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# Motivation Matters: Merit Scholarships and Student Achievement

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**M**erit scholarships, largely diminished in the United States in the 1960s and 1970s in favor of need-based scholarships, are now making their way back into education-policy debate. While merit scholarships remain controversial, evidence from a program in Kenya suggests these scholarships can be an effective tool to raise both students' and teachers' efforts and to boost academic achievement.

Here in the United States, a growing number of states, including Georgia, Michigan, New York, and Massachusetts, now offer merit scholarships to college-bound students who perform well academically. Many other countries have similar programs, some of which target younger students. However, some educationalists oppose these kinds of scholarships on equity grounds, fearing that the benefits would mainly go to students from better-off families. Others argue that offering cash rewards for academic performance could weaken students' intrinsic motivation to learn or cause them to focus on prepping for tests at the expense of other dimensions of learning.

Unfortunately, the nature of most existing U.S. merit scholarship programs makes it hard to find reliable evidence on how exactly these programs affect students' learning. Often it is difficult to identify an appropriate group of students who was not eligible for the program to compare with a group who was. Without a credible comparison group, we cannot easily differentiate between program effects and other confounding factors that may influence achievement in education.

For example, one of the best existing sources of evidence on merit scholarships in the United States is Georgia's HOPE (Helping Outstanding Pupils Educationally) program, which awards in-state college scholarships to high school students who graduate with

at least a B average. After the program was introduced in 1993, the average SAT score for Georgia high school seniors rose almost 40 points. But since all students in the state were eligible, there was no reliable way of determining with certainty whether factors other than the scholarship also contributed to the rise.

In order to approach this question more systematically, Edward Miguel, Rebecca Thornton, and I examined evidence from a merit scholarship program for primary-school girls in Kenya. In contrast to most U.S. programs, this one was phased into a number of schools in random order, allowing us to compare schools that were eligible for the program with similar schools where the scholarship had not yet been introduced. That way, the differences in educational outcomes between the two groups of students could be attributed solely to the effect of the scholarship. Our survey included information on test scores, attendance, study habits, and students' attitudes toward learning.

## EDUCATION IN KENYA

Various school fees—levied to cover nonteacher costs such as textbooks, chalk, classroom repair, and other school expenses—have historically created a barrier to education in Kenya. When the program we studied was introduced in 2001–02, primary-school fees averaged approximately \$6.40 per year per family (in 2003, the government abolished these fees). Families spent another \$6 or so to provide each student in the household with a school uniform and other school supplies. In western Kenya—where annual per capita income is less than \$1 a day—these are substantial expenses.

The Kenya Certificate of Primary Education (KCPE), given in grade eight (the end of primary school), tests students' knowledge in five subject areas: Swahili, English, geography and history, mathematics, and science. The results of the exam determine whether students are

admitted to secondary school and, if so, which schools will admit them—much as the ACT and SAT tests affect admission to tertiary education in the United States. In order to prepare for the KCPE, students typically take standardized exams at the end of each school year in grades four through eight. These preparation tests carry a financial cost; students pay roughly \$1–\$2, depending on the year, to sit for the exams.

School-fee problems and the challenge of the placement exam both contribute to the low number of students passing from primary school to secondary school. In the part of western Kenya we examined, drop-out rates climbed precipitously in grades five through seven; only one-third of the enrolled students ever finished primary school. Drop-out rates were especially high among teenage girls.

### THE GIRLS' SCHOLARSHIP PROGRAM

In 2001, a Dutch nonprofit organization called International Child Support (ICS) Africa began awarding scholarships to high-achieving, grade-six girls from Busia and Teso, two rural districts in western Kenya, for the next two academic years—that is, through the end of primary school. In order to win the award, girls had to score in the top 15 percent of the year-end, grade-six exams within their district. Each winning girl received (a) a grant of \$6.40, paid to the girl's school to cover fees; (b) a grant of \$12.80 for school supplies, paid directly to the girl's family; and (c) public recognition at a school awards assembly.

The competition for scholarships took place across a large number of schools and among a large number of students, making it less likely that the program would undermine cooperation between students within schools and classrooms. During the first year of the scholarship, roughly 57 percent of the 63 program schools had at least one winner, with an average of 5.6 winners in each of those schools. During the second year, 70 percent of program schools had at least one winner.

Through several unannounced attendance checks each school year, ICS personnel administered questionnaires to students in grades five through seven, collecting information on study effort, habits, and attitudes toward school and schoolwork. These surveys also confirmed that most students were aware of the scholarship and understood who was eligible to receive the award.

In both Busia and Teso, ICS invited selected schools to participate in the program through random draws, similar to a lottery. In Busia, all schools invited to participate did so and, hence, the characteristics of program schools and comparison schools were balanced. In Teso, some schools and individuals chose not to participate, and so the random allocation of invitations was not sufficient to ensure balanced program and comparison groups, making it harder to draw inferences about the impact of the program. We focus below on the effects in Busia.

### RESULTS

The randomized selection of treatment and control schools made it relatively easy and straightforward to get a reliable measure of the scholarship program's impact. We simply needed to compare students' test scores and other educational outcomes across the two groups of schools before and after the introduction of the scholarship. We made these comparisons over the two-year span of the program, first comparing students who were in grade six in 2001, and then students who were in grade six a year later, in 2002.

