

The Need for Accountability in Education in Developing Countries

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Over the past two decades, developing countries have invested a considerable and rising portion of their GDP on education. A UNESCO (2011) report found that real education expenditures in a sample of 26 African countries grew by an average of 6 percent annually from 2000 to 2009. Similar patterns of education expenditure growth can be observed in South Asia, where the total education budget in India doubled between 2004 and 2009 (Muralidharan, Das, Holla, and Mophal 2016). As a result of this increased investment, countries in the sub-Saharan Africa and Latin America and the Caribbean regions spend about 5 and 4.6 percent of GDP on education, respectively, which compares favorably to North American and European countries that spend about 5.3 percent of GDP on education. However, south Asian countries such as India lag behind their African and Latin American counterparts by spending only 3.3 percent of GDP on education (UNESCO 2011). This rise in education spending in developing countries has mostly been channeled towards initiatives that improve schooling access, and school inputs such as classrooms, textbooks, and teachers. As a result, the global proportion of primary students who were out of school fell from 19 percent in 1999 to 11 percent in 2013 (UNESCO Institute of Statistics Database). Although enrollment rates in sub-Saharan Africa lag behind other regions, enrollment rates in primary

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† For supplementary materials such as appendices, datasets, and author disclosure statements, see the article page at <http://dx.doi.org/10.1257/jep.30.3.109>

doi=10.1257/jep.30.3.109

school have risen from just 55 percent in the mid-1990s to almost 80 percent at present (based on the UNESCO Institute for Statistics database).

While education spending levels and enrollment rates in schools have increased across the developing world, a variety of research studies and datasets show that learning levels remain low. Roughly 50 percent of fifth-grade students could not read a second grade text in rural India, and only about 45 percent could correctly compute a two-digit second grade subtraction problem (Pratham 2014). In East African countries, only about 50 percent of fifth graders could read at a second-grade level in English, while only about 60 percent had attained basic second-grade numeracy and a slightly higher proportion could attain second-grade literacy in Kiswahili (Uwezo 2013). These data also show that these low learning levels have persisted over some time and are especially dire in rural areas, highlighting some of the pressing challenges facing many developing countries.

In addition to the low levels of learning, education systems (especially public systems) in developing countries are plagued by high rates of teacher absenteeism, leakages of financial transfers to schools, ineffective school monitoring systems, and poor parental engagement, which are all symptomatic of low levels of accountability in the system (according to the World Bank Service Delivery Indicators database; see also World Bank 2003). These low levels of accountability could dampen the effect of increased resource investment, which could help to explain why learning levels have been unresponsive to increased educational investment. In principle, education systems should be accountable to parents (and children). However, due to the centralized structure of the (public) education system and the nature of the political economy in developing countries, it is difficult for parents to hold education systems accountable through voting (the long route) or through direct action against public education service providers (the short route) (World Bank 2003). There is some optimism that the growth of the private education sector may increase accountability; more than 10 percent of students in sub-Saharan Africa and 20 percent in south Asia now attend private schools, which often cater to the poor (World Bank EdStats Database; Heyneman and Stern 2013). A growing body of research has shown that private schools employing lower-paid teachers, who face different incentives compared to their public school counterparts and in some cases are provided with improved technological support, are often able to deliver similar or better student results at markedly lower costs (for example, Muralidharan and Sundararaman 2015). However, the potential for the private school market to improve educational accountability depends on a number of factors, including the thickness of the market, the quality of information available to parents, and government policy and regulation.

A growing body of literature has used empirical methods such as randomized control trials and regression discontinuity designs to examine the effectiveness of various interventions in the education systems of developing countries on student outcomes. There are now multiple review papers and meta-analyses of this literature, including Conn (2014); McEwan (2015); Glewwe Hanushek, Humpage, and Ravina (2014); Glewwe and Muralidharan (2015); Kremer, Brannen and

Glennester (2013); and Murnane and Ganimiaan (2014). There has even been a systematic review of reviews by Evans and Popova (2015), which sheds light on some of the divergent findings and recommendations put forward in the aforementioned reviews. Across a variety of contexts, these reviews generally show that input-based policies on their own are largely ineffective in increasing learning outcomes in the absence of complementary initiatives to improve accountability or pedagogy.

However, shifting the focus of education systems in developing countries from primarily input-based policy towards policies that focus on outcomes such as learning is extremely challenging due to the political economy of education service delivery. There is evidence that curriculums often focus on the needs of the top-performing children and the children of elites rather than the median child (Glewwe, Kremer, and Moulin 2009; Banerjee and Duflo 2010). Relative to developed countries, per pupil spending in developing countries is heavily skewed toward tertiary education, which only a select few can access, rather than primary education (as shown in the World Bank EdStats database). In addition, a number of authors have documented examples of elite capture of education resources such as new school construction in Kenya (Kramon and Posner 2016), and school finances in Uganda (Reinikka and Svensson 2004).

Education-related visions, plans, and promises often occupy prominent positions in public debates and the promises of politicians in developing countries. However, there is little overlap between the campaign promises and the policies shown to be effective in the research literature. Across a number of countries, these promises (and the resulting policies) typically focused on highly visible education inputs such as building schools, reducing school fees, offering more loans and scholarships, purchasing computers, raising teacher pay, and reducing class size, rather than less visible but more effective reforms that increase learning through improved accountability and pedagogy. As Rukmini Banerji (2014), who directs the Indian nongovernment organization Pratham, has noted: “Parents can easily discuss issues of access to schooling and debate and argue about inputs and entitlements that their children are supposed to receive as a result of going to school. But discussions focused on learning are neither easy nor automatic.” Her assertion is corroborated by Harding and Stasavage (2014), who use data from a number of African countries to show that policies that improve school quality do not affect electoral support, whereas policies that reduce school fees, especially primary fees, resonate with voters (see also Stasavage 2005)

In this paper, I first review some evidence on the effects of inputs to education in developing countries, such as teachers and textbooks. I then examine the need for accountability across different areas of the education system. I further examine potential pathways to improving accountability among teachers, school management, and parents. Because many developing countries have experienced a dramatic rise in private school enrollments, I discuss the potential for the market to improve accountability in developing countries, highlighting the emergence of low-cost private schools and the innovations and controversies surrounding their

business models. Given the political economy challenges of reforming the system, I will at various points seek to assess the potential for education policy to be reoriented towards learning outcomes.

