POLICY BRIEF

Long Term Effects of Free Primary Education on Educational Achievement: Evidence from Lesotho

Ramaele Moshoeshoe

October 2023 / No.796

Abstract

Many sub-Saharan African countries have instituted Free Primary Education (FPE) policies, which significantly increase primary school enrolment rates in developing countries. However, school attendance is different from learning. The main questions that still beg for answers are whether the many children in school are learning and whether the FPE learning effects are long-lasting. This paper attempts to estimate the long-term effects of the FPE programme on educational achievement in Lesotho. The programme was implemented grade by grade, beginning with grade one school fees abolition in 2000. The

timing of the implementation created changes in programme coverage across age (and grade) groups over time. We employ a semi-parametric difference-in-differences strategy that exploits these variations to identify the long-term effects of the FPE policy on educational achievement, using university examinations record data for student cohorts that are FPE-treated and those that are FPE-untreated. The results indicate that the FPE effect on academic performance is between 2 percentage points (statistically insignificant) and 20 percentage points (statistically significant at a 1 percent level).

Introduction

The Dakar Framework for Action (DFA), adopted by World Education Forum in 2000, called for complete, free, and compulsory quality education, to redress global educational inequalities (UNESCO, 2000). Since then, several sub-Saharan African countries have instituted free primary education (FPE) pro- grammes by abolishing all primary school user fees. Several studies have attempted to quantify the short-term effects of the FPE programmes in sub-Saharan Africa on school enrolment, dropout, and grade progression (see Deininger 2003; Al-Samarrai and Zaman 2007; Nishimura et al. 2008; Grogan 2009; Lucas and Mbiti 2012; Hoogeveen and Rossi 2013; Moshoeshoe et al. 2019). These studies find that FPE increased enrolment, reduced school dropout, and reduced grade-progression. Therefore, largely owing to FPE programmes, the primary school enrolment rate in the developing world has reached 91 percent (UNDP, 2016), with 94 percent and 74 percent of children worldwide completing primary and lower secondary education, respectively (World Bank, 2016, 2018).

However, school attendance is different from learning. The main problem is that millions of children finish primary school without acquiring functional literacy and numeracy skills, which is more pronounced in sub-Saharan Africa (World Bank, 2018). Given the enormous progress in school access and the ensuing learning crisis, achieving inclusive and equitable education quality by 2030 is the fourth most important Sustainable Development Goal under the 2030 Agenda.

The main questions that still bug researchers and policymakers alike are whether the current learning crisis is due to school fees' elimination programmes and whether these effects are long-lasting. A few studies attempt to estimate the short-term effects of these FPE programmes and similar fee elimination policies in Africa on education quality (i.e., test scores), and they find mixed evidence. Lucas and Mbiti (2012), for example, apply a difference-in-differences strategy, exploiting the variation in pre-programme primary school dropout rates across districts in Kenya to estimate the effect of FPE on primary school completion rate and test scores. They find marginal negative effects of FPE on test scores but large and positive effects on primary school completion rate. Blimpo et al. (2016), on the other hand, find positive effects

of the Gambian Girls' Scholarship programme (a secondary school fee elimination programme for girls) on student access and learning, using a difference-in-differences strategy. Unfortunately, as much as this question remains open, data availability remains a hindrance in answering it, and this paper does not attempt to address it for the same reasons.

All else held constant, the negative (or positive) effects of FPE on learning may still show up later in a child's academic life. According to Cunha et al. (2006), achievement test scores are determined by skills or abilities (both cognitive and noncognitive) that are malleable to environmental (family and school) influences. Moreover, these skills are self-productive and complementary. That is, skills acquired at primary school may augment skills attained at the secondary and university levels, and that skills acquired at primary school may raise the productivity of education investments at the secondary and university levels. Therefore, it is reasonable to assume that FPE, through its influence on school inputs and environments, will have lasting effects on education quality. This paper attempts to test this hypothesis.

