear on their parents' record. [16] Whether the CPS correctly captures the state of residence for the other 22 percent is an important question, as error in the collection of these data will bias the chapter's estimates.

If state of residence is simply a noisy measure of state of origin for these 22 percent of youth, then the paper's estimates will be biased toward zero. But consider the following scenario, in which we will be biased toward finding a *positive* effect of merit aid on the probability of college attendance. Say that HOPE has no effect on the college entry margin, but does affect whether students go to college in-state. If the CPS incorrectly codes the state of residence as the state in which one is attending college, then any drop in the out-migration of Georgia college students induced by HOPE will mechanically induce an increase in the observed share of Georgia youth attending college.

A few simple tabulations can give us a sense of whether this is a problem. If the scenario laid out in the previous paragraph holds, then we should observe relative growth in the *size* of the college-age population in Georgia after HOPE is introduced. To test this hypothesis, I predicted

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[16] We cannot restrict the analytical sample to this subset because, as discussed above, whether a youth is on her parents' record is correlated with whether she is in college.

the size of Georgia's college-age population by aging forward the high-school-age population.

Specifically, I compared the population of 18-to 19-year-olds in a given state to the population of

16- to 17-year-olds in the same state two years earlier. This is an admittedly crude prediction of

cohort size. It will be wrong for any number of reasons, among them immigration and

incarceration of teenagers (prisons are not in the CPS sampling frame). However, the relevant

issue is not how error-ridden this prediction is, but whether the sign and magnitude of its error

changes systematically when a merit program is introduced in a state. In particular, does the

population of college-age youth expand unexpectedly when a state introduces a merit program?

<Figure 2a.>

Figure 2A plots the difference between the predicted and actual cohort sizes, with the

difference normed by the predicted size. I plot the normed error for Georgia, and the average

normed error for the other states in the Southeast and the US.[17] For measurement error to be

inducing positive bias in the paper's estimates, the errors should grow relatively more negative in

Georgia after HOPE is introduced. There is no such clear trend. The large negative errors in

Georgia in 1993 through 1995 are somewhat disturbing, even though a muted version of this

pattern also appears in the US and Southeastern series. In Figure 2B, I show the same series for

West Virginia, a southern state that had no merit program during this period. This state's pattern

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[17] That is, I calculate the prediction error for each state-year and divide it by the predicted value for that state-year. I take the average of these normed, state-year errors separately for the Southeastern US and the entire US, in both cases excluding Georgia. Each state-year is treated as a single observation; I have not weighted by population.

The Georgia series is substantially more volatile than those of the Southeast and US; however, any state's error will look volatile compared to averages for the region and country. See Figure B for an example of an equally volatile state.

is almost identical to that of Georgia, suggesting that Georgia's shifts in cohort size are random noise and that the paper's estimates will not be contaminated by this source of bias.

<Figure 2b.>

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Georgia HOPE Analysis

I begin by examining how the college attendance rate has changed in Georgia since HOPE was introduced, compared to how it has evolved in the other Southern states that have not introduced merit programs. The outcome of interest is whether an 18- to 19-year-old is currently enrolled in college. I start with a parsimonious specification, in which an indicator variable for being enrolled in college is regressed against a set of state, year and age effects, along with a variable, $HOPE$, that is set to one in survey years 1993 through 2000 for those who are from Georgia. In this equation, the $HOPE$ variable therefore indicates that a young person of college age resides in Georgia after HOPE is in operation.

The estimating equation is as follows:

$$(1) \qquad y_{iast} = \beta_0 + \beta_1 HOPE_{st} + \delta_s + \delta_t + \delta_a + \varepsilon_{iast}$$

where y_{iast} is a indicator of whether person i of age a living in state s in year t is enrolled in college, $\delta_s, \delta_t,$ and δ_a denote state, year and age fixed effects, respectively, and ε_{iast} is an idiosyncratic error term. I use Ordinary Least Squares (OLS) to estimate this equation, correcting standard errors for heteroskedasticity and correlation of the error terms within state cells.

Recall that HOPE a) decreases the price of college b) decreases the price of in-state colleges relative to out-of-state colleges and c) decreases the price of four-year colleges relative to two-year colleges. The corresponding predicted behaviors for Georgia residents are a) increased probability of college attendance, b) increased probability of in-state attendance, relative to out-of-state attendance and c) increased probability of four-year attendance relative to two-year attendance.

<Table 2>

Column 1 of Table 2 show the college attendance results. The estimates indicate that the college attendance rate in Georgia rose 8.6 percentage points relative to that in the other Southern, non-merit states after HOPE was introduced. The estimate is highly significant, with a standard error of 0.8 percentage points. This estimate is quite close to the estimate in Dynarski 2000, which was based on CPS data for 1989 through 1997.[18] The result suggests that HOPE did, as predicted, increase the share of youth attending college.

I next probe the robustness of this result by adding a set of covariates to this regression. For reasons discussed earlier, I limit myself to covariates that are available for the entire sample and exclude any that require that a youth and her parents appear on the same survey record, such as parental education and income. Control variables indicate whether a youth lives in a metropolitan area, is African-American, or is Hispanic. These three variables are each interacted with a full set of year effects, so that the effect of these attributes on schooling decisions is allowed to vary flexibly over time. I also include the state's unemployment rate and the median income of families with children who are near college age. These two variables are intended to capture any Georgia-specific economic shocks that may have affected college attendance decisions. Results are in Column (2). The coefficient does not change, though the standard error increases to 1.3 percentage points.

I next examine whether the effect of merit aid extends across state borders. Since students travel across state lines for college, changes in postsecondary education policy in one state will reverberate in neighboring states. If more Georgians want to go to college, and the supply of colleges is inelastic, students from Florida, for example, will be pushed out of school when HOPE is introduced. The estimating equation is as follows:

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[18] The standard error is substantially smaller, however, than that in Dynarski 2000, which conservatively corrected standard errors for correlation at the state-year level. Bertrand, Duflo, and Mullainathan (2002) conclude that, in this type of application, the appropriate correction is for correlation at the state level.

$$(2) \qquad y_{iast} = \beta_0 + \beta_1 HOPE_{st} + \beta_2 border\_merit_{st} + \beta_3 X_{st} + \beta_4 X_i + \delta_s + \delta_t + \delta_a + \varepsilon_{iast}$$

β_2 captures the effect of having a merit program in a neighboring state. X_{st} and X_i are the state-year and individual covariates discussed in the previous paragraph and used in Column (2). Results are in Column (3). The results weakly suggest that having a merit program on one's border has a small, negative effect on college attendance, indicating the presence of supply constraints. The point estimate is fairly imprecise, however: -0.5 percentage points, with a standard error of 1.3 percentage points.[19]

An identifying assumption of the preceding analysis is that Georgia and the control states were on similar trends in their college attendance rates before HOPE was introduced. If they were instead on divergent trends the estimates will be biased. In particular, if attendance was rising in Georgia relative to the other states pre-1993, then we will falsely attribute to HOPE the continuation of this trend. The inclusion of these pre-existing trends in the equation will eliminate this source of bias. In Column (4), I add to the regression separate time trends for Georgia and the non-merit states.[20] The point estimate drops moderately, to 6.9 percentage points, indicating that Georgia was trending away from the rest of the South pre-HOPE. However, there is still a substantial relative increase in attendance in Georgia that cannot be explained by this trend.

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[19] I have also tested the inclusion of the interaction of having a merit program in one's own state and having a merit program in a neighboring state. The interaction is never large or significant and its inclusion does not affect the paper's estimates.

[20] The time trends are estimated using pre-1993 data.

The Effect of HOPE on School Choice

I next examine whether HOPE has affected decisions other than college entry. In particular, I examine the type of college that a student chooses to attend. The October CPS contains information about whether a student attends a public or private college, and whether it is a two- or four-year institution. I use this information to construct four variables that indicate whether a person attends a two-year private school, a two-year public school, a four-year private school, or a four-year public school. I then run a series of four regressions in which these are the outcomes, including the same covariates as in the richest specification of Table 2. I show results that both do and do not include time trends. The results are shown in Table 3. The attendance results of the previous table are included for ease of comparison.

<Table 3>

HOPE appears to increase the probability of attendance at four-year public institutions substantially, by 4.5 percentage points (no time trends) to 8.4 percentage points (time trends included). Attendance at four-year private schools also rises, though the estimates are smaller than those (2.2 to 2.8 percentage points). There is a somewhat smaller rise in the probability of attendance at two-year private schools (about 1.5 percentage points) and a drop at two-year public schools (of 1.7 to 5.5 percentage points). All but two of the eight estimates are significant at conventional levels.

These shifts in schooling decisions are in the expected direction. Any subsidy to college will both pull students *into* two-year public schools (from not going to college at all) and push them *out of* two-year public schools (into four-year colleges). HOPE appears to push more students out of two-year, public institutions than it pulls in, producing a net drop at these schools.

