

STATE-SPONSORED MERIT SCHOLARSHIP PROGRAMS:

Do They Reverse the Trend of Brain Drain?

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Abstract

Many states across the U.S. have been highly concerned with the idea that their best and brightest are fleeing to another state, the so called “brain drain.” One proposed solution, a sweeping state-sponsored merit scholarship program, was first implemented with the Helping Outstanding Pupils Educationally (HOPE) program in Georgia, but has since expanded to 26 other states, despite previous literature finding negative unintended consequences, such as a regressive redistribution of wealth and an increase in the racial divide. Previous literature has focused on those unintended consequences, neglecting to evaluate the programs on their intended consequence of ending brain drain. This study investigates that exact question using cross-sectional time series data from 1990 to 2007. Results suggest that state-sponsored merit scholarship programs such as HOPE on brain drain by operationalizing the quality of a state's workforce in the number of degrees conferred, educational attainment, and gross state production. These results are robust to a series of sensitivity tests.

Introduction

In 1993 Georgia introduced a new statewide policy, the Helping Outstanding Pupils Educationally (HOPE) program, sparking a change from a system that dispersed financial aid entirely based on need to a system based on merit. This change in policy was largely designed to end a phenomenon referred to as brain drain that was being faced by states such as Georgia. The term “brain drain” expresses the concept that a state is losing its brightest or highest educated population, either after high school or after college, to other states offering more opportunities. Merit based scholarships, more than their need based counterparts, were supposed to target a state's academically superior population and, therefore, have a greater positive impact on a state's workforce, ending the problem of brain drain.

As the first state-sponsored merit based scholarship program, Georgia's HOPE program provided a model for other state-sponsored merit scholarship programs. HOPE is structured to provide a scholarship to cover tuition and fees and a stipend for books to Georgia residents who earn at least a 3.0 grade point average in high school and maintain satisfactory progress in college. The program has been heavily used; it disbursed \$21.4 million dollars in scholarship money to 42,797 students in the 1993-94 school year alone (Georgia Student Finance Commission [GSFC]). Since its inception, the HOPE program has awarded a total of \$4.3 billion dollars in scholarship money to public, private, and technical colleges for over one million students (GSFC).

Other states were soon to follow. In the fifteen years since HOPE was created, 26 other states have started their own state-sponsored merit scholarship program similar to HOPE

(National Association of State Student Grant and Aid Programs [NASSGAP]). Collectively, states spent over \$1.6 billion dollars on merit-only grant programs during the 2006-07 school year, 20 percent of the total spent on all types of financial aid by all states (NASSGAP).

With 41 states facing budget shortfalls in 2008 or 2009 (McNichol and Lav, 2008), many states will be looking to cut spending. To reconcile their budget deficits, states would be wise to look for ineffective or inefficient programs. This makes the evaluation of expensive HOPE programs an important study for policymakers at the state level facing difficult choices on which programs to fund.

A basic way to scrutinize state-sponsored merit scholarship programs is to test whether the programs have accomplished the goals that were set in adopting a program. For state-sponsored merit scholarship programs, this means determining whether states with the program have raised high school achievement, decreased college dropout rates, helped the most capable students attend college, and, perhaps the most ubiquitous reasoning for enacting the programs, stopped brain drain. This study will evaluate these state-sponsored merit scholarship programs on the basis of whether they reverse the trend of brain drain. Brain drain, as studied on the international scale, is the concept of a country losing its highly-educated population to places of more opportunity, resulting in an economic loss for the state as a whole (Beine et al., 2003). This same definition can be applied to states.

