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AN ANALYSIS OF THE FISCAL AND ECONOMIC IMPACT OF GEORGIA'S QUALIFIED EDUCATION EXPENSE (QEE) TAX CREDIT SCHOLARSHIP PROGRAM

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An Analysis of the Fiscal and Economic Impact of Georgia's Qualified Education Expense (QEE) Tax Credit Scholarship Program

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EXECUTIVE SUMMARY

Georgia's Qualified Education Expense (QEE) Tax Credit Scholarship Program allows individual and corporate taxpayers to receive a Georgia income tax credit for donating to nonprofit, tax-exempt student scholarship organizations (SSOs). SSOs use these funds to provide scholarships to pre-K through 12th grade Georgia students, where these scholarships offset the cost of attending independent (private) schools.

House Bill 217, which passed in 2018 and became law in 2019, requires that the Georgia state auditor issue an analysis of the performance of the state's QEE program in the year 2023. The analysis shall include: (A) Net change in state revenue; (B) Net change in state expenditures, which shall include, but not be limited to, costs of administering the tax credit; (C) Net change in economic activity; and (D) Net change in public benefit. To facilitate consideration among Georgia state auditors, lawmakers, and SSOs of the best methodologies to analyze performance of the QEE Program, this report provides a fiscal and economic analysis of the QEE Program. For this report, our "fiscal" analysis of the QEE program consists of our analysis of the net changes in state revenues and state expenditures. Our "economic" analysis consists of our analysis of how an increase in educational attainment results in changes in economic activity due to increased lifetime earnings accruing to scholarship recipients and changes in public benefits accruing to others and society. Public benefits that result from an increase in educational attainment include increased tax revenue, reduced criminal behavior, fewer health care costs, and less dependency on welfare programs.

To conduct these analyses, we relied on publicly available data regarding the QEE Program and Georgia public schools that are provided by the Georgia Department of Revenue and the (Georgia) Governor's Office of Student Achievement. We also relied on a data file of the three most recent cohorts of students receiving scholarships from Georgia GOAL Scholarship Program, Inc. — where each cohort begins in the 9th grade.

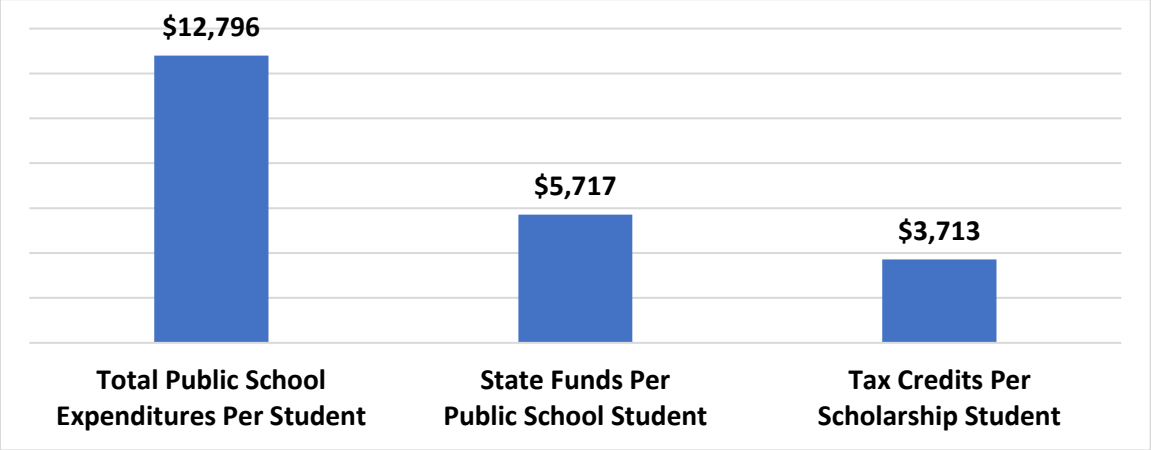
Overall, we find:

- The taxpayer cost of tax credit scholarships is significantly less than the taxpayer cost of educating scholarship students in the public schools — saving taxpayers a total of $53.2 million in academic year 2018-19 from the entire QEE program.
- The three cohorts of GOAL scholarship students graduate high school and enter college at higher rates relative to students in Georgia public schools — with an estimated economic benefit of $46.7 million for this subset of students, or about $15.6 million per cohort in our sample.
- If scholarship students at all SSOs graduate high school and enroll in college at the same rate that GOAL students in our sample do, then the estimated economic benefit from the entire QEE program would be $66.4 million for the cohort of ninth grade students starting high school in 2018. Below we provide an overview of our analyses and findings.

Fiscal Analysis

Under the QEE program, the average taxpayer cost of tax credits per scholarship recipient in calendar year 2018 was $3,713 — significantly less than state average per pupil expenditures in public schools and *less than one-third of the total expenditures per public school student*.

Figure A.1 – Total Expenditures and State Expenditures Per Student in Georgia Public Schools and Tax Credits Per Scholarship Student, 2018-19



Source: https://gaawards.gosa.ga.gov/analytics/K12ReportCard and https://dor.georgia.gov/document/publication/2018-calendar-year-qualified-education-expense-credit-report/download

Any analysis of the fiscal impact of the QEE Program needs to consider whether, absent receipt of a scholarship, students would have enrolled in public schools, resulting in a cost to state, local, and federal treasuries. Based on student behavior documented in 27 empirical observations of school choice lotteries from other states (described later in this report), a cautious estimate is that 90 percent of scholarship students would attend public schools if they were not able to access a scholarship. Using this 90 percent public school attendance figure, the 13,895 students who received scholarships in 2018 under the QEE program, and the expenditure and tax credit data from Figure A.1 above, we calculate that, for the 2018-2019 academic year (AY), the savings from the QEE program to state taxpayers were as follows:

State cost of educating 90% of Scholarship Students in Public Schools	—	Revenue forgone by the state treasure due to tax credits given to SSO donors
(0.9 **x** 13,895 scholarship students **x** $5,717)	—	($3,713 **x** 13,895 scholarship students) **=**
$71.5 million	—	$51.6 million **=**

$19.9 million in state taxpayer savings for (AY) 2018-19

The details for the above calculation are as follows:

- Number of scholarship recipients in 2018 **=** 13,895.

- Estimate of the percent of scholarship recipients who would have attended a public school if a scholarship had not been available **=** 90 percent (or 0.90).
- Average <u>state</u> revenues per public school student **=** $5,717.
- <u>State</u> taxpayer cost to educate 90 percent of these scholarship students in public schools **=** 0.90 **x** 13,895 scholarship students **x** $5,717 **=** $71.5 million.
- Revenue forgone by the state treasury due to tax credits given to donors **=** $3,713 **x** 13,895 scholarship students **=** $51.6 million.
- Savings to <u>state</u> taxpayers **=** $71.5 million **-** $51.6 million **=** $19.9 million.

That is, if 90 percent of the 13,895 scholarship students would have enrolled in a public school if they had not accessed a scholarship, those students would have cost the state $71.5 million, to educate in the public schools. The reduction in state income tax revenues — because some state taxpayers decided to donate to an SSO in exchange for a Georgia income tax credit — was $51.6 million in 2018.

Therefore, if the QEE program did not exist, the increase in costs to state taxpayers would have been $71.5 million, but state revenues would have increased by only $51.6 million in 2018. Since the cost to state taxpayers of educating these students in the public schools exceeds the increase in state tax revenues that would result if there had been no taxpayer donations to SSOs, we estimate that Georgia's QEE Tax Credit Scholarship Program saved state taxpayers $19.9 million in 2018-19.

Additionally, we estimate the savings from the QEE program to local taxpayers. Using a cautious estimate of $8,381[1] as the average additional cost of educating students added to Georgia public school systems, we estimate the fiscal effects of 90 percent of scholarship students migrating to the public schools if they were not able to access a scholarship. If these students migrated to public schools, public school costs would rise, and those local systems would receive more state funding via this enrollment growth. We calculate that, for AY 2018-2019, the savings from the QEE program to <u>local</u> taxpayers was as follows:

Local cost of educating 90% of Scholarship Students in Public Schools	—	State Funding for Enrollment Growth
0.9 **x** 13,895 scholarship students **x** $8,381	—	0.9 **x** 13,895 scholarship students **x** $5,717 **=**
$104.8 million	—	$71.5 million **=**

$33.3 million in <u>local</u> savings for (AY) 2018-19

[1] This $8,381 figure is the estimated variable cost of educating a student in public schools. This amount is only about two-thirds of the total average cost of educating students in public schools ($12,796) for AY 2018-19, and the source of this $8,381 figure is detailed in the appendix to this report.

The details for the above calculation are as follows:

- Number of scholarship recipients in 2018 **=** 13,895.
- Estimate of the percent of scholarship recipients who would have been enrolled in a public school if a scholarship had not been available **=** 90 percent (or 0.90).
- Estimate of the variable cost of educating students in public schools **=** $8,381. This estimate is significantly below the actual $12,796 average cost of educating students in public schools.
- Average <u>state</u> revenues per public school student **=** $5,717.
- <u>Local</u> taxpayer cost to educate 90 percent of these scholarship students in public schools **=** 0.90 **x** $13,895 **x** $8,381 **=** $104.8 million.
- State funding for enrollment growth to local public school systems if 90 percent of the 13,895 scholarship students had been enrolled in public schools **=** $5,717 **x** 13,895 scholarship students **=** $71.5 million.
- Savings to <u>local</u> taxpayers **=** $104.8 million **-** $71.5 million **=** $33.3 million.

In other words, the decrease in local taxpayer costs of not having to educate 90 percent of scholarship students in the public schools is 90 percent of the 13,895 scholarship students multiplied by our cautious estimate of the average variable cost of educating these students in public schools ($8,381), or $104.8 million — reduced by the state revenues that local systems receive to offset a portion of the cost of educating those students, or 90 percent multiplied by 13,895 scholarship students times $5,717, the average state revenues per student in public schools. This latter figure represents $71.5 million. The difference between these two figures, $33.3 million, represents the savings to local taxpayers from not having to pay to educate 90 percent of scholarship students in the local public schools.

Thus, the sum of yearly savings to Georgia taxpayers from the QEE Program equals the estimated $19.9 million in savings to the state treasury plus the $33.3 million in savings to local public school systems, for a total of $53.2 million in savings for Georgia taxpayers in academic year 2018-19.

$19.9M in <u>state</u> savings + $33.3M in <u>local</u> savings =

$53.2 million in savings <u>overall</u> to Georgia taxpayers

(AY) 2018-19

While our cautious estimates indicate that the QEE program saved Georgia taxpayers $53.2 million in academic year 2018-19, Martin Lueken (2019) created an historical estimate of savings from academic years 2010-11 to 2017-18. Using methods very similar to those used here, Lueken estimated that the QEE program saved Georgia taxpayers a total of $179 million during that time period. Estimated savings — on a per year basis — have been increasing over time because public school expenditures per student have been increasing while tax credits per scholarship student have been flat or declining over time.

Economic Analysis

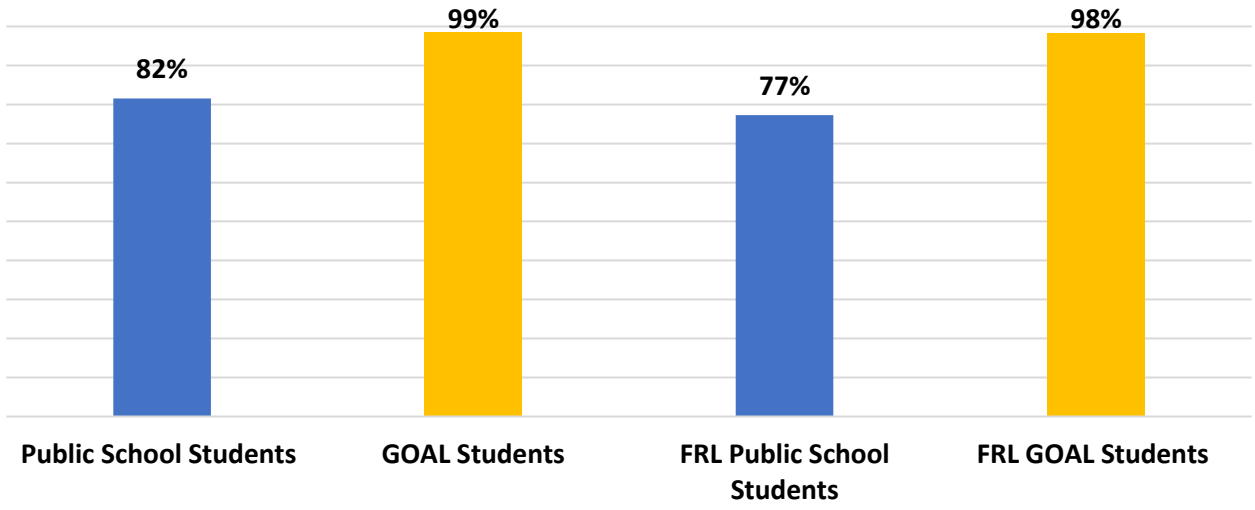
In its future audit of the QEE Program required by House Bill 217, the Georgia State auditor is required to consider the total economic impact of the QEE Program, which consists of a study of the net changes in "economic activity" and "public benefit" associated with the Program. In our study, we estimate the economic impact for three cohorts of students receiving a scholarship from Georgia GOAL, the largest SSO in the QEE Program.

GOAL provided us data on three cohorts of ninth grade students from academic years 2013-14, 2014-15, and 2015-16 — the most recent cohorts for which educational attainment can be observed. We use a straightforward analysis comparing the educational attainment of GOAL students to traditional public school students and estimate the present value of lifetime earnings associated with increased educational attainment — including high school graduation and college entrance. For high school graduates only, we consider the public benefits of increased educational attainment, as there are not good estimates in the academic literature on the public benefits — the benefits to others — from college enrollment.