Apart from the fact that this paper is among the first studies that attempts to estimate the long-term effects of FPE policies in sub-Saharan Africa, it contributes to several strands of literature. First, it contributes to the literature that looks at the long-term impacts of schooling inputs on educational outcomes. For example, Fredriksson et al. (2013) look at the long-term effects of class size on human capital development. They find that smaller class sizes improve cognitive and noncognitive abilities at age 13 and improve achievement test scores at age 16. Second, it adds to the literature that looks at the short-term impacts of fee eliminations on educational outcomes in developing countries (Grogan, 2009; Lucas and Mbiti, 2012; Hoogeveen and Rossi, 2013; Chyi and Zhou, 2014; Moshoeshoe et al., 2019). Lastly, it also adds to the small, but growing, literature that studies the long-term effects of schooling subsidy pro- grammes (including tuition fee eliminations) on human capital development. For example, Xiao et al. (2017) estimate the long-term effects of a free compulsory education reform in rural China on educational attainment, cognitive skills, and health. They find that the reform had long-lasting positive effects on educational attainment and cognitive achievement. See also Baez and Camacho (2011) and Behrman et al. (2011) for evidence on the long-term effects of conditional cash transfers on human capital.

This paper attempts to answer the following questions: 1) Does FPE have lasting effects on children's academic performance? Furthermore, 2) Do these effects (if any) differ by student's gender? To my knowledge, no studies attempt to quantify the long-term education quality effects of FPE programmes in sub-Saharan Africa. This paper, therefore, aims to bridge this knowledge gap. Specifically, the paper estimates the long-term causal effect of FPE on education performance using the first cohort of FPE- treated students observed later at the university level.

Answering these questions is not a matter of academic curiosity but great policy relevance. In order to build a productive, talented, and diverse labour force, it is essential to know well in time the effects of the implemented policies so that they can either be scaled up (if the effects are positive) and/or changed (if the effects are negative). Because of gender stereotypes in many cultures, girls' education is mostly considered of lesser value. Therefore, girls get less education, at least in terms of enrolment rates. However, whether, conditional on attendance, boys and girls receive the same quality education remains unanswered.