The Impact of Increasing Education Inputs in Low Accountability Contexts

Classroom Inputs

Despite the increases in education investment, many classrooms in developing countries continue to face real resource constraints. Average pupil-teacher ratios in Malawi, Chad and Rwanda were at least 60:1, while Pakistan, Cambodia, Uganda, Tanzania, Burkina Faso all had ratios over 40:1 (from the World Bank World Development Indicators database). The average pupil-teacher ratio in India was approximately 35:1 in 2011 (according to the World Development Indicators), however, these ratios could reach as high as 90:1 in rural areas (Pratham 2013). Some schools operate in two shifts—one morning, one afternoon—which reduces scheduled classroom instructional time for students to approximately three hours per day (World Bank Service Delivery Indicators database). Only 25 percent of primary schools in sub-Saharan Africa had electricity, while 68 percent had toilets, and approximately 50 percent had access to potable water. When textbooks are available, they are often shared by two, three, or more students (World Bank EdStats database).

But perhaps surprisingly, given the low levels of resources found in schools in developing countries, interventions that provide inputs or resources such as school grants, flipcharts, or textbooks rarely improve learning outcomes. A variety of randomized experimental studies have reached this conclusion. For example, Glewwe, Kremer, Moulin, and Zitzewitz (2004) find that providing flip charts in rural Kenyan schools did not improve student outcomes. Randomized evaluations of textbook provision programs also find limited increases in learning outcomes. For example, Glewwe, Kremer, and Moulin (2009) argue that the English language used in the textbooks was not appropriate for most children in rural Kenya who tend to have limited exposure to English at home. Sabarwal, Evans, and Marshak (2014) argue that the uncertainty of future resource (or input) flows encourages schools in Senegal to engage in a type of precautionary savings behavior where they store the books for future use rather than distribute them to students.

In an experiment in 350 Tanzanian primary schools, Mbiti, Muralidharan, Romero, Schipper, Rajani, and Manda (2016) found that school grants that doubled per pupil spending were ineffective in increasing learning outcomes, unless the grants were coupled with teacher incentives. Das, Dercon, Habryarimana, Krishnan, Muralidharan, and Sundararaman (2013) found that school grants given to schools in Zambia and India were completely offset by reductions in parental education expenditures. Experimental studies also show that computer resources that fail to

target instruction also rarely boost learning outcomes, although they promote familiarity with computers (Cristia, Ibararan, Cueto, Santiago, and Severin 2012; Kremer, Brannen, and Glennerster 2013). Overall, these studies suggest that the effectiveness of increased inputs may be hampered by behavioral responses by parents or head-teachers, and the lack of accountability. Political pressure to institute visible education policies may also lead education systems to invest in less effective inputs.

Another reason why overall increases in education spending by the central government have had limited impact on student outcomes is that often a substantial share of the earmarked funds does not reach schools. An extreme case of leakage was documented in Uganda in the mid-1990s, when only about 22 percent of allocated funds reached schools after local politicians diverted the funds to their election campaigns (Reinikka and Svensson 2004). The capture of education funds by local politicians again highlights the importance of political economy and accountability concerns in these settings. In short, these data suggest that there is very limited accountability in the management of education resources. Moreover, preventing such leakage would involve improved transparency coupled with reforms that strengthen the monitoring capacity and governance ability of key stakeholders including central government, local government, school committees, principals, and parents.

Pupil/Teacher Ratios and Teacher Pay

Given the large pupil/teacher ratios found in developing countries, there is often pressure on governments to hire more teachers to reduce class sizes. In an experiment in western Kenya, Duflo, Dupas, and Kremer (2012) find that lowering class size by adding more centrally hired civil service teachers did not improve student learning outcomes. Instead, existing teachers reduced their effort in response to the new hires, and helped to get their relatives hired into a significant portion of these new teaching slots. Even though the bulk of primary and secondary education spending in developing countries is allocated to teacher and staff payroll, governments often face pressure to increase teacher remuneration. Almost 90 percent of the education budget in India, Jamaica, Pakistan and Togo was devoted to teachers and staff (World Bank EdStats database; Muralidharan, Das, Holla, and Mophal 2016). On a per person basis, primary school teacher salaries in sub-Saharan Africa were on average four times per capita GDP, whereas the OECD average teacher salary was at most 1.3 times per capita GDP (author's calculations using data from UNESCO 2011 and OECD Online Education Database).

Teachers' unions often argue that teachers need better pay to be more effective, but there is limited evidence to support this claim. A policy change in Indonesia permanently doubled salaries for teachers who met certain certification criteria, and de Ree, Muralidharan, Pradhan and Rogers (2015) use a randomized phase-in design across a large sample of teachers to evaluate the program. They find teacher satisfaction increased, but there was no discernable impact on teacher effort or student learning two to three years after the reform. Using a regression discontinuity design based on geographic boundaries, Pugatch and Schroeder (2014a, b) examine the

effect of hardship allowances which increased teacher pay by 30–40 percent in remote areas in Gambia. While the pay increase increased the number (and proportion) of qualified teachers in remote areas, there was no resulting increase in average test scores (although they do find evidence that the program benefited the top-performing students). Given that many developing country education systems lack accountability and teachers are unlikely to be dismissed for poor performance, it seems plausible that pay increases are mostly a transfer to teachers, because they do not lead to increases in teacher effort or performance. However, increases in remuneration could yield some improvements in the long-run if they attract more able and potentially more motivated individuals to the teaching profession.

The Need for Accountability Among Teachers

In developing countries, teachers are typically civil service workers, often unionized, who are hired and paid directly by a central authority which has ultimate authority on teacher staffing. This centralized system makes it very difficult for parents and even school principals to hold teachers accountable. Consequently, documented measures of quality teaching are quite low across many countries. Teacher absence is a pervasive issue in many developing countries. Almost one-quarter of teachers were absent from schools on a given day in India, Tanzania, and Uganda, while just over 15 percent were absent from schools in Senegal and Kenya (Muralidharan, Das, Holla, and Mophal 2016; World Bank Service Delivery Indicators database).