Comparing the educational attainment of GOAL students to traditional public school students:

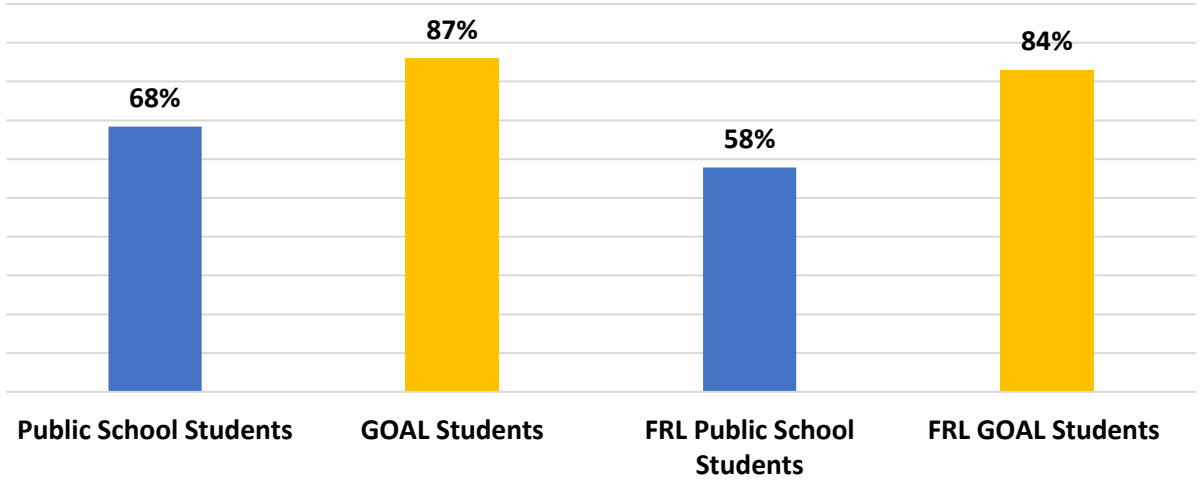
- Of students who received a GOAL scholarship to attend a private school, 99 percent graduated from high school compared to 82 percent of traditional public school students.
- Scholarship students who qualify for free or reduced-priced lunch (FRL) also graduated high school at a significantly higher rate than similar students in public schools: 98 percent vs. 77 percent, respectively.
- Participating scholarship students also enter college at a higher rate, 87 percent, than public school counterparts, 68 percent. Additionally, scholarship students who qualify for FRL enter college at a rate of 26 percentage points more than similar public school students, 84 percent vs 58 percent.

Figure A.2: Four-Year High School Graduation Rate for Public School and GOAL Scholarship Students



Notes: *Data on GOAL students was provided by Georgia GOAL and includes a sample of 784 students who entered 9th grade in AY 2013-14, 2014-15, and 2015-2016 and graduate high school between AY 2016-17, 2017-18, and 2018-19. We combine these cohorts of GOAL students to calculate an overall high school graduation rate. Data on public schools come from The Governor's Office of Student Achievement,* https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data*. We use the four-year graduation rates from AY 2018-2019. The graduation rate for 2016-17 was 81% and 82% in 2017-18.*

Figure A.3: College Entrance Rates for Public School and GOAL Scholarship Students



Notes: GOAL college entrance rates are conditional on students having graduated high school. We downwardly adjust the student-reported college entrance rate of GOAL students to provide a better comparison to the institution confirmed college entrance rate of public schools students; see the full report for more details. College entrance rates for public school students are also conditional on students graduating from high school and come from the Governor's Office of Student Achievement post-secondary report for FY2018-19, *https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data*. Students in the FY2018-19 report graduated high school in 2017. At the time of writing this is most recent available data.

Using cautious estimates from the literature on the returns to educational attainment, we find substantial economic impacts of the Georgia GOAL Scholarship Program for the three cohorts of students in our sample. We estimate a combined economic benefit of $46.7 million from increased high school graduation and college entrance for these students, or about $15.6 million per cohort, on average.

Table A.1: Combined Economic Benefit for Sample of GOAL Students

Economic Benefits		
	Benefit from High school Graduation	$ 39,984,000
	Benefit from College Entrance	$ 6,764,370
Total Benefit		$ 46,748,370

If extrapolated to all scholarship recipients across the entire QEE program, the estimated economic benefits would be $66.4 million for the cohort of ninth grade students starting high school in 2018.

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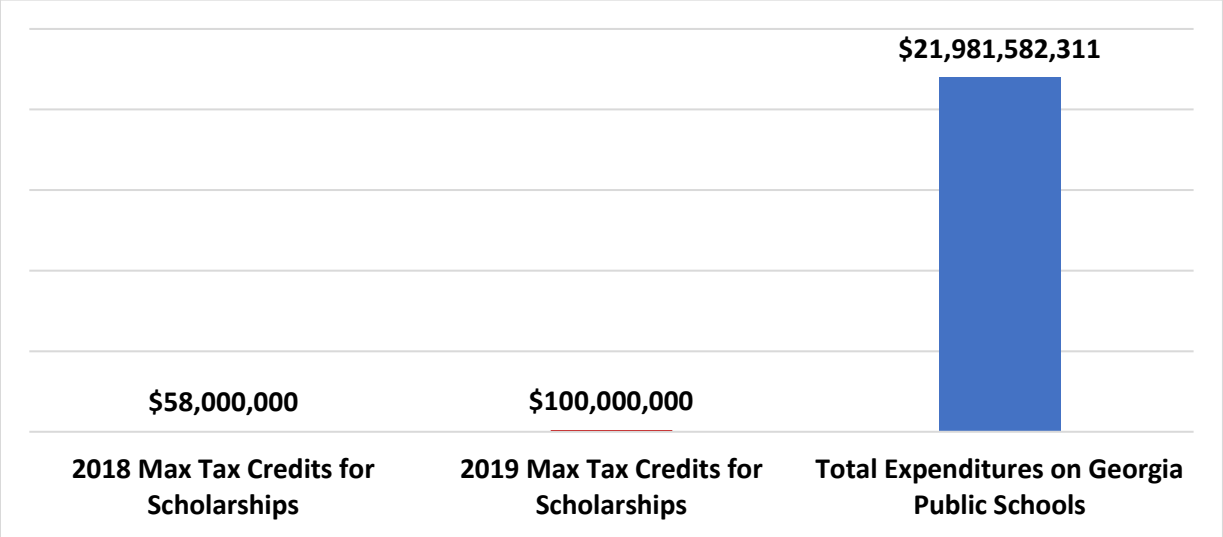
I. Introduction

With the passage of HB 1133 in 2008, the Georgia General Assembly created the Qualified Education Expense ("QEE") Tax Credit Program.[2] Signed into law by Governor Sonny Perdue, the QEE Program allows individual and corporate taxpayers to receive a Georgia income tax credit for donating to nonprofit, tax-exempt student scholarship organizations (SSOs). SSOs use these funds to provide scholarships to pre-k through 12th grade Georgia students, where these scholarships offset the cost of attending independent (private) schools. While the law has been amended three times since its creation, current law permits students who have been enrolled in a public school for at least six weeks to be eligible for a scholarship. However, this six week prior public school attendance requirement is waived for students who are enrolling in prekindergarten, kindergarten, or first grade as well as for students who live in communities where their assigned public school is deemed "low performing" by the state of Georgia or where the student has been subject to a documented case of school based violence, verbal abuse that threatens physical harm, or who was enrolled for one year in a qualified home study program.

Current law allows those filing their taxes as individuals to donate up to $1,000 of their state income tax liability to an SSO, those filing as married couples to donate up to $2,500, the owners of pass-through entities (S-corporations, LLCs and partnerships) may donate up to $10,000, and C corporations and trusts to donate up to 75 percent of their state income tax liability to SSOs. Per House Bill 217, which passed in 2018 and became effective in 2019, these donation caps are subject to an aggregate annual statewide limit of $100 million in available QEE credits. For calendar year 2018, the cap was $58 million.

Figure 1 – Cap on Tax Credits and Total Expenditures in Georgia Public Schools, 2018-19



Source: Governor's Office of Student Achievement https://gosa.georgia.gov/report-card-dashboards-data/report-card

[2] For HB 1133 see http://www.legis.ga.gov/Legislation/en-US/display/20072008/HB/1133

This $58 million figure for 2018 represents less than three-tenths of one percent of the amount that was spent on Georgia public schools in 2018-19, the most recent year available.

The SSO marketplace has been extremely competitive in Georgia. For example, individual and corporate taxpayers who wish to donate under the QEE Program currently have 34 SSOs from which to choose, at the time of writing.[3] In 2018, 26 different SSOs awarded scholarships to 13,895 Georgia students. These SSOs must report scholarship and financial information annually to the Georgia Department of Revenue, and these figures are drawn from those annual reports, which are posted on-line.[4]

Since the creation of the program in 2008, the Georgia GOAL Scholarship Program, Inc. has been the largest SSO. In 2018, Georgia GOAL received about $20.1 million in donations from 10,568 individual and 95 corporate taxpayers. This $20.1 million in donations represented 39 percent of all taxpayer donations to student scholarship organizations. In 2018, GOAL awarded 5,005 student scholarships, and the average scholarship award was $3,772.33 per student. In this report, we use data provided by GOAL to analyze the educational attainment of scholarship recipients.

In addition to increasing the statewide cap on donations from $58 million to $100 million, HB 217 required that the state auditor issue an "economic analysis report on the performance of this tax credit" in the year 2023.[5]

This analysis shall include a study of the:

- Net change in state revenue.
- Net change in state expenditures, which shall include the cost of administering the program.
- Net change in "economic activity".
- Net change in "public benefit".

This report endeavors to provide an early look at these issues that meets the intent of the General Assembly in HB 217. Specifically, this report provides (a) a fiscal analysis of Georgia's Qualified Education Expense Tax Credit Program; and (b) an economic analysis of this program.

[3] Georgia Department of Education, https://www.gadoe.org/External-Affairs-and-Policy/Policy/Pages/Tax-Credit-Program.aspx

[4] Georgia Department of Revenue, https://dor.georgia.gov/document/publication/2018-calendar-year-qualified-education-expense-credit-report/download .

[5] HB 217 see http://www.legis.ga.gov/Legislation/20172018/178899.pdf

Our “fiscal” analysis of the QEE program consists of our analysis of the net changes in state revenues and state expenditures. Our “economic” analysis consists of our analysis of how an increase in educational achievement results in changes in economic activity due to (a) increased lifetime earnings accruing to scholarship recipients and (b) changes in public benefits accruing to others and society. We consider the public benefits of increased educational attainment for high school graduates only, as there are not good estimates in the academic literature on the public benefits — the benefits to others — from college enrollment.

To conduct these analyses, we relied on publicly available data on the program and on Georgia public schools that are provided by the Georgia Department of Revenue and the (Georgia) Governor’s Office of Student Achievement. We also relied on a data file of the three most recent cohorts of ninth grade GOAL scholarship students that was kindly provided to us by the Georgia GOAL Scholarship Program, Inc.

The rest of this report is organized as follows. Section II provides a fiscal analysis of this program by analyzing the effect of the entire QEE program on state revenues, state expenditures, and the fiscal effects of this program on local public school systems. In section III, we offer an economic analysis of this program using student level data on three cohorts of ninth grade students provided by Georgia GOAL. We use these data to estimate the economic benefit of the increased high school graduation rates and college attendance rates experienced by Georgia GOAL scholarship students relative to Georgia public school students. In both the fiscal and economic analyses, we endeavored to be transparent with respect to our data limitations and our methodological approaches. Concluding remarks and limitations of these analyses are summarized in section IV. The report also contains two methodological appendices; one that details our approach to estimating the average variable cost of educating students in public schools, and the second that includes further discussion on the estimates for the economic returns to college entrance.

II. Fiscal Analysis of Georgia's QEE Tax Credit Scholarship Program

In this section we estimate the fiscal effects of the state of Georgia's Qualified Education Expense (QEE) Tax Credit program on state and local taxpayers for academic year 2018-19. To make these estimates we use publicly available data reported by the Georgia Department of Revenue and the Georgia Department of Education.

1. Fiscal Effects of Georgia's QEE Tax Credit Scholarship Program on State Taxpayers

To estimate the fiscal effects of Georgia's QEE Tax Credit Scholarship Program on state taxpayers, we need to ascertain (i) the reduction in state revenue due to state income tax credits awarded to student scholarship organization (SSO) donors, (ii) the cost to the Georgia Department of Revenue for administering the program, and (iii) the reduction in state taxpayer costs that results from scholarship students not being enrolled in public schools — because they were able to access a scholarship to attend a private school.

Some Basics of Education Finance in Georgia

Public schools in Georgia receive funding from federal, state, and local taxpayers. SSOs receive donations from state taxpayers. The relevant statistic for analyzing fiscal impacts is the total resource cost of the program — which is the total amount of tax credits per scholarship student.[6] Likewise, the relevant statistics for comparison are the total expenditures and revenues per student in public schools.[7]

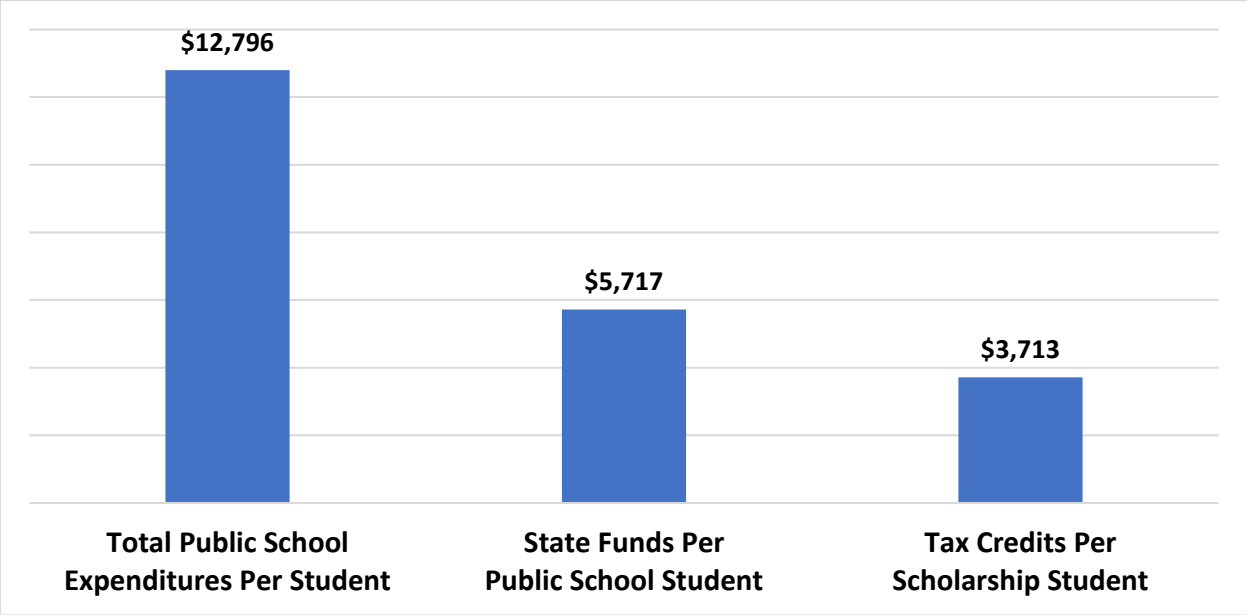
Given the focus on the total taxpayer cost, we report some basic information on taxpayers' expenditures on Georgia public schools for 2018-19 and taxpayers' expenditures on the QEE program for tax year 2018, where credits are often realized in spring 2019 as taxpayers file their tax returns. Academic year (AY) 2018-19 was the most recent data available on public school finances at the time of writing. Figure 2 shows total expenditures per public school student, state taxpayer revenues per public school student, and tax credits per scholarship student. As shown below, the average expenditures per student in Georgia public schools was $12,796 for AY 2018-19. Of those funds, state revenues per public school student were $5,717.