Most of these students appear to shift toward four-year public institutions, though some also shift into the private sector.[21]

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The Effect of HOPE on Migration to College

We might expect that HOPE would also affect whether students choose to attend college in their home state. Data from both the data from the University System of Georgia (USG) and the Department of Education's Residence and Migration Survey suggest that HOPE has had the effect of encouraging Georgia residents who would have attended a four-year college out of state to stay in Georgia instead. Data from the Residence and Migration Survey indicate that in 1992 about 5,000 Georgians were freshmen at two- and four-year colleges in the states that border Georgia. This represented an average of 3.4 percent of the border states' freshmen enrollment. By 1998, just 4,500 Georgians crossed state lines to enter college in the border states, accounting for an average of 2.9 percent of freshmen enrollment in those states. This drop in migration was concentrated in a group of border schools that have traditionally drawn large numbers of Georgians. At the ten border schools drawing the most Georgia freshmen in 1992, students from Georgia numbered 1,900 and averaged 17 percent of the freshman class. By 1998, the ten top destinations enrolled 1,700 Georgians, who represented nine percent of freshman enrollment. Jacksonville State College in Florida, for example, drew 189 Georgian freshmen in 1992 and only 89 in 1998; the share of the freshman class from Georgia dropped from 17 to 11 percent.

Further supporting the conclusion that Georgia's four-year college students are now more likely to attend college in state is a shift in the composition of Georgia's four-year colleges.

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[21] Note that the coefficients for the four schooling options do not sum to the overall attendance effect. This is because the type of school is unknown for some students, who appear as college attenders but not as attending a specific type of school.

Figure 3 shows data from the USG on the share of freshmen enrollees that are Georgia residents at Georgia's two- and four-year public colleges. The data are separately plotted for the two-year, four-year and the elite four-year colleges in the state. Here we see a definite shift toward Georgia residents since HOPE was introduced, with the effect most pronounced at four-year colleges (especially the top schools) and least evident at the two-year schools. This pattern fits with our understanding that four-year students are most mobile when making college attendance decisions.

<Figure 3>

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The Differential Impact of HOPE by Race and Ethnicity

The effect of merit programs may vary across racial and ethnic groups for a number of reasons. First, as was discussed earlier, academic performance in high school is strongly correlated with race and ethnicity. Second, the rules of the programs are sometimes such that they are likely to have a lesser impact on low-income youth. Until recently, Georgia did not offer the grant to those youth who had substantial Pell Grants and low college costs. Mechanically, then, the program would have had a lower impact on African Americans and Hispanics, who tend to have lower incomes: in Georgia, 94 percent of African-American but just 62 percent of white 16- to 17-year-olds live in families with incomes less than $50,000.[22] The numbers for the rest of the United States are similar.[23] Third, states that have merit programs may reduce need-based aid or appropriations to colleges. Both of these effects would tend to make college more

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[22] Author's estimates from the Current Population Survey. Note that this refers to the nominal income distribution. This is appropriate, since the Georgia rules were written in nominal rather than real terms.

[23] These figures for the share with income below $50,000 may appear high. This is because the unit of observation is not the family but the child. Since lower-income families have more children, the distribution of family income within a sample of children has a lower mean and median than the distribution of family income within a sample of families.

expensive for those who don't qualify for the merit programs to which the money is being channeled. Finally, the elasticity of schooling with respect to a given grant may differ across demographic groups. *A priori*, it not clear whether Blacks and Hispanics would be more or less elastic than other students in their schooling decisions.[24]

To explore how the effect of merit aid programs varies by race and ethnicity, I repeat the analysis of the preceding section, but allow the effect of HOPE to differ across racial and ethnic groups. I divide the population into two, mutually exclusive categories: 1) white non-Hispanics and 2) Hispanics of any race plus Blacks.[25] I then estimate the effect of merit aid separately for each group. The estimating equation is:

$$
(3) \quad
\begin{aligned}
y_{iast} &= \beta_0 + \beta_1 Merit_{st} + \beta_2 Merit_{st} \times black\_hisp_i + \beta_3 border\_merit_{st} \\
&+ \beta_4 X_{st} + \beta_5 X_i + \delta_s + \delta_t + \delta_a + \varepsilon_{iast}
\end{aligned}
$$

Results for Georgia are in Table 4, for specifications that do and do not include pre-existing time trends.[26] The point estimates are somewhat unstable, changing substantially when time trends are included. But the two sets of estimates agree that HOPE had a substantially greater effect on white attendance than Black and Hispanic attendance. The estimated effect of HOPE on the white attendance rate is 9.6 to 14.0 percentage points, while that on Blacks and Hispanics is –0.7 to 6.6 percentage points. The results indicate that HOPE has increased racial and ethnic gaps in college attendance in Georgia.

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[24] Dynarski 2000 develops a model of schooling choice that demonstrates this ambiguity. Dynarski 2002 reviews the evidence on the relative price elasticities of the schooling of low- and upper-income youth.

[25] I would prefer to separately examine effects on Blacks and Hispanics. I have attempted to do so, but the Hispanic results are too imprecisely estimated to be informative.

[26] When time trends are included, they are estimated separately by state and race/ethnicity. Trends are estimated for four separate groups: 1) non-Hispanic whites in Georgia 2) non-Hispanic whites in the rest of the Southern non-merit states 3) Blacks and Hispanics in Georgia 4) Blacks and Hispanics in the rest of the non-merit Southern states.

<Table 4>

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The Effect of Broad-Based Merit Aid in Other States

The Georgia program was one of the first, largest, and most well-publicized merit aid programs. It has also been, by far, the most well-studied program; at this point, dozens of papers have analyzed its impact. In the absence of sound empirical research on the effect of the other merit programs, the Georgia experience has been extrapolated in predictingeir effects.[27] However, as is shown in Table 1, there is heterogeneity in program rules, which may well lead to heterogeneity in the programs' effects. Further, initial college attendance rates and the supply of postsecondary schools varies across the merit aid states, which may affect the impact of the merit programs on schooling decisions. For all these reasons, results from one state may not provide a good prediction of the effect of another state's merit program.

Fortunately, many of the merit aid programs in Table 1 have now been in existence sufficiently long to allow us to separately estimate program effects for each state. I will limit my analysis to the South, where all but three of the programs in Table 1 are located. A benefit of focusing on the Southern merit states is that they have a natural control group: the non-merit Southern states. The programs of three Southern states (Maryland, Tennessee and West Virginia) are excluded, as they were introduced after 2000, the last year of the sample. That leaves seven merit programs, located in Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi and South Carolina.

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[27] An exception is Binder and Ganderton (2002), which examined the effect of New Mexico's merit program. They conclude that New Mexico Success has not affected the college attendance rate but, like HOPE, has shifted students toward four-year schools.

I follow the approach used in the analysis of HOPE, creating a variable that indicates a year and state in which a merit program is in place. I estimate the following equation:

$$(4) \qquad y_{iast} = \beta_0 + \beta_1 merit_{st} + \beta_2 border\_merit_{st} + \beta_3 X_{st} + \beta_4 X_i + \delta_s + \delta_t + \delta_a + \varepsilon_{iast}$$

Results are in Table 5. The estimated overall effect of the seven merit programs is 4.7 percentage points. The estimate is highly significant, with a standard error of 1.1 percentage points. In Column (2), I allow this affect to vary across the seven states, by replacing the single merit dummy with a set of seven dummies, one for each state's program. The specification of Column (2) is otherwise identical to that of Column (1), and so the appropriately-weighted average of the seven coefficients is the 4.7 percentage points of Column (1). Six of the estimates are highly significant. Five are clustered between 4.9 (Mississippi) and 7.4 (Georgia). Well below Mississippi are Florida and South Carolina, with estimated effects of 3.0 and 0.2 percentage points, respectively.

<Table 5>

We might suspect that the merit states are somehow different from the non-merit states, and that the non-merit states therefore form a poor control group for these purposes. We can test the sensitivity of our results to the choice of control group by dropping the non-merit states from the sample and estimating the effect of merit aid purely from the staggered timing of its rollout across the states. In this approach, the merit states form their own control group. Figure 5 graphically illustrates the identification strategy. During the first years of the sample (1988-90), before the first merit program is introduced, all of the states are in the control group. In 1991, Arkansas moves into the treatment group, followed in 1993 by Georgia. By 2000, all of the states are in the treatment group. This approach assumes that the states that eventually have a merit

program are on similar trends in the schooling outcomes of young people. The assumption is that the year in which a state's merit program begins is quasi-random, uncorrelated with any state-specific trends in or shocks to schooling decisions.

<Figure 5>

Results are in Columns (4) and (5) of Table 5. The estimated overall effect is insensitive to the choice of control group, with the estimate rising only slightly from 4.7 to 5.2 percentage points. The state-specific coefficients are somewhat more sensitive to the choice of control group. For five of the states, the two approaches yield similar results. The two exceptions are Arkansas and Florida, for whom the estimates vary substantially between Column (2) and Column (4). Arkansas' estimate drops from 4.8 to 1.6, while Florida's rises from 3.0 to 6.3.

Only South Carolina has a consistently small and insignificant effect, which may be explained by its requirement that students score at least 24 on the ACT. Nationally, just 30 percent of test-takers scored above South Carolina's ACT cutoff in 2000, while 88 percent met Missouri's requirement and about 60 percent met the requirements of Arkansas (19), Florida (20) and Louisiana (19.6).[28] The South Carolina legislature has come under pressure to loosen the scholarship requirements and has responded by adding another route to eligibility. As of 2002, students can qualify for a scholarship by meeting two of three criteria: 24 on the ACT, a GPA of 3.0, and graduating in the top 30 percent of one's high school class.[29] Further, the ACT requirement has been dropped completely for those attending two-year institutions. It will be of

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[28] These figures refer to the national ACT distribution, which has a mean of 21. The Black and Hispanic distributions have lower means, of 16.9 and 19, respectively. Fewer members of these groups will meet the state ACT cutoffs.

[29] Bichevia Green of the South Carolina Commission on Higher Education, telephone communication, June 14, 2002.

interest to see if the effect of South Carolina's program on college attendance rises with this shift in policy.