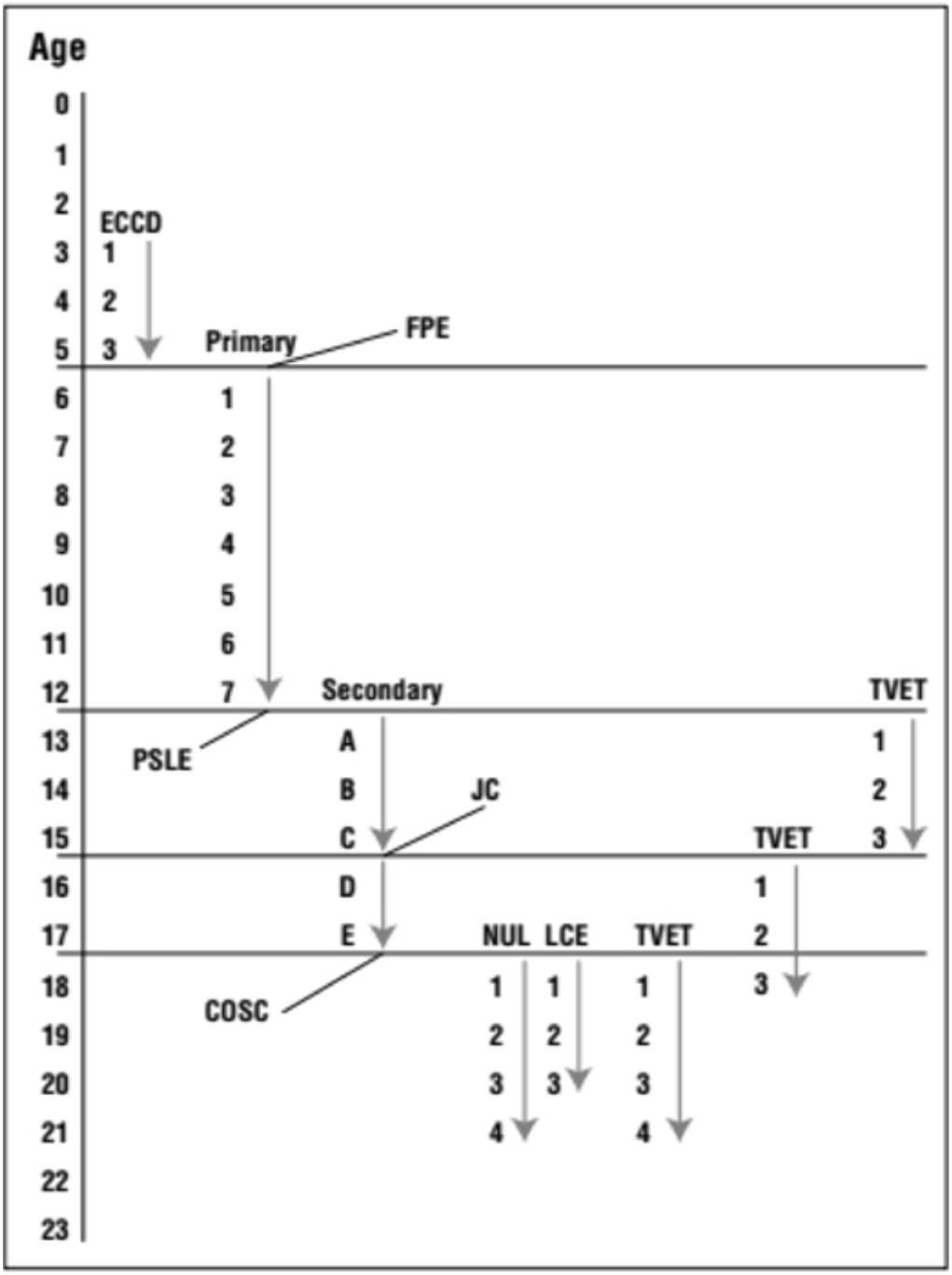
To answer these research questions, we use Lesotho as our case study mainly for the following two reasons. First, unlike many sub-Saharan African countries, the FPE programme in Lesotho was phased- in grade by grade, starting with grade one in 2000, until it covered the entire primary schooling system in 2006. This implementation strategy makes it possible to follow two cohorts of children (the FPE-treated and the FPE-untreated cohorts) from primary school through the university level and hence account for the underlying trends in achievement test scores of the cohorts through a difference-in-differences estimation strategy. Second, Lesotho has only one big (and premier) university, the National University (NUL), and two smaller universities, which only opened in 2007 and 2016, respectively. Therefore, it is possible to get data for a sizeable proportion of the FPE treated and untreated cohorts that have written similar standardised achievement tests.

The results indicate that the FPE programme has lasting positive effects on educational quality: it increased university student's academic performance by about 20 percentage points. While these effects vary by student's program of study (or faculty), there is no discernible FPE effect heterogeneity by student gender. This implies that conditional on university attendance, boys and girls receive the same quality education. The robustness checks analysis indicates that this increase in educational quality cannot be attributed to some positive time trend. These effects are stronger when the sample is narrowed to 18-22 years old, the age range appropriate for the undergraduate level.

The institutional context and policy background

Lesotho education follows a 7-3-2-4 system, with seven years of primary education, three years of junior secondary education, two years of senior secondary education, and four years of university education (see Figure 1). The official age of entry into primary schooling is six years, such that by age twelve, children should be in grade seven. This implies that the official primary school age is 6 to 12 years old and for secondary education is 13 to 17 years old.