Tax credits per scholarship student averaged $3,713 in 2018, $51.6 million in tax credits divided by 13,895 scholarship students. The taxpayer cost per scholarship is significantly below state revenues per student in public schools and *less than one-third of the amount spent per student in public schools*.

[6] Data on total tax credits contributed to SSOs and the number of scholarships awarded are available from the Georgia Department of Revenue, https://dor.georgia.gov/document/publication/2018-calendar-year-qualified-education-expense-credit-report/download .

[7] Data on total expenditures and revenues by source for Georgia public schools are available from the Governor's Office of Student Achievement, https://gaawards.gosa.ga.gov/analytics/saw.dll?dashboard .

Figure 2 – Total Expenditures and State Revenues Per Student in Georgia Public Schools and Tax Credits Per Scholarship Student, 2018-19



Source: Public school expenditure and revenue data for 2018-19 were retrieved from the Governor's Office of Student Achievement, https://gaawards.gosa.ga.gov/analytics/K12ReportCard and data on donations to SSOs for calendar year 2018 were retrieved from the Georgia Department of Revenue, https://dor.georgia.gov/document/publication/2018-calendar-year-qualified-education-expense-credit-report/download

Naïve Estimates of the Fiscal Effects of Georgia's QEE Program

Using only the figures in the preceding subsection, there are two naïve ways to estimate the fiscal effects of Georgia's QEE program, and we believe both yield misleading estimates. First, one could simply note that in 2018 the state granted $51.6 million in tax credits, so if the program went away the state treasury would have an extra $51.6 million at its disposal. Therefore, the net fiscal cost of the program is $51.6 million.

Another naïve estimate would be as follows:

- The average cost of educating students in public schools was $12,796 per student in 2018-19.
- Tax credits under the QEE program per scholarship student were $3,713 in 2018.
- There were 13,895 scholarship students in 2018.
- So, the net fiscal savings of the program would be the difference in taxpayer costs between educating these students in the more expensive public schools versus the less expensive tax credits per scholarship student.
- Thus, the net fiscal savings would be:

  13,895 scholarship students **x** ($12,796 **-** $3,713) **=** $126.2 million.

These estimates are both naïve — for different reasons. In the next subsection, we describe why both of these extreme estimates are misleading. And, as discussed later in the report, our estimate of taxpayer savings from the QEE program is toward the middle of these extreme estimates.

Why Both Naïve Estimates are Misleading

The first naïve estimate of a net fiscal cost of $51.6 million is incorrect because (a) it completely ignores the cost of educating scholarship students in public schools if the program did not exist. The second naïve estimate of net fiscal savings of $126.2 million is incorrect because (b) not all scholarship students may attend a public school if the program did not exist. In addition, the second naïve estimate (c) ignores that the variable or marginal cost of educating students in public schools may be less than the average cost. We discuss these three issues in turn, and in our analysis, we use cautious evidence with respect to these three concerns to make prudent estimates of the net fiscal effects of the QEE program on state and local taxpayers.

a) Taxpayers Incur Costs to Educate Students in Public Schools

As stated above, taxpayers spent an average of $12,796 educating students in public schools in 2018-19. If the QEE program did not exist, surely many scholarship students would have been enrolled in a public school — with taxpayers covering this expense. The first naïve estimate ignores this fact, but we consider this issue when making our estimate of the net fiscal effects of the QEE program.

b) If the QEE Program Did Not Exist, What Percent of Scholarship Students Would be Enrolled in a Public School

Given the fact that their families have expressed an interest in private schooling when they pursued a scholarship, some scholarship students would have enrolled in either a private school or been homeschooled if they were not able to access a scholarship. However, when sending their children to a private school, families would incur the total cost of that decision — whereas taxpayers pay the full cost of students attending public schools. Given this feature of the K-12 education system — families must pay the full cost of private schools and taxpayers pay the full cost of public schools — only 8.2 percent of American families enrolled their children in private schools in 2017. So, the question is: what percent of scholarship students would be enrolled in public schools — and thereby leading to higher taxpayer costs — if the QEE Tax Credit Scholarship Program did not exist?

In the next subsection, we draw on the growing body of evidence from school choice lotteries used to allocate scholarships in other states to estimate of the percent of scholarship students who would have been enrolled in a public school if they had not been able to access a scholarship. This estimate allows us to calculate the reduction in state taxpayer costs due to these students not enrolling in a Georgia public school.

Additionally, we need an estimate of the reduction in the public schools' operating costs when they experience a reduction in their student population. To make this estimate, we rely on a cautious estimate from the literature on the nature of operating costs in public schools. Given that this issue is complex, we discuss this issue in Appendix A. In short, there are four methods in the literature to estimate the variable costs of educating students in public schools — three of them produce very similar estimates (about two-thirds of the average cost per student), while the fourth estimate suggests that virtually all public school expenditures are variable costs.

For our analysis, we use the more cautious estimate of public schools' variable costs to be about two-thirds of their expenditures. If we had used the fourth and much higher estimate, our estimates of fiscal savings would have been considerably higher — and very close to the second naïve estimate discussed above.

What is a prudent estimate of the percent of scholarship students who would attend public schools if the QEE program did not exist?

It is likely the case that at least some scholarship students would have been enrolled in a private school or homeschooled — if they had not been able to access a scholarship. Thus, it is necessary to estimate what percent of scholarship students would have enrolled in a public school if they could not access a scholarship. There are countervailing factors that influence this issue. First, the families of scholarship students have revealed that they have an interest in enrolling their children in a private school — they revealed that preference when they accepted a scholarship. Second, the incentives of the private schools that enroll these students are to have scholarships awarded to students who would not have attended their schools if they were not provided with scholarships — in order to fill empty seats.

For many reasons, the share of students enrolled in private schools has been falling nationally since the 1960s. Given these declines, private schools have incentives to want scholarships to be given to students who would not have attended private schools without financial support. For example, private schools would not want a scholarship going to Bill who would have enrolled in their school even without a scholarship. They would rather the scholarship be given

to Mary who would have attended a public school without a scholarship in order to fill an empty seat. In this example, the private school would have more revenue if scholarships went to students who would not have attended without them.

Fortunately, we now have a large body of evidence from which to base the estimate of the percent of scholarship students who would be considered as "switchers" — those who truly switched from a public to a private school only because of the scholarship. Lueken (2020) has surveyed the evidence from six different school choice programs from around the nation that assigned scholarships via lottery. In each of these six scholarship programs, many more families sought to access these scholarships relative to the number of scholarships permitted by law. A variety of researchers studied these six programs and have created 27 different observations (across time) of the percent of families who did not win the lottery — families who applied for a scholarship via lottery, but ultimately did not win a scholarship — who then enrolled their children in a public school.

Lueken (2019) created a weighted average of switchers from these 27 observations of the tens of thousands of families who did not win a random scholarship lottery across the six school choice programs over a few years of observation. He reports that in the studies of these six school choice programs, on average, 91 percent of families who were not awarded a scholarship via lottery enrolled their children in public schools (thus, these students would have been truly switchers and attended a private school only if they had received a scholarship). The remaining 9 percent enrolled their children in a private or homeschool setting. The median of these observations was 90 percent. In the interest of caution, we use this lower 90 percent figure in our analysis below and assume that 90 percent of students who applied to the QEE program would have attended a public school in absence of the scholarship program.[8]

Since no researcher or policymaker (or anyone) will ever observe how many scholarship students would have enrolled in a public school, this 90 percent figure is an estimate. Nevertheless, we take comfort that this estimate comes from such a large pool of observations that actually occurred in similar private school choice programs from across the nation.

Fiscal Effect of the QEE Program on State Taxpayers

Assuming that 90 percent of students who have received a scholarship through the QEE program would have enrolled in a Georgia public school without the scholarship, we calculate the savings from Georgia's QEE Tax Credit Scholarship Program to state taxpayers as follows:

[8] In earlier work in an academic journal, Lueken (2018) estimated that the switcher rate for Georgia's QEE Tax Credit Scholarship Program was between 98 and 99 percent, Table A6. Again, we are using the more cautious 90 percent estimate for our analysis.

State cost of educating 90% of Scholarship Students in Public Schools	—	Revenue forgone by the state treasury due to tax credits given to SSO donors
(0.9 **x** 13,895 scholarship students **x** $5,717)	—	($3,713 **x** 13,895 scholarship students) **=**
$71.5 million	—	$51.6 million **=**

$19.9 million in state taxpayer savings for 2018-19

The details for the above calculation are as follows:

- Number of scholarship recipients in 2018 **=** 13,895.
- Estimate of the percent of scholarship recipients who would have been enrolled in a public school if a scholarship had not been available **=** 90 percent (or 0.90).
- Average state revenues per public school student **=** $5,717.
- State taxpayer cost to educate 90 percent of scholarship students in public schools **=** 0.90 **x** 13,895 **x** $5,717 **=** $71.5 million.
- Revenue forgone by the state treasury due to tax credits given to donors **=** $3,713 **x** 13,895 scholarship students **=** $51.6 million.
- Savings to state taxpayers **=** $71.5 million **-** $51.6 million **=** $19.9 million.

That is, if 90 percent of the 13,895 scholarship students would have enrolled in a public school if they had not accessed a scholarship, those students would have cost the state $71.5 million to educate in the public schools. The reduced state income tax revenues — because some state taxpayers decided to donate to an SSO in exchange for a Georgia income tax credit — was $51.6 million in 2018. Therefore, if 90 percent of these scholarship students had enrolled in a public school because they were not able to access this scholarship program, the increase in costs to state taxpayers would have been $71.5 million, but state revenues would have increased by only $51.6 million in tax year 2018. Since the cost of educating these students in the public schools exceeds the increase in state tax revenues that would result if there had been no taxpayer donations to SSOs, we estimate that Georgia's QEE Tax Credit Scholarship Program saved state taxpayers $19.9 million in 2018-19.

Caveats

We do not know exactly how much in state revenue the average scholarship student would have received if they had been enrolled in public schools — so in this analysis we assumed that the average scholarship student would (in the parlance of school funding) "earn" the average of state funding.[9]

[9] Georgia's Quality Basic Education (QBE) funding formula awards funding on a per student basis to local public school systems based on the grade level of students, the needs of individual students, and local property wealth. Thus, different students "earn" differing amounts of QBE funding based on what grade they are in, their needs,

Also, a very small portion of state funding to local public school systems is in the form of grants that do not depend directly on enrollment. Despite the fact that such funds are a very minor fraction of state funding to public schools, there is reason to believe that our use of the state average ($5,717) for the state cost of educating scholarship students in public schools is too low, at least for the largest SSO in Georgia, Georgia GOAL. Specifically, since its inception, about 60 percent of GOAL scholarship students have come from outside metro Atlanta. School systems outside of metro Atlanta tend to receive more state funding per student than public school systems in Atlanta — in the form of higher Quality Basic Education (QBE) funding and higher levels of Equalization funding due to their, on average, lower property wealth per student.[10] We do not know if other SSOs provide a majority of their scholarships outside metro Atlanta, so we do not know if the GOAL experience is representative of the entire QEE program.

Next, we made an email inquiry to the Georgia Department of Revenue as to their estimate of the cost of administering the program — HB 217 requests the state auditor to report on the costs of administering this tax credit. We received a polite response that they have not endeavored to calculate their costs of administering this program because they do not calculate their costs on a per tax credit program basis. The lack of this information is completely understandable. That said, surely the costs of administering the program are not zero, but surely they are not substantial either.

As stated previously, we used a cautious figure (90 percent) for the "switcher rate" — the percent of scholarship students who would have been enrolled in a public school if they had not been able to access a scholarship. Lueken (2018) used an estimate of between 98 and 99 percent for the switcher rate in his analysis of Georgia's QEE program. Using his estimate would have increased our estimate of savings to state taxpayers significantly.

In addition, the above fiscal analysis is incomplete as it does not consider the fiscal effects of the QEE program on local public school systems. As shown in the next section, this program — with its very low taxpayer cost per student — saves local taxpayers money as well.

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and where they reside. In this report we use the average state funding per student because we do not observe the amounts of QBE funding that would be earned by individual scholarship recipients. If using the average causes us to overstate state funding per student, then we are overestimating savings to state taxpayers — but underestimating savings to local taxpayers by the same amount. Thus, the estimate of total savings to Georgia taxpayers is unaffected by our assumption. The converse is true if our use of average state funding per student is an underestimate — but total savings from the QEE program to Georgia taxpayers remains unaffected.

[10] Please see slide 10 at this link https://www.goalscholarship.org/docLib/20191031_GOALResults103119forWebsite.pdf which shows that well over half of GOAL Scholarship students have come from outside metro Atlanta. Public school systems outside metro Atlanta tend to earn more state dollars per public school student, given their relatively low levels of property wealth per student.

