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Beyond Primary School Completion:
Exploring How a Public-Private Partnership in Uganda Supported Secondary School
Expansion

Qualifying Paper

[10,969 words]

Submitted by

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Introduction

The *Sustainable Development Goals* call for all children to complete “quality primary and secondary education” by 2030 (United Nations, 2015). This lofty goal expands on the previous targets set for 2015, now including not only primary but also secondary completion and aspirations for *quality* education. Low and middle-income countries have made important strides toward reaching the 2015 targets, which focused on access and completion. Meeting the expanded goals of secondary completion and quality will require building on the lessons learned from prior policies, especially the elimination of school fees not only at primary levels but also among earlier adopters at secondary level. Uganda’s decision to eliminate school fees in secondary schools in 2007, the first country in sub-Saharan Africa to do so, presents an opportunity to learn from the set of policies it implemented to expand secondary school access.

The Ugandan government anticipated a large increase in demand for secondary school when it decided to eliminate school fees from most public schools. In order to accommodate the large increase in students, this country adopted three policies: constructing new public schools or classrooms in under-served areas; allowing over-subscribed public schools to implement *double-shifts*; and inviting low-fee private schools to provide publicly-funded education. This study builds on an evaluation of the impact of the latter, a public-private partnership (PPP) that has resulted in nearly 900 private secondary schools providing education to students subsidized by the government (Ministry of Education and Sports, 2013a). The PPP program in Uganda offered private schools an opportunity to enroll eligible students and receive a grant from the

government based on enrollment, provided students were not charged school fees¹.

Understanding the effects of this policy on low-fee private schools and students can serve to inform policymakers in Uganda as well as in other countries in the region as they take measures to increase access to quality secondary school education.

A previously conducted quantitative evaluation of the PPP assessed the impact of the policy on access and student learning, as well as three potential mechanisms through which the PPP was anticipated to function. Results indicated that private schools participating in the program experienced large increases in enrollment and that, after 18 months, students who attended these schools performed better on average than their peers in similar private schools who were not part of the program. Importantly, the evaluation found that the most likely mechanism that explained the difference in student test scores was a difference in the characteristics of students enrolled, rather than a change in school management or educational inputs. Importantly, however, the quantitative study did not exclude other causal mechanisms to explain student gains.

The current study explores whether head teacher and parental perceptions were consistent with these quantitative findings and uncovers other mechanisms that could explain student learning gains. The findings from the qualitative study are consistent with the quantitative study, confirming an increase in learning opportunities for students from relatively lower-income backgrounds, as well as an opportunity for low-fee private schools to enroll students with higher performance at primary school. In addition, the study found that the program led to an increase of continuation of education for students

¹ In order to be eligible, students need to pass the national Primary Leaving Exam with a maximum of 28 points and cannot repeat a grade. While school fees are not charged to government-subsidized students, private schools can require funds for additional requirements, such as uniform, food or teaching materials.

and additional forms of support to teachers. These mechanisms could partially explain higher student achievement. These findings present important factors to consider as policymakers propose and implement strategies to expand secondary education. The paper is structured as follows. The first section provides an overview of the context, as well as a review of literature on public-private partnerships in education and the mechanisms explored in this study. I then describe the mixed-methods approach used to answer the research questions. Finally, I report findings and discuss policy implications for low and middle-income countries aiming to increase secondary school completion.

Literature Review and Conceptual Framework

Access to Education

In its formulation of the *Millennium Development Goals*, the international community explicitly aimed to achieve universal primary education by 2015 (United Nations, 2013). In the last two decades, there has indeed been a massive expansion of access to primary school in low and middle-income countries. To achieve this, governments adopted a range of strategies, including eliminating school fees, school feeding programs and conditional cash transfers to increase demand, as well as supply-side interventions through school construction and partnerships with the private sector (UNESCO, 2015). The sudden elimination of school fees in a small set of countries in the mid-nineties led to “regional political momentum” for other countries to follow suit (p.85, UNESCO, 2015).

As a result of these policies, primary school completion increased in most countries, in some cases dramatically. In 2011, approximately 57 million children were out of school, compared to 102 million in 2000, despite an overall increase in the global

population (UN, 2013). However, progress has been unequal with large variations in the primary school completion rates between low-income countries and the rest of the world and, within countries, between higher and lower income families (UNESCO, 2015). In addition, maintaining quality instruction and preventing drop outs have been two major challenges following the rapid expansion of primary school systems. Completion of primary school in low-income countries reached 51% from 2008 to 2014, compared with 84% and 92% in lower middle income and upper middle income countries respectively (UNESCO, 2016). These disparities persist throughout the system; countries in these income categories reached 27%, 68% and 79% completion at secondary level, respectively, over the same period. Differences in completion rates across countries exist alongside within-country inequalities. In Uganda, for example, young people from the poorest households averaged fewer than 5 years of education, compared with approximately 10 years for those from the richest households (UNESCO, 2016).

In 2007, Uganda abolished fees for secondary schools through its Universal Secondary Education (USE) policy, the first country in sub-Saharan Africa to do so (Chapman, Burton, & Werner, 2010). This policy was introduced gradually through a phased-in approach over four years, and students' eligibility was contingent on two criteria: not having repeated a grade and passing the Primary Leaving Exam (PLE) with a maximum of 28 points². Under USE, enrollment in secondary school increased from approximately 700,000 to 1,080,000 students (54% increase) between 2006 and 2010; the transition rate from primary to secondary school also increased by 20 percentage (UIS, 2016).

² The PLE score is a composite of four assessments and scored such that 4 is the lowest and best possible score.

Given the large increase in access to primary school and moderate increase in completion, demand for secondary school has soared in many countries. This increase in demand, along with policies and programs aimed at reaching the newly-formulated SDGs on education foreshadow patterns of rapid expansions of secondary school similar to those described above in the primary sector. Ghana's newly elected president, for instance, recently announced the abolishing of all fees for public secondary school starting in the 2017-2018 school year (Sackey, 2017). These policies are likely to have consequences similar to USE in Uganda for students and schools impacted.

Private Schools and Partnerships in Education

The share of enrollment in private schools in low-income countries doubled from 11% to 22% between 1990 and 2010 while growing from 8% to 12% in middle-income countries (Baum, Lewis, Lusk-Stover, & Patrinos, 2014). This expansion has largely taken place at the primary level, and has been driven by students from lower income families' choice of small private or community schools that charge low fees³. For example, in the capital city of Bihar state in India, a recent survey found that close to 80% of schools were private, and 70% of those were low-fee schools (Rangaraju, Tooley, & Dixon, 2012). The growth in low-fee private schools has contributed to the overall increase in access to education at the primary level, but whether this increase contributes to reduce inequities remains contentious.

Private schools expansion has served to increase access to education for underserved populations in a range of countries including Kenya, Ghana, Pakistan and

³ The literature uses several terms for these schools, such as low-cost, low-fee, community schools. In this paper, I use the term 'low-fee private schools' consistent with Srivastava (2013).

India (Barrera-Osorio, Blakeslee, Hoover, Linden, & Raju, 2011; Tooley & Dixon, 2005). In these contexts, communities where low-fee private schools open, some children gain access to educational opportunities. For example, Andrabi, Das, and Khwaja (2008) show that boys and girls from four provinces in Pakistan living in settlements with private schools have enrollment rates 16 and 24 percentage points higher respectively. However, private schools do not tend to open in the most vulnerable communities. Andrabi et al. (2008) document that private schools in the four provinces studied open in larger settlements, where communities are relatively wealthier and have higher levels of literacy. Low-fee private schools across contexts usually fail to reach the most disadvantaged communities, and when they do, they are not affordable for the most vulnerable in these communities (Srivastava, 2013). Further, the expansion of private schools has clearly contributed to the increase in access to education, but the impact on quality of provision lacks strong evidence (Day Ashley et al., 2014).

While the private school expansion has been driven in part by entrepreneurs, governments in low and middle-income countries have also contributed to this increase through partnerships with private schools aimed at increasing capacity for expansion of access to education. Public-private partnerships (PPPs) in education take several different forms, including vouchers given to families and contracting out education services to private providers (Patrinos, Barrera-Osorio, & Guáqueta, 2009). Proponents of PPPs point to several potential advantages of partnerships. First, partnering with existing private schools allows for an expansion of access in a more cost-effective way than building new schools (Barrera-Osorio & Raju, 2011; Patrinos et al., 2009). Private schools in settings where families are not always able to pay fees may not make the

optimal investment because of the uncertainty of income stream. The risk aversion, thought to be common in private actors (Werner, 2008), could be mitigated by reliable streams of funding provided from the government through a PPP. In addition, private schools are thought to have more flexibility than public administrations to innovate, which could lead to an increase in quality, though this point has been contested (Verger, BonaL, & Zancajo, 2016). Finally, private schools can be held accountable by parents more directly, suggesting they should have to provide higher quality education in order to retain students. Taken together, these factors present PPPs as an opportunity to increase access to quality instruction, if proper quality assurance mechanisms are in place (Baum et al., 2014; Patrinos et al., 2009).

As part of USE, the government of Uganda introduced a partnership with low-fee private schools in areas where government capacity to absorb new students was particularly low. The explicit goal of the PPP was to temporarily support the expansion of USE while government increased its capacity. Partnerships are regulated by a memorandum of understanding between schools and the Ministry of Education and Sports (MoES). Under this agreement, the MoES commits to transferring 47,000 UGX⁴ per term per student eligible, and schools are required to abide by a set of regulations. These responsibilities include ensuring proper accountability of the funds, using the money for “teaching and learning”, employing qualified teachers and staff, having a Board of Governors (BOG) oversee the management of the school, and not charging school fees to eligible students⁵. By 2013, there were over 1800 secondary schools

⁴ In 2007, this was equivalent to \$27.40. In 2017, this amounts to approximately \$13.20.

⁵ The MoU includes 12 responsibilities of the school: (i) Providing for the welfare and discipline of the students. (ii) Ensuring proper accountability of all disbursed funds. (iii) Ensuring that students admitted are eligible. (iv) Ensuring monies are used for teaching and learning. (v) Ensuring school has qualified head

participating in USE, 48% of which were private schools taking part in the PPP (Ministry of Education and Sports, 2013b).

Evaluations of the impact of PPPs on student learning have found mixed results, with some evaluations findings positive outcomes for participants (Wössmann, 2006; Chakrabarti and Peterson, 2009 cited in Verger et al., 2016), others no impact (Barrow & Rouse, 2008). Further, positive gains found in some studies could have been at the expense of students who did not benefit from the program and stayed in the public schools (Kremer & Holla, 2009). Overall, evidence for the “private school effect” on student learning remains weak (Day Ashley et al., 2014).