Figure 1: Education System in Lesotho



Source: (Liang et al., 2005, p.25). Notes: ECCD refers to Early Childhood Care and Development; LCE refers to Lesotho College of Education, and TVET refers to Technical and Vocational Education and Training.

At the end of primary school, students take the national exit exam, the Primary School Leaving Exam (PSLE), to enter the lower (junior) secondary school. After three years of junior secondary education, students take the Junior Certificate (JC) exam to progress to senior secondary. Finally, at the end of senior secondary school, they take the Cambridge Overseas School Certificate Exam (COSC). Students can also enrol in different Technical and Vocational Education and Training (TVET) after taking the PSLE, JC, and/or COSC exams. However, given that secondary education is not free in Lesotho, enrolment into TVET is primarily dictated by a child's academic performance (low performance) and/or household wealth.

Unlike many other countries, most primary schools in Lesotho (about 85 percent) are owned and controlled by different churches (see Moshoeshoe et al., 2019), and these churches are represented in the national education advisory board by their appointed education secretaries (Ambrose, 2007). Non- religious private schools constitute about one percent of schools and are not covered by the FPE policy. The picture is very similar even at the secondary or high school level because most church-owned primary schools have their secondary schools nearby. However, the share of non-religious private secondary schools is slightly higher than at the primary level. As of 2014, about 1.4 percent of non-church private high schools (Bureau of Statistics, 2015) are concentrated in four country districts, namely, Berea, Botha- Bothe, Leribe and Maseru.

Notwithstanding this co-ownership structure, except for non-church private schools, all schools follow the same national curriculum provided by the Ministry of Education and Training (MOET). Further, the government has overall authority in pronouncing education policies, management and regulation of education, training of teachers, teachers' placements, and deployments within government and church- owned schools. Nevertheless, some church-owned schools do, at times, privately hire contract teachers at their costs. Nonetheless, church and government owned schools are public schools since they have no material differences.

Concerning students' progression within the system, the de jure government policy since 1967 is that of automatic grade promotion at the primary school level. However, the de facto policy is that schools still practice grade retention (Ambrose, 2007), and there has been an increased push for automatic grade promotion at the primary school level since 2010. But this latest policy call does not affect the cohorts this paper studies (i.e., those in primary school from 2000 to 2006). Therefore, coupled with delayed school enrolment, grade retention implies that in any given year (or grade), one finds students of different cohorts Moshoeshoe et al. (2019). In addition, there is a grade retention policy at the secondary school level. Therefore, those who ultimately get into university are a select group of motivated, high-ability children coming from high-income households, as they were able to pass both the JC and COSC exams and pay school fees for at least five years. Between 2005 and 2014, the

PSLE exam failure rate ranged from 12 percent in 2013 to 17 percent in 2007. The JC exam failure rate increased from 24 percent in 2004 to 32 percent in 2009, when the FPE student wrote JC exams (Bureau of Statistics, 2015).

Beyond physical and monetary costs, there are no regulatory restrictions concerning school choice in Lesotho, so parents freely choose schools to which they prefer to take their children, conditional on their ability to meet costs. School choice is determined mainly by school availability, school's past pass rates, parental wealth, and parental tastes for education. High-performing high schools generally attract students from across the country and have stricter entry requirements. To cope with the high demand, high-performing high schools typically administer entry exams and do not admit their students whose JC exams are considered poor (usually second-class pass and below). Therefore, different schools largely cater to different types of students regarding performance.