2. Fiscal Effects of the QEE Tax Credit Scholarship Program on Local Taxpayers

It was relatively straightforward to estimate the fiscal effects on state taxpayers from Georgia's QEE Tax Credit Scholarship Program — the Georgia Department of Revenue publicizes the dollar value of tax credits and the number of scholarship students annually, and the Governor's Office of Student Achievement publicizes the amount of state funding that goes to public schools annually. Estimating the fiscal effects of Georgia's QEE program on local public school systems requires more analysis — including an estimate of the short-run (from one year to the next) variable costs of educating students in public school systems. In other words, we need to know how much public school system costs would increase if a scholarship student was not able to access a scholarship and then enrolled in a public school. There are four methods in the literature on estimating variable costs of public schools, and three of those methods produce almost identical estimates. We relied on a method from one of these three approaches and estimate $8,381 per student as the variable or marginal cost of educating additional students in Georgia public schools. We detail how we arrived at this estimate in Appendix A. In short, the estimate comes from observed actual reductions in expenditures (from one year to the next) when Georgia school systems experienced declines in enrollment. This estimate is only about two-thirds as large as the average cost of educating students in Georgia public schools — $12,796. Since the fourth method of estimating variable costs produces an estimate substantially higher than $8,381 per student, our approach is cautious.[11]

Using this cautious estimate of $8,381 as the additional cost, on average, of educating students added to Georgia public school systems, we estimate the fiscal effects of 90 percent of scholarship students migrating to the public schools if they were not able to access a scholarship. We also account for the fact that if these students migrated to public schools, public school costs would rise, and those systems would earn more state funding via this enrollment growth. We calculate the savings from the QEE program to local taxpayers as follows:

Local cost of educating 90% of Scholarship Students in Public Schools	—	State Funding for Enrollment Growth
0.9 **x** 13,895 scholarship students **x** $8,381	—	0.9 **x** 13,895 scholarship students **x** $5,717 **=**
$104.8 million	—	$71.5 million **=**

$33.3 million in <u>local</u> savings per year

[11] If we used the estimates in Dorfman (2019), our estimate of the additional cost of educating students in public schools would be about $12,700 per student

The details for the above calculation are as follows:

- Number of scholarship recipients in 2018 **=** 13,895
- Estimate of the percent of scholarship recipients who would have been enrolled in a public school if a scholarship had not been available **=** 90 percent (or 0.90)
- Estimate of the variable cost of educating students in public schools **=** $8,381, where this estimate is significantly below the actual $12,796 total cost of educating students in public schools.
- Average <u>state</u> revenues per public school student **=** $5,717
- <u>Local</u> taxpayer cost to educate 90 percent of these scholarship students in public schools **=** 0.90 **x** 13,895 scholarship students **x** $8,381 **=** $104.8 million
- State funding for enrollment growth to local public school systems if 90 percent of the 13,895 scholarship students had been enrolled in public schools **=** .09 **x** 13,895 scholarship students $5,717 **=** $71.5 million
- Savings to <u>local</u> taxpayers **=** $104.8 million **-** $71.5 million **=** $33.3 million.

In other words, the decrease in local taxpayer costs of not having to educate 90 percent of scholarship students in the public schools is 90 percent of the 13,895 scholarship students multiplied by our cautious estimate of the average variable cost of educating these students in public schools ($8,381), or $104.8 million. Then, minus the state revenues that local systems receive to offset a portion of the cost of educating those students, or 90 percent multiplied by 13,895 scholarship students times $5,717, the average state revenues per student in public schools. This latter figure represents $71.5 million. The difference between these two figures, $33.3 million ($104.8 million - $71.5 million), represents the savings to local taxpayers from not having to pay to educate 90 percent of scholarship students in the local public schools.

Caveats

A small portion of state taxpayer funding to public school systems is not directly tied to enrollment. Thus, savings to local taxpayers are, in actuality, slightly higher than the $33.3 million figure listed above, and savings to state taxpayers are actually slightly lower — by an equivalent amount (*Caveat 1)*. That said, the estimate of total savings to state and local taxpayers is unchanged.

Our second caveat requires a lengthier presentation.

A Fiscal Impact on State and Local Taxpayers that We Do Not Measure (Caveat 2)

Nationally, the share of enrollment in private schools has been declining for decades. In 1965, 14.3 percent of K-12 American students attended a private school. By 2017, that share had

fallen to 8.2 percent.[12] There are myriad reasons for this decline, including the increasing cost of public schools — from 1965 to 2016, real expenditures per student (adjusted for inflation) in American public schools almost tripled.[13] In the absence of choice programs, parents who send their children to private school must pay both the increased federal, state, and local taxes to fund more expensive public schools and the full tuition cost to attend a private school. Parents who make this private school choice for their children provide a significant fiscal benefit to other taxpayers who do not have to bear the cost of educating these students in private schools.

This decline in the share of enrollment in private schools places a fiscal cost on taxpayers who must pay to educate an increasing share of students in public schools. In the analyses above, we do not consider the possibility that Georgia's QEE Program has kept at least some private schools open — thereby keeping non-scholarship students in the private education sector, which saves taxpayers the cost of educating these non-scholarship students in public schools.

Although we do not measure these potential fiscal savings (keeping more non-scholarship students in private schools) from Georgia's tax credit program, there is strong evidence that these fiscal savings may be significant.

Under Georgia's QEE Program, SSOs began giving scholarships to students in fall 2008. Nationally, private school enrollment fell by 12 percent between fall 2008 and fall 2017.[14] During that time period, public school enrollment increased by 2.7 percent in the United States as a whole.[15] Thus, during the 2008 to 2017 time period, in the United States there was a significant decline in the share of American children who attend a private school for their K-12 education. Surely the Great Recession played a big role in this decline.

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[12] Source: Current Population Survey, U.S. Bureau of the Census, https://www.census.gov/data/tables/time-series/demo/school-enrollment/cps-historical-time-series.html . The enrollment of students in private schools has proven difficult for federal government agencies to collect accurately. The Current Population Survey appears to be the most "clean" data source (no large and unbelievable gyrations from year-to-year). Nevertheless, all federal sources that collect data on private school enrollment show sharp and consistent declines in private school enrollment shares from 1965 to the present and 2008 to the present. This report from the Census Bureau explains these issues and documents that all sources of data on private school enrollment show these significant declines in private school enrollment shares over time, https://www.census.gov/content/dam/Census/library/working-papers/2013/acs/2013_Ewert_01.pdf .

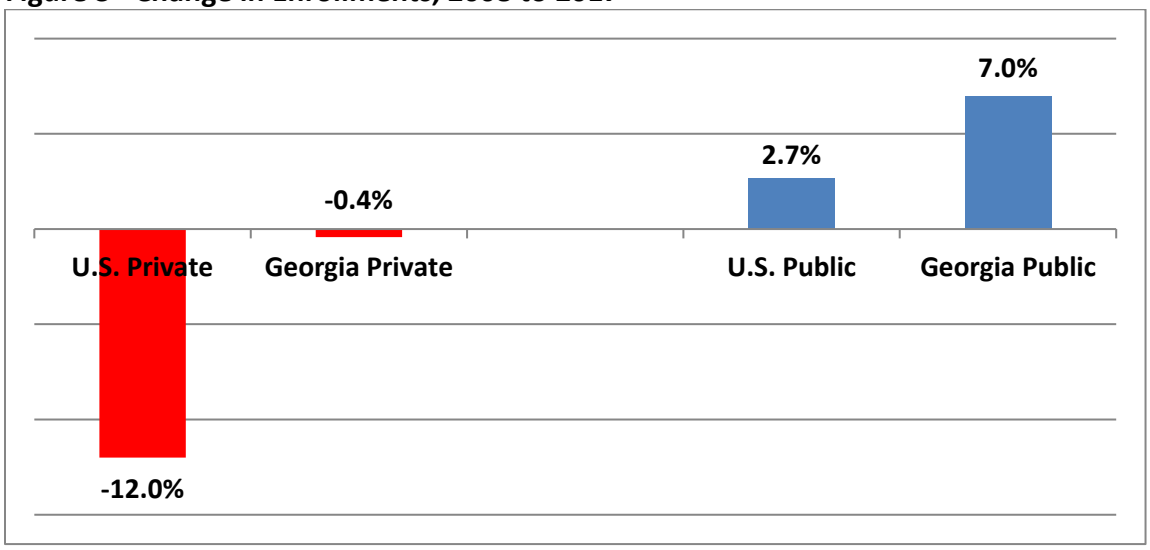
[13] Source: National Center for Education Statistics at the U.S. Department of Education, https://nces.ed.gov/programs/digest/d18/tables/dt18_236.55.asp?current=yes .

[14] Source: Current Population Survey, U.S. Bureau of the Census, https://www.census.gov/data/tables/time-series/demo/school-enrollment/cps-historical-time-series.html .

[15] Source: National Center for Education Statistics at the U.S. Department of Education, https://nces.ed.gov/programs/digest/d18/tables/dt18_203.40.asp?current=yes and https://nces.ed.gov/programs/digest/d10/tables/dt10_038.asp .

Despite the large national decline in the private school enrollment share after 2008, Georgia did not experience such a big change. In Georgia, public school enrollment increased by 7 percent from 2008 to 2017.[16] According to a data file kindly provided by the Georgia Independent School Association (GISA), private school enrollments in Georgia fell by only 0.4 percent during this time period — or four-tenths of one percent.[17]

Figure 3– Change in Enrollments, 2008 to 2017



Sources: https://www.census.gov/data/tables/time-series/demo/school-enrollment/cps-historical-time-series.html ; https://nces.ed.gov/programs/digest/d18/tables/dt18_203.20.asp?current=yes ; and data files provided to the authors by the Georgia Independent School Association.

Clearly the private education sector in Georgia has held its enrollment share more than has been the case nationally. To the extent that Georgia's QEE Program has aided in keeping private schools from closing — and thereby keeping some non-scholarship students from enrolling in the public education sector — then this tax credit program is providing an additional fiscal benefit to Georgia taxpayers. In this report we do not attempt to quantify this fiscal benefit. And, this fiscal benefit would be in addition to our savings estimates that result from the QEE program educating scholarship students at a significantly lower taxpayer cost relative to the public education system.

[16] https://nces.ed.gov/programs/digest/d18/tables/dt18_203.20.asp?current=yes

[17] Consistent historical data on state-level data on private school enrollment appear to be nonexistent — federal agencies endeavor to collect this information, but these data display large gyrations from year-to-year that cannot plausibly be true. The Georgia Independent School Association does not include all private schools in Georgia as members. Thus, we use the trend in enrollments in their schools as a proxy measure for private school enrollment trends for the private education sector in Georgia overall. If readers can suggest a potentially better data source, please contact this report's authors at educationeconomics@kennesaw.edu .

3. Summary of the Fiscal Effects of Georgia's QEE Tax Credit Scholarship Program to Georgia Taxpayers

The sum of savings to Georgia taxpayers from the QEE Program equals the estimated $19.9 million in savings to the state treasury plus the $33.3 million in savings to local public school systems. These figures indicate that the QEE program saved the taxpayers of Georgia a total of $53.2 million in academic year 2018-19.

$19.9M in <u>state</u> savings + $33.3M in <u>local</u> savings =

$53.2 million in savings <u>overall</u> to Georgia taxpayers

While our cautious estimates indicate that the QEE program saved Georgia taxpayers $53.2 million in 2018-19, Lueken (2019) created a historical estimate of savings from 2010-11 to the 2017-18 academic year. Using methods very similar to those used here, Lueken estimated that the QEE program saved Georgia taxpayers a total of $179 million during that time period. Annual savings have been increasing over time as the taxpayer cost per student of the public school system has been increasing, while the average taxpayer cost per scholarship student in the QEE program has been flat or modestly declining.

In the text of HB 217, the Georgia General Assembly stated that they also wanted estimates of economic and public benefits of this program. We endeavor to create cautious estimates of these benefits in the next section.

III. Economic Analysis of Georgia GOAL

In this section, we estimate the economic impact of enhanced educational attainment for students receiving a scholarship from the largest participating SSO, Georgia GOAL Scholarship Program, Inc. (GOAL). Unfortunately, student level data for scholarship recipients from all SSOs in the QEE program are not available. For our analysis, GOAL provided us student level data for three cohorts of scholarship students entering ninth grade — the three most recent cohorts for which both high school graduation and college enrollment may be observed. We use these three cohorts of students and compare their educational attainment, including high school graduation and college entrance, to students in Georgia public schools and then estimate the economic benefits associated with increased attainment, where economic benefits include both (a) economic activity in terms of increases in earnings and (b) "public" benefits that accrue to others and society from higher levels of educational attainment. Given limitations in the academic literature, we only estimate public benefits that accrue from increased high school graduation rates.

1. Data

We use data provided by GOAL on scholarship students who entered ninth grade in academic years 2013-14, 2014-15, and 2015-2016. The data also includes students' gender, race/ethnicity, family income, high school graduation status, and self-reported college enrollment immediately following high school graduation. For data on Georgia public school students, we use high school graduation and college enrollment data from The Governor's Office of Student Achievement (GOSA).[18]

The data provided by GOAL contains a total of 1,191 students. To be consistent with how high school graduation rates are computed for public school students, we use an adjusted cohort methodology that excludes students who transferred out of the GOAL program prior to entering the twelfth grade. Of the 1,191 GOAL students, 407 students transferred out of the GOAL program to other high schools leaving a cohort adjusted sample of 784 students. These 784 students comprise our primary analytic sample.

Table 1 provides descriptive information on the GOAL adjusted cohort of 784 students compared to the student demographics in Georgia public schools. The majority of GOAL students in the adjusted cohort identify as Caucasian, 62 percent, and 25 percent identify as African American. Forty percent of GOAL students qualify for free or reduced-price lunch (FRL) comparted to 55 percent of public school students. FRL status is a relatively crude measure of economic disadvantage, as many public schools located in low income areas can identify the entire school as FRL due the Community Eligibility Provision without collecting household

[18] We used the Graduation Rate (4-Year Cohort) for 2018-19, as well as the Post-Secondary C11 Report for 2018-19. Retrieved from https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data.

income data.[19] However, the data provided to us by Georgia GOAL includes a student's household income from their households' tax return which allows us to accurately identify the number of GOAL students who would qualify for FRL. Due to these differences, the data likely overstates the amount of economic disadvantage among students in public schools and does not provide for an equal comparison.