Mechanisms of PPP Effects on Student Learning Schools

The previous quantitative evaluation of PPP in Uganda proposed three mechanisms to explain changes in student learning: school governance, change in financial investments, and change in student composition (Barrera-Osorio, de Galbert, Habyarimana, & Sabarwal, 2016). Partnering with the government could lead to changes in school governance in two distinct ways. Under a PPP, schools relinquish part of their autonomy, which could negatively affect their service provision if autonomy is key to ensuring more effective management. In contrast, regulations imposed by government could lead to schools implementing more effective or representative governance structures. In Uganda, while all private schools are required to register with the

teacher. (vi) Ensuring that qualified staff is in place to deliver the curriculum. (vii) A functional BOG is in place. (viii) Ensuring proper bookkeeping including a student register. (ix) Ensuring the institution meets the basic requirements and minimum standards. (x) Ensuring class size is as recommended under USE guidelines of 60 students per stream. (xi) Ensuring regular statistical returns to the MoES. (xii) Declaring the number of students to benefit from the Bursary. For an example of the MoU, see Brans (2011).

government, schools applying to the PPP had to provide evidence of having complied with MoES regulations.

Government subsidies could also affect low-fee private school investment decisions. First, a partnership can lead to an increase in overall budget through the government grant. This increase in budget can lead to changes in investments such as an increase in teacher compensation or purchase of learning materials. Supporting teachers in these ways could prove a lever in improving quality. For example, teacher absenteeism is an important problem in low and middle-income countries (Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006), especially in rural areas (Mulkeen, 2005). Teacher salaries are generally low, causing many to search for additional employment through tutoring, farming, or teaching in more than one school as was found for Science teachers in Uganda (Bennell & Akyeampong, 2007; Urwick & Kisa, 2014). Better support for teachers through a PPP could therefore reduce absenteeism and improve instruction.

Partnerships between private schools and government could also affect the composition of students enrolled. Increasing school choice for parents could lead to increased socio-economic segregation if students and parents who are better prepared and have more information can select better schools. Similarly, if schools can select the students they accept through the partnerships programs, schools could select higher achieving students and leave public schools or non-participating private schools with lower performing students, as was seen in Chile (Hsieh & Urquiola, 2006; Verger et al., 2016).

In addition to the three mechanisms tested in the quantitative study, this paper explores whether the program's impact on students could have led to increased learning. Students enrolled in private schools under a government sponsorship could benefit in several ways. First, they could benefit from the reduced financial pressure. While the main argument to reduce direct costs to schooling is about enrollment, the variety of fees charged to students leads to absenteeism as well, which diminished total possible time for learning. A recent survey of low-fee private schools in Ghana found that 25% of households reported shortage of money caused a child to miss some schooling (Upadhay, Roland, & Burnett, 2016).

In addition, attending a private school from the community can be appealing to students and parents who identify with the school leadership and culture. While one constraint in sending students to secondary schools for many families is transport, distance to school can also be measured through cultural distance from a community (World Bank, 2003). Winthrop and Sperling (2015) review studies that find community schools are particularly successful in improving access and completion for girls in a range of low and middle-income countries partly by providing a cultural environment more appropriate or acceptable to students and their parents.

Methods

This study adds to the research literature on PPPs and secondary school completion and quality by examining the impact of a policy that simultaneously removed school fees and enabled families to send children to low-fee private schools. The current mixed-methods study builds on a quantitative impact evaluation to explore the

perspectives of head teachers and parents, key stakeholders in education policy

implementation, in order to answer the following research questions:

1. How do parents and head teachers perceive the impact of USE and PPP on secondary school enrollment and quality?
2. How do parents and head teachers in private schools in Uganda understand the ways in which PPP influenced student test scores?
3. Do findings emerging from qualitative data on continuity of education as a mechanism for gains in test scores generalize to the larger quantitative sample?

Research Design

This study follows an explanatory mixed-methods design (Creswell, 2003) where qualitative analysis seeks to explain and explore results from a quantitative analysis. It is also sequenced to employ further analysis of quantitative data following qualitative analysis to see whether findings from the qualitative sample generalize to the larger sample. The previously-conducted quantitative study exploits a randomized-control trial evaluation conducted in 101 private secondary schools in Uganda between 2010 and 2012. I collected the qualitative data from 11 of these schools in December 2014, purposively selected after preliminary analysis of the quantitative data (see Appendix A for the timeline).

The total sample was obtained from eligible schools that initially applied to participate in the PPP at the end of 2010. Some schools did not enter the random evaluation as the Ministry of Education considered them to be serving communities in urgent need of support, and thus they received the program without lottery. The remaining sample of 101 schools was randomly assigned to two groups, the first of which was invited to participate in the program in 2011, while the control group was invited to start in 2012. The sample of 11 schools selected for the follow up qualitative study was

selected purposefully to include schools from diverse settings while considering the logistics of data collection. Schools were selected from both groups, after the PPP had begun in all sites; they were located in five different districts, and they served both urban and rural communities.

Data for the quantitative study were collected by the Ugandan Bureau of Statistics (UBOS) and a local data collection firm from teachers, head teachers, and parents at four different time points: baseline (before randomization), twice in 2011, and once in 2012⁶. In addition, the Uganda National Education Board (UNEB) assessed students in Math, English, and Biology under their annual National Assessment of Progress in Education (NAPE) study in the middle of each school year (for more on the quantitative methods, see Barrera-Osorio, de Galbert, Habyarimana, & Sabarwal, (2016)).

I collected data for the qualitative study in December 2014. Data collection included interviews with 11 head teachers or other school administrators⁷ and focus groups with a total of 20 parents in seven of these schools⁸. I conducted the semi-structured interviews in English and followed an interview guide developed to reflect questions that emerged from the quantitative data analysis and explore additional mechanisms (Appendix B). Interview guides were developed to (i) understand the perspectives of school administrators on PPP and USE in general, (ii) whether the policy had led to perceived changes in student enrollment and learning, and (iii) whether the mechanisms theorized in the design of the study were relevant and whether there were

⁶ UBOS collected baseline data and InfoPlus, a local data collection firm collected data at the three additional rounds. I participated in instrument design and testing, training of enumerators and supervised data collection at baseline and two of the three rounds.

⁷ Interviews were designed to be conducted with head teachers. 9 were conducted with head teachers, and 2 with another school administrator or the owner when the head teacher was not available.

⁸ Recruitment of parents was done through the head teachers and it was not always possible to recruit parents who were available and spoke English during the data collection period.

important alternative mechanisms to consider. General questions included *“Uganda introduced universal secondary education in 2007. How would you explain this policy to someone unfamiliar with Education in Uganda?”* and *“How has PPP influenced the implementation of USE in your community?”* Specific questions on mechanisms included the following: *“I would like to learn about the selection process of students who apply to S1. Do you ever have more applicants in S1 than you have room for?”*

I conducted focus groups with parents in English following a similar protocol (Appendix C) and with the same general aim. Questions included perspectives on the choice of school, such as *“Why did you choose this school over another?”* and *“Was it difficult to enroll your child in S1?”* Parents or legal guardians of students in schools participating in the program were invited to participate by the school administration, and focus groups ranged from 2 to 5 participants. Thirteen participants were fathers or male guardians and seven were mothers or female guardians. All participants provided written consent (Appendix D).

Analytical Plan

I coded transcripts from the interviews and focus groups first using an etic approach focused on the two main outcomes of interest (access and learning) and three pre-defined mechanisms tested in the quantitative evaluation (management, inputs, student composition). I then coded the transcripts using grounded theory to uncover any additional mechanisms through which PPP could impact access to and quality of education. I created a codebook that includes a label, a definition, a description of each code, qualifications or exclusions and examples of positive and negative occurrences of

the code following Boyatzis (1998). For instance, one code used to analyze the first research question and labeled “PPP – Access” was used to identify when participants discussed a change in enrollment following the policy, such as “One, the numbers have gone up in a good way, and the children are very ... the parents of the children are very good” (see Appendix E for the code book). After coding all the transcripts, I wrote analytical memos about the codes most relevant to the research questions, which served as the basis for analysis and writing up of the findings. I draw on select quotations and examples in this paper that are representative of views expressed in interviews and focus groups across the dataset.

After completing the qualitative analysis, I returned to the quantitative data collected from students in February 2012. In order to test whether perceptions emerging from parents and head teachers generalized to the larger sample, I specified an intent-to-treat econometric model. Similar to the initial quantitative study, I regressed the mechanisms on a dummy variable indicating treatment (see Appendix F). Continuity of Education emerged as a key finding in the qualitative data, and I tested this mechanism using the larger sample. Second year students were asked about having been sent home for lack of fees and their absenteeism in previous weeks. In addition, I used student answers to questions about their perception of school to test whether the program affected their engagement in school (see Table 1 for the list of questions asked in the 2012 survey).

Validity

The internal validity of the study is supported by the randomized control-trial design and the triangulation of data through the qualitative explanatory analysis. The internal validity of the study is limited mainly by the small sample of the qualitative study and the sample selection. Having school administrators invite parents and guardians likely limited the sample to parents who are involved in the school and may have a more positive perception of the school. In addition, one practical limitation of the sample selection was the necessity of recruiting English-speaking participants, meaning parents able to participate were those with relatively higher levels of education and economic status. This may obscure some important perspectives on these policies such as barriers to school completion. Another important limitation to this study, as well as the quantitative evaluation, is the exclusion of government schools. Administrators from these schools, as well as parents who chose government schools could offer a different perspective on USE and PPP, and is an important area of further study.

The external validity of the study is limited for two main reasons. First, the randomized control-trial was limited to schools in districts the ministry did not deem “in critical need.” Thus, the estimate of the impact of the program may not be externally valid to all low-fee private schools participating. It is possible that schools in districts considered most in need would have had larger impacts on increasing access to secondary school because of the limited schooling options. Second, the geographical limitation of the qualitative sample to five districts in the Central and Western regions of the country also undermines the external validity of findings. Although the schools participating served both urban and rural communities, none of the school were located in the most under-served parts of the country. Communities in the North and North-East of the

country, as well as those living in mountainous terrain and islands have had lower levels of access to education in recent decades because of conflict or geographical barriers than those in the center of the country. Understanding perspectives of those with largest obstacles is crucial to ensure access for all as these are typically the hardest to reach communities.

Findings

In this section, I present quantitative and qualitative data to answer the research questions. For the first two research questions, I use qualitative data to build on the findings from the previous quantitative study. I explore how participants in interviews and focus groups perceived the policy, its impact, and the mechanisms they identified as explanation. I answer the third research question through an analysis of the quantitative data.