Next, I examine whether the inclusion of pre-existing time trends affects the results. Pre-existing trends could contaminate the results for both control groups. The merit states may be on different time trends from the non-merit states, and they may be on different trends from each other. I estimate a trend for the entire 1988-2000 period for each state. Deviations from these trends after a state introduces merit aid are then attributed to the new program.[30]

Results are in Columns (3) and (6). As was true in the specification without time trends, the merit-only control group produces somewhat larger estimates. Both approaches indicate that the effect of merit aid evolves over time, with the effect rising from 2.4 percentage points in the first year a program is in effect to 6.0 percentage points in year three and beyond. When the merit states are used as their own control group, the effect rises from 5.1 percentage points in year one to 9.8 percentage points in the third year). Note that these are not cumulative effects, but period-specific program effects.

The effect of merit aid may rise during the first years of a program for several reasons. It may take time for information about the new programs to diffuse. It also takes time for high school students who are inspired to work harder to increase their overall GPAs. Those who are high school seniors when a program is first introduced can do little to increase their cumulative GPAs, while those who are freshmen have four years to increase their effort. The pool of eligible youth may thereby expand over time.

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[30] In this specification, a simple merit dummy will not properly identify the effect of the merit aid program, as such an approach would inappropriately attribute part of the aid-induced change to the trend. We can solve this problem by replacing the merit dummy with either a separate time trend or year effects after merit aid is introduced in a state. Wolfers and Stevenson (forthcoming) use this approach to estimate the effect of divorce law reform, which occurred in different states in different years.

The effect could also *diminish* over time, if many college students fail to qualify for scholarship renewals and their younger peers are discouraged from taking up the scholarship. Further, in the presence of supply constraints, the effect of latecomer programs would be smaller than that of earlier programs, as attendance grows and the supply grows tighter. The results in Table 5 indicate that, across the merit states, the incentive and information effects dominate the discouragement effect.

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The Effect of Merit Aid on College Choice

The analysis of the previous section indicates that the state merit aid programs have increased college attendance. I next examine whether these programs have also affected the choice of college, as was true in Georgia. I use the analytical framework of the previous section, though I will only show results that pool the merit states in order to gain precision. All of the Southern states are included in the sample; results are similar, but less precise, when the sample is limited to the Southern merit states. I show results that do and do not include time trends.

<Table 6>

Table 6 indicates that, overall, the Southern merit programs have had a strong effect on the choice of college, with a considerable shift toward four-year public schools of 4.4 percentage points, which is about the same as the overall attendance effect. There are no effects on other choices of college. As was discussed earlier, this is likely the result of equally-sized shifts toward and away from two-year public schools, by students on the margin of college entry and four-year-college attendance, respectively. The time-trend specification gives similar results, though here there is more indication of a net drop in the probability of attendance at two-year public colleges.

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Do All Merit Aid Programs Have the Distributional Impact of HOPE?

Many of the merit programs are quite new. Of the seven programs examined in Table 5,

three had been operative for fewer than four years by 2000. In this section, I examine the four

more mature programs – those of Georgia, Florida, Arkansas and Mississippi – in greater depth.

An advantage of focusing on the older programs is that these states have sufficient post-program

observations to allow for the finer cuts of the data needed to examine heterogeneity in the effect

of aid across demographic groups. Given the strong impact of HOPE on the racial/ethnic gap in

schooling, it is of interest to examine whether the other programs have had a similar impact.

<Table 7>

In Table 7, I examine how the effect of the four programs varies by race and ethnicity.

The control group is the non-merit states. I show the results of specifications that do and do not

include pre-program time trends.[31] While the estimates do change when time trends are included,

and some are quite imprecisely estimated, a consistent story emerges from the table. The

estimates concord with those of Table 5, which showed that each of these four programs had a

strong impact on the college attendance rate. However, Table 7 shows that the *relative* effects on

Blacks and Hispanics differ substantially across programs. In particular, Georgia is an outlier in

its relatively low effect on Blacks and Hispanics, as compared to its effect on whites.

Georgia's HOPE has had the largest impact of all the state programs on the college

attendance of whites, with the estimated effect ranging from 9.6 to 14.0 percentage points

(without and with time trends, respectively). Analogous effects in the other states are

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[31] In the analysis of each program, four pre-program trends are estimated: two for white, non-Hispanics (one for the treatment state and one for the control states) and two for Blacks/Hispanics (one for the treatment state and one for the control states).

substantially smaller, with no state's estimates for white, non-Hispanics larger than six percentage points. Further, the effect of Georgia HOPE on Blacks and Hispanics is 3.0 to 14.7 points *lower* than the effect on whites. In the other three states, the estimated effect of merit aid on Blacks and Hispanics is consistently *more positive* than its effect on white, non-Hispanics.

This is an important finding, as Georgia is the only program whose distributional effect has been examined in depth, and the assumption has been that, in other states, merit aid would similarly widen the racial gap in college attendance.[32] The results in Table 7 indicate that the other mature merit aid programs have not had this effect, with nearly all of the estimates suggesting that merit aid has actually *narrowed* the gap.

Why is Georgia different? HOPE diverges from the other three programs in two key dimensions. First, of the four programs analyzed in Table 7, Georgia's has the most stringent GPA requirements. Georgia requires a high school GPA of 3.0, while Arkansas and Mississippi require a GPA of only 2.5. Florida's high school GPA requirement is similar to Georgia's, but its renewal requirements are less stringent. While Georgia requires that a HOPE scholar maintain a GPA of 3.0 in college, in Florida a college GPA of 2.75 allows a student to keep her scholarship. A college GPA of 2.75 also qualifies a student for renewal in Arkansas, and only a 2.5 is required in Mississippi.

Scholarship renewal rates for Blacks are substantially lower than those of whites in Georgia, indicating that the college GPA requirement hits them particularly hard. Blacks at the University of Georgia are twice as likely as whites to lose their scholarship after the freshman

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[32] See, for example, Dynarski 2000 and Cornwell, Mustard and Sridhar 2002.

year (Healy 1997). A study at the Georgia Institute of Technology also found that Blacks were substantially more likely than whites to lose their scholarships. This differential disappeared after accounting for differences in ability (as measured by SAT scores) (Dee and Jackson 1999). More generally, since Blacks and Hispanics have relatively low high school and college grades, less stringent GPA requirements will disproportionately benefit this group.

A second key difference between HOPE and the other state programs is its treatment of other sources of aid and associated paperwork requirements for students potentially eligible for aid. During the period under analysis, HOPE was reduced dollar-for-dollar by a student's other aid, and low-income students were required to fill out extensive paperwork in order to establish their eligibility for other aid. The net impact of these requirements was that lower-income students had to work harder for less aid than their well-off counterparts.[35] In stark contrast, Arkansas gives *larger* awards to low-income students, by allowing students who receive the Pell to keep their Academic Challenge Scholarships and by excluding from eligibility students from families with incomes above $55,000.[36]

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[35] Georgia recently eliminated this aspect of its program. As more data become available, it will be of interest to examine whether this change has altered the distributional impact of HOPE.

[36] This is the income cutoff for a family of four. Median income for a family of four in Arkansas is $45,000, so a large share of students fall under these income guidelines.

Additional Effects of Merit Aid on Individuals and Institutions

The analysis in this paper has focused on the effect of merit aid on two critical margins: the decision to attend college and the type of college chosen. I have touched on another outcome that is quite important, at least to legislators: the decision to attend college within one's home state. I have found that merit aid moderately increases college attendance and shifts students from two-year schools toward four-year schools. The data also suggest that Georgia's merit aid program has increased the probability that a student will attend college in her home state. It remains to be determined whether merit aid keeps those students in state after they have completed their education, which is the ultimate goal of legislators who hope to use merit aid to stanch a perceived "brain drain." It also remains to be settled whether the merit programs have increased completed schooling, as opposed to attempted schooling.[37]

There are many other margins of behavior that merit aid may affect. Thoroughly addressing all of these potential effects would expand this lengthy chapter into a lengthy book. Here I will provide a necessarily shallow discussion of these issues.

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Additional Effects of Merit Aid on Individuals

A goal of merit aid is to increase academic effort in high school and college. The carrot of merit aid may cause students to work harder in high school and college in order to qualify for and then maintain their scholarships. This increased effort would be reflected in higher grades,

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[37] Data limitations, rather than conceptual difficulties, hamper the analysis of this particular margin of behavior. At a minimum, we require data on the completed schooling of adults, along with information about the state in which they graduated high school. As of 2002, these data are not available in any survey large enough for informative analysis of the existing merit programs. The 2000 Census micro-data may prove useful in this context, and I am currently examining this question using these data.

test scores and college attendance rates. However, observed academic performance may also improve for unintended reasons, in that pressure from students and parents on teachers may lead to grade inflation at both the high school and college level.

A small literature has examined the effect of merit aid on academic effort. Henry and Rubinstein (2002) show that the average high school GPA of freshmen entering the Georgia public universities rose from 2.73 in 1992 to 2.98 in 1999. In order to test whether this increase reflects greater effort or grade inflation, they examine SAT scores of entering freshmen, which is not subject to the same parental and student pressures as high school grades. The authors find that the average SAT score of entering freshmen in Georgia rose along with grades after HOPE was introduced, from 968 to 1010. While these results are suggestive, they are not conclusive, since this study examines only students in Georgia. It is quite possible that the increases in grades and SAT scores in Georgia are part of a broader secular trend rather than a consequence of HOPE.