Table 1: Descriptive Data of Public School and GOAL Scholarship Students

	GOAL Students	Public School Students
Race		
African American	25%	38%
Caucasian	62%	43%
Hispanic	7%	12%
Asian	1%	4%
Other	5%	3%
Female	43%	49%
Student qualifying for FRL	40%	55%

Notes: Data on GOAL students was provided by Georgia GOAL and includes a sample of students who entered 9th grade in AY 2013-14, 2014-15, and 2015-2016 and graduated high school in AY 2016-17, 2017-18, and 2018-19. Cohorts adjusted for students who transfer out of the program prior to graduation for a total of 784 students. Data for public school students comes from The Governor's Office of Student Achievement 2016-17 high school graduation report, https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data.

2. Methods

We estimate the economic impact associated with high school graduation and college entrance for the three cohorts of GOAL students. We use a straightforward approach that compares the rate at which GOAL students and students in Georgia public schools graduate high school and enter college. Our models assume that if students did not receive a scholarship from GOAL, they would have enrolled in a public school and graduated high school and entered college at a similar rate to public school students. Unfortunately, we are not able to account for selection bias generated from students selecting into the GOAL program. In other words, we are not able to account for the fact that some students would have enrolled in a private school even without a GOAL scholarship, or would have graduated high school at the same rate as we observe even if they would have attended a public school. However, given that the QEE program requires most students to previously enroll in a Georgia public school before applying for the program, we believe that using public school high school graduation and college entrance rates provides an appropriate comparison. If there is "positive selection" into the program, our estimated

[19] More about the community eligibility provision, https://www.fns.usda.gov/school-meals/community-eligibility-provision#:~:text=The%20Community%20Eligibility%20Provision%20(CEP,students%20without%20collecting%20household%20applications.

economic benefit would be upwardly biased.[20] To account for this potential bias, we use cautious estimates on the economic returns to high school graduation and college entrance. In addition, there could be "negative selection" into the program if students not performing well in public schools are more likely to seek GOAL scholarships.[21] We do not make an adjustment for this potential downward bias in our estimates of economic benefits.

We calculate the returns for high school graduation and college entrance separately. For each outcome, we estimate the benefits from economic activity using the following equation:

$$Benefits = S * D * R$$

where $Benefit$ represents the economic benefit of receiving a scholarship to attend a private school compared to attending a public school for students in our sample. S represents the number of GOAL students in the adjusted cohort, 784. D represents the difference between the outcomes (high school graduation and college entrance rates) of GOAL students and public school students, and R represents the economic return for each additional student graduating high school or entering college.

Defining Economic Benefits

Estimating the economic benefits associated with each additional student who graduates high school or enters college is not a simple task. First, we need to define what we mean by an "economic benefit". The simplest definition would be what the applicable Georgia law refers to as "economic activity," that is, the additional amount of the present value of lifetime earnings for a student at one level of education, say a high school diploma, compared to a student at the next lower level of educational attainment, say not completing high school. A second aspect of the economic benefits includes what the applicable Georgia law refers to as "public benefit", that is, the public benefits of positive externalities, which accrue to others, that are associated with increased educational attainment, such as: increased tax revenue for governments,

[20] Selection bias occurs when the people who select into a program differ in unobservable ways that could affect the outcome of interest (educational attainment in our case) as compared to people who do not select into the program. For example, positive selection bias would occur if more motivated families are more likely to apply for the program than less motivated families. Students with highly motivated parents might also be likely to graduate high school and enter college, even in absence of the QEE program. Such selection bias would overstate the QEE's impact on educational attainment in this situation.

[21] Negative selection into the QEE program is also possible. Families seeking scholarships to private schools are likely doing so as an alternative to their local public schools. Switching schools is difficult and families are unlikely to leave their public schools if their children are performing well. Students who seek out private school alternatives through the QEE could be struggling academically, and as a result would be less likely to graduate high school and enter college than students who remain in public schools. Such selection bias would understate the QEE's impact on educational attainment. There is evidence that negative selection can occur among families choosing private schools, see Neal (1997).

decreased dependency on government services, fewer health care costs, and reduced criminal behavior.

Second, estimating the economic benefits associated with increased educational attainment requires many assumptions on the growth of the economy, the length of time people remain in the labor force, the discount rate of future earnings, and the monetary value of the positive externalities associated with increased educational attainment. Additionally, estimating the *causal* effect of increased educational attainment is exceptionally difficult as it requires detailed individual level data as well as complex statistical methods to net out the impact of students' cognitive and non-cognitive abilities from the effect of their level of educational attainment. In other words, the estimated economic benefit needs to account for the fact that a given student with superior cognitive and other abilities may have earnings similar to others with their same educational attainment, even if the student had not attained that level (Vining & Weimer, 2019). Estimated economic benefits that do not account for students' abilities overestimate the economic benefit of educational attainment.

Given these limitations, readers should consider the economic analysis in this paper as an *estimate*. We rely of the most recent literature on the returns to education to produce a cautious, yet plausible, estimate of the economic benefits generated by the GOAL students in our sample. However, even the most recent and technically advanced research on the returns to education suffer from some of limitations addressed above, and "should be viewed as inherently uncertain" (Vining & Weimer, 2019, pg 12). In the following subsections we address how we calculate both the high school graduation and college entrance rates for GOAL students as well as the associated economic activity and public benefits.

High School Graduation

Applying the same methodology used for Georgia public schools, we calculate the adjusted four-year high school graduation rate for the three cohorts of GOAL students using the following equation:

$$High\ School\ Graduation\ Rate = \frac{Number\ of\ Students\ in\ Adj.Cohort\ who\ Graduate}{Number\ of\ Student\ in\ Adjusted\ Cohort}$$

As described previously, the adjusted cohort includes GOAL students who entered ninth grade in the 2013-14, 2014-15, and 2015-16 academic years minus students who transferred out of the program and to another high school prior to twelfth grade. For the public school comparison, we use the four-year graduation rate for Georgia public schools reported by the Governor's Office of Student Achievement which uses the same methodology.

Estimated Economic Return for Each Additional High School Graduate

Commonly cited in education policy cost-benefit analyses regarding public education programs and policies, Levin (2008) estimates that the total economic benefit from each additional high school graduate is, on average, $572,200 with $288,000 coming from the present value of lifetime earnings and $284,200 coming from associated positive externalities including increased tax revenue as well as decreased health care costs, criminal behavior, and welfare costs.[22] However, Levin's estimates represent the upper bound of the economic return to high school graduation, as he does not account for students' cognitive and non-cognitive abilities — other than educational attainment — that contribute to a students' likelihood of graduating and the resulting economic activity and public benefit. Other research suggests that the effect of students' abilities account for a substantial portion of the estimated economic returns (Heckman, Humphries, & Veramendi, 2018), as much as 50 percent of the present value of lifetime earnings for high school graduates compared to students who drop out (Vining & Weimer, 2019).

Vining and Weimer (2019) provide a more cautious estimate of the economic benefits of a high school diploma — relative to Levin (2008). They include both the present value of lifetime earnings, adjusting for students' attributes, as well as positive externalities associated with educational attainment in their estimate. They estimate that each additional high school graduate generates, on average, a combined $300,000 more in (a) lifetime earnings and (b) public economic benefits — where these public benefits accrue to others — compared to someone who does not complete high school. The public benefits included in their estimate are increased tax revenues, reduced criminal behavior and the resulting savings to the criminal justice system, fewer healthcare costs, and reduced dependency on welfare programs. Given our goal of providing a cautious estimate of the economic and public benefit of the QEE program, we use Vining and Weimer's estimated combined economic benefit in our analysis.

College Entrance

We calculate the college entrance rate for the adjusted cohort of GOAL students in a similar way as the high school graduation rate.

$$College\ Entrance\ Rate = \frac{\#\ of\ Students\ in\ Adj.Cohort\ who\ Enter\ College}{\#\ of\ Student\ in\ Adjusted\ Cohort\ who\ Graduate\ High\ School}$$

[22] Levin estimates the average return to graduating high school compared to dropping out is $211,875 in 2004 U.S. dollars. We adjust his estimate in terms of 2019 U.S. dollars, $287,967. He estimates an average gross benefit of the positive externalities to be $209,100 in 2004. We adjust this estimate to reflect dollars in 2019, 284,200. We round to the nearest hundred for ease of exposition.

The college entrance rate for Georgia public school students comes from GOSA. The GOSA data reports how many students graduated high school and enrolled in post-secondary institutions within 16 months of high school graduation. The data provided by GOAL includes student-reported college entrance immediately following high school for graduating seniors.

To maintain an appropriate comparison between GOAL and traditional public school students, we adjust the self-reported college entrance rate of GOAL students to account for the difference between students' intent to enter college following high school graduation and their actual enrollment, referred to as "summer melt." Castleman and Page (2013) estimate that of students who express intent during twelfth grade to enroll in college, 10 percent of students who do not qualify for FRL and 15 percent of students who qualify for FRL do not enter college the fall semester following high school graduation. Additionally, Eagan et al. (2015) estimate that approximately 3 percent of students take a "gap year" and enroll in post-secondary education a year after graduating high school.[23] We adjust the self-reported college entrance rates first using Page and Castleman's estimates of summer melt (reducing the student reported rate) and then add 3 percent to the adjusted enrollment rate to account for students who would enroll within 16 months of their high school graduation.

We adjust the college entrance rates as follows. We start by calculating the overall college entrance rate as well as the entrance rate for both students who quality for and those who do not qualify for FRL separately. Out of the 775 students in our adjusted cohort who graduated high school, 743 of them reported their intent to enroll in postsecondary schooling. Of the 775 students, 465 do not quality for FRL and 310 qualify for FRL. The entrance rate for non-FRL students is 0.9570 or 95.7 percent (445/465 = 0.9570). The entrance rate for FRL students is 0.9613 or 96.13 percent (298/310 = 0.9613). To account for summer melt among these students, we reduce the entrance rate for non-FRL students by 10 percent (0.9570*0.9 = 0.8613), and then reduce the entrance rate for FRL students by 15 percent (0.9613*0.85 = 0.8171). We then combine these two figures for a college entrance rate adjusted for potential summer melt, 84.36 percent (465 * 0.8613 + 310 *0.8171 / 775 = 0.8436). Next, we add 3 percent to our adjusted entrance rate (to account for students who first enroll in college a year after graduating high school) for an estimated college entrance rate of 86.89 percent (0.8436 * 1.03 = 0.8689). Again, these two adjustments for summer melt and gap years between high school and first time college enrollment are based on empirical studies of these phenomena.

The details for the above calculation are as follows:

- Number of GOAL students in adjusted cohort: 784.
- Number of students in adjusted cohort who graduated from high school: 775.
- Number of students who graduated high school and <u>do not qualify for FRL</u>: 465.

[23] See also https://www.thesca.org/connect/blog/gap-years-what-does-research-say

- Number of students who graduated high school and qualify for FRL: 310.
- Student-reported college entrance rate for high school graduates: 743/775 = 0.9587 or 95.87%.
- Student-reported college entrance rate for non-FRL students: 445/465 = 0.9570 or 95.70%.
- Student-reported college entrance rate for FRL students: 298/310 = .9613 or 96.13%.
- "Summer melt" downward adjustment for non-FRL students: -0.10 or -10%.
- "Summer melt downward adjustment for FRL students: -0.15 or -15%.
- "Gap year" upward adjustment for all students: +0.03 or +3%.
- Adjusted college entrance rate for GOAL students:
    - "Summer melt" downward adjustment for FRL students: 0.9613 **x** 0.85 = 0.8171
    - "Summer melt" downward adjustment for non-FRL students: 0.9570 **x** 0.90 = 0.8613
    - "Summer melt" downward adjustment for FRL and non-FRL students:

      (465 non-FRL students **x** 0.8613) **+** (310 FRL students **x** 0.8171) / 775 = 0.8436
    - "Gap year" upward adjustment for all students: 0.8436 **x** 1.03 = 0.8689.
    - **Overall adjusted college entrance rate for GOAL students: 0.8689 or 86.89%.**

To summarize, the self-reported college entrance rates for GOAL high school graduates was 95.87 percent, but through the above adjustments we use a lower graduation rate for GOAL students, 86.89 percent.

Estimated Economic Benefit for Attending Some College

We estimate the economic benefit for entering college but not completing, as most of our sample of GOAL students have not been enrolled in college long enough to graduate. The return to an associate's, bachelor's, or graduate degree are much larger than the return to some college. Therefore, our estimated returns in this section represent the lower bound of the potential economic benefit for participating students.

We use Giani, Attewell, and Walling's (2019) estimated return in labor markets earnings for students who attend some college. Giani and colleagues use methods that reduce the threat of selection bias and estimate a plausible return for students who only attended some college but

stop short of a degree.[24] It is important to note, that their estimates only include the increase in labor market earnings and do not account for any positive externalities that are associated with college attendance; therefore, our analysis continues to provide a cautious economic return.

Giani, Attewell, and Walling estimate that students who enroll in a 2-year institution but do not complete a degree experience a 6.5 percent increase in earnings, on average, and students who enter a four-year institution experience a 5.8 percent increase in earnings, on average. [25] The estimated returns vary greatly for different types of students, particularly for economically disadvantaged students who experience the greatest benefits from enrolling in some college. Economically disadvantaged students who enroll, but do not complete a degree, in a two-year institution experience an 8.1 percent increase in earnings and a 22.6 percent increase in earnings from enrolling in a four-year institution, on average. The substantial variation among the estimated returns for some college complicate our methods, as there is not one estimated return that makes the most sense to use in our models and choosing an estimate requires us to make assumptions on which type of colleges, two- or four -year, students enroll without data on their actual enrollment.

