Abstract Title Page

Title: Addressing Inequality in Secondary School Access: Evidence from a Field Experiment of Scholarship Targeting Strategies in Kenya

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Abstract Body

Background / Context:

Currently in Kenya, secondary school government bursaries are administered through committees set up at the level of parliamentary constituencies. However, there is widespread consensus that this system is not functioning adequately, as the process is often haphazard and funds are often spread too thinly across students. The Ministry of Education has thus expressed an interest in introducing a more standardized system to target scholarships to the neediest children, either through proxy-means testing or through participatory community meetings.

However, findings from recent exploratory research literature on these poverty targeting strategies is mixed. For example, Banerjee et al (2007) in India find that community-based participatory sessions more accurately identify poorer sub-populations than standard government targeting strategies, along various dimensions of poverty, including land holdings, assets and credit access. In Indonesia, Alatas et al (2010) compare the efficacy of a proxy-means test of household assets against a community-based poverty ranking exercise and find that while community rankings perform worse in regards to per-capita expenditure, community rankings in fact represent important non-income-based dimensions of relative poverty. Finally, in Peru and Honduras, Karlan and Thuysbaert (2013) find that participatory community rankings and proxy-means tests perform similarly enough to each other that the authors suggest that costs should be the primary determinant of a scaled-up targeting strategy.

This study thus builds upon the current literature by experimenting with different forms of proxy-means testing, complemented by a community assessment of relative student neediness. A major difference, however, between these other studies and the study in question however, is that in this case relative poverty may be only one reason for which a student does not continue in school. Thus, capturing these additional predictors of dropout which are separate from or amplified by poverty will be essential in discovering which poverty targeting method is most effective.

Purpose / Objective / Research Question / Focus of Study:

The research question addressed in this paper is the following: How can the Kenyan Ministry of Education best target scholarships to 8th graders at the highest risk of dropping out? This study will provide evidence on the effectiveness of various tools in capturing the ability of each of these methods to predict secondary school enrollment. Specifically, the targeting methods under examination are 1- government proxy-means surveys (filled by teachers and guardians), 2- school community "participatory rural appraisal" sessions (PRA) (both with and without parents), and 3- a comprehensive household survey. In the case of the community-based sessions, the 36 schools were randomly assigned to two groups: a- sessions with teachers and the school management committee only, and b- sessions with teachers, the school management committee, *and parents*; this was done in order to test to if the addition of parents made the relative rankings more accurate due to the additional information and level of transparency or more biased, as parents may have a highly vested interest in their student's receipt of scholarship aid.

Setting:

The setting of this study is within the poorest five "Administrative Locations" in Western Province, Kenya, as determined by the World Bank's Poverty Data tables. Across these Locations, 36 primary schools were randomly selected for participation.

Population / Participants / Subjects:

In total, across the 36 schools, the sample included 36 8th grade teachers and 1395 students, along with their primary parent/ guardian. As the 36 schools selected from each of the poorest administrative "Locations" in Western province, these participants were all from very rural and low-income backgrounds.

Intervention / Program / Practice:

Teacher & Guardian Surveys: In each of the 36 schools, the guardians and teachers of every class 8 student were asked to fill the Ministry of Education's poverty assessment forms. The parental form contains 25 questions regarding the family's economic status, while the teachers' form contains 17 questions pertaining to ability of a student's family to fulfill his/ her "daily needs," including the ability of a student's family to afford secondary school.

Community Meetings (PRA): Each participatory session began with a discussion of relative poverty within a school's particular locale. With the enumerator, participants came up with a "Criteria of Neediness" list that would help guide them through the rest of the session. Examples of criteria included the average number of times a family ate each day, the employment status of the parents, the social networks that a family possessed, or the ability of a family to access credit. Participants were then asked to divide the class 8 students into two groups: "Able" and "Unable" (based potential to transition into secondary school). After this split, participants were then asked to divide the "Unable" group further into two equal groups representing the "More able" and "less able" of the remaining students. The "least able" group thus represented the poorest 25% of the class 8 students. The participants were further asked to then rank these "least able" students one-by-one, in order of their level of need. Each session lasted approximately 3.5 hours.

Household Survey: In all 36 schools, an exhaustive household survey, including a detailed module on wealth and resources, was administered to the parents of sampled Class 8 students through home visits conducted by independent enumerators.

Research Design:

As described above, this study experiments with three main types of scholarship targeting strategies: 1- Ministry of Education teacher and guardian surveys (proxy-means instruments), 2- Participatory Rural Appraisal (PRA) sessions with the school community, and 3- Household surveys. The facilitation of PRA sessions with school communities in particular, seeks to harness the ability of community members to identify the neediest Class 8 pupils within their school. Further, under this method, the 36 sampled schools were randomly sub-divided into two equal groups. In Group A schools, PRA participants consisted of the School Management Committee (SMC), as well as all primary school teachers. In Group B schools, the PRA participants consisted of the School Management Committee (SMC), the school's primary school teachers, and finally all Class 8 parents. Table A provides a visual representation of this research design (please insert Table A here). In addition, it will also be feasible to identify the most important predictors of inability to pay for secondary school by correlating the household data with the ex-post, observed enrollment status of students. This data was gathered from official records of the students' primary school of origin.