Grades at the college level may also be affected by merit aid. First, students may work harder in their courses in order to keep their scholarships. This is an intended effect of the merit programs. Two untended effects may also increase college grades. Professors may feel pressured to give higher grades so as not to threaten their students' continued eligibility for HOPE, and students may choose less demanding courseloads for the same reason. Note that determining whether merit aid increases effort in college is inherently difficult. While the SAT is a well-accepted metric of the preparation of high school students, there is no equivalent instrument used to measure the achievement of college students.

Whether due to increased effort, less demanding courseloads, or grade inflation, college grades at University of Georgia are on the rise, with the proportion of freshmen grades below a B

dropping from 40 percent in 1993 to 27 percent in 1996.[38] In New Mexico, Binder and Ganderton (2002) found support for the hypothesis that this is due, in part, to students taking fewer courses per semester, and therefore concentrating more effort on each course. They found support for the hypothesis that students respond to a merit program by taking on less-demanding courseloads. They found that credit hours per semester dropped after the Success program was introduced. This work on New Mexico is the only conclusive empirical research regarding the question of effect of merit programs on academic effort in college.

Even the largest estimates of the effect of merit aid on schooling decisions suggest that the great majority of aid goes to infra-marginal families – that is, to families whose schooling decisions are unaffected by their receipt of aid.[39] For these families, of interest is which margins of behavior *are* affected by the windfall receipt of scholarship funds. Do students use these funds to reduce the number of hours they work while in school? Do they increase their spending on leisure activities? Do families save the money, for retirement or later bequests to their children? One study suggests that at least part of the money is used for increased current consumption. Cornwell and Mustard (2002) examine new car registrations in Georgia and comparison states and find that car purchases rose faster in Georgia after the introduction of HOPE than before. They reach similar conclusions by examining the correlation between car registrations and the number of HOPE recipients at the county level within Georgia, finding an elasticity of new car registrations with respect to HOPE recipients of about two percent.

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[38] Healy 1997.

[39] It is important to note that merit aid is not unique in this way. Estimates of the effects of other forms of student aid also indicate that aid largely goes to those whose observable schooling decisions are unaffected by the receipt of aid. Targeting of subsidies is a classic topic of public economics; there is no transfer program that is 100 percent effective in limiting its subsidy to those whose decisions are contingent on the receipt of the subsidy.

Impact of Merit Aid on Institutions

Dynarski (2000) compares the cost of attendance (room, board, tuition and fees) at four-year schools in Georgia to that in the rest of the Southeast. She concludes that prices rose faster at public schools in Georgia than in comparable states after HOPE was introduced. Long (2002) subjects this question to a more thorough analysis, controlling for college selectivity and state characteristics. She separately examines the various components of the cost of attendance: tuition, room and board, and institutional financial aid. She finds that the increase in posted schooling prices in Georgia is fully explained by increases in room and board, which are not covered by HOPE. Further, she finds that institutional financial aid dropped as a result of the introduction of HOPE. Long hypothesizes that schools may have been under pressure from the state not to raise tuition, since any increases here would have to be met by increased HOPE outlays. Increases in room and board and drops in aid, however, could slip by with less attention. Private schools faced no such incentives to game the form taken by their price increases, and accordingly their price increases are more evenly divided between tuition, room and board after HOPE.

Cornwell, Mustard and Sridhar (2003) provide insight into how a merit aid program affects the composition of institutions of higher education. They examine enrollment data for two- and four-year colleges in Georgia and the rest of the Southeast. Their empirical results show how the changing schooling choices of Georgia's young people translated into major shifts in the demographic composition of Georgia's schools. They find that enrollment expanded after the introduction of HOPE, relative to enrollment in comparable states. They also find a sharp rise in the enrollment of black students at Georgia's four-year colleges. Given the relatively small

increase in the college attendance rate of Blacks found in the present analysis, their increased presence at Georgia's four-year colleges likely reflects a shifting of Black students from out-of-state colleges to Georgia schools.

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The Politics and Finance of Merit Aid

State merit aid programs grew during the Nineties, a period characterized by strong economic growth and overflowing state coffers. Recently, merit programs have begun to feel the pinch of the recent economic downturn. As state legislators struggle to balance their budgets, merit aid programs dependent upon legislative appropriations (Arkansas, California, Louisiana, Maryland and Mississippi) find themselves in direct competition with other state priorities such as elementary and secondary education and health care. Arkansas, the first state to introduce a broad-based merit aid program, has temporarily closed the program to new enrollees. While current scholarship recipients can renew their awards, no new students are being admitted to the program. Funding for Louisiana's program barely avoided the chopping block during the state's last legislative session.

Those merit programs with committed revenue streams have been relatively buffered from the economic and political effects of the recession. Six states (Florida, Georgia, New Mexico, West Virginia, South Carolina and Kentucky) fund their programs with revenues from a state lottery, while two (Nevada and Michigan) use funds from the tobacco litigation settlement. With their dedicated funding sources, merit aid in these states is not vulnerable to legislators seeking to cut spending in the face of sinking tax revenues. This puts merit aid in a unique position, since other sources of funding for higher education at the state level are not protected in the same way. For example, public universities are experiencing leaner times this fiscal year as

their state appropriations are reduced. Aid for low-income students is also vulnerable. West Virginia's need-based aid program could not deliver scholarships to all those low-income students who were eligible during the 2002-2003 academic year. The same year, the state's new merit program, which has no income cap, was launched with full funding.

A similar dynamic has emerged at the federal level. The fastest-growing subsidies for college students – tax credits, savings tax incentives, and loans –are programs whose funding is not contingent upon legislative appropriation. By contrast, spending on the Pell Grant program, which funds the most needy students, is determined by annual legislative appropriation.

While lottery funding protects merit aid funding from downturns in tax revenue and associated drops in appropriations, using lotteries to fund merit scholarship is a particularly regressive form of redistribution. The high-achieving college students who receive merit funds are relatively likely to be white and from upper-income families. Lottery spenders, by contrast, tend to be disproportionately concentrated in the bottom of the income distribution. Through both the revenue and spending channels, then, lottery-funded merit programs are regressive in their impact.

Why have merit aid programs spread so rapidly and maintained such strong political support? One possibility is that merit aid is a politically astute way to build support for spending on postsecondary education. Consider three alternatives for subsidizing college: merit aid, subsidized public tuition and need-based aid. Merit aid has a political advantage over low tuition in that it has a high profile. Parents (voters) generally do not understand that the public university tuition they pay is kept artificially low by state appropriations to the schools. As a result, they may be unsympathetic to legislative efforts to increase funding through this route. If, instead, their child receives a "scholarship" that pays for tuition, the perceived benefit is personal and

immediate, inducing political support for the spending. This gives merit and need-based aid a political edge over tuition subsidies as politically-viable methods of subsidizing college costs.

A second dynamic gives merit aid an edge over the other subsidy options. Since students "earn" merit aid, families may feel a more personal connection to the program and fight for its continuation. In this way, a merit program is akin to Social Security: in both cases, voters are fiercely supportive of transfers that they perceive as earned rewards rather than unconditional entitlements.

A third political advantage of merit aid, again held in common with Social Security, is that it is broad-based in its constituency. In most states, students of any income level qualify for a merit scholarship as long as they earn the required grades. All families are therefore potential recipients of, and political supporters of, merit aid scholarships. By contrast, the bulk of need-based aid flows to a relatively narrow slice of the population. The price of this highly progressive spending on need-based aid is that many voters do not perceive themselves as its potential beneficiaries. William Julius Wilson (1987) and Theda Skocpol (1991) have argued that robust welfare states are characterized by benefits that are widely available and, therefore, widely supported. They argue that means-tested anti-poverty programs are politically weak because their scope is narrow. A similar dynamic could explain strong political support for merit aid paired with weak political support for need-based aid.

Do these political realities indicate that a progressive aid system is politically unviable? Skocpol and Wilson point out that politically popular "universal" programs can provide political cover for redistributive transfers. As Social Security shows, a universal program can be layered with transfers that channel extra dollars toward those with greater need. This does not necessarily require new spending, as existing need-based programs could simply be relabeled in

a way that enhances their political viability. For example, federal need-based grants could be delivered to needy students through the tax system by making the Hope and Lifetime Learning tax credits refundable.[40] This would eliminate one layer of paperwork (the FAFSA) yet allow aid eligibility to still be determined with the detailed financial information that is provided in tax filings. More importantly, funding for low-income students would be shifted into a program with broad-based political appeal and a guaranteed funding stream.

Conclusion

This paper has examined how merit aid programs in seven states have affected an array of schooling decisions, with particular attention to how the effects have varied by race and ethnicity. I find that merit aid programs typically increase the attendance probability of college-age youth by five to seven percentage points. The programs are therefore effective at getting more students into college. In fact, as I discuss below, the merit programs appear to be *more* effective than need-based aid at achieving this goal.

The merit programs also shift students toward four-year schools and away from two-year schools. Why? Four-year colleges are far more expensive than two-year colleges, but merit aid programs generally reduces the direct cost (tuition and required fees) of each option to zero. It is therefore expected that a greater proportion of students would choose the four-year option than they would in the absence of merit aid. An open question is whether this shift toward four-year colleges is socially beneficial. Four-year colleges are more expensive to run than two-year colleges, and so a shift toward these schools will increase the total cost of educating college

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[40] Those who assail the need-based aid system for its complex application process will likely be horrified by this suggestion, as the federal tax system is also notoriously complex. But the Earned Income Tax Credit has proved to be an effective mechanism for transferring money to low-income families, and a refundable education tax credit has the potential to do the same for low-income students.

students. Further, marginal students who cannot handle the rigors of a four-year college may drop out of school altogether, whereas at a two-year institution they may have received the support they needed to persist. A countervailing factor is that some students who would not have considered going on for a BA will do so once they are enrolled in a four-year school.[41] The current analysis does not allow us to address which of these effects dominates.