In order to simplify our estimates and to cautiously estimate the economic impact of the GOAL program, we use Giani and colleagues' lowest estimated average return of some college. That is, we assume an average return of 5.8 percent on yearly earnings for all students as a result of attending some college. We also do not calculate the estimated returns for students who qualify for and those who do not qualify for FRL separately. This decision continues to cautiously estimate the economic benefit as the returns for some college are much higher for economically disadvantaged students, and GOAL students who qualify for FRL enter college at a much high rate than similar students in public schools. If we had made different choices as to rates of return and separating the data, our estimates of economic returns to some college would have been larger than those reported here.[26] In Appendix B, we include alternative estimates where we estimate the return in earnings separately for students who qualify for FRL.

[24] Giani, Attewell, and Walling use a longitudinal data set on high school graduates in Texas. They use Augmented Inverse Probability Weighting (AIPW) to reduce the threat of selection bias to produce reasonable estimated returns.

[25] For Giani, Attewell, and Walling's (2019) estimated earnings returns for some college see Table 5 in their full paper.

[26] Given the large variation in the estimated returns for some college, especially for economically disadvantaged students, we provide multiple alternative estimates in Appendix B where we estimate the earning returns for FRL and non-FRL students separately for both two- and four- year institutions. These estimates range from an increase of $7 million in total lifetime earnings to an increase of $14.5 million in lifetime earnings for the GOAL students in our sample. We only report the most cautious estimates in the body of this report.

In Georgia, the median annual income for a high school graduate is $27,587, assuming a 3.5 percent discount rate, a 1.5 percent increase in yearly wages, and assuming people work 40 years, the net present value of lifetime earnings for a high school graduate is $747,372.[27] Using Giani, Attewell, and Walling's estimated 5.8 percent return in yearly earnings, a person with some college earns an estimated $45,938 more over there their lifetime as compared to someone with a high school diploma but never attends any college. This $45,938 estimate is the increase in the present value of lifetime earnings for students who attend some college relative to students who stopped their education after earning a high school diploma.

There are not good estimates in the academic literature on the public benefits — the benefits to others — from college enrollment. Thus, we do not attempt to estimate the public benefits that accrue from increased college enrollment in the QEE program. Surely, there are benefits to others when more individuals enroll in college, which means our report is underestimating the economic benefits of the QEE program by not estimating the public benefits of college enrollment. In future work, once more QEE scholarship students have had time to finish college, we plan to include the public benefits of college graduation. These benefits would be positive if and only if scholarship students display higher college graduation rates relative to public school students.

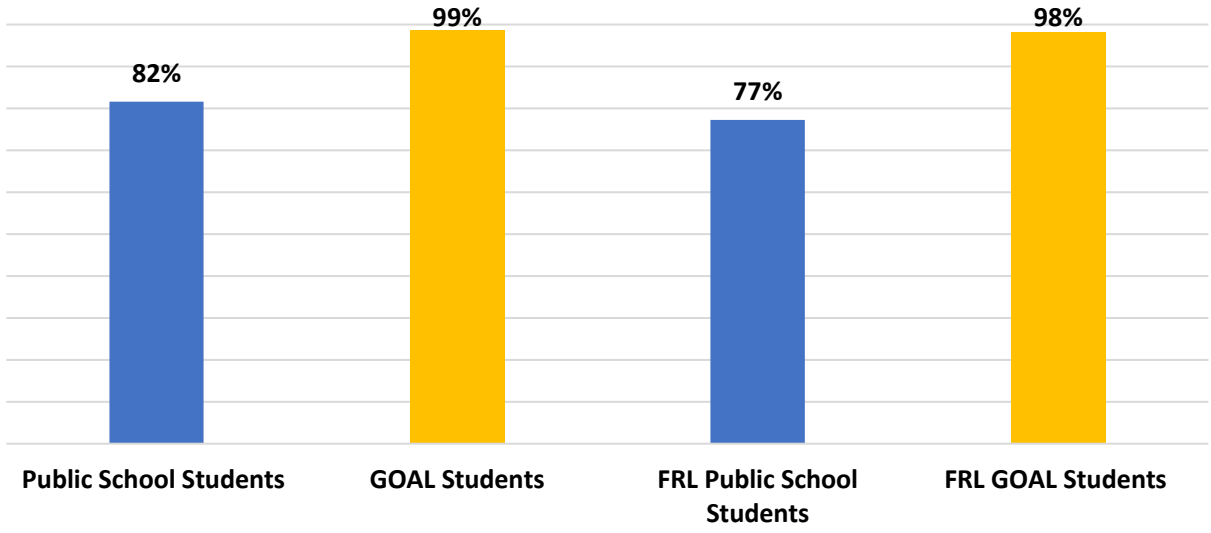
3. Results

High School Graduation

Figure 4 shows the high school graduation rates for GOAL and public school students. GOAL students graduate at a higher rate than public school students by 17 percentage points, with 99 percent of students receiving a GOAL scholarship graduating high school as compared to 82 percent of students in Georgia public schools. When considering only students who qualify for FRL, 98 percent of GOAL students graduate compared to 77 percent of public school students; a difference of 21 percentage points.

[27] Median yearly income estimates come from the Census Bureau 2017 America Community Survey. See https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml for more information

Figure 4: Four-Year High School Graduation Rate for Public School and GOAL Scholarship Students



Notes: Data on GOAL students was provided by Georgia GOAL and includes a sample of 784 students who entered 9th grade in AY 2013-14, 2014-15, and 2015-2016 and graduate high school between AY 2016-17, 2017-18, and 2018-19. We combine these cohorts of GOAL students to calculate an overall high school graduation rate. Data on public schools come from The Governor's Office of Student Achievement, *https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data*. We use the four-year graduation rates from AY 2018-2019. The graduation rate for 2016-17 was 81% and 82% in 2017-18.

Table 2 details the estimated economic benefit associated with the increased high school graduation rate of GOAL students. The estimated economic benefit includes both the increase in the economic activity (i.e., present value of lifetime earnings) as well as the public benefit (e.g. reduced crime and health care costs). Using the model described above, we estimate the economic benefit by multiplying together the number of GOAL students in our adjusted cohort, the difference between the GOAL and public school high school graduation rates, and Vining and Weimer's estimated economic benefit of a high school diploma (784 students * 0.17 * $300,000). We estimate an economic return of $39.9 million dollars for our three cohorts of GOAL students compared to students in traditional public schools.

The details for the above calculation are as follows:

- Number of GOAL students in adjusted cohort = 784.
- GOAL Students high school graduation rate = 0.99 or 99%.
- Georgia public school high school graduation rate = 0.82 or 82%.
- Difference between the GOAL and public school high school graduation rate = 0.17.

- Estimated economic benefit for each additional high school graduate compared to non-graduates **=** $300,000, where this figure includes both "economic activity" (i.e., the present value of lifetime earnings) as well as the "public benefit" including: increased tax revenues, reduced criminal behavior, fewer healthcare costs, and reduced dependency on welfare programs.
- Estimated increase in economic and public benefit for GOAL students compared to public school students: 784 scholarship students **x** 0.17 **x** $300,000 **=** $39,984,000.

Table 2: Estimated Economic Return from High School Graduation

GOAL Students High School Graduation	0.99
Public School Students High School Graduation	0.82
Difference (GOAL-Public School)	0.17
# GOAL Students in Adjusted Cohort	784
Increase in lifetime earnings and public benefits per student	$300,000
Economic Benefit	$39,984,000

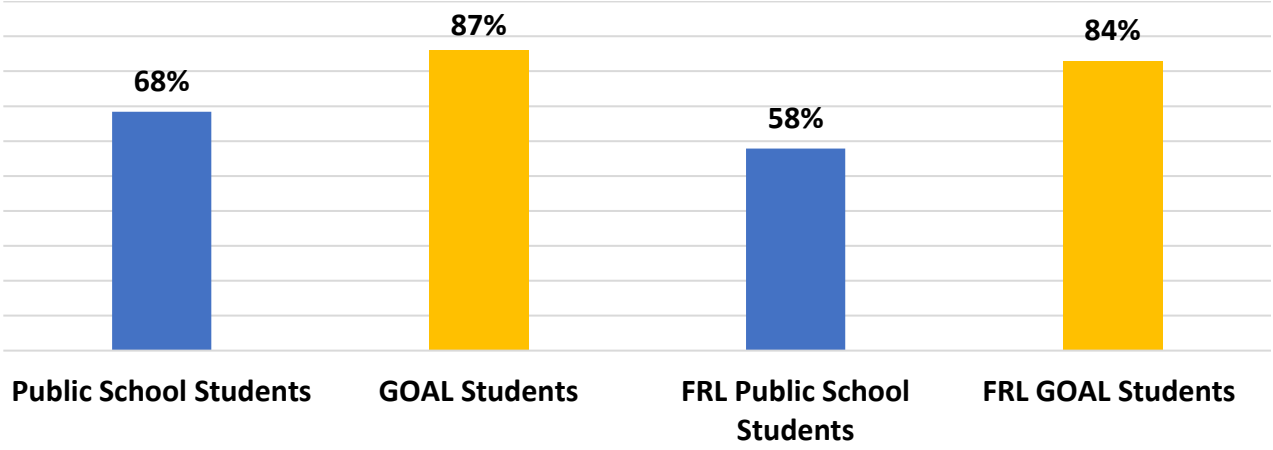
Notes: GOAL Cohorts are adjusted for students who transfer out of the program prior to graduation. Estimated economic benefit for each additional high school graduate comes from Vining and Weimer (2019). High School graduation rates for public school students come from The Governor's Office of Student Achievement. We use the graduation rate from AY 2018-2019. The graduation rate for 2016-17 was 81% and 82% in 2017-18.

College Entrance

Figure 5 shows the college entrance rates for GOAL and public school students. GOAL students enter college at a rate 19 percentage points higher than students in traditional public schools, with 87 percent of GOAL students and 68 percent of public school students entering college.[28] Limiting the sample to only students who qualify for FRL, 84 percent of GOAL students enter college compared to 58 percent of public school students; a difference of 26 percentage points.

[28] The reported college attendance rate of GOAL students — reported by the students themselves — was 96%. The GOAL college entrance rates are adjusted downward to account for summer melt from the student-self-reported enrollment. Refer to the methods sections for details.

Figure 5: College Entrance Rates for Public School and GOAL Scholarship Students



Notes: GOAL college entrance rates are conditional on students having graduated high school. We downwardly adjust the student-reported college entrance rates of GOAL students to provide a better comparison to the institution confirmed college entrance of public schools students; see the methods section of the economic analysis for more details. College entrance rates for public school students are also conditional on students graduating from high school and come from the Governor's Office of Student Achievement post-secondary report for FY2018-19, *https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data*. Students in the FY2018-19 report graduated high school in 2017. At the time of writing this is most recent available data.

Table 3 details the estimated present value of increased lifetime earnings associated with the higher college entrance rates we observe for GOAL students. We estimate a return of $6.7 million (775 students * 0.19 * $45,938) of additional lifetime earnings (in present value terms) for students who received a GOAL scholarship compared to students who attended Georgia public schools.

The details for the above calculation are as follows:

- Number of GOAL students in adjusted cohort who graduated high school = 775.
- GOAL Students college entrance rate = 0.87 or 87%.
- Georgia public school college entrance rate = .68 or 68%.
- Difference between the GOAL and public school college entrance rate = 0.19.
- Estimated present value of lifetime earnings for some college (5.8% return) compared to a high school diploma = $45,938.
- Estimated increase in the present value of lifetime earnings for GOAL students compared to public school students: 775 scholarship students **x** 0.19 **x** $45,938 = $6,764,370.

Table 3: Estimated Value of Lifetime Labor Market Earnings from Some College

GOAL Students College Entrance	0.87
Public School Students College Entrance	0.68
Difference (GOAL-Public School)	0.19
# of GOAL Students who Graduate High School	775
Increase in lifetime personal income per student	$45,938
Economic Benefit	$6,764,370

Notes: GOAL college entrance rates are conditional on students having graduated high school. We downwardly adjust the student-reported college entrance rates of GOAL students to provide a better comparison to the institution confirmed college entrance of public schools students; see the methods section of the economic analysis for more details. College entrance rates for public school students are also conditional on students graduating from high school and come from the Governor's Office of Student Achievement post-secondary report for FY2018-19, *https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data*. Students in the FY2018-19 report graduated high school in 2017. At the time of writing this is most recent available data.

As stated previously, since there is a dearth of research in the academic literature on the public benefits of college enrollment, we do not consider these public benefits in our analysis.

4. Discussion

We estimate a combined economic benefit of $46.7 million, about $15.6 million per cohort, associated with the increased high school graduation and college entrance for our sample of GOAL Scholarship students compared to students in Georgia public schools (Table 4).

Table 4: Combined Economic Benefit for Sample of GOAL Students

Economic Benefits	
Benefit from High school Graduation	$ 39,984,000
Benefit from College Entrance	$ 6,764,370
Total Benefit	$ 46,748,370

Our estimates represent a substantial economic benefit for the participating individuals and the State of Georgia, especially given that we only consider a subset of GOAL students in our analysis, 784 students. Georgia GOAL has served almost 17,000 students since the program started in 2009. Additionally, there are 25 other SSOs that provide scholarships to students with over 13,000 students receiving a scholarship each year since 2011.

If scholarship students participating in other SSOs graduate high school and enter college at similar rates to the students in our analysis, the full economic benefits of the QEE are substantially larger than our estimates reflect. As an illustration, 13,895 students received a

scholarship from participating SSOs in 2018. Approximately eight percent of students who receive a scholarship from GOAL are incoming ninth grade students. If we assume that eight percent of all students in the QEE are also ninth graders, that means there were 1,112 ninth grade students participating in the QEE program in 2018. If these 1,112 students graduate high school and enroll in college at the same rate that GOAL students in our sample do, then the estimated economic benefit would be $66.4 million for the cohort of ninth grade students starting high school in 2018, with $56.7 million (1,112 students ***** 0.17 ***** $300,000) as a result of increased high school graduation and $9.7 million from increased college entrance (1,112 students ***** 0.19 ***** $45,938).