Even teachers who are on the school grounds seem to spend considerable time in the staff room drinking tea or conversing with each other (or visitors), rather than in the classroom. Approximately 50 percent of Tanzanian and Ugandan teachers were not in the classroom (as reported in the World Bank Service Delivery Indicators database). As a result of these high rates of absence, the actual average instructional time in schools was limited, ranging from two hours per day in Tanzania, to about three hours and 15 minutes per day in Uganda and Senegal. Teacher absence also imposes negative externalities on other teachers and students. Nearby teachers are often obligated to check in on the unattended classroom or integrate the unattended students into their classrooms (sometimes resulting in multi-grade classrooms). Despite the high levels of teacher absence, not a single teacher in a sample of Indian public schools had been dismissed during the tenure of the principal (as shown in data from the Young Lives India study at <http://www.younglives-india.org>).

In addition, school inspectors who monitor schools to ensure compliance with education standards and regulations rarely seem to focus on the most pressing issues. For example, schools in Tanzania were visited about twice a year by ministry of education officials. These visits were mainly administrative, often to collect information such as enrollment or to deliver exams. Only 30 percent of schools report that the most recent inspection visit focused on teaching and learning. During a recent visit to a school in Tanzania, I was accompanied by a quality assurance officer. Although several teachers were absent from the school, the officer did not report

this fact, but rather complained to the principal that the students were speaking a local language rather than Kiswahili, the official language of instruction. Given the high levels of expenditures on teachers in developing countries, Muralidharan, Das, Holla, and Mohpal (2016) argue that investing in more effective teacher monitoring and accountability systems could significantly increase the productivity of the education budget by reducing the high levels of teacher absenteeism and encouraging greater teacher effort. They argue that absenteeism costs Indian taxpayers the equivalent of over US\$1.5 billion per year.

Several studies show that teacher absenteeism responds to incentives—although not always in the desired manner. For example, evidence from Kenya and India shows that when there are more teachers, or a lower pupil-teacher ratio, absence rates are typically higher (Duflo, Dupas, and Kremer 2011; Muralidharan, Das, Holla, and Mohpal 2016). This finding may help to explain why simply adding more teachers without changes in the accountability structure has such a disappointingly small effect on student outcomes.

Randomized experiments in India and Kenya have demonstrated that teachers who are hired directly by the school on short-term contracts can improve student test score outcomes (Duflo, Dupas, and Kremer 2011, 2012; Muralidharan and Sundararaman 2013). Because contract teachers face stronger incentives to deliver quality teaching relative to their civil service counterparts, they are more likely to be at school, to be in the classroom teaching, and to deliver better or a least similar learning outcomes compared to civil service teachers, all while being paid between one-fifth to one-third the salary of their government counterparts. However, proposals to formalize policies around greater use of contract teachers have met heavy opposition from teachers' unions. There are additional concerns that scaling up such a program through the “business as usual” government procedures may undermine its effectiveness. Building on the experiment by Duflo, Dupas, and Kremer (2012) in Western Kenya, Bold, Kimenyi, Mwabu, Ng'ang'a and Sandefur (2013) evaluate a larger experiment in Kenya which scaled up the contract teacher program to nearly 200 schools across all provinces of Kenya. The study compared the effectiveness of the program when it was administered by the government rather than a non-government organization (as was the case in Duflo, Dupas, and Kremer 2012). They find that the benefits of the program completely disappeared when administered by the government rather than a non-government organization, highlighting the challenge of scaling up promising interventions through government systems that lack accountability and (in this case) implementation fidelity.

While improving incentives by altering the contractual structure of teachers is politically difficult, a growing body of experimental research has demonstrated the potential for providing teachers with financial incentives to improve learning outcomes. Muralidharan and Sundararaman (2011) found gains in student outcomes in an experiment in rural primary schools in the Indian state of Andhra Pradesh, where teachers were awarded bonus payments based on the improvement of their students' test scores. Loyalka, Sylvia, Liu, Chu, and Shi (2016) also found student gains from an experiment tying teacher pay to student

performance in 216 schools in western China, using a variety of incentive designs. Duflo, Hanna, and Ryan (2012) carried out a randomized study in India, where some teachers were given a digital camera, and received a financial incentive for taking a time-stamped picture of themselves with their class at the beginning and end of the school day. The incentives, coupled with monitoring by the camera, reduced teacher absenteeism and improved student outcomes.

However, while teacher incentive schemes can increase accountability by aligning teacher effort with student outcomes, they are often insufficient in raising learning outcomes when they are introduced as stand-alone interventions, as there may be additional binding constraints. For example, teachers' incentives may be complementary to other classroom inputs (as found in the experiment of Mbiti, Muralidharan, Romero, Schipper, Rajani, and Manda 2016) or to student effort (Behrman, Parker, Todd, and Wolpin 2012). In addition, the design of the incentive scheme is an important factor in determining the effectiveness of such schemes. Economic theory suggests the most effective schemes will feature individual incentives and payoffs that are based on student growth and elicit effort across the entire student distribution, such as the "pay for percentile" scheme described by Barlevy and Neal (2012), and experimentally evaluated in Chinese villages by Loyalka, Sylvia, Liu, Chu, and Shi (2016). However, in practice there may be a tradeoff between the transparency and ease of comprehension of the incentive design on one hand, and the power of the incentive on the other.

Yet another difficulty with plans to link teacher pay to student performance is that many teachers may be limited by their knowledge of their subject(s) and pedagogical techniques. Consequently, teacher incentive programs may not be sufficient to improve learning outcomes as the increased effort by teachers may not be directed towards effective activities. Using linked teacher-student databases from Peru (Meltzer and Woessman 2012), and from 13 different sub-Saharan African countries (Bietenbeck, Piopiunik, and Weiderhold 2015), the authors find that teacher subject knowledge is correlated with student learning outcomes. However, data from a variety of settings suggest that teacher subject knowledge is quite limited. In Kenya, sixth grade math teachers scored about 50 percent on an externally administered grade appropriate math exam (Ngware, Ciera, Musyoka, and Oketch 2015). About 40 percent of teachers in Kenya, 20 percent of teachers in Uganda, 5 percent of teachers in Senegal, and 1.2 percent of teachers in Tanzania had the "minimum knowledge needed to be effective" (data for 2012 from the World Bank Service Delivery Indicators).