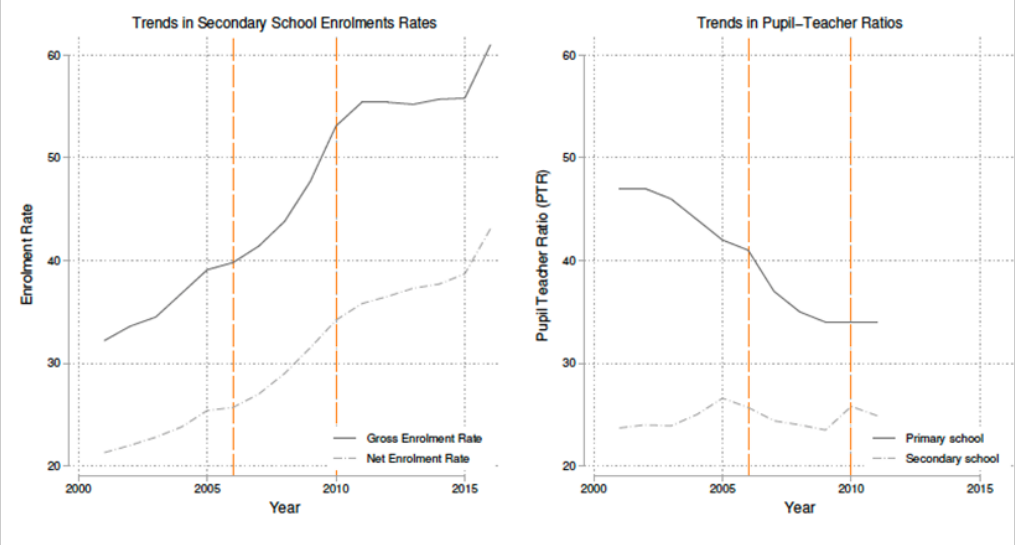
As of 2013, there were about 13 higher education institutions, 8 (i.e., 62 percent) of which are public institutions. The National University of Lesotho (NUL) is the leading tertiary institution in Lesotho and remained the only local bachelor's and master's degree-awarding institution until 2007. The university admits about 44 percent and 89 percent of Lesotho's undergraduate and postgraduate students, respectively (Council on Higher Education, 2013).

Policy background

Lesotho instituted the FPE programme in 2000 to meet the Millennium Development Goal (MDG) of ensuring that primary education is free and available to all (UNESCO, 2000). As mentioned earlier, Lesotho's implementation strategy differed from that of other African countries. First, school fees were eliminated sequentially on a grade-by-grade basis, starting with grade one in 2000 such that by 2003, the first four grades were covered, and all seven primary school grades were under FPE by 2006. The main reason for this implementation strategy was to cushion FPE's financial impact on the public budget (Urwick, 2011).

The FPE policy is an amalgamation of several programme components that address the demand- and supply-side constraints to schooling. On the demand side, the policy eliminates private schooling costs such as school fees, stationery, and textbooks. On the supply side, the government recruited more teachers and built additional classrooms in existing and new government schools where none existed. For example, between 2002 and 2011, the number of primary schools in Lesotho increased by about 10 percent, and the primary school pupil-teacher ratio dropped from 48 to 34 pupils per teacher (MOET, 2011). This infrastructure increase also helped reduce the average distance to schools and transportation costs. In addition to school infrastructure, the government provides annual capitation grants, furniture and teaching materials to all schools, including church/private schools (Jopo et al., 2011; Lekhetho, 2013).

Figure 2: Changes in Pupil-Teacher Ratio and Enrolment



Source: Own representation using data from various Education Statistics Reports (MOET, 2010, 2011, 2016).

Figure 2 shows changes in secondary school enrolment (demand for education), the left panel, and pupil-teacher ratio (supply of education), the right panel, since the FPE programme. We can see that while the secondary school gross enrolment rate was on the increase between 2001 and 2011, the increase was much faster between 2006 and 2010. The figure further shows that while the net enrolment rate increased throughout the period, the gross enrolment rate plateaued between 2011 and 2015 and then began an upward trend. 2007 is the year the first cohort of FPE children entered secondary school. Moshoeshoe et al. (2019) find that, within the first three years of the FPE policy implementation, enrolment of primary school-aged children increased by about 29 percent. Therefore, the increase in enrolment between 2007 and 2011 is partly due to the increased demand for education from the first three FPE cohorts. This first FPE cohort, which potentially had many overaged children, completed secondary education in 2011. This partly explains the plateauing of the gross enrolment rate and the continued increase in net enrolment between 2011 and 2015.