State policymakers have made their expectations for state-sponsored merit scholarship programs' effect on brain drain clear. Governor Mitch Daniels of Indiana, when referring to the creation of his state's merit scholarship program, expressed the hope of many governors across

American when he said, “Let's make the dreary term 'brain drain' a forgotten phrase” (Martin, February 6 2007). Recent talk of reforming the Bright Futures scholarship program in Florida has led some to remember the arguments for its inception, first among them is brain drain (Zaragoza, January 15 2009). Prior to the inception of HOPE some observers suggested that policymakers began the process by asking how to stop brain drain and arrived at the conclusion providing merit scholarships, although not on the level that was instituted in recent state-sponsored merit scholarship programs. (Jaschik, 1987)

States enacted the state-sponsored merit scholarship programs with the idea that the program would stem the tide of brain drain and keep more of their brightest students within the state. The underlying idea said that if the state offered a financial incentive to remain in the state for college, then students who would normally have left the state to attend college might remain in-state. The hope, then, is that after college more of those students would settle in the state. This is why states required their students to attend one of the state's own universities to receive the scholarship from the state-sponsored program. Unfortunately for the states, it is unclear if this is an effective means of keeping more college graduates in-state. Young single professionals with college degrees are more likely to move between states than any other demographic (Franklin, 2003). Another line of reasoning stated that with a state-sponsored merit scholarship program in place more professionals with a college degree would migrate to take advantage of the program for their children.

Generally, this study asks if state-sponsored merit scholarship programs reverse the trend of brain drain within a state. The idea of brain drain is broad and vague and must be approached

in a systematic way to study it. Therefore, this study asks if state-sponsored merit scholarship programs are effective in improving the quality of a state's workforce. As it was the objective of the program upon implementation, the hypothesis is that state-sponsored merit scholarship programs reverse the trend of brain drain, which will be observed via an increase in the quality of a state's workforce.

Background

Merit-based scholarships in general, and specifically state-sponsored programs, have been roundly criticized in previous literature for increasing wealth gaps and racial inequality. Previous literature, while critical of the programs' social consequences, has recognized some of their educational benefits. The literature has shown that state-sponsored merit scholarship programs encourage high school achievement and college enrollment. The literature on whether the scholarship programs stymie brain drain, however, is weak. This study, therefore, fills the gap in the literature evaluating state-sponsored merit scholarship programs on the programs' foremost goal of reversing the trend of brain drain.

The most developed portion of the literature on state-sponsored merit scholarships explores the programs' negative social consequences. Four different studies have suggested the scholarship programs' tendency to redistribute wealth from the poor to the middle and upper classes. Dynarski (2002) first applies studies conducted on Pell Grant and the GI Bill to show that it is typically students with more wealth that take advantage of open scholarship programs, leading to the conclusion that merit-based scholarship programs are regressive. Stranahan and Borg (2004) investigate whether using a lottery, specifically, to fund merit scholarships is

regressive. The authors convincingly show that because lower classes tend to buy more lottery tickets than the upper class and the middle and upper classes tend to utilize merit scholarships more than the lower class, funding the latter with the former is in fact a regressive redistribution of wealth. Binder and Ganderton (2004) discovered that New Mexico's state sponsored merit scholarship program disproportionately goes to students of higher wealth, despite lower academic ability. Heller and Rasmussen (2002) use the Florida and Michigan state scholarship programs as samples and find that there is a significant difference in the rates at which wealthier and less wealthy students receive scholarships. They point to the states' requirements of standardized test scores and the correlation of higher score and higher income as the likely reason for the divide.

Dynarski (2002) also criticizes state-sponsored merit scholarships for increasing the racial divide. That observation is followed up by Cromwell and Mustard (2002) who find that blacks access to Georgia's competitive schools has declined since HOPE was started and the blacks disproportionately bear the cost of HOPE via the lottery. Farrell (2004) also concludes after examining non-need merit-based scholarship programs state-by-state, that current state sponsored merit scholarship programs are increasing racial inequality. Farrell goes so far as to recommend reinstituting need-based scholarships to keep from exacerbating socioeconomic divides.

Although not as developed as the literature on the social consequences of state-sponsored merit scholarship programs, the literature on the scholarship programs' effect on academics at the high school and college level is substantial. The academic-focused literature is comparatively

more positive, but is still critical of state merit scholarship's influence over college students' choices and lack of influence on college graduation rate.

