Abstract Title Page
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Title: Impacts of a Program to Improve Girls' Enrollment and Persistence in Liberia Elementary Schools: The Challenge of Using Gender Differences in Aggregate Outcome Trends to Identify Program Effects

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Abstract Body

Limit 4 pages single-spaced.

Background / Context:

Description of prior research and its intellectual context.

Under-enrollment of girls in primary and secondary is a longstanding and well-documented problem in developing countries. Limited parental and communal resources combine with cultural factors to create a disincentive for parents to send their girls to school and to keep them there throughout the school year and for the full primary and secondary school years. Girls in developing countries often enroll in school later than boys, attend less consistently, and drop out of school earlier. This phenomenon has serious negative consequences for the girls, their families, their future children, and the economic and social development of the communities in which they live. Because of this, girls' education has been a major focus for international aid agencies like USAID and for NGOs engaged in international educational development.

The evidence on the effectiveness of programs to promote girls' enrollment and attendance is relatively limited. Usually, the activities that specifically target girls' enrollment are embedded within larger programs and are not evaluated separately. As far as we know there have been no systematic comparisons of different approaches to supporting girls' enrollment. Our study provides such comparisons.

Purpose / Objective / Research Question / Focus of Study:

Description of the focus of the research.

Our project is a demonstration project involving 60 schools in three counties in Liberia. The project, funded by USAID and the Millenium Challenge Corporation, provided 40 of these schools with three years of funding and logistical support to implement three different intervention models. The remaining 20 schools functioned as a comparison group. Outcomes for children exposed to three intervention models, described below, are compared to identify which model is the most effective one to carry forward in further scale up of the intervention. The purpose of the study is to (a) document the implementation of the three models in the participating schools, (b) measure the impacts of each of the three models on girls' educational outcomes, and (c) analyze the relative cost-effectiveness of the three models under different assumptions.

The interventions were implemented from 2010-2013 and a final report will be submitted to USAID by the end of 2013.

Setting:

Description of the research location.

Liberia is a low-income country in West Africa whose educational and economic development was interrupted by a brutal 14-year civil war that affected the country between 1989-2003. In the

past ten years much progress has been made in rebuilding the country's devastated education infrastructure but major challenges remain, especially in more remote and more war-affected areas of the country. Although the gender gap in student enrollment has narrowed in recent years, there is persistent under-enrollment of girls and this gap gets wider as students move through the grades. Although education is officially free of charge and compulsory in Liberia, low-income parents continue to face considerable barriers to consistently sending their children to school. Uniforms, informal school fees, materials, and opportunity costs of children's labor in the household and in food production all contribute to low rates of enrollment and attendance, especially among girls. Schools are also often not well outfitted for the girls' needs, especially with regard to safety and sanitation. Lastly, support from communities and teachers for girls' participation in education is often lukewarm at best.

Population / Participants / Subjects:
Description of the participants in the study: who, how many, key features, or characteristics.

The study sample consists of 60 primary schools and their students. As described below, data were collected for boys and girls, even though the interventions focused exclusively on girls. Because of lack of education during the war years, many of the students are considerably above age-for-grade, especially in the higher grades.

Intervention / Program / Practice:
Description of the intervention, program, or practice, including details of administration and duration.

We implemented three interventions:

One set of 10 schools received school-level grants, which were given to the schools' PTAs, which also received intensive training on how to better advocate for their schools and contribute to their schools' success. The grants were to be spent on activities jointly identified in school improvement plans and were to focus on girls' access wherever possible. The hypothesized purpose of these grants is to support broad school wide change which would benefit more disenfranchised students (including girls) the most.

In a second set of 10 schools, all girls in the community served by the school were eligible for annual scholarships, which included uniforms, supplies, and any fees required. These scholarships were delivered in a community event to which parents, PTA members, and other community stakeholders were invited.

In a third set of 20 schools these two interventions were combined. Also, in all intervention schools the program supported the creation and operation of girls' clubs, which were designed to keep girls motivated to keep coming to school and to help them deal with competing demands and other challenges to their staying in school.

Research Design:
Description of the research design.

It was not politically feasible to randomly assign the 60 schools to the four treatment groups. When the GOAL program was first implemented, no rigorous impact evaluation was planned and negotiations between USAID and project stakeholders in Liberia did not include discussions about random assignment of schools. However, to achieve an equitable distribution of resources and facilitate comparisons of program implementation success, the schools that GOAL targeted were broadly matched on location, size, and other background characteristics. Nevertheless, a straight comparison of "treatment" and comparison schools would not have been sufficiently rigorous to identify program effects. The non-experimental comparison group design was strengthened somewhat by the availability of 2010 baseline data on enrollment, completion, and grade promotion. Unfortunately, these 2010 baseline data were not sufficiently consistent across the regions and the different time periods to support a robust difference-in-difference design. Moreover, as mentioned above, baseline enrollments were skewed by the backlog of war-affected students making their way through the system as it was rebuilt during the 2000s. Therefore, even as school enrollment increased among girls and among young children, overall enrollment declined over time in many schools, regardless of their treatment status. Therefore, we were facing a nonexperimental evaluation design with nonequivalent comparison groups and significant history problems in our enrollment trends over time.