The test-score impact of the scholarship program was large and tended to spill over to other students who had little or no chance of winning the award. During both years of the program in Busia, girls' test scores in scholarship schools improved markedly when compared to girls in control schools; test scores increased by 0.29 standard deviations among grade-six girls in 2001, and they increased by 0.21 standard deviations among grade-six girls in 2002. These improvements are roughly equivalent to 0.2 grades of extra primary schooling. As expected, girls scoring just below the winning threshold on baseline exams showed the largest test-score gains. But there were also large improvements among girls who scored poorly on baseline exams and who were therefore not likely to win the award from the outset.

Test scores among boys, who were definitely ineligible to compete for the award, also improved. Boys' test scores in Busia program schools increased over the two years by 0.13–0.21 standard deviations. As with the girls, boys at all levels of the original baseline distribution improved their scores, although the gains at the top of the distribution were somewhat more pronounced.

Finally, these test-score gains also appear to have extended beyond the time students were eligible to win the scholarship. Data collected in 2002 from the original cohort of girls, then in grade seven, suggest that these gains were lasting and were not due to extra preparation sessions or cheating on the exam in an effort to win the award.

One potential explanation for the broad improvement in test scores was the jump in student and teacher attendance rates in program schools. Student attendance increased by as much as 5 percentage points for both girls and boys in Busia, equivalent to reducing absenteeism by almost one-third. At the same time, teacher absentee rates dropped by about 6 percentage points, an effect roughly as large as the attendance gains among students. The improvements in attendance were evenly distributed across each school year, indicating that these gains were not due to extra study sessions just before the exams.

The large attendance gains in program schools among boys and girls with low baseline test scores immediately suggests that the rise in student effort (as measured by attendance) was not simply due to test preparation. Moreover, the higher teacher-attendance rates provide a plausible explanation for the positive spillover effects experienced by boys in Busia program schools: Any increase in teacher effort caused by the scholarship benefited the class as a whole.

Moreover, we found little evidence to support the common criticisms of merit scholarships. Students did not appear to have spent more time cramming for exams or otherwise focusing on them at the expense of other aspects of learning. Nor did we find evidence to support the argument that external rewards like merit scholarships interfere with a student's self-esteem or motivation to learn. According to our survey results, students' attitudes toward school and school work remained similar between program and comparison schools and between girls and boys.

On the other hand, we did find that scholarship winners came from somewhat more advantaged families than the other students in the sample. Parents of scholarship winners, for example, had nearly three more years of schooling than parents of nonwinners (7.7 years compared to 4.8 years). However, there was no notable difference between winners and nonwinners in terms of important household assets, such as

iron roofs or latrines, and so there was no evidence that children from wealthier households were more likely to win.

Finally, when compared to other randomized interventions conducted in the same region, it appears that the scholarship program was more cost-effective than alternative projects that supplied textbooks, flip-charts, school uniforms, or offered performance-based incentives to teachers. In terms of effectiveness, the average test-score gain in merit scholarship program schools for female and male students in both Busia and Teso over the two years of the program was roughly 0.12 standard deviations; the comparable gain for schools participating in the teacher incentive program over two years was just 0.07 standard deviations. The average gain for the textbook-program schools was only 0.4 standard deviations, while the flip-chart and the child-sponsorship programs (which provided the school uniforms) did not produce any statistically significant effects on test scores.

In dollar terms, although the picture is a little less clear, the scholarship program was still the least expensive way to improve test scores. Using the average program impact for both Busia and Teso, the per-pupil cost of increasing test scores by 0.1 standard deviation was \$1.41, the comparable cost of the teacher incentive program was \$1.36, and the textbook program \$5.61. However, if we limit our analysis to Busia, where the girls' scholarship program was well received, the per-pupil cost of the program was only \$0.75, far lower than any other program aimed at improving test scores.

## REFINING THE DEBATE

While merit-based scholarships have re-emerged in recent years in the United States and elsewhere, we still have little evidence on precisely how these programs affect students' learning. Critics have argued that such programs benefit only those students with a certain background, or that they improve education outcomes only over the short run, or that they cause students and teachers to concentrate on prepping for achievement tests rather than other important aspects of learning.

However, evidence from the randomized evaluation we conducted in Kenya suggests that such programs can produce an environment where teachers and students from all skill levels increase their effort, resulting in higher student academic achievement that

is long-lasting. Introducing the scholarship in Kenya, moreover, did not appear to have any significant negative impact on students' attitudes or desire to learn.

Although we found evidence that students from more advantaged backgrounds (in this case, those whose parents had more schooling) gained most from the program, there may be ways to spread those benefits more widely. In the United States, one way to

achieve this might be to limit merit scholarships for tertiary education to students from poor, or poorly performing, areas where the more disadvantaged students would have a chance at winning an award.

Finally, while most research on education focuses on the impact of additional material resources on student performance, the results of our study suggest that student motivation is a critical variable.

## ENDNOTE

<sup>1</sup> For more information on Kenya's program, see "Incentives to Learn" by Michael Kremer, Edward Miguel, and Rebecca Thornton, National Bureau of Economic Research Working Paper. No. 10971, December 2004. [www.nber.org/papers/w10971](http://www.nber.org/papers/w10971).