Henry and Rubenstein (2002), using a combination of GPA and SAT scores, find that Georgia's HOPE program did raise Georgia high school's quality of education. The study concludes that because Georgia students' average GPA and SAT both increased after HOPE was introduced compared with surrounding states, that students at the margin of the HOPE program increased their GPA and SAT scores. This study shows the HOPE, and likely other state merit scholarship programs achieve their goal of increasing high school quality of education and serving as a reward to students who achieve in high school.

Cornwell, Mustard, and Sridhar (2006) do find a significant increase in enrollment at Georgia's colleges due to the HOPE scholarship. They attribute the increase in enrollment at Georgia's institutions to more Georgian high school graduates choosing to remain in Georgia for college. Increased enrollment and high school achievement leads to the conclusion that HOPE is working in the first stage of solving the brain drain problem.

Two studies show possible risk-averse behavior by students at the margin of Georgia's HOPE program. Dee and Jackson (1999) find a link between state scholarship recipients and specific college majors. Their study shows that scholarship recipients, compared to out-of-state students, tended to chose more liberal arts majors, instead of the majors of more perceived difficulty, like the sciences or engineering. Dee and Jackson's study, however, is recognized to suffer from possible reverse causation because students remaining in-state to attended a Georgia college might be predisposed to chose liberal arts majors at a higher rate than students attending

a Georgia institution as a out of state student. While other studies have posited that state merit scholarship programs could cause risk-averse students on the scholarship margin, Cornwell Lee, and Mustard (2005) found more convincing results by focusing on different dependent variables. They showed that HOPE recipients at the margin of the scholarship cutoff are more likely to withdraw from classes and take lighter class loads. Summer school credits were increased by HOPE. These two studies show that HOPE, through an unintended consequence, could be weakening Georgia's labor force by encouraging students to take easier classes.

Singell and Stater (2006) find no causal relationship between need-based or merit-based state scholarship programs and higher education graduation rates. While the increased enrollment found in Cornwell, Mustard, and Sridhar (2006) would mean more graduates overall, the static graduation rate is a negative for state merit scholarship programs. This signals a problem with one of the arguments for choosing a merit aid program over a need-based program. The study expected to find an increase in the graduation rate when the merit program went into effect because those recipients are supposed to be better prepared for college. The opposite finding, however, leads to question whether merit recipients are, in fact, more prepared for college than need-based recipients. If standardized test scores and high school grade point average were ideal predictors of college success, then merit based scholarships should raise the graduation rate above their need based counterparts. The fact that the graduation rate remains the same calls the use of these metrics as predictors of college success into question.

This study adds to the literature on state-sponsored merit scholarships where it is weakest. Most of the previous literature studied the unintended consequences, such as social impacts, of

state merit scholarship programs. Another significant part of the literature focused on state merit scholarship programs' affect on high school and college performance. Ackerman, Young, and Young (2005) conclude that New Mexico's state scholarship plan is helping to solve that state's brain drain problem, but do not show that the scholarship plan is actually affecting the state's workforce. Their study's conclusion is based on the finding that the state scholarship program increases college attendance, likelihood of choosing an in-state institution, and the recipient's chance of matriculating. These variables address the concept of brain drain only as it might occur between the high school and college level, not for the state overall. This study, using a reduced model, will skip that intermediate step and test the final result of the scholarship's affect on brain drain by asking: do state-sponsored merit scholarship programs alter a state's workforce? This approach allows the study to evaluate the programs final affect, taking into account a college graduate's tendency to leave after completing their degree and the incentive for highly educated families to move to the state.