RQ1 – Impact of the Public Private Partnership Policy on Enrollment and Quality

Results from the previous quantitative analysis led to clear findings on the outcome of the policy. Schools that participated in the program experienced a sharp increase in enrollment as soon as students could enroll without fees. On average, the increase across participating schools was similar for boys and girls and represented a growth in enrollment of approximately 35%. In addition, students in these schools performed better, on average, than their peers in similar schools not supported by the

policy, especially in math⁹ (see Barrera-Osorio et. al (2016) and Appendix G for relevant tables). In this section, I report how head teachers and parents interviewed largely perceived PPP as a component of USE and believed the policy had a positive impact on access and quality of education in their community.

In interviews, participants described how they considered the PPP an integral part of USE, and they often described features of the PPP when asked more generally about USE. For example, Daniel¹⁰, a head teacher, answered a question about USE by explaining how the “government brings in the money for the USE students [they] admit” in the private school. Maria, a head teacher in an urban school participating said she could not “separate the two” policies. This view of PPP as a part of the overall policy is consistent with the explicit goals of the government when it introduced the partnership, as a temporary program to support secondary school expansion while the government increased its capacity.

Head teachers interviewed all considered the participation of their school in the program had more positive than negative outcomes. Head teachers considered the policy as a benefit to the school as well as the community. For their school, head teachers saw the policy as an important source of funding and resources. In addition, administrators saw USE, and PPP particularly, as a financial relief for families. Paul, a deputy head teacher in a very rural setting explained that if USE only functioned through government schools, “it would not work well”. He explained that “there were some sub-counties with

⁹ The Ugandan National Examination Board (UNEBC) assessed a random selection of students from the schools in the study. This included students benefiting from the USE sponsorship as well as those paying fees. The findings are therefore about all students in the schools.

¹⁰ All names are changed. See Appendix H for the sample decomposition of the qualitative data and associated pseudonyms.

no government schools, but they are having private schools, so the government had to introduce that program in such private schools, such that the citizens in that area could also benefit from that program of paying fees for those students.” The program therefore offered subsidized access to families previously unable or unwilling to send children to a distant school.

Parents described three main reasons for their positive view of the policy to include private schools as part of the implementation of USE: financial relief from paying school fees, quality of education to their children, and benefits to the community. John, a father in a rural school, said: “it has contributed toward the school fees of the learners. It has provided scholastic materials such as textbooks, some lab equipments. It even monitors the academic excellence of our schools. Because, [the government] normally sends a team to this school that looks at the teachers.” Clare, a mother said “it has helped some parents who cannot afford those expensive schools because, the money they pay [now] is a bit”. She added that it helped reduce drop out as well because “before, a student would come, and after two terms, no fees and then, she drops or he drops out of school. But at least [now] the drop out has decreased”. Alvin, a guardian in a rural community, also explained that government schools under USE were not able to provide the quality of teaching parents expected, so the option of a private school was appealing: “Schools of USE have become notorious for having poor quality in terms of teacher performance, because the teachers are not motivated, so the parents are always pushing hard to get money to send them to private schools, because they are performing well, better than the USE schools.” Alvin also explained that the increase in enrollment “also had an impact on business. People in the area have started small snack business.”

Ibrahim, a guardian in another community explicitly justified his choice of school for his sibling similarly, pointing to the government's investment as a catalyst for community development. He explained: "if I bring my child here, I am creating jobs in my community. I want my place to develop. As we move, we want to develop areas. But it's better to develop your home first." Clare, in another community, believed that keeping students in the community would help in the long term as "those parents who pay fees in those big schools, those children will not come back to the community. (...) That's why USE is very important to such communities". Parents considered additional student and teachers in the community a vector for economic development.

Head teachers and parents overall had a genuine appreciation for the policy. Their perceptions of the impact of PPP on access to secondary education was in line with the quantitative findings in that this policy indeed did increase enrollment. Head teachers reported their participation in the program enabled them to provide better education to more students, and parents reported they were able to access schools they generally considered to be higher quality. The only consistent critique of the program was the limited amount and irregularity of grant transfers, which I do not explore here.

RQ2 – Mechanisms to Explain Gains in Student Test Scores

Barrera-Osorio et al. (2016) examined three mechanisms suggested by previous research on Public-Private Partnerships to explain the gains in student test scores: change in school governance, inputs, and student composition. The results suggest no changes in school governance, few changes in inputs, but important changes in student composition (Appendix G). This supports the hypothesis that the policy increased access to secondary

school but that student selection and sorting rather than changes in the education experience of students could be responsible for higher test scores at the school-level. This section reports on the perspectives of head teachers and parents on these three mechanisms, which largely support the quantitative findings. In addition, the section discusses continuity of education, an additional mechanism that emerged from the data that could explain student gains in learning.

School Governance

One of the hypotheses formulated at the outset of the original study was that the creation of a formal link between the private school and the government would impact school governance. Governance might improve, such as through a better organized, more inclusive or more active governing board in the school, as well as increased government oversight. In contrast, providing access to families who are not required to pay fees could break an existing link between families and school administration, thus reducing accountability toward families. When examining the presence and composition of board of governors, school ownership and the frequency of meetings and absence of members, the quantitative evaluation found no evidence of change, either positive or negative, on average.

Interview and focus group participants largely confirmed these findings. This may be due to the fact that all private schools, not just those part of the PPP, are subjected to the same requirements for the board of governors (BOG), so the program did not in fact institute any new requirements or necessitate any changes. Daniel explained what happened to the board of governors in his school, “nothing much has changed. As I’ve

told you, it was some kind of integration. (...) So basically it does almost the same thing, (...) it has just been made more formal than it used to be.” This notion that collaborating with the government only made the BOG more formal was echoed by Paul, a deputy head teacher who said that when the school was purely private, “there was no member from the district, even from the sub-county, but only the community members, and the staff members.” Only one of the eleven schools reported having had to create a BOG to take part in the program. Formal partnership through PPP had minimal impact on the existence of governing boards in the schools.

In terms of responsibilities, participants provided similar perspectives, generally stating that participating in the program did not affect the role of BOG. The main responsibilities given to BOG are guidance (“oversee the activities of the school”) and financial advice (“approve the budget”) or support (“bringing funds”) to the administration of the school. Two schools also reported the board was in charge of hiring teachers and one schools said the board was in charge of ad hoc student discipline cases. Head teachers consistently reported that joining PPP did not change the responsibilities of the board and had little impact on oversight beyond what formal registration of a private school with the MoES required.

Investment in Education

Although the decision for schools to partner with the government was largely motivated by the promise of financial and material resources, there should be no clear expectation that the spending per pupil would change and impact learning. First, the transfer from the government was meant to replace fees imposed by the school. Second,

the large increases in enrollment may require schools to invest in infrastructure rather than instructional materials. However, as discussed above, private actors may invest more optimally under a reliable stream of funding. The quantitative study examined changes in inputs that could impact learning through data on teachers and infrastructure.

Participation in PPP had no impact on the number of teachers working at the school or their qualifications, but teachers were slightly more likely to be present and teaching. In addition, the study found few changes in infrastructure, with participating schools only reporting higher presence of science laboratories on average (Appendix G).

The qualitative data suggested possible areas where financial and material inputs provided by the government grant may have been used in different ways to engender a positive impact on student learning. These findings complement and further explain the quantitative findings. Head teachers suggested three specific ways in which the partnership supported their instruction through inputs: textbooks, infrastructure, and teacher support. The majority of head teachers reported having received textbooks for “science” or “various disciplines.” Some schools reported having enough for each student, while others had “one for two students,” which was a positive change from the past. Head teachers clearly viewed this as helpful given the cost of textbooks often meant schools did not have textbooks for students. Suleiman, an owner of a school in a large town explained “it’s books that we could not afford; so at least students have enough materials to read”. Though evaluations of the impact of textbook distribution tend to minimize their impact (e.g. Glewwe, Kremer, & Moulin, 2007; Sabarwal, Evans, & Marshak, 2014), administrators in low-fee private schools perceived the availability of books as a clear benefit of the program.

Participant responses concerning investments in infrastructure were not consistent across schools. Overall, schools reported infrastructure projects to be long-term investments that existed prior to the program, and continued through the partnership. Their answers, however, pointed to two clear ways in which the grants enabled schools to invest in infrastructure projects. Patrick, a head teacher in an urban school explained that the grant did not allow for infrastructure expenditure but enabled schools to free some funding toward these projects: “PPP money is not supposed to do those things. They basically emphasize instructional materials. So the money I would have used for instructional materials, buying chalk or whatever (...) I use it [for infrastructure].” In addition to this shift across budget lines, the delivery of grants as a large transfer every term enabled schools with cash flow challenges to purchase expensive materials. Oliver, the owner of a peri-urban school explained what several administrators reported: “the money which comes from government comes in a lump sum, unlike the money that you collect locally. So it gives us an opportunity to plan (...) So in that way, because the money comes in lump sum, it has given us the ability to allocate (...) for infrastructure,” which require large transactions. Although the nature of the transactions in large sums enabled schools to make progress on infrastructure development, head teachers reported a history of the schools that suggests these investments were taking place similarly before the formal partnership.

Finally, the program seems to have enabled schools to support to teachers in two ways. First, head teachers reported the partnership created a sense of security for teachers that salaries would be paid. Patrick explained that “it’s not the amount that changed, but in my case, what I have done is improving on the payment on time. Other times they

were going with debts, and quarrelling, and quarrelling, but now that has reduced.”

Second, over half of the schools reported increasing benefits of teachers through meal or transport allocations as a result of the partnership. Maria, a head teacher in an urban school, described providing teachers with bonuses or tutoring opportunities: “When we get that money, you easily give transport, you give some allowance, you give some extra lesson, so the teacher is more secure.” These findings support and can explain how the quantitative study found no change in the number of teachers or qualifications but did find an increase in teachers’ presence in the school and in the classroom. A stronger sense of commitment to the school, along with additional financial support in part through additional work load could partly explain student gain in learning.

Student Selection and school choice

The third hypothesis tested in the original study was that the policy induced schools or families to self-select into the program. This segregation across socio-economic levels was documented in Chile when schools had the ability to choose which students to accept, as they did under the policy in Uganda. The impact evaluation noted that students in the program schools were qualitatively different, on average, than their peers in control schools. Specifically, students had stronger performance in the primary school leaving exam, had parents with higher levels of education and who were more likely to visit the school (Appendix G). These results suggest that, either the schools selected higher performing students, or that these families selected program schools at higher rates than control schools.