Lessons by teachers are generally not interactive—and this lack of interaction may be more common among teachers who are not as comfortable with the material. I have observed teachers spending close to 30 minutes drawing science diagrams on the board, with absolutely no interaction with the class. Much of the time students are asked to solve problems, while the teachers sit at the front of the room without interacting with the class.¹

¹Detailed micro-data on teaching practices and teacher knowledge are available through the World Bank Service Delivery Indicators data set for Kenya, Tanzania, Uganda, and Senegal. For example, there

Corporal punishment is common. When I observed classes in Kenya, teachers were often seen walking around with intimidating foot-long PVC pipes which they use as a pointer on the blackboard but also to cane students. Tabulations from the Young Lives database (at <http://www.younglives-india.org>) show that almost one-half of the students surveyed in India had been beaten in the week prior to the survey, while one-third of Ethiopian students, just over one-quarter of Peruvian students, and around one in six students in Vietnam had been punished in a similar time frame. Taken together, these data suggest that there a number of ways in which teachers could alter their actions to improve the learning environment.

Teacher training programs are an obvious approach to address teachers' inadequate knowledge of their subjects and instructional methods. Research on teacher training in developing countries is limited, but there is a growing body of literature on "scaffolding" instruction programs. These programs provide step-by step instructional methods for teachers, and in some cases even include daily lesson plans. Well-designed scaffolding programs are a generally a cost-effective approach to improving learning outcomes as they mitigate limited teacher subject knowledge and pedagogical skills. For example, Lucas, McEwan, Ngware, and Oketch (2014) show gains to student learning in Uganda from a randomized evaluation of the "Reading to Learn" curriculum, which takes a scaffolding approach to teaching literacy, and ongoing teacher support. Piper, Zuilkowski, and Mugenda (2014) use a randomized controlled trial in over 500 schools in Kenya to evaluate a scaffolding-style program of teacher training for early grade learning called PRIMR. The results on early grade reading and numeracy were so promising that the Kenyan government implemented the reading program in all public primary schools. Critics argue that scaffolding can be too restrictive or constraining, especially for effective teachers. But the approach need not be mandatory for all to be useful for many.

Since education systems are often oriented toward top-performing students, interventions that support the teacher's ability to adapt to their students' level of preparation across the range of performance may be complementary to accountability programs. In an experiment in schools in an urban setting in India, Banerjee, Cole, Duflo, and Linden (2007) find that hiring young women as tutors in literacy for students who had fallen behind or using computer-aided adaptive learning for math are cost-effective ways of raising student outcomes. Duflo, Dupas, and Kremer (2011) conducted an experiment in 121 schools in western Kenya, where students were tracked based on their past performance. They find that tracking helped lower-performing students in particular, because it gave teachers a rationale for teaching them at their own level. This change is more significant than it may sound, as the norm among many teachers in developing countries is to finish the syllabus, regardless of the actual learning progression of students. When this practice is combined with the automatic grade-to-grade promotion rules that have been implemented in many countries, a significant portion of students end up leaving primary school

are comparisons of specific teaching practices between civil service teachers and contract teachers, as well as between teachers in public and private schools.

without acquiring basic competencies in numeracy and literacy. For example, data from Tanzania show that across all subjects approximately 83 percent of Tanzanian teachers in first, second and third grade covered the entire material in the syllabus in a year, yet 25 percent, 47 percent, and 17 percent of seventh-grade students failed a second-grade exam in Kiswahili, English, and Math respectively (Twaweza 2013; Uwezo 2013).

The recent scale-up of the PRIMR program in Kenya provides an illustration of how learning-centered education reforms can be enacted. In this case, the program had support from teachers' unions, government, nongovernment organizations, and donors such as USAID and the UK Department for International Development (DFID). The program likely garnered broad support because it provided a combination of visible inputs such as new student textbooks and instructional materials for teachers, as well as less visible changes in pedagogy and ongoing teacher support. Future research should focus on evaluating the complementarities between teacher incentive programs (broadly defined) and interventions that support teachers' ability to teach all students, accounting for the various political economy and accountability challenges that may continue to bind. Research that illuminates the challenges of scaling up programs and potential solutions for addressing those challenges is especially important.

The Need for Improved Accountability and Resource Management in Schools

Schools in developing countries are usually managed by principals in conjunction with local school management committees which consist of teachers, parents, and community members. Principals are generally more educated than teachers. For instance, almost 45 percent of principals in the Young Lives sample of Indian schools for 2012 had a master's degree and 43 percent had a college degree, whereas only 19 percent of teachers had a master's degree and 58 percent had a college degree (at <http://www.younglives-india.org>). But despite the higher education level of principals, school management capacity is relatively weak. Two-thirds of principals in the Young Lives India sample utilized in-person meetings with teachers as their primary method of monitoring. In this data, principals in India believe that the most important indicators of good schools are observable inputs such as buildings, geographical accessibility, and the availability of teaching materials. Only 11 percent of principals believe that learning outcomes (or exam results) are the most important indicator of a good school. Further, only 13 percent of public school principals in the survey in 2012 conducted unannounced teaching observations, while only 8 percent report using student learning outcomes to monitor teacher performance.

Such skewed perceptions of quality suggest that effective management training for principals could have large impacts on schools. However, data from Tanzania show that only 22 percent of principals attended a school management training in

the past five years, while in 2012 just over 67 percent of principals in a Peru survey and 78 percent of principals in an Indian survey had attended school management trainings (Twaweza 2013; Young Lives Database at <http://www.younglives.org.uk>). In an experiment in Senegal that provided schools with grants, Carneiro, Kousihouede, Lahire, Meghir, and Mommaerts (2015) find that schools that invested in materials saw limited improvements in learning outcomes, whereas schools that invested in programs that increased management and teacher productivity through training programs saw improvements in learning. Such training programs may also be more effective if coupled with reforms that incentivize increased oversight effort among principals. However, given the mixed evidence on training programs for schools, more research is needed to enhance our understanding of how to design these programs.

Principals and school committees are jointly responsible for managing school finances. Following the reduction or elimination of school fees in public primary schools in many African countries, governments instituted capitation grants to replace the previously collected school fees (Lucas and Mbiti 2012). These grants are transferred from the central government to schools, although sometimes they are routed through intermediary institutions such as local governments or ministry of education departments. Coupled with the irregularity and uncertainty about the flow of funds, there was considerable confusion about the funding policies in many contexts. Almost 60 percent of principals in the Tanzanian survey did not know how much they were eligible to receive from the government, while 35 percent of Kenyan principals did not know the size of the capitation grant for nonteaching expenses (Twaweza 2013; World Bank Service Delivery Indicators database for 2012). In Tanzania, only 55 percent of principals had a manual that explained the capitation grant policy, and 64 percent kept organized financial records (Twaweza 2013).

