Student Incentive Structures in Malawi

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Sector(s): Education

Fieldwork: Africa Future Foundation

Sample: 7,342 students

Target group: Children Primary schools Secondary schools Students

Outcome of interest: Student learning Soft skills

Intervention type: Scholarships In-kind transfers Monetary incentives Student motivation

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Research Papers: When Student Incentives Do Not Work: Evidence from a Field Experiment in Malawi

Partner organization(s): Africa Future Foundation, Viatron Technologies, Korea International Cooperation Agency

Performance-based exam incentives for students could motivate high-achieving students and deter others, making the overall effect of such incentives on student learning an important area for research. Researchers conducted a randomized evaluation to test the impact of two different performance-based incentives on students' test scores, motivation, and behavior in Malawi. They find that tournament-style incentives that rewarded the top performers among a large group lowered test scores and student motivation, especially among lower-performing students, while tournaments among small groups based on initial performance did not impact students' test scores.

Policy issue

While providing performance-based incentives to students may seem like a straightforward approach to increasing student effort and, as a result, student learning, there is mixed evidence on the impact of such incentives on high- and low-achieving students across a range of contexts. This could be because performance-based incentives on exams could crowd out students' intrinsic motivation to learn or shift students' focus away from learning underlying concepts and towards test content. A common method to incentivize an entire student population is to only award prizes to the top performing students who score the highest on the exam, which allows policymakers to easily set a fixed budget for incentives ex ante. However, this approach may encourage high achievers while demotivating lower-achieving students who could feel hopeless to meet the cutoff to win the prize. As a result, structuring incentives this way could risk widening the performance gap. Could an alternative incentive structure motivate more students without increasing inequality in academic performance?

Context of the evaluation

In the early 1990s, the government of Malawi removed primary school enrollment fees, leading to near-universal enrollment levels in grades 1-8. Despite improvements in enrollment, student learning has remained low, even compared to similar contexts. For example, across fifteen countries in Sub-Saharan Africa, 6th graders from Malawi ranked towards the bottom in both reading and mathematics. [1]

Chimutu, where this study takes place, is a rural sub-district outside of Malawi's capital city of Lilongwe. The school system faced several resource constraints at the time of the evaluation in 2014: no classrooms had access to electricity, 33 percent of students did not have their own desk or chair, and the student-to-teacher ratio was 85:1. Further, Malawi's GDP per capita was around USD 362.70.

In Malawi, primary school students take exams across six subjects during each of the three terms of the year. Students must pass their final exams to advance grade levels, and 8th grade students must take a national standardized exam to move on to secondary school.



Students taking notes during class

Photo credit: Goallord-Creativity, Shutterstock.com

Details of the intervention

In partnership with the Africa Future Foundation (AFF) and the Chimutu school district, researchers conducted a randomized evaluation to test the impact of different performance-based incentives on students' final exam scores and their behavior in Malawi. After the first term baseline exams, researchers randomly assigned 118 grade levels (5th-8th grades) across 31 schools to

three different groups:

1. *Population-based scholarship*: In this group, the students scoring in the top 15 percent in the sub-district on their grade's final exam earned an award or "scholarship". Students could choose between either MWK 4,500 (USD 9.70) in cash or an item of similar value like shoes, a school bag, or a uniform.
2. *Bin-based incentives*: In this group, researchers divided students into smaller groups (bins) of 100 students with similar first term test scores across the district. On the final exam, students who scored in the top 15 percent of their bins could choose from the same award options as in the population-based scholarship group.
3. *Comparison group*: Students in this group did not compete for any incentive.

In the second term, AFF notified students of the incentive, their assigned incentive group, their overall exam rank, their bin rank (when applicable), and what rank they needed to achieve by the final exam to earn an award. AFF shared this information through personalized paper cards after a one-hour information session with students.

Researchers measured the impact of the incentive models by comparing students' final test scores and rankings. Nine months later, researchers also conducted a second follow-up survey and exam for 5th and 6th graders only to collect data on the medium term impact of the program, after incentives had ended. Researchers also collected data on student attendance, study hours, parent and teacher effort as reported by students, and non-cognitive skills like self-esteem, conscientiousness, grit, and motivation.

Results and policy lessons

Compared to students who received no incentives at all, the population-based incentive program resulted in lower test scores and motivation to study, especially for the lowest-ranked students. The bin-based incentive program had no impact on test scores.

Incentive comprehension and student expectations: Students across groups generally understood the incentive schemes. When quizzed on the details of the programs following the information session, students answered 92 percent of the questions correctly, on average, which fell to 64 percent by the end of the year. Following the programs' announcement, about 40 percent of students in both incentive programs felt optimistic about their chances of winning, despite the top 15 percent cutoff. Optimism increased to over 60 percent of students around the time of the final exam.

Short-term impact on test scores: Students in the bin-based incentive program achieved similar test scores as students in the comparison group, who received no incentive.

Students in the population-based incentive group performed 0.27 standard deviations worse on their final exam than students in the comparison group. The negative impacts of the program concentrated among the lowest-ranked students, who also reported lower motivation to study.

Medium-term impact on test scores: Nine months after the final exams and award distribution, the negative effects of the population-based incentive scheme disappear. This suggests that the dip in test scores seen previously could reflect students efforts on their final exams, rather than how much they learned during the term.

Student effort and non-cognitive skills: Neither incentive scheme impacted the effort that students put forth, as measured by the number of hours they reported studying. However, the population-based incentive lowered student motivation and self-esteem and decreased an index of non-cognitive skills that also included grit and conscientiousness by 0.14 SDs.

Teacher and parent effort: Neither incentive scheme impacted teacher or parent effort, though parents indicated awareness of the population-based incentive program and reported discussing it with their children.

Taken together, the results suggest that lower ranked students can be demotivated by a performance-based cutoff so far from their current position, as opposed to no performance-based incentive at all. Researchers attribute these results to students' prior knowledge and the learning environment in the schools. Unlike Kremer et al. (2009), which assessed a similar merit-based scholarship in a comparable setting, this study involved students being aware of their rankings, making the population-based scholarship more challenging for lower-scoring students. Additionally, the lack of teacher effort likely reduced the intervention's effectiveness compared to Kremer et al. (2009).

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