According to MOET (2011), the government increased the number of secondary schools and recruited more teachers in anticipation of the increased demand. This is evident in the right panel of Figure 2. We can see here that secondary schools' student-teacher ratio was on the increase until 2005, after which it began to decline to about one teacher per 24 students in 2009. It is clear from this analysis that Lesotho's FPE programme had multiple components targeted at primary schools, which also had a knock-on effect on school resources at the secondary school level. This paper examines the long-term effects of this policy package, not its elements.

Data source

This paper uses the National University of Lesotho's students' administrative records data for the years 2010 up to 2014. It makes use of first year and second-year students' data. As the largest and oldest undergraduate degree-awarding university in Lesotho, the NUL admits the largest share of all students who achieve the minimum score for university entry in the senior high school exit examinations. It, therefore, admits the largest proportion of students who have gone through the FPE system. Given that the first cohort that has gone through the FPE programme first entered the university level in 2012, the second-year students are a control group, while the first years are a treatment group.

The data contains information on each student's gender, date of birth, academic year, senior high school exit (or Cambridge Overseas School Certificate [COSC]) examination pass grade, the NUL Admission Point System (APS) score for each student, the high school attended, faculty, department or program of study, the overall weighted mean or year mean performance, and whether a student is local or international. The overall weighted mean (OWM) is the main outcome variable. It is calculated as the weighted sum of the final scores of core, pre-requisite, and/or elective subject courses that make a maximum of 36 credit hours, where the weights are each course's credit hours divided by 36. In addition, we construct the student's district information based on the location of the high school attended.

Conclusion

This paper examines the long-term effect of the Free Primary Education policy on educational achievement and how this varies by gender. The results indicate that the effect of FPE on educational achievement at the university level is bounded between 2 percentage (which is statistically insignificant) and 20 per centage points (which is statistically significant at 1 percent). Furthermore, we do not find any FPE effect heterogeneities by student gender, but the effect varies by faculty or programme of study.

In countries where the FPE policy was introduced simultaneously for all grades, it was found that education quality declined, at least in the short run (see Lucas and Mbiti, 2012). However, in countries where no user-fee programmes have been implemented progressively, like rural China's free and compulsory education reform programme, there are positive long-run effects on education quality (Xiao et al., 2017). The results of this paper are consistent with the latter evidence from China. They suggest that, if implemented gradually or on a grade-by-grade fashion as in Lesotho, educational outcomes can be increased. They further suggest that other sub-Saharan African

countries yet to implement free education programmes can increase their chances of meeting the SDG goal of inclusive and equitable education quality for all if they replicate Lesotho's FPE implementation approach.

This paper is not without limitations. As highlighted earlier, the FPE programme in Lesotho is a true package of supply and demand side programmes all geared towards achieving quality education for all. Therefore, while these results are interesting, they must be interpreted with caution: they do not show the effects of just fee eliminations. As we have seen in figure 2, maybe in anticipation of the influx into the secondary schooling system, secondary school resources increased from 2005. Thus, these results are partly attributable to resource increase at the secondary school level.

Furthermore, I cannot completely rule out the possibility that the FPE-treated group worked harder than they would compensate for the perceived lower education quality they received under FPE. That is, there could have been a Hawthorne effect. In addition to this, it is also possible that secondary school teachers may have doubled their effort when teaching the FPE cohort for the same reasons as perceived primary school education. While these are real threats to the validity of the results, nothing indicates that there has been any of these coordinated responses by students and/or teachers that could have biased the results this way. Further research is still needed to tease out the pathways through which the FPE policy increased students' academic performance.

References

Al-Samarrai, S. and Zaman, H. (2007) Abolishing School Fees in Malawi: The Impact on Education Access and Equity, *Education Economics*, 15, 359–375.