This financing structure does little to encourage quality teaching, because better-performing schools are unlikely to receive additional resources given the uncertainty and irregularity of resource flows from the government such as grants and additional teachers. Also, as Kremer, Moulin, and Namuyu (2003) argue, efforts to improve school performance may be undermined if they are offset by increased student enrollment. In addition, schools have limited discretion on spending, and so may not be able to channel their resources efficiently. For instance, almost 95 percent of schools in Kenya are given specific instructions on what materials to purchase from government officials, and 86 percent report having no discretionary funds at all (World Bank Service Delivery Indicators data for 2013). Pairing school finances with head teacher incentives may be a promising approach to encourage the more efficient use of school resources. In a randomized study in Tanzanian primary schools, Mbiti, Muralidharan, Romero, Schipper, Rajani, and Manda (2016) find that school grants were quite effective at improving learning outcomes when paired with teacher and head-teacher incentives. They argue that the combination of incentives and resources encouraged schools to invest their available resources more efficiently.

Training, empowering, and funding school committees are potential approaches to improving school management practices. However, most evaluations of school management training have found that they are generally ineffective, at least as stand-alone interventions. For example, Blimpo, Evans, and Lahire (2015) conduct an experiment in 273 Gambian primary schools where school management committees in the treatment group received additional funds, training, or both interventions. There was some effect in reducing student and teacher absence, but no effect on student outcomes. There is some evidence that empowering school management committees may help student performance. In a multi-treatment experiment in 520 Indonesian public schools, Pradhan, Suryadarma, Beaty, Wong, Gaduh, Alisjahbana and Artha (2014) evaluate the effectiveness of increasing the legitimacy of the school committee through elections. They find that elections for school committees (coupled with school grants) improved teacher effort and parental engagement, but did not raise learning outcomes. However, they find that building linkages from the school committee to the powerful village council improved learning outcomes. Their study suggests that policies that solely increase the accountability of school committees may not be sufficient to improve learning, as school committees have limited power to enact change without additional support. Decentralization is often proposed as a solution to improve accountability. However, the evidence from the randomized studies discussed above show that decentralization initiatives, such as providing school committees with more funding, would need to be coupled with additional programs to facilitate effective and accountable local management. This is another area for future research. Such studies should also examine how to best empower and support school principals. To the extent possible, these studies should also be conducted at scale to facilitate the examination of market-level responses.

Accountability through Parents

Parental engagement can play a large complementary role in education production of children. Parents can hold schools and teachers accountable by voicing concerns, or even by moving their children to another school. They can support the school's fundraising efforts, and can also support their children directly at home.

However, many parents do not seem to be well-informed. A survey in Tanzania found that only 20 percent of parents knew what their child had scored on their last math, English, or Swahili test. Only 48 percent of parents received a report from the school about their child's performance. Enrollments per grade were around 110, but 45 percent of parents reported that their child was in the ranked among the top ten children in the grade, which suggests that most parents were overestimating their child's performance (Twaweza 2013). Parents were also not well-informed about education finance policy at schools. Tanzanian primary schools are supposed to receive capitation grants worth 10,000 shillings per child from the central government to cover the school's (non-teacher-related) operating expenses such as administration, minor repairs, and input purchases such as textbooks. However,

only 13 percent of parents knew what a capitation grant was and only 3 percent of parents knew the amount of money that schools were meant to receive. Moreover, parents had limited interactions with schools. About two-thirds of households had no discussions with teachers in the previous year. Just over one-half of parents in Tanzania attended a meeting at the school in the previous year, but the main topics of discussion were academic performance (usually about the national exams in fourth and seventh grade) and fundraising. Almost 70 percent of parents contributed to schools by donating either financially, in-kind, or with their labor. Overall, these levels of interaction are higher than those documented in India by Banerjee, Banerji, Duflo, Glennerster, and Khemani (2010). In their study in 280 villages in Uttar Pradesh, they find that only 6 percent of households donated to schools, 8 percent volunteered at school, and 28 percent visited the school to complain or monitor.

Increased parental (or community) involvement in school management could potentially improve accountability. A common low-cost approach is to provide parents with information about the school, usually through some form of report card. However, there is limited evidence on the effectiveness of providing such information. For example, Banerjee, Banerji, Duflo, Glennerster, and Khemani (2010) carried out an experiment in India where parents were provided with information about learning outcomes, and community members were trained on a testing tool for children. They find that the information intervention did not improve student learning. Lieberman, Posner, and Tsai (2014) carried out an experiment in 26 Kenyan villages where parents received information about their child's performance and materials about how to help, but found no effect on student outcomes. In contrast, Reinikka and Svensson (2005) studied a newspaper campaign in Uganda that provided schools and parents with information so that they could monitor how local officials were managing a large education grant, and argue that it reduced the capture of these funds and measurably improved student enrollment and learning outcomes.

One reason that providing information may be insufficient to affect outcomes is that parents may have limited avenues to affect the education system. The low levels of parental engagement, and the general ineffectiveness of information campaigns could be a rational response by parents, who, perhaps correctly, surmise that their voice, pressure, and engagement will have little impact as they have limited avenues to hold public schools accountable. Indeed, the Banerjee, Banerji, Duflo, Glennerster, and Khemani (2010) study in India found that report cards paired with a training program on how to conduct summer reading camps did lead to improved learning outcomes among camp attendees as it provided parents with a specific course of action to address the issues raised in the report card.

Collective action problems are also important barriers to parental action, and these may be amplified by ethnic and social divisions within the community. Focusing on a sample of schools in western Kenya, Miguel and Gugerty (2005) find that as the community diversity increased, parental contributions to schools decreased as it was harder to coordinate in order to impose social sanctions on parents that did

not contribute. However, the relationship between ethnicity and parental contributions was relatively muted in Tanzania, as ethnicity is less salient there relative to neighboring Kenya. There is growing evidence that collective action problems can be overcome. Barr, Mugisha, Seernels, and Zietlin (2012) analyze an experiment involving 100 primary schools in Uganda, where parents played an active role in deciding on their own objectives, roles, and indicators of progress for monitoring schools, and found that this process was associated with improved student outcomes as it alleviated collective action problems. Studies that shed light on potential pathways to reduce collective action problems and which provide parents with specific avenues to effect changes in schools would be productive avenues for future research, especially if conducted at scale.