Data

Data for the analysis spanned the years from 1990 to 2007 and all 50 states, creating an analysis sample of 900 observations organized as cross sectional time series data. The independent variable, whether or not a state had enacted a state-sponsored merit scholarship program four years earlier (SCHOLARDELAY4), was generated with data from the Education Commission of the States. A lag of four years was placed on the implementation of a state sponsored merit scholarship program in order to allow a college class eligible to receive the state sponsored merit scholarship program to graduate. Workforce quality is what is said to be lost by

brain drain and is operationalized through degrees granted per capita (DEGCONFPERCAP), educational attainment (EDATTAIN), and gross state product per capita (GRSTPROPERCAP). The dependent variables were compiled from data collected by the National Science Foundation, the Census Bureau's Current Population Survey, and the Bureau of Economic Analysis, respectively. Data was also included on each state's unemployment rate (UNEMP), poverty rate (POVRAT), and party control of the state government (GOVDEM, LOWLEGDEM, and UPLEGDEM). Table 1 lists every variable along with the source and a brief description.

Table 1. Variable descriptions

Variable	Definition	Source
SCHOLAR	Whether or not the state had a state-sponsored merit scholarship program similar to the HOPE program in Georgia.	Education Commission of the States and Secretaries' of State websites
SCHOLARDELAY2	Whether or not the state had a state-sponsored merit scholarship program two years prior	Generated by author from SCHOLAR variable
SCHOLARDELAY4	Whether or not the state had a state-sponsored merit scholarship program four years prior	Generated by author from SCHOLAR variable
SCHOLARDELAY6	Whether or not the state had a state-sponsored merit scholarship program six years prior	Generated by author from SCHOLAR variable
POP	Estimated population considered to be current residents of the state	Population Division, U.S. Census Bureau, University of Kentucky Center for Poverty Research,
DEGCONF	Number of degrees conferred by qualifying NSF institutions of higher learning located in the state	Web CASPAR, National Science Foundation
DEGCONFPERCAP	(DEGCONF / POP) Number of degrees conferred by qualifying NSF institutions of higher learning located in the state per person located within the state	DEGCONF and POP variables
EDATTAIN	The percentage of the population 25 years of age or older which had completed a bachelor's degree or the equivalent	Current Population Survey, U.S. Census Bureau
GRSTPRO	Measure of economic output of a state by totaling the value-added of industry within the state (in millions of dollars)	Bureau of Economic Analysis, U.S. Department of Commerce, University of Kentucky Center for Poverty Research
GRSTPROPERCAP	(GRSTPRO / POP)	GRSTPRO and POP variables

	Measure of economic output of a state by totaling the value-added of industry within the state (in millions of dollars) per person located within the state	
UNEMP	Percentage of civilian noninstitutionalized population that is actively seeking a job, but is unable to find employment.	Bureau of Labor Statistics, Local Area Unemployment Statistics program, University of Kentucky Center for Poverty Research
POVRAT	Percentage of a state population thought to be living below the federally defined poverty line	U.S. Census Bureau, Housing and Household Economic Statistics Division, University of Kentucky Center for Poverty Research
GOVDEM	Whether control of the state's governorship is in control of someone from the Democratic party	The Council of State Governments, The National Governors' Association, and Elections Research Center, University of Kentucky Center for Poverty Research
LOWLEGDEM	Percentage of the state's lower legislature that is controlled by members of the Democratic party	The Council of State Governments, University of Kentucky Center for Poverty Research
UPLEGDEM	Percentage of the state's upper legislature that is controlled by members of the Democratic party	The Council of State Governments, University of Kentucky Center for Poverty Research

There are a few minor concerns with the data. The National Science Foundation did not collect the number of degrees conferred in 1999, leaving a gap in the DEGCONF variable. This hole was filled using the mean of DEGCONF for the particular state in 1998 and 2000. This variable was also limited because the data for 2007 was not available when the analysis was conducted, limiting the model using DEGCONF as the dependent variable to the years 1990-2006. The educational attainment for 1992 was also unavailable, and was also remedied by taking the mean of the 1991 and 1993 educational attainment in the particular state. The Current Population Survey methodology received a minor alteration in 1992, changing the educational attainment variable from the percentage of residents 25 years of age and older with four or more years of college to the percentage of residents 25 years of age and older with the equivalent of a bachelor's degree or higher.