Head teachers and parents confirmed that students in the PPP schools had stronger academic background than the students who had previously enrolled at their schools. Schools overwhelmingly reported accepting all eligible students who applied (only one of the eleven schools, located in a densely populated urban setting, reported being over-subscribed). Patrick explained: “as long as the ministry requirements, minimum entry requirements are fulfilled, we admit.” In addition, many schools reported accepting any student who applied and was not eligible for the government subsidy as a private student if they could pay the school fee. Kennedy, a head teacher in a rural school said “Now, the selection, really for us, we just welcome whoever has got those aggregates (...) Now, those who don't get those aggregates, we also admit them on private. They pay some little money, something like 50,000.”¹¹ Parents in these schools all reported a similar application process, which required forms and processing fees, but no interview or selection process. Taking part in the program therefore enabled schools to recruit and subsidize students with higher levels of learning at the primary school level.

The government criteria for student eligibility for USE – performance on the PLE – was seen by many participants as an important factor explaining the higher performance of students in PPP schools. Robert, head teacher in a peri-urban school reported his school had “changed in terms of enrollment, in term of quality of input, because the government only finances those who have performed well.” Daniel, another head teacher explained how his school was able to attract higher performing students: “Originally, when we were not under USE, you could hardly get a student in first grade¹²

¹¹ Aggregates refers to Primary Leaving Exam (PLE) scores. Schools are allowed to admit and charge fees for students who do not pass the minimum score to be eligible for government sponsorship under USE and PPP. These students are often referred to as “private” students.

¹² First grade refers to the highest level of the PLE

joining us here. But at least now because they know there is USE, they come and join.”

These findings confirm that sorting of students did take place across these private schools, and that the selection took place largely on the part of families, not schools.

Understanding the families’ decision process in choosing schools for their children is thus important.

Parents provided three main reasons for choosing the schools in the sample: proximity, community, and quality. Amina, a guardian, provided two of these reasons. “I find it more convenient to bring my kid here, because the school is very near. Two, I can monitor the child. (...) Another reason is with religion. I am a Muslim, but they bring the sheiks, the teachers who teach religion here. Because I find it very hard to bring the child to a school which is very far and a Christian school, because I am Muslim.” Ibrahim, a guardian in the same school, added concrete benefits of proximity: “it’s very close to where I am staying. It’s very easy to monitor my brother from here. Even he could come at night for evening preps (...) I can talk to the administrators directly. I can come to the office.” James, a parent in a rural school also explained that there was “no way [he] was going to take a child five miles away when [he] stays nearby.”

Community ties were also expressed by parents, as a form of proximity. Peter a parent in a peri-urban school explained his reasons for choosing the school: “you look at the love between a parent and the technical people in that school. It’s the first priority. Because you must be friendly, if you cannot be a partner and friendly, I cannot bring my kid.” Clare, a mother in the same school shared having had difficulties in paying some of the financial requirements at this school and feeling comfortable coming to the owner: “Even me, I can cry to the director to excuse me.” Valentine, another father explained the

importance of the relationship with administrators: “you know this school, where most of time it’s the nearest to the people. So the directors and technical people, they are next to their clients, because they are closer so (...) you know your community they know you. (...) the [government people] they are very far from the parents, to the peasant people.” Finally, as described above, some parents felt the school was an important institution for their community, even when the schools were owned by a private individual. John and Samson, two parents in a rural school expressed this by saying the school was “a school of poor people and rich people, (...) it’s almost like a community school.” Parents interviewed considered the private schools in their communities as important institutions and chose to send their children to these schools in large part because of their geographical and cultural proximity.

Lastly, parents generally perceived the schools they chose to be of higher quality than the local government school. They considered teacher absenteeism and student performance as indicators of quality. Robert, a parent perceived teacher absenteeism as an important difference between public and private schools. “Because being on government payroll, he does whatever he feels to do. Even if he doesn’t work for two weeks. The head master may just ask him why he has not taught, and it stops there. In private school, the owner, to me I think the owner is very much more strict than in government schools.” James, a parent, claimed “performance is better in national examinations, and that has really encouraged parents”. Alvin, a parent in the same school compared the performance on national exams to the nearest government school: “it’s a government school nearby. They had 3 first grades last year. And their total student population is over 1,000. This school has about 400 students, and they had 4 first grades

last year. So if you do a comparative, that's very clear." Unsurprisingly, parents largely considered school quality as an important factor in deciding which school to send their children to.

Continuity of Education

One perceived impact of the policy that emerged from parents and head teachers during the qualitative study was the benefit students faced by avoiding being sent home for lack of fees. Students attending private secondary school face important costs in cash or kind, whether or not official fees are charged. Many private schools allow families to pay in installments. Occasionally, schools send students home for several days, or until they are able to pay their arrears. As head teacher Maria explained in frustration "How do I fit them? How can I pay the teachers? (...) To sustain them in school, you need money. Children here in school, eat lunch. You need the facilitation, like electricity if you are going to use the computers, library, you need to facilitate them, so if you are going to keep them around, they need to pay. You can't keep them around unless they pay." Private schools reported using suspension or expulsion of students who could not pay both as means to remain financial viable and as an instrument to encourage families to settle debts.

In discussing USE and PPP, participants systematically alluded to the financial burden education poses to families. One of the direct consequence of this burden is the interruption of schooling of students to collect fees from parents, or in some cases, to go work to pay for the fees they owe. Student sponsorship through PPP seems to have reduced this phenomenon in two ways. First, the government sponsorship reduces the

amount of money parents must raise. As Clare explained, “only that small money for feeding the teachers and transporting them, most parents can afford. But when it comes to fees, you can pay half and at the end of the day you’ve failed to pay the balance.” In addition, having students sponsored by the government enrolled in private schools caused some schools to be more wary about sending them home. Maria explained that students under the program would only be sent home after “a lot of consideration” and that they would “need to do a lot with the parents” before sending the students away.

Administrators generally reported being less likely to send sponsored students home, although it was not always the case. Kennedy admitted taking the risk: “even if these government officials come from Kampala, again, we stand to be blamed.”

Parents almost unanimously claimed the administration at their school was more understanding than in private schools not part of the PPP. Betty, a mother in an urban setting with many schools claimed, “In those schools, the private schools, you have to pay 40, you don’t have it, by the time they want it, they have to chase the girl to go back home to bring money. When it’s not there, she has to sit, or sit at home. It’s a problem.” John, a parent at the same school said it was different there: “you come with the little you have, even if I have 1000, I can come and say please, this is what I get, tomorrow I will be getting another one.” Parents reported high levels of flexibility from administrators in payment timeline, as well as some schools accepting payments in kind.

The impact of an interrupted schooling experience was clear for participants. Fatima, a head teacher explained: “They are on and off, they are looking for fees, so it is hard for them to concentrate, so you will find that their performance is not so good.” Amina, a mother in that school had similar views: “so you find that the child is missing

almost half a term, he is seated at home, and you find it very hard to catch up with other students.” Clare, a mother at another school expressed fear for students whose schooling is interrupted: “Suppose you miss term 1, 3 weeks, then in another term, 2 weeks, then term 3, two weeks like that. At the end of the day, you’ll find yourself missing a whole term. Without attending classes. And remember, when teachers teach, they follow the syllabus. So they will complain ‘you never taught us this’ but you were taught, but you were not around.” Clearly, absenteeism was understood as a barrier to learning given the incremental nature of learning and the large amount of material in the curriculum.

Overall, the qualitative data confirm the main findings from the quantitative study. PPP has led to an increased enrollment in private schools, and one of the main drivers for the better performance of students is likely to be a sorting of students. The policy also seems to allow low-fee private schools to have textbooks and their teachers are better supported. In addition, data suggests that one possible mechanism to explain improved performance comes from an increase in the stability of the student experience. The following section explores whether there was evidence of continuity of education in the larger sample of students.

RQ3 – Continuity of Education as a Mechanism to Explain Gains in Student Test Scores

As discussed above, administrators and parents in participating schools clearly expressed that students attending secondary school under government sponsorship were less likely to be sent home for failing to have met financial obligations. Participants

mainly explained how continuity of education could positively impact student learning through increased opportunities to learn with teachers. Another possible mechanism resulting from being sent home, or an ongoing threat of interruption, is through students changing their perception of school, feeling less connected and thus reducing their motivation or ability to focus. Using surveys administered to students in February 2012, I test whether there is evidence of either of these mechanisms.

Table 1 presents intent-to-treat estimates of the impact of the program on students at the beginning of their second year. This group of students was the first cohort of students participating in the program school, and the last cohort of students not participating in the control schools. The first column includes the mean and standard deviation for the control group. Columns 2 and 3 present the results of OLS regression with and without fixed effects at the regional level. The first panel presents demographic characteristics of students confirming that the students in the treatment schools were, on average, slightly younger than their peers in control schools, and that the sample was balanced across gender.

The second panel presents three variables confirming the findings that emerged from the interviews and focus groups. Among students in the control schools, nearly 70% reported having been sent home in the previous academic year because of school fees, 11 percentage points higher than students in treatment schools. Similarly, 47% of students in control schools were absent at least once in the previous two weeks compared with 40% in the treatment schools. The reason for the absence for both groups of students was overwhelmingly financial – 80% having to work or lacking fees for school – and there were no statistical differences between groups. These findings confirm that students

enrolled in private schools under PPP were more likely to spend more time in school than their peers enrolled in other private schools without government subsidy¹³.

The third panel presents answers to eight questions students answered about their perception of school. These questions were answered using a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Students, on average, reported working hard at school (4.18), liking school (4.47) and thinking that school is important (3.98). Notably, however, there were no statistical differences on any of these measures between students in the treatment and control schools. These results suggest that the program had no impact on students' perception of school, despite having led to an average increase in continuation of education.

Discussion

The findings of this study provide insight for countries working toward reaching the Sustainable Development Goals focused on secondary school completion and quality. Under the Universal Secondary Education policy, the Ugandan government has been able to expand access to secondary school. The partnership with low-fee private schools played in an important role in expanding the capacity of the government, as can attest the large proportion of students enrolled under USE in private schools (42% in 2013; MoES, 2013b). Perspectives shared by some parents in this study suggest that their children would likely have attended a government school under USE had there been no private

¹³ Using logistic regression on these binary outcomes provides similar estimates. The significance levels are the same for estimated differences in log-odds, and the predicted probabilities are very similar (69% sent home in control group versus 58% in the treatment group; 47% absent in the control group versus 40% in the treatment group).

option. The PPP program enabled other families to extend their children's education through reducing the distance between the school and their communities. For those living in remote areas not served by government schools, the PPP provided a school with geographical proximity, facilitating access where there would have been none. In addition to physical distance, the availability of private schools akin to community schools reduced the cultural distance for families unwilling to send their children to large government secondary schools run by administrators from different religious or ethnolinguistic groups. These findings build on studies reporting increased education completion following the construction of locally-situated public primary schools (e.g. Duflo, (2001) in Indonesia) or community schools (e.g. Burde and Linden (2013) in Afghanistan). The partnership removed some barriers to access from the demand side similar to those described in the review by Winthrop and Sperling (2015). In addition to improving access, USE and PPP may have impacted the quality of education provided.