The Potential of the Private Schools and Market Competition to Provide Accountability

Private school enrollment rates have been growing slowly, but steadily, in many developing countries. In the South Asia region, private schools account for around one-fifth of all primary school enrollment (according to the World Bank EdStats database). Andrabi, Das, and Khwaja (2008) show that the number of private schools in Pakistan increased by a factor of ten in less than two decades, with most of the growth in the 1990s. The share of primary school students in private schools is more than 15 percent in Latin America and exceeds 10 percent in the sub-Saharan Africa region. While the share of primary school student in private schools is only about 7–8 percent in the Middle East and East Asia/Pacific regions, this level is double what it was 25 years ago (again, according to World Bank EdStats).

The rise of private schools is partly driven by parental beliefs about the relative quality of private schools, which may be a consequence of the low accountability in public schools. The shift toward reducing school fees for public education, along with rising enrollments, caused some parents to seek private schools instead. Lucas and Mbiti (2012) show that the introduction of free primary education in Kenya increased the demand for private schooling, especially in districts with higher levels of economic inequality, which is perhaps suggestive of parental preferences for peer groups.

Given the myriad of challenges faced by public schools in developing countries, a key policy question is the extent to which the private sector can provide more accountability in the education system. By relying on school fees, private schools are possibly more accountable to parents. In addition, private schools may be better placed to deliver better quality education, as measured by learning outcomes, and could generate positive (or negative) spillovers to the public sector through greater competition. The potential effects of private schools depend critically on factors such as the market structure, information constraints, parental preferences, and government policy.

There is considerable heterogeneity in private schools in developing countries, ranging from elite institutions that cater the richest households to low-cost private

schools that operate in disadvantaged areas such as urban slums which are typically underserved by public schools and other public services. There is also substantial product differentiation in this sector. For example, private schools in Pakistan and India offered different languages of instruction and different subjects, suggesting that they are responsive to market demand (Muralidharan and Sundararaman 2015; Andrabi, Das, Khwaja, Vishwanath, and Zajonc 2008). A disproportionate share of the recent growth in private school enrollment has actually been in private schools that cater to the poor, as discussed in the Heyneman and Stern (2013) case studies of low-fee private schools in Jamaica, Kenya, Tanzania, Ghana, Indonesia, and Pakistan.² These schools are typically located in lower-income, densely populated urban areas—even in slums—but were also prevalent in peri-urban and more rural settings. For instance, Muralidharan and Sundararaman (2015) find that 35 percent of students in rural Andhra Pradesh (the fifth-largest state in India) attended a private school. A multi-country school census in low-income areas conducted by Tooley and Dixon (2005) found that 65 percent of schools in Hyderabad in India and the state of Lagos in Nigeria were privately run, while 75 percent of schools were private in Ga district, a peri-urban and somewhat rural district in Ghana. Oketch, Mutisya, Ngware, and Ezeh (2010) show that over 90 percent of schools in two slums of Nairobi, Kenya, were private. Because many of these schools were not formally registered (or recognized) by the government, official statistics may underestimate private sector enrollment rates.

Private school fees vary but were often modest, with the unregistered schools charging less than registered private schools. In the Ga district in Ghana, unregistered private schools charged US\$14 per term on average (roughly \$5 per month), while registered schools charged US\$24 per term on average (roughly \$8 per month). Using a comprehensive school census from Pakistan, Andrabi, Das, and Khwaja (2008) find that rural private schools charged an average of US\$17 per year in fees, while urban schools charged US\$27 per year.

Although these fees seem modest, there are concerns that the growth of private schools may exacerbate social inequalities (even in rural areas or slums) by excluding the very poorest households, girls, and disadvantaged groups such as ethnic minorities or lower-caste groups. Across different contexts, the data generally show that students who attend private schools come from relatively wealthier households, with better-educated parents (for example, Andrabi, Das, and Khwaja 2008; Muralidharan and Sundararaman 2015; Singh 2015). However, digging deeper into the data, access to private schools among the poorest is clearly quite high. Survey data from Lahore, Pakistan and two slums in Nairobi, Kenya show that 37 percent of children from households at or below the 15th percentile of the

² In general, these areas are not well served by public services such as education or sanitation; often a consequence of the limited or nebulous property rights in informal settlements (Marx, Stoker, and Suri 2013). Because a public school has to be set up on land with a title deed, and has to fulfill various rules (say, having sufficient acreage for a playground), the limited presence of public schools in low-income areas has created an opportunity for the private sector.

wealth distribution and 43 percent of children from the poorest quintile of households attended private schools, respectively (Alderman, Orazem, and Paterno 2001; Oketch, Mutisya, Ngware, and Ezeh 2010). This relatively high rate of private enrollment among the poor may in part reflect the lack of government school options in urban slums and other disadvantaged areas. There is less consistency regarding gender patterns in enrollment. Using the Young Lives data from India, Singh (2015) find that girls are less likely to be enrolled in private school. However, using data from five states in North India, Pal (2010) finds the reverse pattern. Using an experiment in Pakistan, Alderman, Orazem, and Paterno (2001) find that private school entry can actually help close the gender gaps in enrollment. Andrabi, Das, and Khwaja (2008) reach a similar conclusion using a rich set of panel data from Pakistani villages. Because distance to schools is a major barrier to enrollment, especially for girls, both sets of authors argue that policies that induce the expansion of private schools into underserved areas may be effective at closing gender gaps in enrollment. Such expansions could also close enrollment gaps by caste. However, the challenge is to design policies that sufficiently entice private schools to locate in underserved and disadvantaged areas, rather than to cluster around other private schools or relatively richer households (Andrabi, Das, Khwaja, Vishwanath, and Zajonc 2008).

Can Private Schools Deliver Better Outcomes?