A simple comparison of means (Table 2) runs counter to the hypothetical expectation that after a four year lag the scholarship program should increase the number of degrees conferred and state educational attainment. Means were compared from the control and treatment group. In this case, the control group were states in years that they did not have a merit scholarship program four years prior ($SCHOLARDELAY4 = 0$). The treatment group consisted only of states in years that the state did have a merit scholarship program four year prior ($SCHOLARDELAY4 = 1$). Only the gross state product per capita increased. However, without running a regression that controls for year and state, as well as the other control variables, reverse causation and spuriousness are both concerns. States with fewer degrees conferred per capita and lower educational attainment would likely be the states more eager to enact a large

state sponsored merit scholarship program to reverse that trend. In addition, factors such as other state policies, the state unemployment rate, or a progression over time might all covary with the introduction of a state-sponsored merit scholarship program and the three dependent variables. Thus, whether or not the differences in means are statistically significant, a more intricate statistical analysis is needed.

Table 2. Analysis Sample

	Mean		Standard Deviation	
	SCHOLARDELAY4 = 0	SCHOLARDELAY4 = 1	SCHOLARDELAY4 = 0	SCHOLARDELAY4 = 1
DEGCONFPERCAP	0.010532	0.008817	0.004809	0.001862
EDATTAIN	0.253969	0.245462	0.057229	0.042844
GRSTPROPERCAP	0.035673	0.036192	0.015228	0.008203

Methods

State sponsored merit scholarship programs' effect on a state's workforce quality is tested by contrasting years of states that received the treatment with years of states without treatment. Treatment, in this study, refers to the existence of a state sponsored merit scholarship program four years before the year in question. For the three different variables used to operationalize the quality of the state's workforce, the following regression models were estimated:

$$y = \alpha + \beta_{SCHOLARDELAY4} + \beta_X + \zeta_{STATE} + \varphi_{YEAR} + \omega$$

With three different dependent variables, degrees conferred per capita, educational attainment, and gross state product per capita, three separate models were used. In each of the models y represents one of the dependent variables. $SCHOLARDELAY4$, the independent variable, indicates the existence of a state sponsored merit scholarship program four years before the year being tested. X is a vector of control variables including $UNEMP$, $POVRAT$, $GOVDEM$, $UPLEGDEM$, and $LOWLEGDEM$. State and year fixed effects were included in all three regressions in order to minimize spuriousness. Doing so controls for variables such as the introduction of another state policy, natural progression over time, and national trends. These unseen variables could not be controlled for without state and year fixed effects.

Results

The results of each of the three regressions for the different dependent variables produced similar results. The first regression tested the effect of the state sponsored merit scholarship program on the number of degrees granted by institutions within the state (Table 3). With a P-value of .414 for the key $SCHOLARDELAY4$ variable, the result was not statistically

significant. The second regression tested the programs' effect on educational attainment in the state and produced a statistically significant correlation of $-.0066708$ (Table 4). That correlation amounts to approximately half a percentage point decrease in the state educational attainment, reflecting a two percent decrease. The third regression was used to estimate the effect on gross state product (Table 5). That regression also produced a statistically significant negative correlation. The coefficient of -0.000978 equates to a three percent decrease in the gross state product per capita.

Table 3. Estimating the effects of a scholarship program on the number of degrees conferred per capita (DEGCONFPERCAP) with OLS.

Variable	Coefficient	Standard Error	P-value
SCHOLARDELAY4	-0.000082	0.000100	0.414
UNEMP	0.000137	0.000039	0.000**
POVRAT	0.000008	0.000016	0.609
GOVDEM	0.000150	0.000054	0.000**
LOWLEGDEM	0.000064	0.000371	0.863
UPLEGDEM	-0.000412	0.000367	0.260

**Statistically significant results at the .01 alpha level.

Table 4. Estimating the effects of a scholarship program on the rate of educational attainment (EDATTAIN) with OLS.