One key finding of the study was the increased stability in the continuity of education of students attending low-fee private schools under USE compared to those paying fees. Students enrolled in low-fee private schools were less likely to be sent home and miss school because of financial difficulties, especially if they were eligible under USE. This was the direct result of (i) the reduction of direct costs of attendance and (ii) the change in behavior from some schools. This behavior change may be a direct reaction to the first "general principle" of the MoU that requires schools to consult with the MoES before dismissing students (Brans, 2011, Appendix G). Continuity of education enables students to learn more both because of the increased learning opportunities and because new material builds from previous knowledge, which absenteeism disrupts. In addition,

engagement with the labor market while away from school increases the opportunity cost of returning to school. Without knowledge of how USE impacted behavior of government schools with regard to students unable to pay fees, we cannot infer how USE impacted continuity of education for those choosing to enroll in public schools.

Removing official fees, however, does not sufficiently reduce financial burdens facing those most in need. Akyeampong (2009) finds that removing fees in Ghana was most beneficial for middle-class families and left poorest households unable to offset the indirect costs and opportunity costs of schooling. This finding was consistent with participants in this study who explained how indirect costs led to interruption of schooling and dropout. The increase in continuity of education for students enrolled in PPP schools should be considered an important positive impact of the policy, even if the benefits might not accrue to the more vulnerable who did not access these schools.

Another important finding of this study was the increase stability provided by schools to teachers. The quantitative study highlighted an increase presence of teachers in classrooms but no change in salary. This study suggests that the increase in presence is due to (i) increased perception of financial stability of the school by teachers and (ii) increased benefits through non-salary compensation or opportunities to earn more through tutoring. Teachers working in private schools face a certain level of precarity characterized by the low level of stability of schools (7% of the schools in our sample closed permanently over the course of the study) and low salaries. Few studies examine the longevity of low-fee private schools, but longevity seems to be an important challenge, and partnership with the government could help bring stability, or at least perception of stability, which is important for teachers and families alike. In addition, the

public nature of the grants seemed to give a perception of accountability that provides teachers greater guarantee that payments will come, even if late. Finally, the increased material support could lead to greater motivation and commitment, resulting in the increased time in class highlighted in the quantitative study. Research with teachers could shed light on the specific reasons that led to increased presence in the classroom.

One important concern highlighted by this study is the notion that public-private partnerships increases socioeconomic segregation through sorting. Schools participating in the PPP in Uganda were able to enroll students with higher performance at the primary level and with relatively higher socioeconomic levels. Although we had no information on students in the surrounding government schools, this finding is consistent with sorting along socioeconomic lines found in other PPP programs. Parents with higher social and economic capital were able to choose schools that offered USE subsidies leaving students from lower-income families in schools with fewer resources. This segregation, which leads to public resources being spent away from the most vulnerable families, is one of the most important criticisms of public-private partnerships as it raises equity issues. Lewis and Patrinos (2011) offer guidelines to mitigate segregation in PPP, including removing a school's ability to select students based on performance or family characteristics. Policies where the government assigns students to schools, such as the concession schools in Bogota (Barrera-Osorio, 2007) or the new legislation in Chile that requires schools to select students following a "system that guarantees transparency, equity and equal opportunity" (República de Chile, 2015; article 1.6) aim precisely to reduce segregation across socioeconomic class. Equity concerns remain in these systems given low-fee private schools do not reach the poorest households (Srivastava, 2013;

Upadhyay et al., 2016). This is likely even more pronounced for secondary schools than primary schools as the completion of primary cycles is already unequal.

Conclusion

Efforts to expand access to and completion of quality secondary school require policies that will remove the structural barriers low-income families face and enable school-level improvements to the learning environment. This paper explored a policy in Uganda that simultaneously removed user fees and offered parents an alternative to government schools because of the limited capacity to absorb the growing student population. The impact of USE and the PPP has been consistent with the explicit goals of the policy in expanding access to secondary school. Students in the program demonstrated higher levels of learning than their peers in similar schools that were not part of the program. This difference is likely due to a combination of segregation and changes in student experiences. The PPP in Uganda led to schools enrolling students with higher levels of learning and higher socioeconomic background. It also reduced the frequency of students having to miss school for lack of financial resources. Finally, it led to slightly higher levels of teacher presence.

Countries looking to expand access to secondary education should carefully consider the financial barriers faced by students, including the detrimental effects of school interruption. Partnering with private schools where government capacity is lacking may be an effective way to expand access. The role of the private sector is viewed with ambivalence by education stakeholders globally (Aubry & Dorsi, 2016; Srivastava, 2013; UNESCO, 2016) in large part because of the perception that it does not serve most in

need and may reinforce inequalities. Designing policies in a way that supports the most vulnerable families requires careful design to avoid segregation along socioeconomic lines or other unintended regressive outcomes.

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Table 1. Results from Research Question 3

	Check 3		
	Control Mean and SD	Treatment- Control	Treatment- Control
	(1)	(2)	(3)
A. Characteristics of Students: Demographics			
Students' age	16.15 (1.81)	-0.449** (0.18)	-0.281** (0.14)
Gender (1 male)	0.50 (0.50)	-0.024 (0.03)	-0.017 (0.03)
B. Continuity of Education			
Sent Home for fees last year	0.69 (0.46)	-0.112** (0.05)	-0.110** (0.04)
Absence, last two weeks	0.47 (0.50)	-0.068* (0.04)	-0.075** (0.04)
Reason for absence was money	0.80 (0.40)	-0.008 (0.03)	0.002 -0.03
C. Student Perception of School			
I work hard at school	4.18 (0.96)	0.042 (0.09)	0.00 (0.08)
I like school	4.47 (0.89)	-0.018 (0.07)	-0.055 (0.07)
I get in trouble at school	2.44 (1.32)	-0.009 (0.10)	-0.028 (0.10)
I get bored at school	2.54 (1.38)	-0.111 (0.09)	-0.135 (0.09)
School is important	3.98 (1.02)	0.003 (0.09)	-0.033 (0.09)
Other people at school like me	4.45 (0.90)	0.014 (0.07)	-0.033 (0.06)
I give up when school is hard	4.02 (0.99)	-0.023 (0.07)	-0.038 (0.07)
I always do my homework	3.00 (1.43)	-0.071 (0.11)	-0.118 (0.10)
Fixed Effects Region level			
Number of obs.	585	No 1299	Yes 1299
Test for jointly significance			
Chi2			37.775
Prob>Chi2			0.009

Note. Column (1) report mean and standard deviation for the control group. Columns (2) and (3) report the estimate of effects of a regression of each outcome variable against the treatment indicator, controlling for regional fixed effects. Standard errors are cluster at the school level.

Appendices

A – Timeline

B – Interview Guides for Head Teachers

C – Focus Group Protocols

D – Informed Consent form

E – Codebook

F – Econometric Models

G – Results Tables from Barrera-Osorio et al. (2016)

H – Interview and Focus Group Participants

Appendix A – Timeline of Study

- October 2010 – Schools apply to participated in PPP
- December 2010 – Baseline Data Collection
- January 2011 – Random assignment of schools to treatment groups
- February 2011 – Start of school year (51 schools in Treatment)
- February 2012 – Start of school year (all schools in Treatment)
- April 2011 – July 2012 – Quantitative Data Collection
- December 2014 – Qualitative Data Collection

Sample size and collection of data

	Baseline	Check 1	NAPE 2011	Check 2	Check 3	NAPE 2012
Time	Dec 2010/April 2011	July 2011	July 2011	Sept 2011	Feb 2012	July 2012
Head Teachers Survey						
Treated School	43	48	48	48	49	48
Control	41	48	45	46	46	45
Teachers						
Treated School	119					
Control	105					
Students						
Treated School	944		1230		1467	1268
Control	801		1126		1261	990

Note: calculation of sample size using data collected at baseline, three follow-up (Check 1-3) and two test applications (NAPE)

Appendix B – Questionnaire to Head Teachers

Head Teacher assent – consent form already signed

In this interview, I would like to discuss with you some questions around access and quality of education in secondary schools in Uganda, with particular focus on your community and your school.

Do you have any questions before we start?

Questions	Rationale
<p>Part 1. Background on the community/school</p> <p>1. Could you tell me a little bit more about the community where your school is located?</p> <ul style="list-style-type: none"> • Is the community mostly urban, rural? • Are there other primary or secondary schools in the area? • Do most students in the community attend secondary school? <p>2. I would like to know a bit more about the school itself.</p> <ul style="list-style-type: none"> • When did the school open? Who opened the school? • Are the people who started the school still the owners today? • When did you join the school? 	<p>This part is meant to create a rapport with the interviewee and get a better understanding of the school and its community. (Some interviews will not take place in the school).</p> <p>These questions will give us a better sense of the community where the school is located, and the students it primarily serves.</p> <p>These questions will give us an idea of the type of school this is. Was it started by a church, a business person, a community group?</p> <p>We will use these questions to understand if the partnership operates differently in different types of schools.</p>
<p>Part 2. Education policy and its impact in the community</p> <p>3. Uganda introduced universal secondary education in 2007. How would you explain this policy to someone unfamiliar with Education in Uganda?</p> <p>How has this policy impacted access to education in your community?</p> <ul style="list-style-type: none"> • Prompts on barriers to access in the community 	<p>This part is meant to understand whether and how the community experienced the introduction of USE, and how the HT understands the policy.</p> <p>These questions will help understand how the head teacher, and community,</p>

<ul style="list-style-type: none"> ○ Distance to schools ○ Fees or requirements ○ Perceptions about secondary schools being the norm <ul style="list-style-type: none"> ● Prompts on barriers to quality of schools <ul style="list-style-type: none"> ○ Type of teachers ○ Class size ○ Pedagogy ○ Purposes of education <p>4. Uganda introduced a public-private partnership in 2007 where private schools could apply to partner with the government to provide secondary education to students. How would you explain this policy to someone not familiar with Education in Uganda?</p> <ul style="list-style-type: none"> ● How has this policy influenced the implementation of USE in your community? <ul style="list-style-type: none"> ○ Prompts on change in number of schools, number of students attending secondary school. <p>5. How has your school approached participating or not participating in the PPP program?</p> <ul style="list-style-type: none"> ● Prompts on dates of application, dates of acceptance/refusal, reasons for applying, who decided to apply (decision power). 	<p>feels the new policy impacted education.</p> <p>These questions will help to confirm or correct our understanding of this schools participation. (We know they participated). We can also get a sense of whether there were concerns about joining the program.</p>
<p>Part 3 – Operation of the school</p> <p>6. I would like to know more about the board of governors in your school. Do you have a board of governors?</p> <ul style="list-style-type: none"> ● Prompt questions on composition of the board, selection process (election?), frequency of meetings, responsibilities, role of the school owners. ● How has joining PPP changed the operation of your BoG? <p>7. I would like to learn about the selection process of students who apply to S1. Do you ever</p>	<p>This part will explore the three hypotheses drawn from the literature and tested in the quantitative part of the paper: governance, selection and change in inputs.</p> <p>Governance. One hypothesis states that when parents no longer pay fees, the accountability that school leaders faced toward the community is reduced, leading to weaker community engagement.</p>