Across various settings, there is growing evidence that private schools are finding ways of using their resources more effectively. In India and Pakistan, the operating costs for private schools are one-half to one-fourth that of government schools (Muralidharan and Sundararaman 2015 in India; Andrabi, Das, Khwaja, Vishwanath, and Zajonc 2008 in Pakistan). Most of the cost savings comes from differences in teacher hiring and remuneration. Private school teachers are younger, less educated, less likely to be formally trained, less experienced, and paid roughly one-third to one-fifth of their public school counterparts (based on World Bank Service Delivery Indicators data for 2012; Muralidharan and Sundararaman 2015; Andrabi, Das and Khwaja 2008). However, private school teachers display better attendance and effort, as measured by the proportion of time teachers are actually in class (World Bank Service Delivery Indicators for 2012). In addition, evidence from Pakistan suggests that teacher pay is negatively correlated with absence rates in the private sector, but positively correlated in the public sector, where older, more experienced higher paid teachers are more likely to be absent. The high rate of teacher turnover in Pakistani private schools, at over 25 percent per year, may be one mechanism that private schools employ to hold teachers accountable (Andrabi, Das, Khwaja, Vishwanath, and Zajonc 2008).

Most low-cost private schools are owned by sole proprietors, especially in Ghana and Nigeria (Tooley and Dixon 2005). These schools were often unable to expand to take advantage of any potential economies of scale. Because private schools tend to locate in clusters, they are often quite competitive, which drives down their profits. Using the data from Pakistan, Andrabi, Das, Khwaja, Vishwanath,

and Zajonc (2008) show that the average profits of private schools are low, on par with the salary of teacher in a private school, which is the likely outside option of the school owner.

There has been a recent emergence of chains of for-profit low-cost private schools which are leveraging technology to deliver lessons and to manage teachers more effectively. Examples include Bridge International Academies in Kenya and the Omega Schools in Ghana (owned in part by James Tooley, author of numerous studies on low-cost schools). Bridge International Academies opened its first school in a Nairobi slum in January 2009. By November 2014, it had opened nearly 400 schools across Kenya and had enrolled over 100,000 students (see <http://www.bridgeinternationalacademies.com/company/history>). Bridge has now expanded into Nigeria and Uganda and is preparing to launch in India and Liberia.³ Bridge employs curriculum development specialists who create scripted lessons. Each teacher is given a tablet and delivers extremely detailed scripted content to the classroom: for example, the scripts even include prompts to call on students. Bridge hires individuals who are not necessarily trained as teachers and pays them less than teachers in government schools. However, the tablets enable Bridge to monitor both teacher attendance and what material has been delivered in the classroom. Bridge also uses a database to track student learning outcomes. Teacher absence is less than 2 percent compared to over 16 percent in government schools, and teachers also spend more time in class (for more details about Bridge schools, including common critiques about their model see Rosenberg 2013, 2016).⁴

Simple comparisons of survey data across several contexts suggests that learning outcomes are generally higher in private schools (as shown by the World Bank Service Delivery Indicators for 2012; the Young Lives dataset at <http://www.younglives.org.uk>; Andrabi, Das, Khwaja, Vishwanath, and Zajonc 2008 in Pakistan). With respect to Bridge schools, an internal Bridge study focusing on grades 1, 2, and 3 found that students in a Bridge schools saw greater increases in learning relative to students in government schools (Bridge International Academies 2015). At the upper primary level, Bridge students did better than students in public schools in the Keynan national primary school exit exam. Bridge students scored between 0.2 to 0.3 standard deviations more than their government counterparts (author's calculations using Kenyan examinations data). However, it is likely that a substantial portion of the learning differences are driven by selection, given the differences

³The Liberian government has invited a number of private operators including Bridge to manage and operate around 100 public schools. These schools will be free to the families of the students, and the government will pay the operators a fixed fee per student. More details are reported by Rosenberg (2016).

⁴Bridge has attracted investors such as Mark Zuckerberg, Bill Gates, the Omidyar Network, the International Finance Corporation (part of the World Bank Group) and the UK Department of International Development (DFID). The full list of investors can be found at <http://www.bridgeinternationalacademies.com/company/investors/>. There are concerns in some circles about international development agencies financing or subsidizing a for-profit entity (Rosenberg 2013, 2016; Das 2016).

in observable characteristics such as parental education across school types, and in particular the probable differences in unobservable factors such as parental motivation or child ability.

Rigorous evaluations of private schools in Pakistan, India, and Colombia show that private schools deliver outcomes that are at least as good as public schools. Using student-level panel data and value-added approaches in Pakistan, Andrabi, Das, Khwaja, and Zajonc (2011) show that private schools raise learning between 0.19 to 0.3 standard deviations across English, math, and Urdu. Using a similar approach in India, Singh (2015) finds a large effect of private schools on English (over 0.6 standard deviations), but limited effects on math and Telegu (the local language) for younger students, and modest effects in both subjects for older students. Muralidharan and Sundararaman (2015) examine a program that randomly allocated vouchers to private schools among a pool of applicants from 180 villages in Andhra Pradesh. Four years after the launch of the program, they find no impacts of private schools on math or Telegu, but do find significant impacts on English (0.12 standard deviations) and Hindi (0.55 standard deviations). Angrist, Bettinger, Bloom, King, and Kremer (2002) examine a low- to medium-cost private school voucher lottery that targeted low-income students in Colombia. Focusing on a sample of applicants from Bogota, they find a moderate effect of the program on test scores (0.2 standard deviations). Given that private schools generally operate with far fewer resources compared to public schools, these results suggest that private schools are much more productive, because they can deliver learning outcomes that are comparable or better than public schools at a much lower cost. Muralidharan and Sundararaman (2015) also show that private schools devote less time to certain subjects such as math, yet deliver outcomes that are at least as good as public schools in those subjects. This finding provides additional evidence of the relative productivity of private schools.

Policies to Leverage the Private Sector

There are a variety of policy options that could potentially leverage the productivity of the private sector. Some possibilities include using a voucher scheme in which students could choose their own low-cost private school; public-private partnerships in which the government uses private schools to expand enrollment; and encouraging competition between public and private schools.