Ambrose, D. (2007) The History of Education in Lesotho: Six Brief Subsectoral Studies, *Lesotho Mis- celaneous Documents*, No. 23.

Angrist, J. D. and Lavy, V. (1999) Using Maimonides' rule to estimate the effect of class size on scholastic achievement, *The Quarterly Journal of Economics*, 114, 533–575.

Baez, J. E. and Camacho, A. (2011) Assessing the Long-term Effects of Conditional Cash Transfers on Human Capital: Evidence from Colombia, *IDB Working Paper Series No. IDB-WP-432.*

Becker, G. S. and Tomes, N. (1986) Human Capital and the Rise and Fall of Families, *Journal of labor economics*, pp. S1–S39.

Behrman, J. R. (2010) Investment in education – inputs and incentives, in *Handbook of Development Economics* (Eds.) D. Rodrik and M. Rosenzweig, Elsevier, vol. 5, pp. 4883 – 4975.

Behrman, J. R., Parker, S. W. and Todd, P. E. (2011) Do conditional cash transfers for schooling generate lasting benefits? a five-year followup of progresa/oportunidades, *Journal of Human Resources,* 46, 93–122.

Blimpo, M. P., Gajigo, O. and Pugatch, T. (2016) Financial constraints and girls' secondary education: Evidence from school fee elimination in The Gambia, *The World Bank Economic Review*, p. lhw051.

Blundell, R. and Dias, M. C. (2009) Alternative Approaches to Evaluation in Empirical Microeconomics, *Journal of Human Resources*, 44, 565–640.

Bureau of Statistics (2015) 2014 Education Sstatistics Report Force Survey, *Statistics Report*, No. 28.

Chabé-Ferret, S. (2015) Analysis of the bias of matching and difference-in-difference under alternative earnings and selection processes, *Journal of Econometrics*, 185, 110–123.

Chyi, H. and Zhou, B. (2014) The effects of tuition reforms on school enrollment in rural china, *Economics of Education Review*, 38, 104–123.

Council on Higher Education (2013) Report on the state of Higher Education in Lesotho, Tech. rep., Council on Higher Education.

Cunha, F. and Heckman, J. J. (2009) The economics and psychology of inequality and human develop- ment, *Journal of the European Economic Association*, 7, 320–364.

Cunha, F., Heckman, J. J., Lochner, L. and Masterov, D. V. (2006) Interpreting the Evidence on Life Cycle Skill Formation, in *Handbook of the Economics of Education* (Eds.) E. Hanushek and F. Welch, Elsevier, vol. 1, pp. 697–812.

Deininger, K. (2003) Does cost of schooling affect enrollment by the poor? Universal primary education in Uganda, *Economics of Education Review*, 22, 291–305.

Fredriksson, P., Öckert, B. and Oosterbeek, H. (2013) Long-term effects of class size, *The Quarterly Journal of Economics,* 128, 249–285.

Frölich, M. and Michaelowa, K. (2011) Peer effects and textbooks in African primary education, *Labour Economics*, 18, 474–486.

Glewwe, P., Kremer, M. and Moulin, S. (2009) Many children left behind? Textbooks and test scores in Kenya, *American Economic Journal: Applied Economics*, 1, 112–135.

Glewwe, P. W., Hanushek, E. A., Humpage, S. D. and Ravina, R. (2011) School resources and educational outcomes in developing countries: A review of the literature from 1990 to 2010, *NBER Working Paper*, No. 17554.

Grogan, L. (2009) Universal primary education and school entry in Uganda, *Journal of African Economies*, 18, 183–211.

Hoogeveen, J. and Rossi, M. (2013) Enrolment and Grade Attainment following the Introduction of Free Primary Education in Tanzania, *Journal of African Economies*, 22, 375–393.

Jopo, H., Maema, M. and Ramokoena, M. (2011) Quality of primary school inputs in Lesotho, *SACMEQ Policy Brief,* No. 2.