The details for the above calculation are as follows:

- Number of scholarship recipients in 2018: 13,895 students.
- Proportion of 9th grade students receiving scholarships via GOAL who are in the 9th grade: 0.08.
- Estimated number of 9th grade scholarship users in 2018 **=** 13,895 students **x** 0.08 **=** 1,112 students.
- Difference between GOAL and public school high school graduation rate: 0.17.
- Difference between GOAL and public school college entrance rate: 0.19.
- ***If*** these students graduate high school at the same rate as the sample of GOAL students, ***then****:*
    - Estimated increase in economic benefit from increased high school graduation: (1,112 students **x** 0.17 **x** $300,000) **=** $56.7 million.
- ***If*** these students enter college at the same rate as the sample of GOAL students, ***then****:*
    - Estimated increase in the present value of lifetime earnings from increased college entrance: (1,112 students **x** 0.19 **x** $45,938) **=** $9.7 million.
- Estimated economic benefit from increased high school graduation and college entrance: $56.7 million **+** $9.7 million **=** $66.4 million.

The high school graduation estimate is much higher than the figure for increased college entrance for two main reasons. First, the high school graduation estimate includes both the impact of increased economic activity (i.e. lifetime earnings and public benefits to others), whereas the estimated returns to college entrance only include the impact of increased earnings. Second, the economic benefit for college entrance only estimates the impact of enrolling in college and not graduating with a degree.

Caveats

There are some limitations to our analysis that are important to consider when interpreting these results. First, as previously mentioned, our models assume that, without the QEE program, students receiving a GOAL scholarship would have continued to enroll in Georgia public schools and had similar outcomes to public school students. Unfortunately, we are unable to account for potential selection bias into the program. It is possible that students in GOAL would have graduated high school and entered college at the same rates as they have regardless of them attending a private school. In other words, the state would have enjoyed the economic benefits of these students even if they had attended public schools. If true, this situation would generate upwardly biased estimates of the economic impacts of the program. On the other hand, it is possible that our estimates could be downwardly biased. Students who apply for a GOAL scholarship are possibly more likely to be struggling in public schools compared to students who do not apply for a scholarship, generating an underestimate of the economic impact GOAL students' experience.

Although we are not able to account for selection bias in our models, we use cautious estimates of the economic benefits associated with high school graduation and college entrance. We only estimate the economic activity from entering college and not earning a degree. The returns to some college are quite low compared to the returns of a bachelor's degree. Levin (2008), for example, estimates the economic benefit of a bachelor's degree or higher to be around $1 million in lifetime earnings.[29] If the difference between GOAL and public school students persist and GOAL students earn a degree at a higher rate, then the associated return in lifetime earnings for our sample of 775 students who graduated high school could be as high as $147 million.

Additionally, the estimated economic benefits of some college do not account for other benefits associated with higher educational attainment. Students with higher educational attainment are not only more economically productive, but they also have healthier and longer lives (Day & Newburger, 2002; Meara, Richards & Cutler, 2008; Muennig, 2005; Muennig, 2008) resulting in fewer healthcare costs and less dependence on government assistance. These outcomes all generate substantial public benefits to individuals and the state of Georgia that we do not account for in our estimated economic benefits of college entrance. Though, these additional benefits are included in our estimates for the returns to a high school diploma.

[29] Levin's (2008) estimated average return for a bachelor's degree or higher is approximately $775,250, in 2004 dollars, compared to receiving a high school diploma. We adjust his estimates in terms of 2019 dollars for an estimated return of $1,053,670.

Similarly, research on other private school choice programs have found a reduction in crime among participating students (DeAngelis & Wolf, 2020; DeAngelis & Wolf, 2019). The reduction in crime among private school students could be due in part to the higher educational attainment enabled by attending private schools, or private schooling could help reduce criminal behavior above just helping students reach greater educational attainment. Our estimated economic benefit associated with increased high school graduation includes the benefit of reduced crime that is associated with graduating from high school. However, if the QEE program reduces crime among participating students above and beyond what is associated with increased attainment, then our estimates underestimate the economic benefit of the program. DeAngelis and Wolf (2019), evaluating the Milwaukee Parental Choice Program (MPCP, a voucher program), found a reduction of 3 to 4 percentage points in felonies and a 4 to 5 percentage point decline in misdemeanors for male scholarship students compared to similar public school peers. In a more recent paper DeAngelis and Wolf (2020) found students who participated in the MPCP had fewer drug and property damage convictions as well. A reduction in crime not only results in an increase in lifetime earnings for individuals, but it also results in substantial cost savings to the state in lower incarceration costs as well as less forgone tax revenues. Given that we do not estimate the effect that the QEE program may have on criminal behavior of participating students, our estimated economic impact may further understate the total economic benefit the program. In order to estimate the impact of the QEE program on participating students' criminal behavior directly, we would need student level crime data for both scholarship students and students in public schools.

In the future, we could also greatly enhance our analysis if we were able to obtain student-level data from the National Student Clearinghouse (NSC). The NSC is the most comprehensive database in the country on student post-secondary enrollment, persistence, and degree attainment. With NSC data, we would be able to more accurately estimate the economic returns of not just entering college but college degree completion as well. With NSC data, we would be able to see the type of colleges students enter (two- or four-year institutions) as well as how long they persist and what type of degree they obtain, if any. In order to match students to the NSC database, we need accurate full names and birth dates of participating students. We encourage GOAL and other SSO's to collect and maintain accurate records of scholarship participants' names and birth dates in order to match their records with the NSC database. Such data will facilitate a more robust analysis in the future.

Considering future analyses, we would be able to provide a more robust analysis if we had access to student level data for cohorts of ninth grade students participating in all SSOs, as well as student level data for public school students. Both data sets would allow us to create a

"student match" between students participating in the QEE and similar students in public schools, and then compare the educational outcomes (high school graduation, college entrance, degree completion, and criminal behavior) between similar scholarship and public school students. Matching similar students and comparing their educational attainment outcomes can reduce the threat of selection bias and help in generating better estimates of the economic and public benefits of the program. Below is a list of data needed in order to conduct such an analysis.

Our data "wish list" for future analyses includes:

- Student-level data for scholarship and public school students including:
    - Name of the school(s) they attend in 9^{th} -12^{th} grade
    - Family income, FRL status, race, gender, and home address
    - High school graduation status (transfer, dropout, graduate with diploma)
    - If they receive a scholarship, the number of years students received a scholarship and if they transferred out of the program prior to high school graduation;
- College entrance and degree attainment confirmed by the National Student Clearing House (NSC) for scholarship and public school students.

IV. Concluding Remarks

We find significant fiscal and economic benefits from the state of Georgia's QEE Tax Credit Scholarship Program. The QEE program provides scholarships to students at a lower taxpayer cost relative to the cost of educating those students in public schools, and the scholarship students graduate and enter college at higher rates than their public school peers.

Georgia taxpayers experience an estimated $19.9 million in savings to the state treasury plus an additional $33.3 million in savings to local public school systems, for a total *fiscal savings* of $53.2 million for AY 2018-19 alone. While we do not quantify the savings, we also find suggestive evidence that Georgia's QEE Program has aided in keeping private schools from closing, thereby keeping some non-scholarship students from enrolling in the public education sector, providing even more savings to taxpayers. In prior work, Lueken (2019) estimated that the QEE program saved Georgia taxpayers a total of $179 million during the AY 2010-11 to AY 2017-2018 time period. Estimated savings — on an annual basis — have been increasing over time because public school expenditures per student have been increasing while tax credits per scholarship student have been flat or declining over time.

We also find significant *economic benefits* for a sample of three cohorts of students receiving a GOAL scholarship. GOAL students in our sample graduate high school and enter college at a higher rate than students in public schools. This benefit is even more substantial and prevalent for economically disadvantaged students, as GOAL students qualifying for free or reduced-price lunch graduate high school 21 percentage points higher and enter college 26 percentage points higher than their public school peers. As a result, from the higher educational attainment of the 784 GOAL students in our sample, we estimate a combined (including increased economic activity and public benefits) economic benefit of $46.7 million dollars, or about $15.6 million per cohort. If scholarship students at all SSOs graduate high school and enroll in college at the same rate that GOAL students in our sample do, then the estimated economic benefit from the entire QEE program would be $66.4 million for the cohort of ninth grade students starting high school in 2018.

Our analyses have certain limitations. First, we chose to use myriad cautious approaches in both our fiscal and economic analyses and may be understating fiscal savings and economic benefits. Second, there are many potential benefits to a tax-credit scholarship program that we do not consider. For example, while we estimate the economic return from entering college, we do not estimate the return for increased degree attainment, which is much higher than college entrance alone, as data are not yet available. Further, we do not estimate the public benefits from increased college enrollment. The Education Economics Center plans to update these analyses in future years, as there will be significantly more students using these scholarships from which to analyze outcome data. We invite state officials, researchers, and anyone else to contact the Center at educationeconomics@kennesaw.edu to make suggestions as to how we can refine our analysis in order to make more accurate estimates of the fiscal and economic effects of this tax credit scholarship program.

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Appendix A

Estimating the Variable Costs of Educating Students in Public Schools

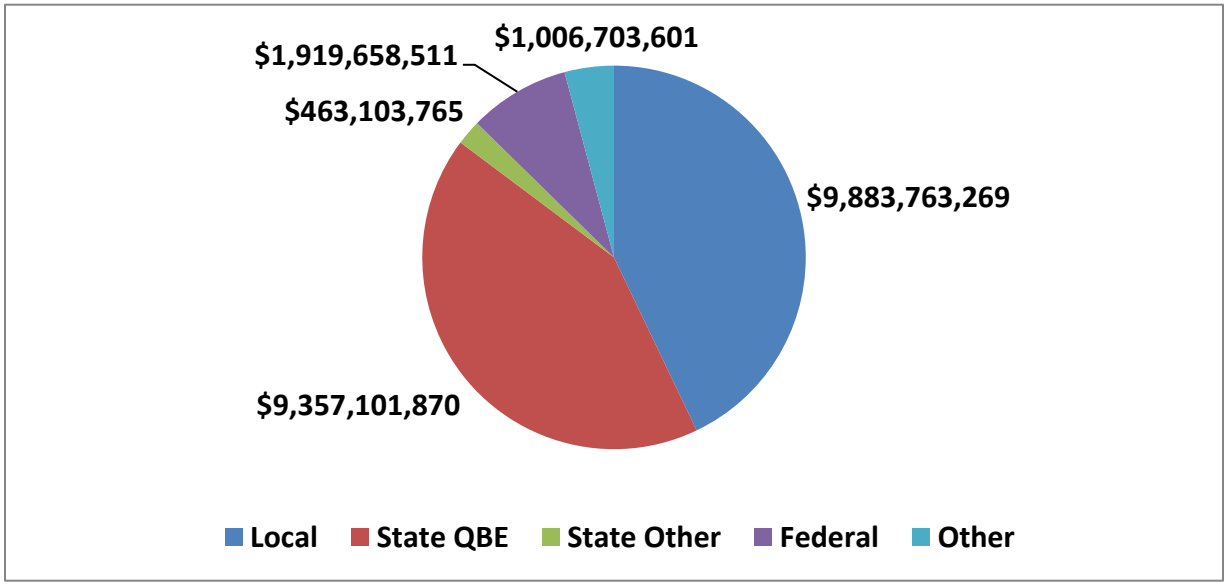
Basic Mechanics of Public School Funding

To estimate the fiscal effect of Georgia's QEE Tax Credit Scholarship Program, we need to know the variable costs of educating students in public schools — because these are the cost reductions that accrue to local public school systems when they do not have to educate students whose families have chosen to access scholarships — for the students who otherwise would have been enrolled in public schools. To be cautious, we are estimating short-run variable costs — cost reductions that accrue from one year to the next. To estimate short-run variable costs of public school systems, it is first necessary to understand some basic mechanics regarding how public schools are funded and how dollars flow when students transfer in and out of public school districts.

Revenue sources

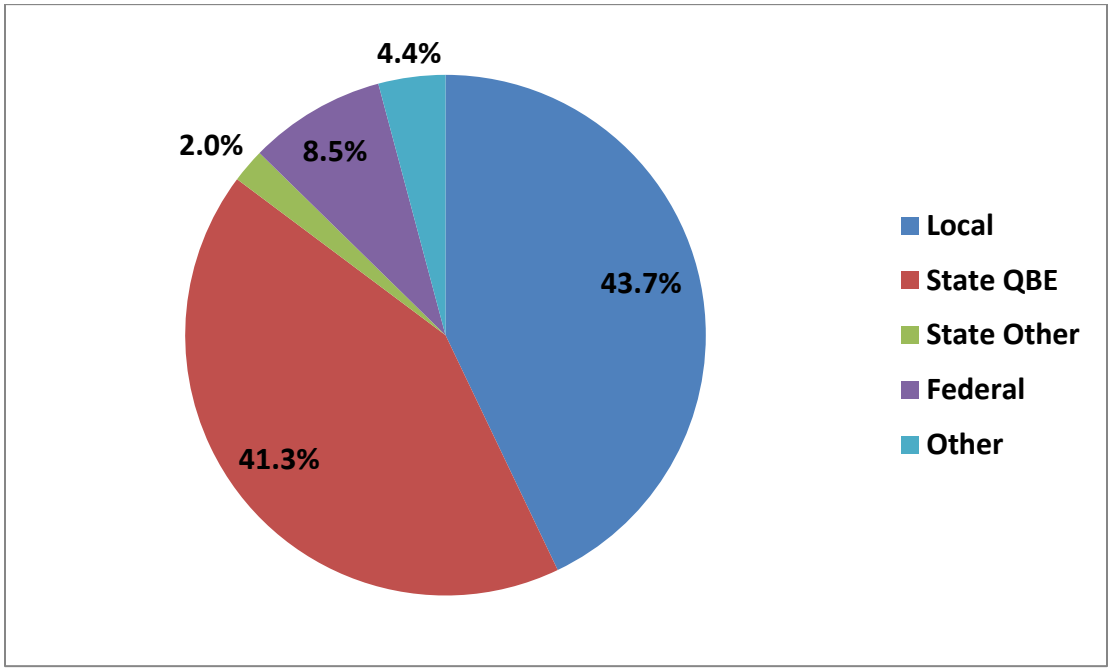
Public school districts receive funding from state, local, and federal taxpayers. While the percentages vary significantly across states, Georgia public schools receive 8.5 percent of their funding from the federal government, on average, and 43.7 percent from locally generated funds. The remaining funds come from the Georgia state government (43.3 percent) and "other sources", which are mostly private funds (4.4 percent). For the 2018-19 school year, the dollar amounts of these fund sources and the corresponding percentages are listed in the two charts below. Since all dollars mechanically flow to public school systems, the focus for this discussion is at the school system level.