Variable	Coefficient	Standard Error	P-value
SCHOLARDELAY4	-.0066706	0.002598	0.000**
UNEMP	0.001690	0.001008	0.094
POVRAT	-0.001110	0.000426	0.000**
GOVDEM	-0.001020	0.001414	0.471
LOWLEGDEM	-0.002661	0.009779	0.786
UPLEGDEM	0.035084	0.009564	0.000**

**Statistically significant results at the .01 alpha level.

Table 5. Estimating the effects of a scholarship program on gross state product per capita (GRSTPROPERCAP) with OLS.

Variable	Coefficient	Standard Error	P-value
SCHOLARDELAY4	-0.000978	0.000327	0.000**
UNEMP	-0.000604	0.000127	0.000**
POVRAT	0.000040	0.000054	0.457
GOVDEM	0.000106	0.000178	0.552
LOWLEGDEM	0.004219	0.001204	0.772
UPLEGDEM	0.004219	0.001204	0.000**

**Statistically significant results at the .01 alpha level.

Also of note is the behavior of the control variables included in each of the regressions. In the DEGCONFPERCAP regression, the variables representing unemployment and control of the governorship by a Democrat both produced positive statistically significant correlations. Poverty rate (negative) and Democratic control of the upper state legislature (positive) were both found to be statistically significant in the EDATTAIN regression. The GRSTPROPERCAP regression estimated statistically significant between state production and unemployment, which was negative, and Democratic control of the upper state legislature, which was positive. Overall, the results found in the control variables were as expected, confirming the validity of the data and regressions.

A sensitivity analysis was conducted to determine whether a trend outside of the adoption of a state sponsored merit scholarship program was clouding the results of the regression. Using the same model, the lag on the scholarship variable was manipulated to create variables with two and six year lags. Regressions were estimated and compared to the regressions for the scholarship variable with the four year lag. As Table 6 shows, there was very little difference between the results of the regression for the two, four, or six year lag. This leads to the conclusion that the regression results were not noticeably effected by an outside trend.

Table 6. Sensitivity analysis comparing two years, four years, and six years after scholarship program implementation with OLS.

Variable	DEGCONFPERCAP	EDATTAIN	GRSTPROPERCAP
SCHOLARDELAY2	-0.000106	-.0053877**	-0.001163**
SCHOLARDELAY4	-0.000082	-.0066706**	-0.000978**
SCHOLARDELAY6	-0.000102	-0.002001	-0.000495

**Statistically significant results at the .01 alpha level.

Discussion

The implementation of a state-sponsored merit scholarship program has been accompanied by expectations of economic turn-around. These programs were adopted with the idea of enticing college-bound high school students to remain in state in hopes those students would remain in state after receiving their college diploma. Politicians touted the state-sponsored merit scholarship programs as a cure to brain drain, implying that the program would increase the quality of the state's workforce and bring more tax revenue to the state government. If these expectations were fulfilled, the regression models estimated in this study would produce a positive correlation between each of the dependent variables, DEGCONFPERCAP, EDATTAIN, and GRSTPROPERCAP, and the independent variable, SCHOLARDELAY4.

Contrary to the expectations of state-sponsored merit scholarship programs, the estimates from the regressions produced either no statistical significance in the case of DEGCONFPERCAP or negative, practically insignificant results in the cases of EDATTAIN and GRSTPROPERCAP. In the cases of statistical significance, the coefficient represents a change of two and three percent of the variable's mean. In both cases, the effects are minimal and in the negative direction, opposite of the direction predicted in the hypothesis. Without support from the regression models, the hypothesis that state-sponsored merit scholarship programs stop brain drain by improving the quality of the work force is rejected.

There are a few possible explanations for why the analysis did not support the hypothesis. One possibility is the programs' inability to entice the best and brightest to remain in-state. The state-sponsored merit scholarship programs are typically structured into levels of tuition that will

be paid based on the students' high school grade point average and/or score on either the SAT or ACT. The top level is well short of what the best and brightest graduating from a state's high school are actually achieving. These students typically receive offers from the institutions to which they applied, providing them with the choice between a free, but inferior, state institution or a greatly reduced to free prestigious school. The ineffectiveness of state-sponsored merit scholarship programs could be due to the continued exodus of those with the largest economic impact.