<p>have more applicants in S1 than you have room for?</p> <ul style="list-style-type: none"> • Prompt for selection criteria (PLE scores, interviews, modes of assessing who is the “better” student for the school, first come serve) <p>8. How has participation in PPP affected your enrollment?</p> <ul style="list-style-type: none"> • Prompt for number of applications, number of S1 students, boy-girl change, PLE scores of applicants? • How has PPP changed the pool of applicants to your school? • How has PPP changed your mode of accepting students? <p>9. I would like to learn more about your teachers. How often do you hire new teachers?</p> <ul style="list-style-type: none"> • How do you identify the best teachers for your school? Prompt for certificates, experience, network or recommendations. • How has this changed since you joined PPP? <ul style="list-style-type: none"> ○ Prompt for hiring new teachers, increasing salaries, more training. <p>10. I would like to know about your investment in infrastructure. How often do you invest in infrastructure?</p> <ul style="list-style-type: none"> • Prompt for classrooms, science lab, latrines, teacher housing. • How are decisions made about investment in infrastructure? • How have you been able to change investments in infrastructure since joining PPP. 	<p>Selection. One hypothesis states that given a larger pool of applicants, schools can select the better students.</p> <p>Inputs – Teachers One hypothesis states that with larger inputs, schools are able to hire better teachers or give them more support.</p> <p>Inputs - Infrastructure One hypothesis states that with larger inputs, schools are able to invest in infrastructure.</p>
<p>11. I recently read in the newspaper that the government is likely to end the PPP policy. How do you think this will impact your school?</p>	<p>This question aims at looking forward to attempt to get to the same three hypotheses on mechanism for the PPP.</p>

- Prompt for student composition, governance of the school, teacher composition, infrastructure development.

12. A recent study of the PPP program found that students performed better in S2 on NAPE tests. Researchers were not able to find out why students were doing better than in non-PPP schools. Do you have any ideas to explain this?

13. Are there any other changes due to PPP that you want to discuss with me?

This question aims at generating new hypotheses to answer the research question.

Is there anything else that you would like to let me know about the questions we discussed?

Thank you for your time

Appendix C – Focus Group Protocols

Parent assent – consent form already signed

In this discussion, I would like to hear some of your thoughts around access and quality of education in Uganda, with particular focus on your community and your school.

Do you have any questions before we start?

Questions	Rationale
<p>Part 1. Background on the community/school</p> <p>1. Could you tell me a little bit more about the community?</p> <ul style="list-style-type: none"> • Is the community mostly urban, rural? • How many primary or secondary schools are in the area? • Do most students in the community attend primary or secondary school? <p>2. I would like to know a bit more about your families, and the schools your children attend.</p> <ul style="list-style-type: none"> • How many children do you have in school currently? • What are all the schools your children have attended? 	<p>This part is meant to create a rapport with the informants and get a better understanding of the community.</p> <p>These questions will give us a better sense of the community where the school is located.</p> <p>These questions are meant to build more rapport and better understand the family context of the informants.</p>
<p>Part 2. Education policy and its impact in the community</p> <p>3. Uganda introduced universal secondary education in 2007. How would you explain this policy to someone unfamiliar with Education in Uganda?</p> <p>How has this policy impacted access to education in your community?</p> <ul style="list-style-type: none"> • Prompts on barriers to access in the community <ul style="list-style-type: none"> ○ Distance to schools ○ Fees or requirements 	<p>This part is meant to understand whether and how the community experienced the introduction of USE, and how the families understands the policy.</p> <p>These questions will help understand how the head teacher, and community, feels the new policy impacted education.</p>

<ul style="list-style-type: none"> ○ Perceptions about secondary schools being the norm ● Prompts on barriers to quality of schools <ul style="list-style-type: none"> ○ Type of teachers ○ Class size ○ Pedagogy ○ Purposes of education <p>4. Uganda introduced a public-private partnership in 2007 where private schools could apply to partner with the government to provide secondary education to students. How would you explain this policy to someone not familiar with Education in Uganda?</p> <ul style="list-style-type: none"> ● How has this policy influenced the implementation of USE in your community? <ul style="list-style-type: none"> ○ Prompts on change in number of schools, number of students attending secondary school. <p>5. How has your school approached participating or not participating in the PPP program?</p> <ul style="list-style-type: none"> ● Prompts on dates of application, dates of acceptance/refusal, reasons for applying, who decided to apply (decision power). 	<p>These questions will help to confirm or correct our understanding of this schools participation. (We know they participated). We can also get a sense of whether there were concerns about joining the program.</p>
<p>Part 3 – Interaction with the school</p> <p>6. I would like to know more about your choice for secondary school.</p> <ul style="list-style-type: none"> ● How did you hear about this school for your children? ● Why did you choose this school over another? ● How does this school compare with other secondary schools? ● How does the quality of this school compare with the primary schools where your children went? 	<p>This part will inform us on the parent decision to send their children to school.</p>

<p>7. What was the process of applying for S1?</p> <ul style="list-style-type: none"> • Was it difficult to enroll your child in S1 here? • Were there interviews, or exams to get in? • Did your child benefit from the PPP partnership with government? (Did you pay fees)? • Do you pay other requirements? 	
<p>8. I recently read in the newspaper that the government is likely to end the PPP policy. How do you think this will impact your school and community?</p> <ul style="list-style-type: none"> • Prompt for student composition, governance of the school, teacher composition, infrastructure development. <p>9. A recent study of the PPP program found that students performed better in S2 on NAPE tests. Researchers were not able to find out why students were doing better than in non-PPP schools. Do you have any ideas to explain this?</p> <p>10. Are there any other changes due to PPP that you want to discuss with me?</p>	<p>This question aims at looking forward to attempt to get parents to discuss hypotheses about how PPP operates.</p> <p>This question aims at generating new hypotheses to answer the research question.</p>
<p>Part 4 – Thematic Curriculum</p> <p>11. I would now like to ask you about another policy change in Uganda, regarding the thematic curriculum. How would you explain this policy introduced in 2007 in Uganda?</p> <ul style="list-style-type: none"> • Prompt for themes, language, transition to P4. • Prompt for languages used in this community, in the primary schools in this community. <p>12. In your opinion, what languages should be taught in primary schools in your community?</p>	<p>This part aims at discussing the parental view on language of instruction in the school.</p> <p>This question aims at understanding how parents view the thematic curriculum reform.</p>

<ul style="list-style-type: none"> • Prompt for why • Prompt for how long <p>13. What are some advantages of using national languages with small children in school?</p> <ul style="list-style-type: none"> • Prompt for disadvantages. <p>14. What languages should a Ugandan who has a university degree know?</p> <ul style="list-style-type: none"> • What languages should she be able to read and write? <p>Is there anything else about languages in schools and communities that you would like to share with me?</p>	<p>This question aims to understand how parents feel about local languages in school.</p> <p>This question aims at understanding the perceptions parents have of advantages and disadvantages of using national languages in school.</p> <p>This question aims at understanding how parents view the goals of education in terms of linguistic instruction.</p>
<p>Is there anything else that you would like to let me know about the questions we discussed?</p>	

Thank you for your time

Appendix D – Informed Consent form

Study Title: Understanding Access and Quality of Junior Secondary Education in Uganda

Investigator: Pierre de Galbert

Participation is voluntary

It is your choice whether or not to participate in this research. If you choose to participate, you may change your mind and leave the study at any time. Refusal to participate or stopping your participation will involve no penalty or loss of benefits to which you are otherwise entitled.

What is the purpose of this research?

The purpose of this research is to examine the changes to access and quality of education in junior secondary schools in Uganda since the introduction of Universal Secondary Education.

How long will I take part in this research?

You will participate in an interview and be asked questions about your experience working in education in Uganda. This interview will take approximately 45 minutes.

I may be interested in re-contacting you for additional information or clarifications after the interview. If I do, your participation would be completely up to you. If you would prefer that we refrain from re-contacting you, please intital below:

Please do not re-contact me following the study: _____

What can I expect if I take part in this research?

As a participant, you will be interviewed once. The interview will be at a time and place convenient to you. The interview will ask about your experience as a Head Teacher in Uganda. With your permission, I will make an audio recording of the interview.

What are the risks and possible discomforts?

If you choose to participate, there is a chance that the confidentiality protections for the information about your school could be compromised.

Are there any benefits from being in this research study?

We do not expect any direct benefits to you from your taking part in this research.

Will I be compensated for participating in this research?

You will not be compensated for participating in this research.

If I take part in this research, how will my privacy be protected? What happens to the information you collect?

The data we collect will be kept in a password-protected computer system. Reports of the results will remove any information that could allow someone to identify you.

The information with your name on it will be analyzed by the researcher(s) and may be reviewed by people checking to see that the research is done properly.

If I have any questions, concerns or complaints about this research study, who can I talk to?

The researcher for this study is Pierre de Galbert, who can be reached at (1) 617 510 1987, pgd135@mail.harvard.edu

- If you have questions, concerns, or complaints,
- If you would like to talk to the research team,
- If you think the research has harmed you, or
- If you wish to withdraw from the study.

This research has been reviewed by the Committee on the Use of Human Subjects in Research at Harvard University. They can be reached at 617-496-2847, 1414 Massachusetts Avenue, Second Floor, Cambridge, MA 02138, or cuhs@fas.harvard.edu for any of the following:

- If your questions, concerns, or complaints are not being answered by the research team,
- If you cannot reach the research team,
- If you want to talk to someone besides the research team, or
- If you have questions about your rights as a research participant.

Statement of Consent

I have read the information in this consent form. All my questions about the research have been answered to my satisfaction.

SIGNATURE

Your signature below indicates your permission to take part in this research. You will be provided with a copy of this consent form.