Facing this dilemma, we decided to use the boys as a within-school counterfactual to help us identify program effects on girls. We estimated program effects in a difference-in-difference model in which we estimated how being in a specific treatment school impacted the difference between girls' and boys' enrollment, completion, and promotion, controlling for baseline levels of those variables in a multiple regression framework. This allowed us to use the baseline data in a way that reduced potential history bias to events that differentially impacted boys and girls. The primary assumption underlying the impact analysis is that any differential impact of history on boys' and girls' school enrollment is not correlated with the impact of the GOAL program.

In addition to estimating effects on student-level enrollment, completion, and promotion outcomes, we estimated impacts (after two years of grant support) on two school-level environmental rating variables capturing overall school conditions and water & sanitation. We did not have fully comparable baseline versions of these variables but we did statistically control for other relevant school background variables measured at baseline.

An interesting methodological challenge with our use of a within-school comparison group (the boys) is that it presents a clear trade off between two different potential biases. On the one hand, this approach reduces school-level selection bias because most underlying school and community characteristics (fixed or varying over time) are controlled if they affect boys and girls equally. On the other hand, this approach creates a *downward* bias on impact estimates for interventions that benefit both boys and girls. This may be especially problematic when comparing the impacts of the grant intervention (likely to benefit boys) with the impacts of the

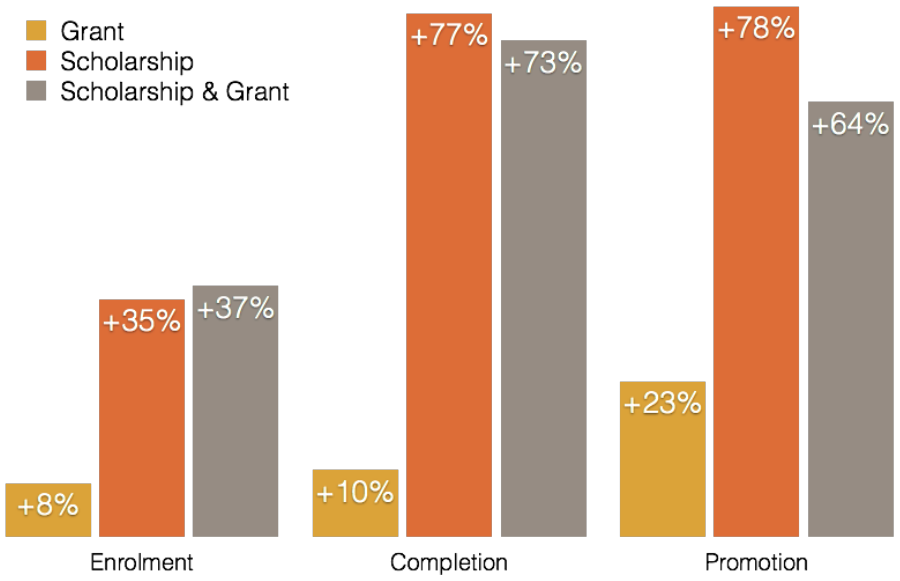
scholarship intervention (less likely to benefit boys). Theoretically, there is also the possibility that the program negatively affected boys, for example by diverting teachers' attention away from them or by making them resentful or reducing their motivation for school. If that were the case, impacts on the girls would be biased *upward* in the gender-based difference-in-difference design we used. However, our implementation research did not find any evidence of those kinds of effects on boys.

Data Collection and Analysis:
Description of the methods for collecting and analyzing data.

All of the data we used for the impact findings were school-level census data, which were collected by school administrators and validated by independent enumerators and AIR program staff. In addition we present some findings from qualitative case studies conducted with a small sample of intervention schools.

Findings / Results:
Description of the main findings with specific details.

We found that all three interventions increased girls' enrollment, completion, and grade promotion. The estimated effects were larger for scholarships than for grants. Also, the effects on completion and promotion were almost twice as large as comparable effects on enrollment. This suggests that the interventions both increased girls' enrollment and the persistence of girls once they were enrolled. As the figure below shows, effects ranged from relative improvements of 8 to more than 75 percent of baseline levels, depending on the intervention and the outcome.



Conclusions:
Description of conclusions, recommendations, and limitations based on findings.

Based on the results presented here we recommended that the Liberia Ministry of Education adopt a similar program across a broader set of schools. The findings suggest that individual scholarships to girls are more effective than grants to schools but we strongly caveat that finding because the crossover effects on boys are likely stronger for grants than for scholarships. Either way, it appears that the overall estimates are conservative across the board, which would make this a good candidate for a more rigorous study to confirm these findings.

Appendices

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Appendix A. References

References are to be in APA version 6 format.

Appendix B. Tables and Figures

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