The merit programs also appear to close racial and ethnic gaps in schooling, at least in three of the four states whose programs are old enough to allow analysis by race. Merit aid programs in Arkansas, Florida and Mississippi have closed gaps, with Georgia's the only program to widen them. I attribute the Georgia program's unique distributional effect to its relatively stringent academic requirements and a recently eliminated provision that channeled the most generous scholarships to higher-income students. This leaves open the question, however, of why merit aid does not simply have a race-*neutral* effect on schooling in states that do not have Georgia's unusual provisions.

One candidate explanation for the role of merit aid in closing gaps in schooling is the simplicity and transparency of these programs. First, these programs are well publicized and knowledge among potential recipients unusually high; one survey found that 70 percent of Georgia high school freshmen could name the HOPE program without prompting, while 59 percent could identify its eligibility requirements.[42] Second, unlike need-based aid, merit aid programs have minimal application procedures, and the applicant knows at the time of application both whether he is eligible and the amount of the award. By contrast, need-based aid requires that the applicant complete a complicated set of forms and wait for months to find out the actual award amount, which is a complicated function of family finances.

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[41] Rouse 1995 addresses the effect of community colleges on college entry and completion.
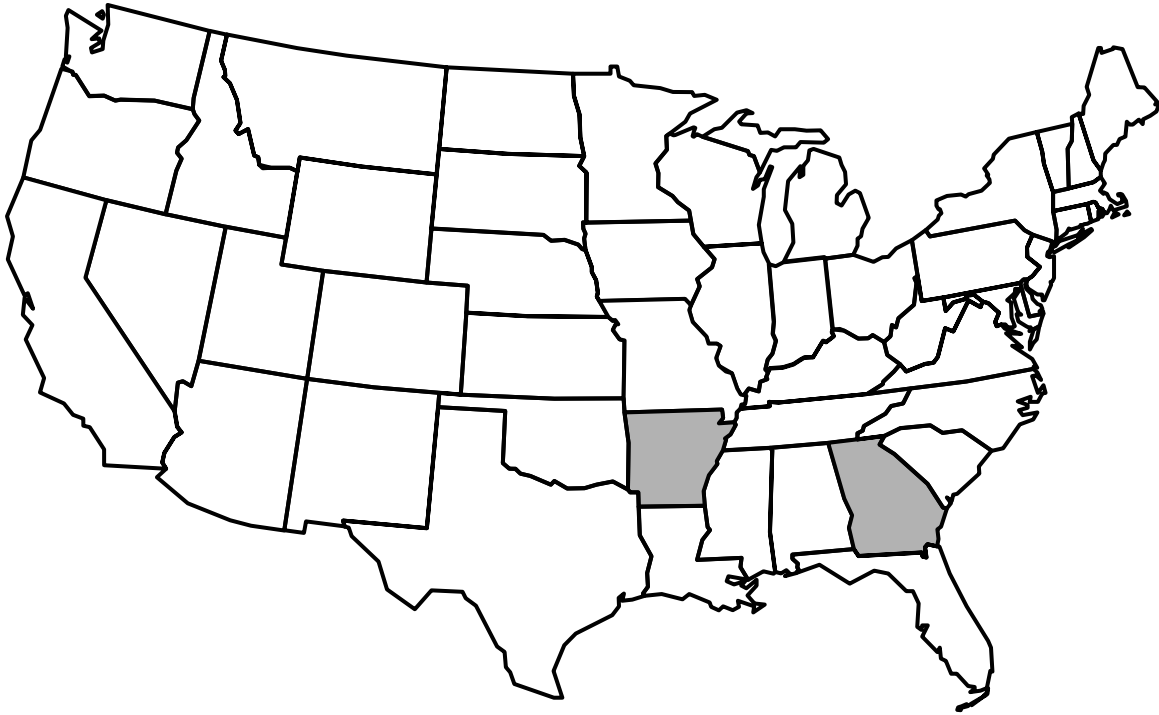
[42] Henry et al. (1998).

Collecting information about college costs and completing application forms may be particularly challenging to parents for whom English is a second language or who have not gone to college themselves. A program with low transaction and information costs may therefore find a particularly large response among non-white, low-income populations. This strong response among the eligible may more than compensate for the fact that a smaller proportion of nonwhites meet the academic requirements of merit aid.

This interpretation of the present results is consistent with a set of studies that have shown little effect of the need-based Pell Grant on schooling decisions (e.g., Kane 1995 and Hansen 1983) but a large effect of simpler, more transparent subsidy programs (e.g., Dynarski 2003 on the Social Security student benefit program and Kane 1994 on tuition prices). Kane and Hansen both find no impact of the need-based Pell Grant on college attendance. By contrast, Kane, in his 1994 study, finds that tuition prices have a substantial impact on college attendance. Dynarski finds that the Social Security student benefit program, which had minimal application requirements, had a large impact on college attendance and completed schooling.

While a benefit of a program with few paperwork requirements is that it may move more youth into school, a cost is the loss of targeting. Unlike the Pell Grant, a merit aid program subsidizes many middle- and upper-income students. A merit aid program is therefore relatively costly to run than need-based aid. However, a merit aid program is no more costly than subsidized public tuition prices, which also benefit students regardless of income. Further, as was discussed earlier in this chapter, merit aid has a substantial advantage over both need-based aid and subsidized tuition in that it has a broad and loyal base of political support in states that have introduced the programs.

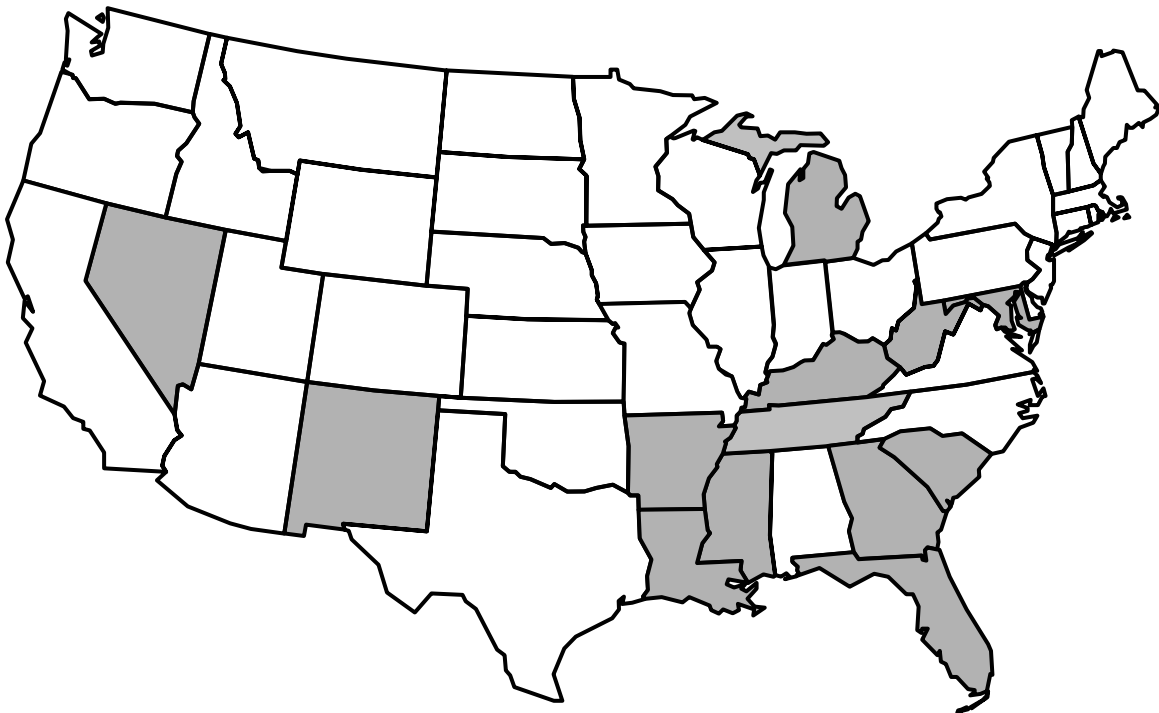Figure 1: States With Broad-Based Merit Aid Programs