Printed name of participant

Signature of participant

Date

Appendix E – Codebook

Label	Definition	Description	Examples
BOG - history	Descriptions of the school management, Boards of Directors and/or Governors, per and post USE	These three codes include all aspects of school management discussed during interviews/protocols.	"In fact before that time, I did not have a BOG"
BOG - members	Descriptions of BOG membership, numbers, elections, etc.	These can include Board of Governors or other management structures, the membership or responsibility of these governing structures	"The proprietors. the church is represented by one person, the teachers are represented by one person, the parents are represented, and then the teachers are also represented."
BOG - responsibilities	Descriptions of BOG responsibilities		"For example, in terms of salary, it decides the salaries, decides the expenditures, decides on tuition, how much to pay, and when to increase, and even other things"
Community Description	Descriptions of the community, including parents, economic activity, and schooling of children in general	This broad code includes any description of the community around the school	"Well this community is somehow, what can I can call it, it's very mixed, we have people who are doing basically informal work, tailors, hawkers, cobblers, housewives, so basically it is mixed, and the problem with this area, there are some students who do not go to school, and they engage with some things like drugs, some things like that, so it's not a very easy area, so it has some elements almost like a slum."
Inputs - infrastructure	Descriptions of investment in school infrastructure, pre and post USE	These four codes include any discussion of investments traditionally discussed as inputs in the economic literature: learning materials, teachers, infrastructure. This includes specific inputs related to the PPP policy as well as other investments made by the community or owners	"In 2007, when we came, or when we started, we only had this [points to one building], even we just changed this fashion here, you see, but it was a hall, one 2, 3, it was 4 rooms here. This whatever here. Now, we put up the other one. We put the white one you have seen, and now we are trying to have this one stand."
Inputs - materials	Descriptions of school materials inputs, including books, science materials etc.		"But at least, it's books that we could not afford. So at least students have enough materials to read. Only that in sciences, the lab equipment, computer literacy, we are just the ones buying. Government has not provided. "
Inputs - PPP support	Descriptions of materials support provided by PPP partnership		"Because the government recently gave us textbooks, which necessitated that the library becomes larger to accommodate the facilitation and have more children using"

Inputs - teachers	Description of teacher hiring, salaries and training at the school		"A good teacher must be principled. Must be an example, exemplary. It's a bit broad. When I say exemplary, do you keep time, do you dress well, do you respect others, do you respect yourself, are you organized, how is your content, how is your role as a team player. "
PPP - access	Discussions of how PPP has affected access	These 5 codes include any discussion of the PPP policy. This includes how respondents defined PPP, the impact the policy has on access and quality, and discussions around joining the program	"One, the numbers have gone up in a good way, and the children are very ... the parents of the children are very good. They are smart, they look healthy, and the discipline is also very good."
PPP - definition	Descriptions of PPP as a policy, in general		"Now that PPP, when they started USE, there were not enough government schools in place, especially when you look at urban areas, (...) so what the government did, since it did not have enough schools, it partnered with some private schools so that we are willing to do that partnership, then you enroll the students, government comes and it monitors, at least it monitors your staff, the infrastructure, the quality, and they can assist you apart from that 47 000, they sometimes give you instructional materials, like they have given us textbooks, basic ones for o-level"
PPP - grant money	Discussions of PPP grants, what they are used for and their frequency		"One thing that has been a problem is that sometimes remittance of even the USE funds come sometimes late. "
PPP - joining decision	Description of the process to apply for PPP by the school.		"Now, I told you that when I was beginning here, I began it as a charity, I even wrote to organizations like "Books of the World" that used to send me books. Then I saw that I could not manage catering for the students, catering for the teachers. I used to tell the parents, just bring small money that we can use to cater for the teachers. Then when government brought in this system, I mean policy, then I said no, it can assist. So from there I said let me just write, so I wrote to the town council informing them. I have been assisting these children, I want you to support me so that I join USE, so that we can cater for these boys and girls."

PPP - quality	Discussions of how PPP has affected quality		"Like I've already said, if I am able to get more facilitation, and use that facilitation to develop the school, then eventually the final product should come out better, as compared to if I hadn't gotten that facilitation."
School Description - General	Description of the school	This code includes any general description of the school such as its history, enrollment, etc.	"This school is a Catholic based school. It started in 2000. It has existed for almost 14 years. It's basically, a private school. It's a mixed school for both boys and girls. We have just acquired USE. That's Universal Secondary Education. It's now four years in place. We have also got the center number. It is now three years old."
Students - PLE	Mentions of PLE scores	This code includes all mentions of Primary Leaving Exam scores.	"Yes, from aggregate 4 to 28. That is government support. Then after that, we tell whoever comes having aggregate above 28, we tell them government does not cater for them, but again those who come with above 28, for us we subsidize here"
Students - S1 selection	Descriptions of S1 application or selection process	This code includes any discussion of the enrollment and selection process	"Yes, we accept all of them up to fourth division. That is 32. "
Students - sent home	Discussions of students being sent home for school fees	This code includes all mentions of students being sent home.	"You call the parents, you send the student home, but obviously, when exams come, you have to relieve them, waiting until the end of the year"
Students - SES	Description of SES of students	This codes includes discussions of student socio-economic status and poverty related factors	"Yeah, it can happen, because some of our students are economically crippled. You look at somebody wearing even the way... if someone can manage to come to school even minus lunch, so you wonder if they have to pay fees what can happen."
USE - access	Discussions of how USE has affected access	These 3 codes include any discussion the USE policy. This includes how respondents defined USE the impact the policy has on access and quality and whether this has impacted the community or country	"What the policy basically did is it increased enrollment in secondary schools. "
USE - definition	Descriptions of USE as a policy, in general		"Truly, truly, this USE is a positive policy. When I am talking about it as a head teacher, I don't know what happens beyond the whatever, whatever happens beyond the school. But this one is in two dimensions. Either the government has a school that it funds and the students that attend that school are all paid for by government. Leave alone the fact that the money paid cannot cover every other aspect or activity in the

			school, but many children here would not have got secondary education, end up making it to school."
USE - quality	Discussions of how USE has affected quality		"The quality, sometimes is compromised in the purely government institutions. Parents are looking for quality, they often don't find it in the government."

Appendix F – Econometric Models

Adapted from Barrera-Osorio et al. (2016)

Results from the quantitative study come from an ITT model based on two main specifications. In the first model, the outcome variables (Y , enrollment and test scores) are regressed against a dummy variable indicating random assignment to treatment (T , 1=treatment; 0=control).

$$Y_{i,s,t} = \beta_0 + \beta_1 T_{s,t} + BX_{i,s,t} + \varepsilon_{i,s,t} \quad (1)$$

Outcome variable Y included enrollment as well as student test results of individual i in school s at time t . Enrollment was measured as the total number of students enrolled in a particular grade. Test results were standardized with respect to the control group (mean zero and standard deviation of 1). The regression was run at school or student level, according to the outcome measure. X included control variables measured at baseline. Standard errors were clustered at the school level. All regressions include region fixed effects.

The second main specification is similar to the first equation. In this second equation, the dependent variable Z includes three families of potential channels of school change.

$$Z_{i,s,t} = \beta_0 + \beta_1 T_{s,t} + BX_{i,s,t} + \eta_{i,s,t} \quad (2)$$

The dependent variable Z includes changes in school inputs (teacher characteristics and school infrastructure), changes in the school governance, and changes in the characteristics of students.

In order to test quantitatively the data that emerged from the qualitative work, an ITT model was used in the same way a priori mechanisms were tested.

Appendix G – Results Tables from Barrera-Osorio et al. (2016)

This Appendix includes tables from Barrera-Osorio et al. (2016) reporting the quantitative findings of the impact of PPP on enrollment (table 5), student learning (table 6), school governance (table 7), inputs (table 8) and student composition (table 9).

Table 5. Impact on enrollment: treatment versus control

	OLS			IV		
	Check 1	Check 2	Check 3	Check 1	Check 2	Check 3
Log (Total number of students)	0.285* (0.16)	0.320** (0.14)	0.288* (0.15)	0.903* (0.47)	0.978** (0.42)	0.737* (0.39)
Log (Students, grade 1)	0.451*** (0.17)	0.410*** (0.15)	0.295* (0.17)	1.436*** (0.52)	1.251*** (0.44)	0.750* (0.42)
Log (Students, grade 2)	0.084 (0.18)	0.134 (0.16)	0.459** (0.17)	0.276 (0.51)	0.408 (0.45)	1.225*** (0.47)
Log (Students, grade 3)	0.282 (0.18)	0.259* (0.15)	0.071 (0.18)	0.723 (0.51)	0.791* (0.47)	0.19 (0.45)
Log (Students, grade 4)	0.371 (0.24)	0.410* (0.22)	0.143 (0.16)	1.028 (0.69)	1.253* (0.65)	0.306 (0.41)
Log (Students, grade 5)	0.177 (0.32)	0.353 (0.31)	0.395 (0.32)	0.681 (0.85)	1.076 (0.86)	0.965 (0.77)
Log (Students, grade 6)	0.12 (0.32)	0.319 (0.31)	0.273 (0.31)	0.489 (0.86)	0.974 (0.86)	0.673 (0.72)
Log (Female students, grade 1)	0.504*** (0.17)	0.439*** (0.15)	0.27 (0.18)	1.612*** (0.57)	1.339*** (0.49)	0.672 (0.45)
Log (Female students, grade 2)	0.089 (0.18)	0.224 (0.17)	0.485*** (0.16)	0.285 (0.51)	0.684 (0.50)	1.285*** (0.46)
Log (Female students, grade 3)	0.307* (0.18)	0.310** (0.16)	0.121 (0.18)	0.848 (0.53)	0.945* (0.49)	0.33 (0.47)
Log (Female students, grade 4)	0.358 (0.22)	0.398* (0.21)	0.097 (0.17)	0.985* (0.60)	1.216** (0.60)	0.195 (0.44)
Log (Female students, grade 5)	0.214 (0.25)	0.247 (0.23)	0.379 (0.24)	0.757 (0.67)	0.755 (0.64)	0.934 (0.58)
Log (Female students, grade 6)	0.119 (0.23)	0.24 (0.22)	0.272 (0.24)	0.444 (0.63)	0.732 (0.63)	0.669 (0.56)
Regions FE	Y	Y	Y	Y	Y	Y
Baseline Controls	Y	Y	Y	Y	Y	Y
Number of schools	94	93	94	92	93	89

Note. Each number represent the estimated coefficient of regressing each enrollment outcome (in natural logarithm) against treatment status. All regressions controls for region fixed effects and baseline characteristics. IV Estimation: reports coefficients of the second stage (2SLS) regression, where the first stage regress actual transfer (as reported in Check 2) as a function of treatment status.