Kuecken, M. and Valfort, M.-A. (2013) When do textbooks matter for achievement? Evidence from African primary schools, *Economics Letters*, 119, 311–315.

Leibowitz, A. (1974) Home investments in children, *The Journal of Political Economy,* 82, S111–S131.

Lekhetho, M. (2013) The Impact of Free Primary Education on Access and Quality of Primary Education in Lesotho, *International Journal of Educational Science*, 5, 397–405.

Liang, X., Tan, J.-P. and Mutumbuka, B., Dzingai (2005) Primary and Secondary Education in Lesotho - a Country Status Report for Education. africa education country status report. washington, dc: World bank., Tech. rep., World Bank; Africa Region Human Development Working Paper Series, No. 101.

Lucas, A. M. and Mbiti, I. M. (2012) Access, Sorting, and Achievement: The Short- Run Effects of Free Primary Education in Kenya, *American Economic Journal: Applied Economics*, 4, 226–253.

MOET (2010) Education Statistics Report), Tech. rep.

MOET (2011) Presentation on Education Management Information System (EMIS): 1999-2011, Tech. rep.

MOET (2016) 2016 Education Statistics Report), Tech. rep.

Moshoeshoe, R. (2015) *Essays in economics of education: free primary education, birth order and human capital development in Lesotho*, Ph.D. thesis, University of Cape Town.

Moshoeshoe, R. (2019) Changes in Educational Achievement after the Free Primary Education pro- gramme in Lesotho: A Relative Distribution Analysis, *Working Paper*.

Moshoeshoe, R., Ardington, C. and Piraino, P. (2019) The Effect of the Free Primary Education Policy on School Enrolment and Relative Grade Attainment in Lesotho, *Journal of African Economies*, 28, 511–532.

Nishimura, M., Yamano, T. and Sasaoka, Y. (2008) Impacts of the universal primary education policy on educational attainment and private costs in rural Uganda, *International Journal of Educational Development,* 28, 161–175.

Todd, P. E. and Wolpin, K. I. (2003) On the specification and estimation of the production function for cognitive achievement, *The Economic Journal*, 113, F3–F33.

UNDP (2016) Sustainable Development Goals Booklet, Tech. rep., UNDP.

UNESCO (2000) The Dakar Framework for Action: Education for All, Meeting our Collective Commit- ments, Tech. rep., UNESCO.

Urwick, J. (2011) "Free Primary Education in Lesotho" and the disadvantages of the highlands, *International Journal of Educational Development*, 31, 234–243.

World Bank (2016) World Development Indicators: Featuring the Sustainable Development Goals, Tech. rep., World Bank.

World Bank (2018) World Development Report: Learning to Realize Education's Promise, Tech. rep., World Bank.

Xiao, Y., Li, L. and Zhao, L. (2017) Education on the Cheap: The Long-run Effects of a Free Compulsory Education Reform in Rural China, *Journal of Comparative Economics*, 45, 544–562.

Mission

To strengthen local capacity for conducting independent,
rigorous inquiry into the problems facing the management of economies in sub-Saharan Africa.

The mission rests on two basic premises: that development is more likely to occur where there is sustained sound management of the economy, and that such management is more likely to happen where there is an active, well-informed group of locally based professional economists to conduct policy-relevant research.

Bringing Rigour and Evidence to Economic Policy Making in Africa

- Improve quality.
- Ensure Sustainability.
- Expand influence.

www.aercafrica.org

Learn More

www.facebook.com/aercafrica

www.instagram.com/aercafrica_official/

twitter.com/aercafrica

www.linkedin.com/school/aercafrica/

Contact Us
African Economic Research Consortium
Consortium pour la Recherche Economique en Afrique
Middle East Bank Towers,
3rd Floor, Jakaya Kikwete Road
Nairobi 00200, Kenya
Tel: +254 (0) 20 273 4150
communications@aercafrica.org