1993

2003

Figure 2a: Does Measurement Error in State of Residence Bias the Estimates?
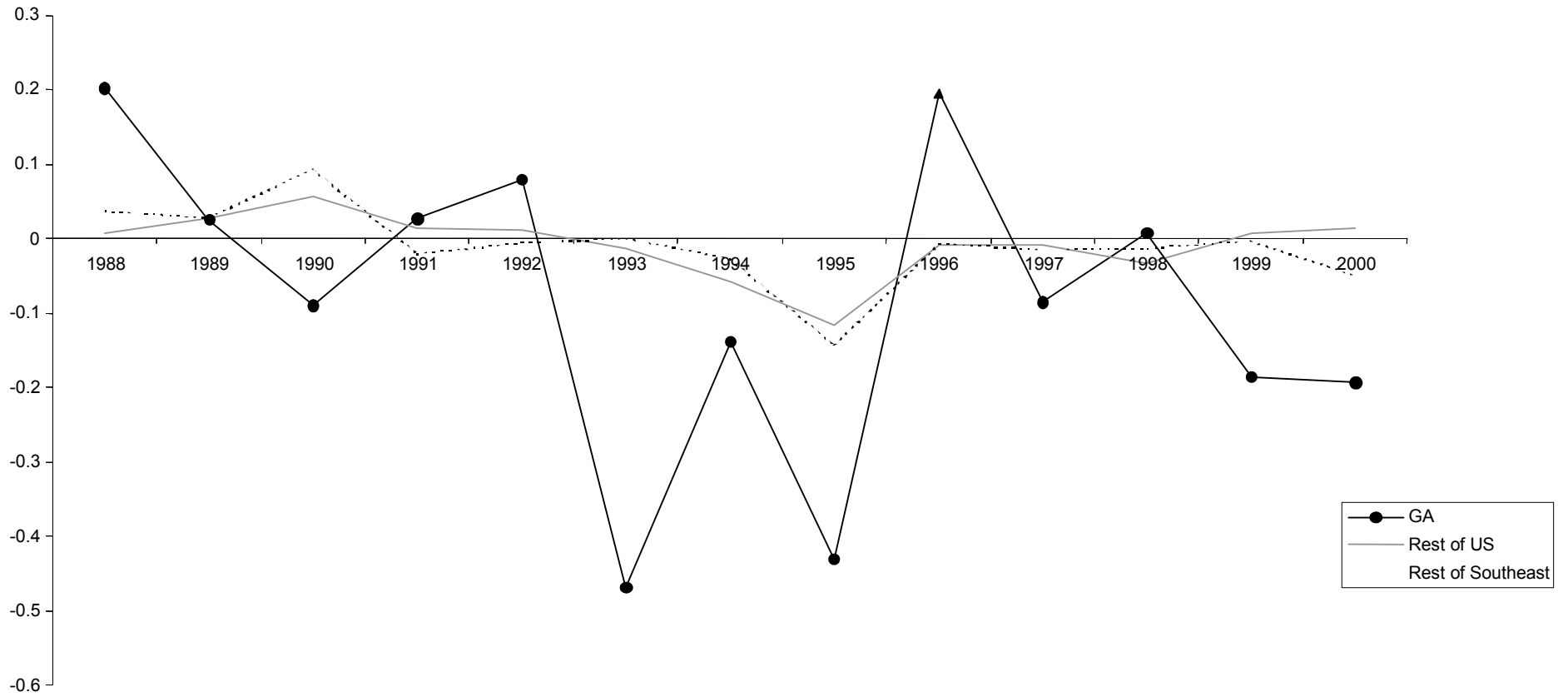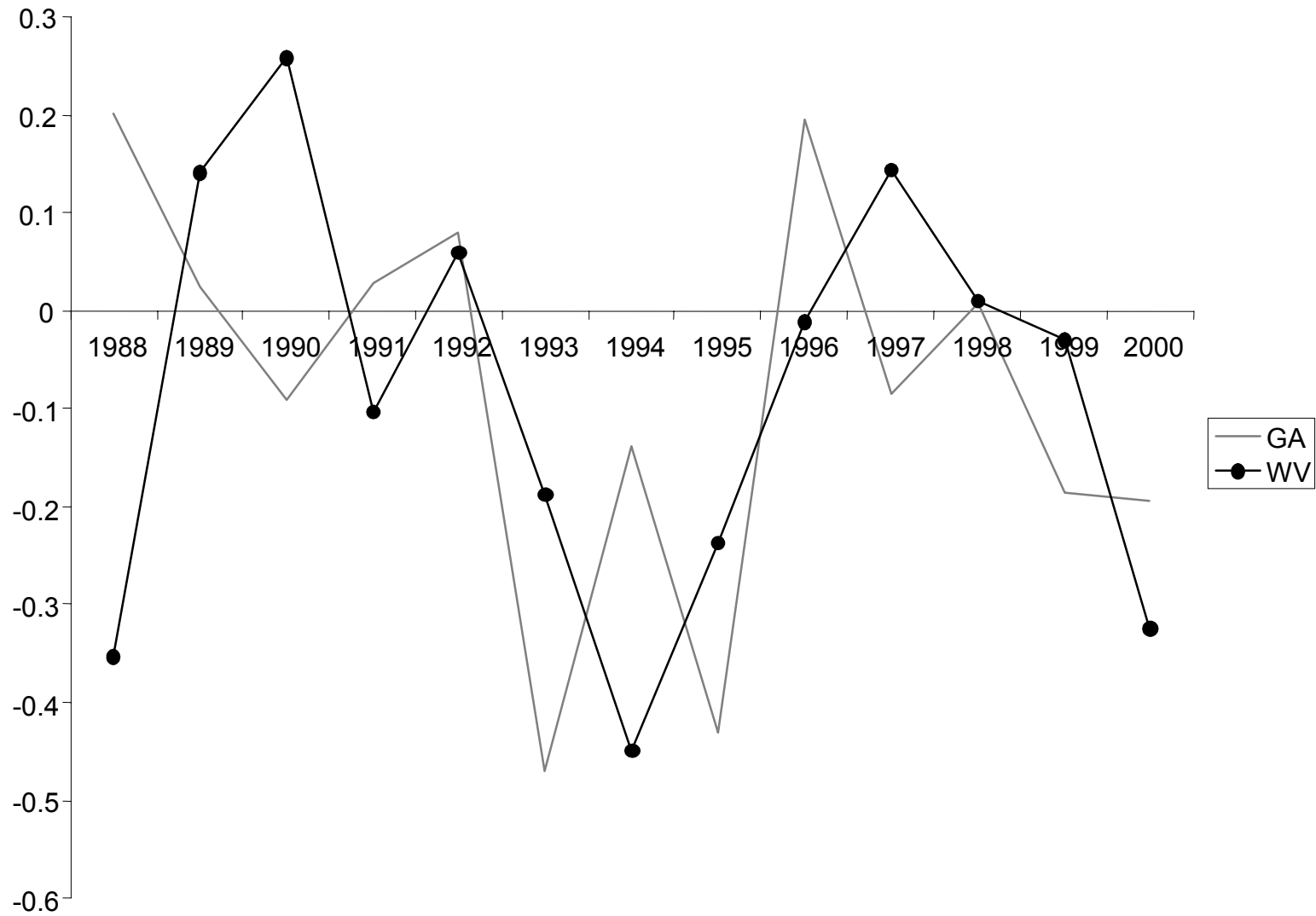
Figure 2b: Does Measurement Error in State of Residence Bias the Estimates?

Figure 3:
University System of Georgia Students
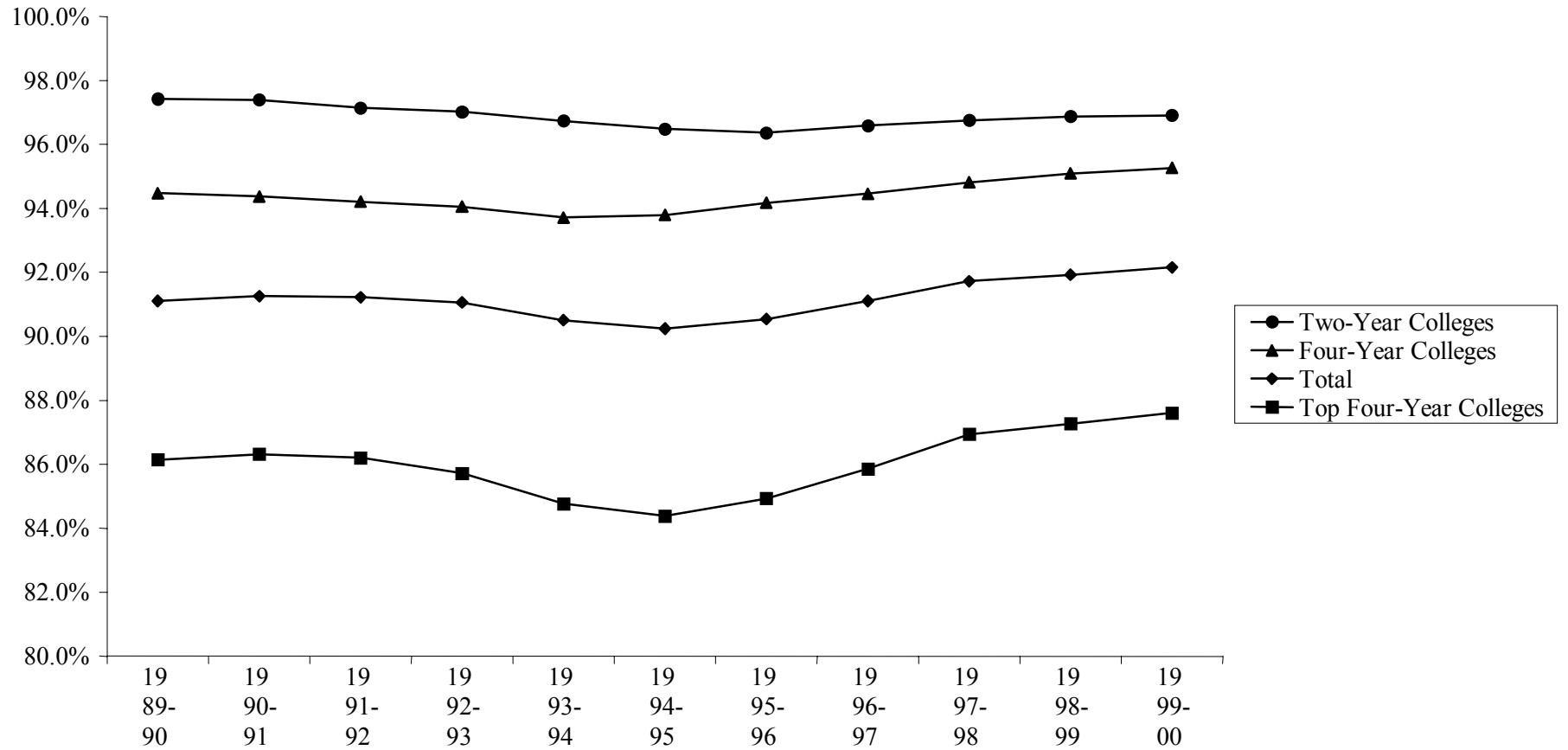**Georgia Residents as Share of Total Enrollment**