Voucher programs are often touted as a mechanism to improve the productivity of the entire education system by promoting competition among schools. By allowing parents to vote with their feet, vouchers could promote accountability throughout the education system. However, there are concerns that such programs would lead to increased sorting and cause harm to public schools. Hsieh and Urquiola (2006) show that Chile's voucher program increased socioeconomic stratification, but had limited impact on learning outcomes. However, Muralidharan and Sundararaman (2015) find there were no negative spillovers of the voucher program on public school students in India. They also find suggestive evidence that the vouchers were more effective in markets with greater school competition.

Information constraints could also limit the effectiveness of vouchers or other school choice mechanisms. Andrabi, Das, and Khwaja (2015) show that providing information about the market for schooling, through village report cards, can increase both attendance and learning outcomes. Using a randomized experiment in 112 Pakistani villages that had a combination of public and private schools, they show that the provision of both school-level and student-level report cards in treatment villages increased the competitive pressures on both types of school to perform.

Because school choice is only feasible if there are a sufficient number of schools, policies that encourage the expansion of the supply of private schools could be cost-effective options to provide quality schooling to underserved locations or populations. In an early study along these lines, Kim, Alderman, and Orazem (1999) look at a program to stimulate girls' schooling by subsidizing the creation of private schools in poor urban neighborhoods of a city in Pakistan. Not only did enrollments rise for girls, but for boys, too. More recently, Barrera-Osorio, Blakeslee, Hoover, Linder, Raju, and Ryan (2013) examine an experiment in a sample of 199 villages in underserved rural districts in Pakistan where the government funded low-cost private schools. They show that the program both increased enrollment and led to a dramatic rise in test scores (compared with control villages with limited schooling options). Barrera-Osorio, de Galbert, Habyarimana, and Sarbarwal (2015) also find positive enrollment and test score effects when they examine a government program that subsidizes students to attend low-cost private schools in Uganda. The program was implemented with a randomized phase-in, thus allowing an experimental evaluation. Given the thin profit-margins generated by private schools, designing these subsidy programs to ensure the sustainability and survival of private schools that are induced to open in new locations is very challenging. Alderman, Kim, and Orazem (2003) and Andrabi, Das, Khwaja, Vishwanath, and Zajonc (2008) argue that these programs may not be well-suited to serve rural areas, which are typically less dense, poorer, and harder to staff.

Credit constraints are generally binding in the private school education sector, given the small scale of most private school operators. Such constraints could limit school investment, hindering the potential benefits of school choice. Andrabi, Das, Khwaja, and Singh (2015) examine a randomized experiment that provided unconditional grants to low-cost private schools. If only one school (or a few schools) in the market receives a grant, they find that the school is more likely to invest in expanding access rather than quality; however, when all schools in a market are provided finances, schools are more likely to compete on quality. They also show that labor constraints can make it difficult for private schools to enter or expand (Andrabi, Das, and Khwaja 2013). Private schools in Pakistan rely on female high school graduates to serve as teachers. They show that areas of Pakistan which had higher rates of female secondary school enrollment, due to the presence of a public girls' secondary school, are now seeing higher growth rates of private schools. Thus, an expansion of schooling also creates a larger labor pool of future teachers and benefits future schooling.

Despite the growing evidence on the effects of (low-cost) private schools, teachers' unions in developing countries have been very vocal in opposing these schools. They argue that private schools exploit parents by providing low quality education, due to their use of unqualified teachers. For example, the teachers' union in Kenya is demanding that Bridge schools be shut down (as reported in Wanzala 2016). To the extent that teachers' preferences are at odds with parental preferences, the growing political clout of teachers' unions in many developing countries may tilt education reforms towards policies that favor teachers. However, Davies (2015) suggests that parental support for (low-cost) private schools may increase as they gain greater familiarity with these schools. The greater exposure of parents (and their children) to private schools could be a necessary condition for parents to lobby for school choice, or other policies that generally support private schools.

Conclusion

The education system is of central importance to the economic future of developing countries, both because of the important role of education in economic growth and because of the limited ability of parents in many countries—given their own limited education levels—to provide home inputs to education. Developing countries as a group have made substantial steps in raising enrollment and committing more resources to education. Subsequent reforms need to focus on initiatives that increase accountability and incentives across the education system, improve the effort and pedagogical practice of teachers, support the more efficient use of the existing resources, and leverage the growing private sector.

Recent research, including a number of randomized control trials, has shed light on possible interventions and policies that could be employed to address the accountability and incentive problems facing schools in developing countries. Much of this research so far has focused on using teachers to deliver primary education. Future research seems likely to move toward using technology to deliver content, as well as to monitor teachers, students, and funding. In particular, finding ways for technology to allow instruction to be tailored to the student's level could dramatically improve the productivity of the education system. Also, as many countries have adopted free primary education, future research seems likely to turn to secondary school and other post-primary education options. Finally, there is limited research on early childhood education in developing countries, especially in African contexts.

Translating the emerging research findings into actual changes in public policy always faces problems of implementation and political economy. Small-scale experiments run by credible non-government organizations may not scale up so well if financed and administered at large scale by governments. Additionally, it is a practical challenge to find ways to focus the attention of parents and voters on effective policies that address learning, rather than visible inputs, and then seek to build coalitions for promoting effective educational reforms in developing countries. There is optimism that increased adoption of results-based financing schemes can help shift

the focus of entire education systems towards learning. The World Bank announced in May 2015 it would double the amount devoted to results-based financing in education to over US\$5 billion over the next five years (see <http://www.worldbank.org/en/news/press-release/2015/05/18/world-bank-group-doubles-results-based-financing-for-education-to-us5-billion-over-next-5-years>) By paying for (pre-agreed) results, the hope is that these schemes can help increase accountability from the Ministry of Finance to the Ministry of Education all the way down schools, teachers, students, and parents. As failure to meet a specified target will be extremely visible, results-based financing could potentially change the political salience of learning outcomes. However, the effectiveness of such schemes will depend critically on their design and implementation.

■ *I thank Angela Ambroz, Allison Bigelow, Andrew Brudevold, Jishnu Das, Paul Glewwe, Adrienne Lucas, Anthony Keats, Michael Kremer, Shawn Powers, Youdi Schipper, Jay Shimshack, Tavneet Suri, Caitlyn Tulloch, Craig Volden, Andrew Zeitlin for their comments and suggestions. Taylor Salisbury, Ramsey Stewart, and Morgan Falls provided super research assistance. I would also like to thank the JEP Editors for their support, encouragement, and feedback.*

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