Table 6. Impact on test scores: treatment versus control

	NAPE 2011				NAPE 2012			
	Control Mean and SD (1)	OLS		IV	Control Mean and SD (1)	OLS		IV
		Treatment- Control (2)	Treatment- Control (3)	Treatment- Control (4)		Treatment- Control (2)	Treatment- Control (3)	Treatment- Control (4)
A. Characteristics of Students and Households								
Students' age	16.22 (1.44)	-0.271** (0.13)	-0.083 (0.10)		16.19 (1.49)	-0.301** (0.14)	-0.094 (0.12)	
Gender (1 male)	0.51 (0.50)	-0.045 (0.03)	-0.034 (0.03)		0.53 (0.50)	-0.049* (0.03)	-0.008 (0.02)	
Index infrastructure	1.69 (0.76)	0.06 (0.08)	-0.015 (0.06)		1.44 (0.68)	0.038 (0.07)	-0.004 (0.05)	
Index assets	2.58 (1.97)	0.303 (0.26)	0.214 (0.24)		3.08 (1.70)	0.252 (0.19)	0.224 (0.23)	
Inverse PLE Score (from low to high)					18.66 (5.14)	0.057 (0.48)	-0.066 (0.41)	
B. Test scores results								
Math (official)	0 (1.00)	0.112 (0.09)	0.127 (0.10)	0.384 (0.29)	0 (1.00)	0.122 (0.10)	0.067 (0.10)	0.280 (0.27)
Math (independent)	0 (1.00)	0.145* (0.08)	0.154* (0.08)	0.426* (0.24)	0 (1.00)	0.167** (0.08)	0.127* (0.08)	0.312 (0.20)
English	0 (1.00)	0.152 (0.10)	0.089 (0.10)	0.412 (0.29)	0 (1.00)	0.260*** (0.10)	0.150 (0.09)	0.441* (0.26)
Biology	0 (1.00)	0.074 (0.11)	0.088 (0.12)	0.312 (0.33)	0 (1.00)	0.193* (0.11)	0.074 (0.12)	0.293 (0.32)
Region Fixed effects and baseline controls		No	Yes	Yes		No	Yes	Yes
Number of obs.	1126	2356	2356	2186	983	2249	2249	2101

Note. Column (1) report mean and standard deviation for the control group. Columns (2) and (3) report the OLS estimate of effects of a regression of each outcome variable against the treatment indicator, the first one without covariates, the second one with regional fixed effects and baseline controls (school characteristics and average students characteristics). Test scores are standardized with respect to the control group. Columns (4) report the results of the second stage of an IV estimation; first stage: receiving transfer (as reported in Check 2) as a function of treatment status. Standard errors are cluster at the school level.

Table 7. Changes in the schools: governance

	Check 1		Check 2		Check 3	
	Control Mean and SD	Treatment- Control	Control Mean and SD	Treatment- Control	Control Mean and SD	Treatment- Control
	(1)	(2)	(1)	(2)	(1)	(2)
Presence of BOG	0.94 (0.24)	-0.074 (0.06)	0.96 (0.21)	-0.09 (0.06)	0.93 (0.25)	-0.037 (0.06)
BOG meets seldom	0.51 (0.51)	-0.027 (0.13)	0.55 (0.50)	-0.038 (0.13)	0.44 (0.50)	0.055 (0.13)
BOG discusses infrastructure	0.53 (0.51)	0.241* (0.14)	0.62 (0.49)	0.026 (0.14)	0.71 (0.46)	-0.358** (0.14)
BOG discusses teacher motivation	0.38 (0.49)	0.102 (0.14)	0.46 (0.51)	0.022 (0.15)	0.39 (0.50)	0.313** (0.14)
Perce of BOG members absent last	0.21 (0.17)	0.027 (0.04)	0.24 (0.21)	0.023 (0.06)	0.18 (0.11)	0.026 (0.03)
Ownership change	0.02 (0.14)	0.021 (0.05)	0.07 (0.25)	-0.015 (0.06)	0 (0.00)	0.038 (0.04)
Max. Number of observations	48	96	46	93	46	95
Region Fixed effects and baseline controls		Yes		Yes		Yes

Note. Columns (1) include the mean and SD for each variable for the control group. Columns (2) present the coefficient of the regression of each variable of governance against treatment status. All regression controls for baseline characteristics and fixed effects at the region level.

Table 8. Changes in the schools: teachers and infrastructure

	Check 1		Check 2		Check 3	
	Control Mean and SD	Treatment- Control	Control Mean and SD	Treatment- Control	Control Mean and SD	Treatment- Control
	(1)	(2)	(1)	(2)	(1)	(2)
A. Teachers						
Number of teachers	15.27 (4.12)	0.986 (1.02)	17.04 (4.61)	2.521 (1.81)	22.02 (11.08)	-0.689 (1.85)
Percent female	0.19 (0.11)	0.01 (0.02)	0.19 (0.09)	0.012 (0.02)	0.21 (0.10)	-0.026 (0.02)
Percent permanent	0.64 (0.23)	0.039 (0.05)	0.63 (0.20)	0.015 (0.04)	0.58 (0.19)	-0.029 (0.04)
Percent in class	0.22 (0.15)	0.069* (0.04)	0.22 (0.13)	0.074** (0.03)	0.23 (0.12)	0.031 (0.03)
Percent absent	0.29 (0.26)	-0.083 (0.05)	0.28 (0.20)	-0.004 (0.04)	0.31 (0.20)	-0.028 (0.04)
Percent with secondary or lower			0.09 (0.16)	-0.033 (0.03)	0.06 (0.10)	0.085** (0.03)
B. Infrastructure						
Students per chair, grade 1	2.2 (1.45)	-0.033 (0.33)	2.36 (2.51)	-0.234 (0.44)	2.14 (0.92)	0.082 (0.21)
Students per chair, grade 2	2.07 (1.27)	-0.331 (0.24)	1.81 (0.88)	-0.043 (0.19)	2.26 (1.05)	-0.215 (0.24)
Index of class: condition, noise, clean	7.72 (1.46)	0.226 (0.31)	7.67 (1.39)	0.161 (0.30)	8.01 (1.44)	0.057 (0.29)
Library (yes or no)			0.26 (0.44)	0.129 (0.10)	0.38 (0.49)	-0.064 (0.11)
Number of working toilets			7.2 (5.38)	1.277 (1.20)	7.15 (6.26)	-0.109 (1.33)
Laboratory			0.67 (0.47)	0.199** (0.10)	0.57 (0.50)	0.215* (0.11)
Index of instruments (lab)			6.46 (3.48)	0.323 (0.72)	8.44 (1.42)	0.089 (0.33)
Max. Number of observations	48	96	46	93	47	95
Control (baseline and region fixed ef.)		Yes		Yes		Yes

Note. Columns (1) include the mean and SD for each variable for the control group. Columns (2) present the coefficient of the regression of each variable against treatment status. All regression controls for baseline characteristics and fixed effects at the region level.

Table 9. Impact on S2 student composition

	Check 3		
	Control Mean and SD (1)	Treatment- Control (2)	Treatment- Control (3)
A. Characteristics of Students: Demographics			
Students' age	16.15 (1.81)	-0.449** (0.18)	-0.281** (0.14)
Gender (1 male)	0.5 (0.50)	-0.024 (0.03)	-0.017 (0.03)
B. Characteristics of Students: Education			
Inverse PLE Score (4=lowest; 36=highest)	17.72 (5.51)	1.046* (0.57)	1.227** (0.58)
Absence, last week	0.47 (0.50)	-0.068* (0.04)	-0.075** (0.04)
Repeated a grade	0.46 (0.50)	0.027 (0.06)	0.026 (0.05)
Walks to school	0.88 (0.33)	-0.017 (0.03)	-0.012 (0.03)
Help on homework	3.04 (1.23)	0.029 (0.12)	0.014 (0.12)
Hhold visits school	0.63 (0.48)	0.113*** (0.03)	0.108*** (0.03)
C. Characteristics of Students: Household			
Hhold Assets	2.31 (1.06)	0.118 (0.11)	0.037 (0.09)
Hhold service	2.6 (0.83)	0.041 (0.09)	-0.016 (0.07)
Hhold size	9.32 (4.80)	-0.765** (0.37)	-0.887*** (0.32)
Mother's education	2.79 (1.36)	0.2 (0.12)	0.105 (0.10)
Father's education	3.37 (1.44)	0.297** (0.12)	0.220* (0.12)
D. School characteristics according to student			
Answered question	0.95 (0.22)	-0.014 (0.02)	-0.01 (0.02)
Noise in classroom	0.44 (0.50)	0.013 (0.05)	0.016 (0.05)
Shares desk	2.16 (0.90)	0.037 (0.12)	0.005 (0.13)
Fixed Effects Region level		No	Yes
Number of obs.	585	1299	1299
Test for jointly significance			
Chi2			39.816
Prob>Chi2			0.001

Note. Column (1) report mean and standard deviation for the control group. Columns (2) and (3) report the estimate of effects of a regression of each outcome variable against the treatment indicator, controlling for regional fixed effects. Standard errors are cluster at the school level.

Appendix H – Interview and Focus Group Participants

School ID	Participant ID	Pseudonym	Role	Gender
01	P01_1	Maria	Head Teacher	Female
02	P02_1	Patrick	Head Teacher	Male
02	P02_2	John	Parent	Male
02	P02_3	Betty	Parent	Female
02	P02_4	- ¹⁴	Parent	Female
03	P03_1	Robert	Head Teacher	Male
04	P04_1	-	Head Teacher	Male
05	P05_1	Suleiman	Owner	Male
05	P05_2	Fatima	Head Teacher	Female
05	P05_3	Ibrahim	Guardian	Male
05	P05_4	Amina	Guardian	Female
06	P06_1	Paul	Deputy Head Teacher	Male
06	P06_2	-	Parent	Male
06	P06_2	-	Parent	Male
07	P07_1	Kennedy	Head Teacher	Male
07	P07_2	James	Parent	Male
07	P07_3	Alvin	Guardian	Male
07	P07_4	-	Parent	Male
08	P08_1	Oliver	Owner	Male
08	P08_2	Clare	Parent	Female
08	P08_3	Peter	Parent	Male
08	P08_4	-	Guardian	Male
08	P08_5	Valentine	Parent	Female
09	P09_1	-	Head Teacher	Male
09	P09_2	John	Parent	Male
09	P09_3	Samson	Parent	Female
09	P09_4	-	Parent	Male
10	P10_1	Daniel	Head Teacher	Male
10	P10_2	Robert	Parent	Male
10	P10_3	-	Parent	Male
11	P11_1	-	Head Teacher	Male

¹⁴ For ease of reference, only interview participants quoted in this paper are given a pseudonym.