Figure 4:
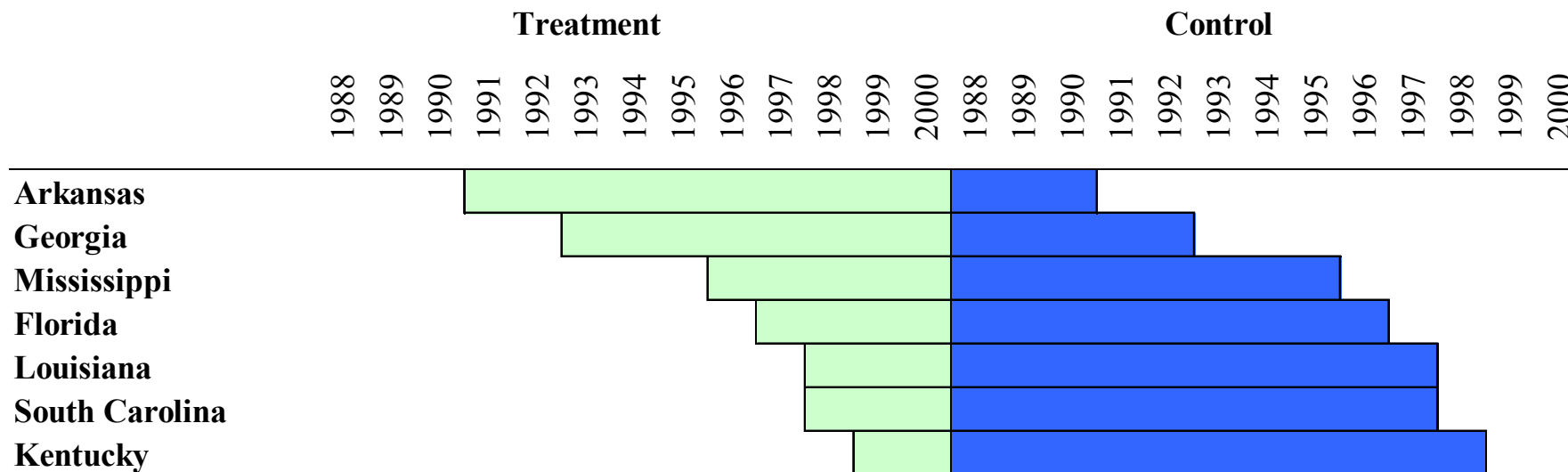Timing of Introduction of State Merit Programs

Table 1: Merit Aid Program Characteristics, 2003

State	Start	Eligibility	Award *in-state attendance only, exceptions noted*
Arkansas	1991	initial: 2.5 GPA in HS core & 19 ACT renew: 2.75 college GPA	public: $2,500 private: same
Florida	1997	initial: 3.0-3.5 HS GPA & 970-1270 SAT/20-28 ACT renew: 2.75-3.0 college GPA	public: 75-100% tuition/fees* private: 75-100% avg public tuition/fees*
Georgia	1993	initial: 3.0 HS GPA renew: 3.0 college GPA	public: tuition/fees private: $3,000
Kentucky	1999	initial: 2.5 HS GPA renew: 2.5-3.0 college GPA	public: $500-3,000* private: same
Louisiana	1998	initial: 2.5-3.5 HS GPA & ACT > state mean renew: 2.3 college GPA	public: tuition/fees + $400-800* private: avg public tuition/fees*
Maryland	2002	initial: 3.0 HS GPA in core renew: 3.0 college GPA	2-yr school - $1,000 4-yr school - $3,000
Michigan	2000	initial: level 2 of MEAP or 75th pctile of SAT/ACT renew: NA	in-state: $2,500 once out-of-state: $1,000 once
Mississippi	1996	initial: 2.5 GPA & 15 ACT renew: 2.5 college GPA	public fresh/soph: $500 public jr/sr: $1,000 private: same
Nevada	2000	initial: 3.0 GPA & pass Nevada HS exam renew: 2.0 college GPA	public 4 yr: tuition/fees (max $2,500) public 2-yr: tuition/fees (max $1,900) private: none
New Mexico	1997	initial: 2.5 GPA 1st semester of college renew: 2.5 college GPA	public: tuition/fees private: none
S. Carolina	1998	initial: 3.0 GPA & 1100 SAT/24 ACT renew: 3.0 college GPA	2-yr school - $1,000 4-yr school - $2,000
Tennessee	2003	initial: 3.0-3.75 GPA & 890-1280 SAT/19-29 ACT renew: 3.0 college GPA	2-yr school - tuition/fees ($1,500-2,500)* 4-yr school - tuition/fees ($3,000-4,000)*
W. Virginia	2002	initial: 3.0 HS GPA in core & 1000 SAT/21 ACT renew: 2.75-3.0 college GPA	public: tuition/fees private: avg public tuition/fees

*Amount of award rises with GPA and/or test score.

Table 2:
Estimated Effect of Georgia Hope Scholarship
on College Attendance of 18-19-Year-Olds
Southern Census Region

	(1)	(2)	(3)	(4)
HOPE Scholarship	.086 (.008)	.085 (.013)	.085 (.013)	.069 (.019)
Merit Program in Border State			-.005 (.013)	-.006 (.013)
State and Year Effects	Y	Y	Y	Y
Median Family Income		Y	Y	Y
Unemployment Rate		Y	Y	Y
Interactions of Year Effects w/: Black, Metro, Hispanic		Y	Y	Y
Time Trends				Y
R^2	.020	.059	.059	.056
N	8,999	8,999	8,999	8,999

Note: Regressions are weighted by CPS sample weights. Standard errors are adjusted for heteroskedasticity and correlation within state cells. Sample consists of 18- to 19-year-olds in Southern Census region, excluding states (other than Georgia) that introduce merit programs by 2000. See Table 1 for a list of these states.

Table 3:
Effect of Georgia Hope Scholarship on Schooling Decisions
October CPS, 1988-2000
Southern Census Region
N=8,999

	(1) College Attendance	(2) 2-year Public	(3) 2-year Private	(4) 4-year Public	(5) 4-year Private
No Time Trends					
Hope Scholarship	.085 (.013)	-.018 (.010)	.015 (.002)	.045 (.015)	.022 (.007)
R^2	.059	.026	.010	.039	.026
Add Time Trends					
Hope Scholarship	.069 (.019)	-.055 (.013)	.014 (.004)	.084 (.023)	.028 (.016)
R^2	.056	.026	.010	.029	.026
Mean of Dependent Variable	.407	.122	.008	.212	.061

Note: Specification in top panel is that of Column (3) in Table 2. Specification in bottom panel adds trends estimated on pre-treatment data. In each column, two separate trends are included, one for Georgia and one for the rest of the states. Sample consists of 18- to 19-year-olds in Southern Census region, excluding states (other than Georgia) that introduce a merit program by 2000.

Table 4:
Effect of Georgia Hope Scholarship on College Attendance
Analysis by Race and Ethnicity
October CPS, 1988-2000
Southern Census Region

	No Time Trends	Time Trends
Merit Program	.096 (.014)	.140 (.013)
Merit*Black/ Hispanic	-.030 (.023)	.-147 (.039)
R^2	.059	.056

Note: Specification in first column is that of Column (3) in Table 2. Specification in second column adds trends estimated on pre-treatment data. Separate trends are included for four groups: white-control, white-treat, nonwhite-control and nonwhite-treat. Sample consists of 18- to 19-year-olds in Southern Census region, excluding states other than Georgia that introduce a merit program by 2000.

Table 5:
Effect of All Southern Merit Programs
on College Attendance of 18-19-Year-Olds

	All Southern States N=13,965			Southern Merit States Only N=5,640		
	(1)	(2)	(3)	(4)	(5)	(6)
Merit Program	.047 (.011)			.052 (.018)		
Merit Program, Arkansas		.048 (.015)			.016 (.014)	
Merit Program, Florida		.030 (.014)			.063 (.031)	
Merit Program, Georgia		.074 (.010)			.068 (.014)	
Merit Program, Kentucky		.073 (.025)			.063 (.047)	
Merit Program, Louisiana		.060 (.012)			.058 (.022)	
Merit Program, Mississippi		.049 (.014)			.022 (.018)	
Merit Program, South Carolina		.004 (.013)			.014 (.023)	
Merit Program, Year 1			.024 (.019)			.051 (.027)
Merit Program, Year 2			.010 (.032)			.043 (.024)
Merit Program, Year 3 and after			.060 (.030)			.098 (.039)
State Time Trends			Y			Y
R^2	.046	.046	.047	.035	.036	.036

Note: Specification is that of Column (3) in Table 2, with the addition of state time trends where noted. Sample consists of 18- to 19-year-olds in Southern Census region, with the last three columns excluding states that have not introduced a merit program by 2000.