Figure A1. – Georgia Public Schools, Taxpayer Revenues by Source (Dollars) for 2018-19



Source: Governor's Office of Student Achievement, https://gosa.georgia.gov/report-card-dashboards-data/report-card

Figure A2. – Georgia Public Schools, Taxpayer Funding by Source (Percentage)



Source: Governor's Office of Student Achievement, https://gosa.georgia.gov/report-card-dashboards-data/report-card

As compared to the national average, Georgia public school systems receive slightly more in funding from federal taxpayers and private sources and slightly less from state and local taxpayers.[30] Total revenues to local public school systems are not exactly equal to total expenditures — for technical reasons and because in a given year local school systems may add to their reserves (so total expenditures would be less than total revenues) or spend some of their reserves (so total expenditures would be more than total revenues).

How Dollars Flow

It is important to understand that when a student leaves a public school system — for any reason — all dollars do not follow. In particular, funding from local and federal sources is usually not allocated on a per-pupil basis. Typically, when public school districts lose students via choice — or lose students for any other reason — they get to retain their locally generated funding and a significant portion of federal funding.[31]

[30] https://nces.ed.gov/programs/digest/d18/tables/dt18_235.10.asp?current=yes .

[31] The two largest federal K–12 education programs are Title I and the Individuals with Disabilities Education Act (IDEA). Title I grants are based largely on census poverty estimates and education costs in each state and IDEA allocations are based on characteristics of the general population rather than public school enrollment. See Lueken (2018a).

Whether local taxpayers face a fiscal burden when they gain or lose students — for any reason, including via choice programs — depends on whether the revenue that public school systems actually gain or lose is greater or less than the short-run variable cost of educating the students who came or left. An example of this issue is how much do public school systems costs increase when they experience an increase in students — the increase in costs would be the variable cost of educating those new students, the costs that actually increase as a result of their enrollment increase. To demonstrate this issue, we describe the relevant basic principles of Accounting and Economics below.

Some Basic Principles of Accounting and Economics - Fixed vs. Variable Costs

Some assert that there are very high fixed costs in public school systems. Fixed costs are costs that do not vary with workload. They note that schools need electricity, air conditioning, teachers, bus drivers, and assistant principals — even though some students leave.

It is true that public school systems receive less funding when students leave — almost exclusively in terms of less in state funds, as they retain local and most federal funds for students they no longer serve. But it is also true that when schools serve fewer students they have lower costs. For example, when one or two students leave, the school needs fewer textbooks, supplies, or software licenses. If a large enough number of students leave, then schools can consolidate classrooms, staff fewer personnel, or take other actions.

This argument about substantial fixed costs is implicitly about the short-run. An important and basic accounting and economic principle is that all costs are variable in the long-run, and public school systems (along with any other economic entity) will adapt accordingly. For instance, if a public school system experiences an enrollment decline of 10 percent, over a period of years they will be able to restructure in order to reduce their costs by 10 percent. Nevertheless, they will likely not be able to reduce their costs by 10 percent from one school year to the next.

Public K-12 education is the only enterprise in our society (that we are aware of) that retains significant amounts of funding for customers they no longer serve. For example, when a patient chooses to leave a health clinic in favor of a different provider, the clinic that loses her doesn't keep any future funds for that patient (out-of-pocket or from insurance). And when a student transfers from one Georgia public college or university to another one in the University System of Georgia or to a university outside the System, every dollar generated by that student (tuition, state funds, Pell Grants, HOPE Scholarship, etc.) follows her. As another example, when you stop shopping at Kroger to purchase future groceries at Walmart, Kroger does not get to keep 20% of your future grocery bill because of "fixed costs."

One final thought on this topic — if all or virtually all public school expenditures represented fixed costs, then public school systems would not need additional state funds for enrollment growth when they gained students, because all their costs are fixed. We certainly do not believe that almost all public school costs are fixed costs — and we certainly do not believe in eliminating state funding to public schools for enrollment growth. Fortunately, we do not have to rely on our beliefs and can look to research that has been done on this issue.

Estimates of Short-run Variable Costs for Georgia Public School Systems

Using the actual experience of school systems in Georgia that lost students for non-school choice reasons, Scafidi (2012) estimated short-run fixed and variable costs in K-12 public school systems in Georgia to be 65.5 percent of total expenditures per student , where the short-run is defined as from one year to the next.[32] Specifically, Scafidi (2012) noted that public school systems report all of their expenditures to the federal government in twelve cost categories. His report then analyzed in which categories were costs actually reduced from one year to the next, where these cost reductions exceeded in percentage terms the reductions in students. For example, if a school system experienced a one percent enrollment decline from one year to the next, his report noted in which cost categories did local public school systems actually reduce their costs by more than one percent.

In terms of how Georgia public school systems actually adjusted their budgets when they lost students, they were observed to actually reduce the following costs more than commensurately with their decrease in students: instruction, student support, instructional staff support, food service, and enterprise operations. Thus, the 65.5 percent figure represents short-run variable costs that Georgia school systems were observed actually decreasing more than commensurately with their decline in student enrollment. In contrast, the remaining 34.5 percent of public school spending can be considered fixed costs that were not reduced (although several actually increased) when Georgia school systems experienced declines in enrollment: capital, interest, general administration, school administration, operations & maintenance, transportation, and "other" support. Please see Scafidi (2012) for more details.

[32] Two subsequent studies used their professional judgement and created estimates extremely close to Scafidi (2012): Bifulco, R. and Reback, R. (2014). And Lueken, M.F. (2016). Dorfman (2019) uses an econometric approach and finds an estimate of short-run variable costs significantly higher than the three prior studies. The author of this fourth study, Dr. Jeffrey Dorfman, is currently the State Economist for the state of Georgia. If the state conducts its own fiscal analysis of this program and uses Dr. Dorfman's estimate of short-run variable costs, it will produce an estimate of fiscal savings for local taxpayers from the QEE program that is significantly larger than the estimate produced here. That said, we used the lower estimate of variable costs yielded by Scafidi (2012) in the interest of producing a cautious estimate of savings.

Scafidi (2017) showed that public school districts around the nation — and including Georgia — have behaved over the last several decades *as if* staff are variable by hiring personnel, both teaching and non-teaching staff, at rates that significantly outpace enrollment growth. Thus, it is reasonable to treat expenditures on a majority of personnel as a short-run variable cost. Using this 65.5 percent estimate of short-run variable costs, we estimate that if scholarship students were not able to access a scholarship and then enrolled in a public school that public school systems' costs would increase as follows:

.655 in short-run variable costs x $12,796 in total expenditures per student = $8,381

This figure of $8,381 per student is an estimate of the additional cost, on average, of educating students who migrate to Georgia public schools. This estimate is cautious because Scafidi (2012) found that Georgia public schools actually reduced these costs more than commensurately with their decline in student enrollments — thus, observed variable costs in Georgia public schools, from one year to the next, were actually higher than 65.5 percent.

To be clear, this 65.5 percent estimate was based on actual cost-cutting behavior by Georgia public school systems that experienced enrollment declines for non-school choice reasons. Further, in the long run, all costs are variable, as local public school systems can make new strategic decisions in terms of staffing and facilities.

In the fiscal analysis in this report, we use $8,381 as our estimate for the short-run variable costs of educating students in Georgia public schools. This estimate is consistent with Scafidi (2012) and two other studies on the topic. A fourth study finds that variable costs are significantly higher in Georgia. We chose not to use this fourth estimate, as it would have produced a much larger estimate of fiscal savings from the QEE program. We chose to be on the side of caution.

Appendix B

Additional Estimates of the Economic Returns from College Entrance

As mentioned in the methods section of the economic analysis, the estimated economic benefits to attending some college vary greatly across type of post-secondary institutions (two- or four-year colleges) and across student subgroups. Giani, Attewell, and Walling's (2019) find that the average return for some college is greater for students who enter two-year colleges (6.5 percent) compared to four-year colleges (5.8 percent). They also find that the return is greater for women, racial minorities, and students who are economically disadvantaged. They observe the largest variation in returns for economically disadvantaged students where these students see an 8.1 percent return in yearly earnings from attending a two-year college and see a 22.6 percent return in yearly earnings from attending a four-year college. This heterogeneity complicates our estimated economic benefits given that we do not have data on the type of colleges GOAL students entered.

In the interest of caution given the heterogeneity of the estimates, in the main body of this paper, we employ the lowest estimated return–a 5.8 percent return to some college for all students in our sample, regardless of if they qualify for FRL. In this appendix, we present multiple estimates for the economic benefits (1) assuming all students in our sample entered a two-year year college, (2) assuming all student entered a four-year college, and (3) estimating separate returns for students who qualify for and those who do not qualify for FRL to capture the larger economic return for FRL students.

First, Table B1 summarizes the estimated economic benefits if we assume that all students in our sample enter a two-year college. The average benefit for entering a two-year college for all students is 6.5 percent or $48,579 in increased lifetime earnings (in present value) compared to someone who never enters any college. Using these figures, we estimate an increase of $7.1 million dollars of lifetime earnings for GOAL students in our sample compared to their public school peers. If we account for the differential returns of entering a two-year college for FRL students (8.1 percent) and non-FRL students (5.6 percent), we estimate an increase of $7 million dollars of lifetime earnings for GOAL students.

Table B1: Estimated Value of Lifetime Labor Market Earnings from Some College, Two-Year Institutions

	All Students (6.5% Return)	FRL Students (8.1% Return)	NON-FRL Students (5.6% Return)
Return from Two-Year College Entrance	$48,579	$60,537	$41,853
GOAL Entrance Rate	0.87	0.84	0.89
Public School Entrance Rate	0.68	0.58	0.78
Difference (GOAL-Public)	0.19	0.26	0.11
# of students who graduated high school in adjusted cohort	775	310	465
Estimated Benefit	**$7,153,281**	$4,879,291	$2,140,771
Combined Benefit: FRL+NON FRL			**$7,020,062**

Notes: *College entrance rates are conditional on graduation from high school. We downwardly adjust the student-reported college entrance rate of GOAL students to provide a better comparison to the institution confirmed college entrance rate of public schools students; see the methods section of the economic analysis for more details. College entrance rates for public school students comes from the Governor's Office of Student Achievement, post-secondary report for FY2018-19.*

Second, Table B2 summarizes the estimated economic benefits assuming that all of the students in our sample enter a four-year university. The average benefit from entering a four-year university for all students in 5.8 percent or $45,938 in increased lifetime earnings (in present value) compared to someone who graduates high school and never enters college. This estimate, which is the main figure included in our report, is the most cautious and represents an increase of $6.7 million of lifetime earnings for GOAL students in our sample compared to their public school peers. If we account for the differential benefits of entering a four-year university for FRL students (22.6 percent) and non-FRL students (2.4 percent), we estimate an increase of $14.5 million in present value of lifetime earnings for GOAL students in our sample.[33]

[33] Giani, Attewell, and Walling (2019) estimate that non-economically disadvantaged students experience a 2.4% increase in yearly earnings from attending a four-year college; however, this estimate is not statistically significant. They believe this could be due to a small sample size. If we only estimate the benefit of enrolling in a four-year college for students who qualify for FRL, the total benefit would be $13.6 million.

Table B2: Estimating Value of Lifetime Labor Market Earnings from Some College, Four-Year Institutions

	ALL students (5.8% Return)	FRL Students (22.6% Return)	NON-FRL Students (2.4% Return)
Return from Four-Year College Entrance	$45,938	$168,906	$17,937
GOAL Entrance Rate	0.87	0.84	0.89
Public School Entrance Rate	0.68	0.58	0.78
Difference (GOAL-Public)	0.19	0.26	0.11
# of students who graduated high school in adjusted cohort	775	310	465
Estimated Benefit	**$ 6,764,346**	$13,613,823	$917,473
Total Benefit: FRL+NON FRL			**$14,531,297**

Notes: *College entrance rates are conditional on graduation from high school. We downwardly adjust the student-reported college entrance rate of GOAL students to provide a better comparison to the institution confirmed college entrance rate of public schools students; see the methods section of the economic analysis for more details. College entrance rates for public school students comes from the Governor's Office of Student Achievement, post-secondary report for FY2018-19.*

Obviously, students in our sample are likely to enroll in a mix of two- and four-year institutions. However, without data on the type of institutions in which the students enroll, we cannot more accurately estimate the increase in lifetime earnings for GOAL students, and, as such, we provide a range of potential estimates. The estimates for increased lifetime earnings provided in this appendix are larger than in the main body of the report because in the appendix we account for the differential returns economically disadvantaged students experience from attending some college. These larger returns substantial increase our estimates as students in the GOAL program who qualify for FRL enter college at a much higher rate than students in public schools. For future analyses, we hope to obtain data from the National Student Clearinghouse which will provide data on the type of institutions students enroll as well as if they obtain any degree.

Given that we use the most cautious estimates, we may be underestimating the increase in lifetime earnings that accrue to GOAL scholarship students from increased college enrollment. In addition, as stated in the body of this report, since we do not estimate the public benefits that accrue to others from increased college enrollment, we are likely further underestimating the returns. We do not attempt to estimate the public benefits from increased college enrollment because, presently, there are not good estimates of these public benefits in the academic literature and conducting the research necessary to calculate such an estimate was beyond the scope of this study.

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Ben Scafidi is a professor of economics and director of the Education Economics Center at Kennesaw State University. He is also a Friedman Fellow with EdChoice (the legacy foundation of Milton and Rose Friedman) and a senior fellow with the Georgia Public Policy Foundation. Previously, he served as the first chair of the state of Georgia's Charter Schools Commission, the Education Policy Advisor to Governor Sonny Perdue, a staff member to both of Governor Roy Barnes' Education Reform Study Commissions, and as an expert witness for the state of Georgia in school funding litigation. He received a BA in Economics from the University of Notre Dame and a PhD in Economics from the University of Virginia.

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REPORT ACCESS

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QEE Full Report: https://coles.kennesaw.edu/education-economics-center/docs/QEE-full-report.pdf

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