Data Collection and Analysis:

Regarding data collection, the Ministry of Education surveys were distributed and collected in all 36 schools in November of 2007. In total, the teacher survey was completed for

1345 students, while the guardian survey was completed for 1388 students. The PRA sessions were conducted in all 36 schools over a period of a week. In total 1010 individuals attended these PRA meetings, and 1393 class 8 students were ranked by level of neediness. Because the composition of attendees varied by school, attendance data was also collected at these meetings, including information on the Class 8 student represented by each parent/guardian. In addition, a representative sample of 893 households was included in a comprehensive (~1.5 hr.) survey. For consistency's sake, the majority of these interviews were conducted with the female guardian. Finally, the secondary school enrollment data of the 8th grade students in the sample was collected ex-post from the official records of the students' primary schools of origin. In addition, students' national examination scores and secondary school acceptance notices were collected as well.

The data analysis portion of this study revolves around measuring the predictive abilities of secondary school enrollment for each method, and I employ multiple analysis methods to evaluate these predictive abilities. To begin, I identify the poorest 25% of students as defined by each method and then examine the percentage of students from each group that actually goes onto secondary school. In the case the PRA, I chose the 25% of students who were ranked "most needy" by the parents, and in the case of the household survey, I chose the 25% of students who scored in the lowest quartile of household asset worth. In the case of the government forms, I chose the 25% of students who were ranked as most in need of a bursary. The method with the lowest percentage of enrollment should be the best predictor of student neediness.

Next, I perform a series of logistic regressions, testing the relative neediness of students (as defined by each method) on enrolment status. In the case of the government surveys, I do not employ the entirely of the household survey or government surveys in order to test its predictive power but instead use the above summary question to divide students into quintiles of need. For the household survey, I employ the value of household assets to divide the students into quintiles of poverty, and for the PRA analysis, I employ the three categories of need in which the community grouped each student. Finally, given data on the actual MoE scholarship recipients, if it appears that the previous year's bursary recipients happen to be ranked among the least needy by the MoE instruments, the school community, and/ or the household survey, this will serve as further confirmation that the MoE's current scholarship targeting scheme is not reaching the poorest of the poor.

Findings / Results:

I first identify the poorest 25% of students as defined by each method and examine the percentage of students from each group who continue to secondary school. When I do this, I find teacher government surveys to be the most effective at identifying those with the greatest need (this is the method with the lowest percentage of students going onto secondary school, meaning that this method was more predictive of non-enrolment than the others). Household surveys also performed reasonably well at 73.5% (please insert Table B here). Also interesting is that the PRA with only teachers and school administration is more effective at targeting needy study than the PRA that included parents. As mentioned earlier, the parents who were present for the PRA may have felt an incentive to present their children as needier than the true most vulnerable students whose parents were perhaps less likely to attend the meeting.

Secondly, I perform a series of logistic regressions (please insert Table C here) to test the relative neediness of students (as defined by each method) on enrolment status. I find again that teacher government surveys do the best job in predicting student enrollment while PRAs with

only the administration and teachers present (no parents) also seem to also perform relatively well. Specifically, as the need level increases on the MoE teacher survey, students are 5% less likely to enroll in secondary school, while as the need level increases within the PRA (without parents) group, students are 7.5% less likely to enroll in secondary school. Further, we can again see that the PRA with parents had only a marginally significant ability to predict enrollment whereas the PRA with teachers has a strong and significant effect.

Finally, as additional motivation to change the current bursary allocation process, I examine the characteristics (as measured by the government and household surveys) of those 60 students who did receive a government bursary for 2008-2009 (please insert Table D). I find that indeed there is evidence that bursaries did not necessarily reach those students who were most in need. For example, a number of bursaries went to household whose income was as high as $6769, which is over four times the average assets value of households in this sample. In addition, one would expect the vast majority of bursaries to go to the very poorest eligible students, but that does not seem to be the case. Only 40% of those living in mud houses and only 13% of those that eat one meal a day received a bursary from the government. Further, the bursaries allotted seemed to go to a disproportionately low number of females (females made up 45% of 8th grade class but were allotted only 35.6% of the bursaries). In terms of PRA rankings, 37% of bursaries went to students in the richest PRA group versus 47% in the lowest PRA group. Clearly, efficiently targeting these bursaries to the neediest students was not fully accomplished through the current government allocation process.

Conclusions:

Overall, teacher-filled government surveys, household survey data, and Community PRA meeting *held with only teachers and the school administration* (and not parents) seem to be the best methods of identifying students who may be vulnerable to dropout. Of these, teacher-filled government surveys may be the most cost-effective way to gather this data. Regarding schooling determinants, from the analysis thus far (employing the variables currently available), it seems that in addition to student performance, student orphan-hood status, household assets, and household access to credit of some kind (formal or informal) all tend to have a strong and very significant impact on the probability of enrollment.