While several of the states have used lotteries to fund their state-sponsored merit scholarship programs, it is likely that many states simply transferred funding that would have gone toward the state's institutions or need-based scholarships. This redistribution of funds would mean that no more state funding is actually being given. Because no study has tested the comparative effects between a dollar of merit-based aid in comparison with a dollar of need-based aid or additional state university funding, it is unclear whether moving money to merit aid would have a stronger effect than the options from which money is being redistributed. The largest constraint upon this study was the amount of time that has passed since state-sponsored merit scholarship programs spread to many states. Because many states have recently adopted the program, creating too large of a lag on the SCHOLAR variable would have shrunk the sample size too much. When analyzing a program that theoretically should produce more graduates than the status quo would have each and every year, the short time span makes it difficult to see the compounding effect of the program. Future research should wait for a larger body of data to compile since the programs have been enacted. It is possible that the programs

need more than four years to significantly impact a state's workforce, but nonetheless, the lack of movement after four years (even six in the sensitivity analysis), calls the efficacy of the programs into question.

Another concern, although to a lesser extent than time, is the ability to operationalize the concept of workforce quality into variables with data available. No single variable is capable of capturing a dynamic concept like workforce quality, therefore this study attempted to operationalize the concept using three variables. This piece-meal storytelling leaves something to be desired. Workforce quality is an amorphous and unmeasurable concept, but with the right metric it might be possible to estimate in order to create a variable for a study such as this.

Regardless of the reason for the ineffectiveness of the state-sponsored merit scholarship programs, the fact that the program is ineffective should have policy consequences. Before any significant policy change can occur, it is necessary to recognize the political hurdles to change. In the case of state-sponsored merit scholarship programs, there is extraordinary grassroots support from a mobilized section of voters, the white middle-class. While merit scholarship aid is advertised as a public good, the families who make use of the scholarships count it as a private good with a direct economic impact upon them. This makes state-sponsored merit scholarship programs an important voting issue with a large base of support. Any significant change to a state-sponsored merit scholarship program already enacted would likely require a group of state legislators to commit political suicide, which is unlikely. Stopping the spread of the ineffective programs is more easily achievable, as voters have not yet directly benefited from the program in those states. It is important that the body of research analyzing state-sponsored merit scholarship

programs continues to grow in order to both form a more definitive evaluation of the programs and educate those shaping state policy.

A politically viable alternative for states experiencing political pressure to end brain drain via a state-sponsored merit scholarship program would be the addition of a means test to the program. This subtle change would decrease the cost of a state's merit scholarship program, as well as redirect some of the program's goals more toward providing access to those who otherwise could not attend college, which has been the traditional goal of the need-based programs. Such a change would appease many of the critics of the unintended social consequences of a state-sponsored merit scholarship program and alter the focus toward access over economic gain, all while avoiding the outrage of taking away a private good from a large block of voters.

Education funds, political considerations aside, appear to be put to better use when improving the quality of a state's institutions of higher education. North Carolina and Virginia both share many characteristics with the southern states that adopted state sponsored merit scholarship plans except they possess a stronger state university system. Logically, these states did not feel the pressure of brain drain because many of the students leaving the states experiencing brain drain were bound for institutions such as the University of North Carolina and the University of Virginia. While the effectiveness of increasing funding to a state's institutions is unknown, an adventurous state may be well served by experimentally shifting merit scholarship funds to improving the state universities.

The most important contribution that can be made to the literature evaluating state-

sponsored merit scholarship programs would be a multi-state study of how many graduates remain in-state, specifically those who took advantage of a state-sponsored merit scholarship. This would provide a clear picture of the whether state-sponsored merit scholarship programs are infusing a state's labor force with more educated workers or simply providing the education of a student that then moves to another state. Although this does not capture the possible incentive for families with children to move into the state like the reduced form model used in this study does, an observation of post-graduation scholarship recipient behavior would enlightened the debate over a state-sponsored merit scholarship program's direct effects.

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