Table 6:
Effect of All Southern Merit Programs
on Schooling Decisions of 18-19-Year-Olds
All Southern States
N=13,965

	(1) College Attendance	(2) 2-Year Public	(3) 2-Year Private	(4) 4-Year Public	(5) 4-Year Private
	No Time Trends				
Merit Program	.047 (.011)	-.010 (.008)	.004 (.004)	.044 (.014)	.005 (.009)
R^2	.046	.030	.007	.030	.020
	State Time Trends				
Merit Program, Year 1	.024 (.019)	-.025 (.012)	.009 (.005)	.034 (.012)	.010 (.007)
Merit Program, Year 2	.010 (.032)	-.015 (.018)	.002 (.003)	.028 (.035)	-.001 (.011)
Merit Program, Year 3 and after	.060 (.030)	-.037 (.013)	.005 (.003)	.065 (.024)	.022 (.010)
R^2	.047	.031	.009	.032	.022

Note: Specification is that of Column (3) in Table 2, with the addition of state time trends where noted. Sample consists of 18- to 19-year-olds in Southern Census region. Estimates are similar but less precise when sample is limited to Southern merit states.

Table 7:
Effect of Merit Aid on College Attendance
Analysis by Race and Ethnicity
October CPS, 1988-2000
Southern Census Region

	(1) Georgia N=8,999	(2) Florida N=10,213	(3) Arkansas N=8,949	(4) Mississippi N=8,969
No Time Trends				
Merit Program	.096 (.014)	.001 (.022)	.054 (.023)	.002 (.011)
Merit*Black/ Hispanic	-.030 (.020)	.077 (.021)	.045 (.026)	.120 (.032)
R^2	.059	.055	.061	.058
Time Trends				
Merit Program	.140 (.013)	.030 (.021)	.060 (.024)	.016 (.015)
Merit*Black/ Hispanic	.-147 (.039)	.000 (.030)	.043 (.043)	.083 (.033)
R^2	.056	.052	.059	.055

Note: Specification in top panel is that of Column (3) in Table 2. Specification in bottom panel adds trends estimated on pre-treatment data. In each column, separate trends are included for four groups: white-control, white-treat, nonwhite-control and nonwhite-treat. In each column, sample consists of 18- to 19-year-olds in Southern Census region, excluding states (other than the treatment state) that introduce a merit program by 2000.

References

Bell, Julie Davis and DeMaree Michelau. 2001. Making College Affordable. *Legislatures Magazine*, National Conference of State Legislatures. November.

Berker, Ali Murat. 2001. "The Impact of Merit-Based Aid on College Enrollment: Evidence from "HOPE-Like Scholarship Programs." Unpublished working paper, Michigan State University.

Bertrand, Marianne, Esther Duflo and Sendil Mullainathan. 2002. "How Much Should We Trust Differences-in-Differences Estimates?" Working Paper #8841, National Bureau of Economic Research.

Binder, Melissa and Philip Ganderton. 2002. Incentive Effects of New Mexico's Merit-Based State Scholarship Program: Who Responds and How? in *Who Should We Help?The Negative Social Consequences of Merit Scholarships.* Report by The Civil Rights Project. Cambridge, MA: Harvard University,

Bugler, Daniel and Gary Henry. 1997. "Evaluating the Georgia HOPE Scholarship Program: Impact on Students Attending Public Colleges and Universities." Unpublished manuscript, Council for School Performance, Georgia State University.

Bugler, Daniel and Gary Henry. 1998. "An Evaluation of Georgia's HOPE Scholarship Program: Impact on College Attendance and Performance." Unpublished manuscript, Council for School Performance, Georgia State University.

Byron, Kris and Gary Henry. 1996. "Report on the Expenditure of Lottery Funds Fiscal Year 1996." Unpublished manuscript, Council for School Performance, Georgia State University.

Byron, Kris and Gary Henry. 1997. "Report on the Expenditure of Lottery Funds Fiscal Year 1997." Unpublished manuscript, Council for School Performance, Georgia State University.

Byron, Kris and Gary Henry. 1998. "Report on the Expenditure of Lottery Funds Fiscal Year 1998." Unpublished manuscript, Council for School Performance, Georgia State University.

Cameron, Stephen and James Heckman. 1999. Can Tuition Policy Combat Rising Wage Inequality?. In., *Financing College Tuition: Government Politics and Educational Priorities*. Edited by Marvin Kosters. Washington, D.C.: American Enterprise Institute.

Clotfelter, Charles T., Philip J. Cook, et. al. 1999. State Lotteries at the Turn of the Century. Report to the National Gambling Impact Study Commission.

College Board. 1998. *Trends in Student Aid.* New York: College Board Publications.

Cornwell, Christopher and David Mustard. 2002. Merit-Based College Scholarships and Car Sales. Research Paper, University of Georgia.

Cornwell, Christopher, David Mustard and Deepa Sridhar. 2003. The Enrollment Effects of Merit-Based Financial Aid: Evidence from Georgia's HOPE Scholarship Program. Research Paper, University of Georgia.

Currie, Janet and Enrico Moretti. Forthcoming. Mother's Education and the Intergenerational Transmission of Human Capital: Evidence from College Openings. Quarterly Journal of Economics.

Dee, Thomas. 2002. Are There Civic Returns to Education? Working Paper #9588, National Bureau of Economic Research.

Dee, Thomas and Linda Jackson. 1999. Who Loses Hope? Attrition from Georgia's College Scholarship Program. Southern Economic Journal 66 (2): 379-90.

Dynarski, Susan. 1999. Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion. Working Paper #7422, National Bureau of Economic Research.

Dynarski, Susan. 2000. Hope for Whom? Financial Aid for the Middle Class and Its Impact on College Attendance. National Tax Journal (September) .

Dynarski, Susan. 2002. The Behavioral and Distributional Consequences of Aid for College. American Economic Review (May) .

Dynarski, Susan. 2003. Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion. American Economic Review (March).

Ellwood, David and Thomas Kane. 2000. Who Is Getting a College Education? Family Background and the Growing Gaps in Enrollment. In *Securing the Future*. Edited by Sheldon Danziger and Jane Waldfogel. New York: Russell Sage.

Hansen, W. Lee. 1983. The Impact of Student Financial Aid on Access. In *The Crisis in Higher Education*. Edited by Joseph Froomkin. New York: Academy of Political Science.

Healy, Patrick. 1997. HOPE Scholarships Transform the University of Georgia. *The Chronicle of Higher Education* (November 7): A32.

Henry, Gary et.al. 1998. Hope Longitudinal Study, First-Year Results. Unpublished manuscript. Council for School Performance, Georgia State University.

Henry, Gary and Ross Rubenstein. 2002. Paying for Grades: Impact of Merit-Based Financial Aid on Educational Quality. Journal of Policy Analysis and Management 21 (1): 93-109.

Jaffe, Greg. 1997. Free for All: Georgia's Scholarships Are Open to Everyone, and That's a Problem. *The Wall Street Journal* (June 2): 1.

Kane, Thomas. 1994. College Entry by Blacks since 1970: The Role of College Costs, Family Background, and the Returns to Education. Journal of Political Economy 102 (5): 878-911.

------. 1995. Rising Public College Tuition and College Entry: How Well Do Public Subsidies Promote Access to College? Working Paper #5164, National Bureau of Economic Research.

------. 2003. A Quasi-Experimental Estimate of the Impact of Financial Aid on College-Going. Working Paper #9703, National Bureau of Economic Research.

Leslie, Larry and Paul Brinkman. 1988. *The Economic Value of Higher Education*. New York: Macmillan.

Long, Bridget Terry. 2002. Merit-Based Financial Aid and College Tuition: The Case of Georgia's HOPE Scholarship. Unpublished Manuscript, Harvard University.

National Center for Education Statistics, US Department of Education.1995. *Making the Cut: Who Meets Highly Selective College Entrance Criteria?* Washington, D.C.: Government Printing Office.

------. 1997. *Digest of Education Statistics*. Washington, D.C.: Government Printing Office.

------. 1998a. *Digest of Education Statistics*. Washington, D.C.: Government Printing Office.

------. 1998b. *State Comparisons of Education Statistics: 1969-70 to 1996-97*. Washington, D.C.: Government Printing Office.

Rouse, Cecilia. 1995. Democratization or Diversion? The Effect of Community Colleges on Educational Attainment. Journal of Business and Economic Statistics 13 (2): 217-224.

Rubenstein, Ross and Benjamin Scafidi. 2002. Who Pays and Who Benefits? Examining the Distributional Consequences of the Georgia Lottery for Education. National Tax Journal 55 (2): 223-238.

Selingo, Jeff. 2001. Questioning the Merit of Merit Scholarships. *Chronicle of Higher Education* (January 19): A20.

Skocpol, Theda. 1991. Targeting within Universalism: Politically Viable Policies to Combat Poverty in the United States. In *The Urban Underclass*. Edited by Christopher Jencks and Paul Peterson. Washington, D.C.: Brookings Institution.

Wilson, William Julius. 1987. *The Truly Disadvantaged*. Chicago: University of Chicago Press.

Wolfers, Justin and Betty Stevenson. forthcoming. 'Til Death Do Us Part: The Effect of Divorce Laws on Suicide, Domestic Violence and Intimate Homicide. Journal of Political Economy.