However, while the use of teacher government surveys could be scalable method, it is possible that teachers would be vulnerable to parental bribery etc. Thus the long-term implications of such a system must be thoughtfully considered. The MoE could consider complementing these teacher surveys with abbreviated home visits to the households of those in the neediest group in order to verify the poverty level of the family and gather (limited) household data to better precise the relative neediness of each student in this group. This follow-up survey could employ a truncated number of questions, employing the variables described above as major enrollment determinants. In any case, employing this strategy in the short run may improve upon the current bursary allocation system in which a relatively large number of students from the highest income quintiles are benefitting from government funds earmarked for those that are most needy.

Appendices

Appendix A. References

Alatas, V. et al (2010). Targeting the Poor: Evidence from a Field Experiment in Indonesia. Working Paper.

Banerjee, A., Duflo, E., Chattopadhyay & Shapiro. (2007). Targeting Efficiency: How well can we identify the poor? Institute for Financial Management and Research Centre for Micro Finance Working Paper Series No. 21.

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Emmanuel S., Davis, B., and de la Vega, S. (2001). Targeting the Poor in Mexico: An Evaluation of the Selection of Households for Progresa. International Food Policy Research Institute.

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Appendix B. Tables and Figures

Table A. Research Design

	Method Description	Sample Size
Method 1 (a&b)	Ministry of Education's Surveys or "Mainstream Targeting Instruments":	
	a- Standard 8 Form A (completed by *class teacher*)	36 schools, 1394 students *(full sample)*
	b- Standard 8 Form B (completed *guardian of pupil*)	36 schools, 1394 students *(full sample)*
Method 2 (a&b)	The poverty ranking of Class 8 students by school communities facilitated by enumerators	36 schools, 1394 students *(full sample)*
		Subgroups:
	a- PRA with school admin + teachers	18 Schools, 676 students
	b- PRA with school admin + teachers +**parents**	18 Schools, 718 students
Method 3	Household survey data collected at the homestead of sampled Class 8 students, administered by field staff	36 schools, 893 households/students *(random, stratified sample)*

Table B.

Basic Predictions from Methods: Highest Predictive Power (for neediest) is MoE A (teachers form)

**Sample limited to those who passed KCPE*

Neediest 25% of students as defined by :	**Percentage Enrolled in Secondary School**
HH survey assets	73.48%
MoE Form A (teachers)*	70.56%
MoE Form B (parents)**	75.93%
PRA (overall)	78.30%
PRA (teachers, admin, parents)	82.08%
PRA (teachers & admin)	74.53%

*Teachers were asked what percentage of a bursary the student needs.

**Guardians were asked what percentage of a bursary the student needs.

Table C.

Predictions (with controls): Prediction of enrollment for each method:

OLS *Y=enrollment*	**MoE A: Bursary Need** *Categories 1-5 (5=neediest)*	**MoE B: Bursary Need** *Categories 1-5 (5=neediest)*	**PRA: Bursary Need** *Categories 1-3 (3=neediest)*	**PRA-Parents: Bursary Need** *Categories 1-3 (3=neediest)*	**PRA-Teachers: Bursary Need** *Categories 1-3 (3=neediest)*	**HH Survey Assets:** *Quintiles 1-5 (5=neediest)*
Bursary Need	**-0.052***** (0.012)	**-0.03***** (0.010)	**-0.047***** (0.014)	**-0.018*** (0.020)	**-0.075***** (0.017)	**-0.041***** (0.014)
KCPE score	**0.003***** (0.0005)	**0.003***** (0.0005)	**0.003***** (0.0004)	**0.003***** (0.0006)	**0.003***** (0.0006)	**0.003***** (0.0007)
KCPE pass	**0.702***** (0.145)	**0.724***** (0.154)	**0.704***** (0.155)	**0.885***** (0.232)	**0.581***** (0.164)	**0.817***** (0.217)
KCPE score*pass	**0.003**** (0.0006)	**-0.001**** (.0006)	**-0.001**** (0.0006)	**-0.002**** (0.0009)	**-0.0007*** (0.0007)	**-0.002*** (-0.002)
School ID (not shown)	**…**	**…**	**…**	**…**	**…**	**…**
Constant	**-0.403***** (0.087)	**-0.419***** (0.090)	**-0.441***** (0.084)	**-0.313***** (0.112)	**-0.431***** (0.114)	**-0.425***** (0.154)
Observations	**1263**	**1265**	**1265**	**653**	**612**	**813**
R-squared	**0.4715**	**0.4636**	**0.4684**	**0.4316**	**0.5167**	**0.4866**

Table D.

Examination of poverty indicators of those who received a government scholarship.

Among those students who received a government bursary for 2008-2009:	
Percent enrolled	98.28%
Average KCPE score	307.91
Average age	15.48
Percent female	35.56%
Average household income (USD)	$1407.86
Range of household income	$114-$6769
Percent with mud house(government data)	40%
Percent with semi-permanent house (government data)	50%
Percent with permanent house (government data)	10%
Percent in poorest PRA group	47%
Percent in middle-income PRA group	17%
Percent in wealthiest PRA group	37%
Percent that have gone without food in last yr.	49%
Percent that eat 1 meal/day	13%
Percent that eat 2 meal/day	73%
Percent that eat 3 meal/day	13%