

Public School Teacher Management in Sri Lanka

Issues and Options

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Abstract

Sri Lanka is increasingly seeking to ensure that its public school system not only delivers greater shares of students who have completed higher secondary and tertiary education, but also that all students obtain a much better education. Raising teacher effectiveness is considered as crucial for achieving these aims. This paper reviews

the literature on teacher management in Sri Lanka, and points to what may be critical teacher management issues. The paper also outlines considerations and options for addressing these issues, informed by international evidence on approaches to improve teacher effectiveness.

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Public School Teacher Management in Sri Lanka: Issues and Options

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I. Introduction

Sri Lanka—a lower-middle income island country in South Asia with a population of 21 million—attained high participation rates at the primary and lower secondary school levels well over a generation ago. Commentators however generally perceive that the country’s public school system, attended by 96 percent of students in grades 1–13, fails to adequately prepare students for future socioeconomic success (see, for example, Aturupane, Savchenko, Shojo, and Larsen 2014; Balasooriya 2012; World Bank 2011).¹

Any assessment of school system performance would necessarily have to examine the performance of its frontline service delivery agents: teachers. Costs associated with teachers—such as teacher recruitment, professional development, and compensation costs—typically account for the bulk of education expenditures. Given this, even small gains in teacher performance would translate into big gains in the efficiency of education expenditures. International evidence suggests that teacher effectiveness (that is, the value-added of teachers measured through student test scores) varies substantially across teachers, persists over time, and strongly influences student academic and nonacademic outcomes over the long term (Jackson, Rockoff, and Staiger 2014). In other words, there is now compelling evidence that individual teachers matter. What is much less known is what factors explain the variation in teacher effectiveness. Indeed, teacher characteristics that are typically observed, such as academic and professional qualifications, teaching experience, and school tenure, are found to explain only a small fraction of the variation in teacher effectiveness (Jackson et al 2014), even in school systems where teacher characteristics differ substantially (Bau and Das 2015).

Based on existing documentation and data, this paper reviews claims and evidence on various aspects of teacher management in Sri Lanka’s public school system, such as recruitment, training, and promotion, to name a few. The available information mainly describes the structure of teacher management; there is little credible information on the performance of teacher management. In addition, to the best of our knowledge, information on teacher effectiveness and its correlates are absent for the country. Nevertheless, based on the available information, the paper aims to delineate apparent critical issues in teacher management in Sri Lanka. The paper

¹ The remaining students are in private schools (2.2 percent) and international schools (1.8 percent) (own estimates based on data from the 2012–13 Sri Lanka Household Income and Expenditure Survey).

also proposes options for addressing these issues, informed by international evidence from rigorous evaluations of interventions to raise teacher effectiveness.

The remainder of the paper is organized as follows. Sections II, III, and IV are short sections that respectively: motivate the focus on teachers for improving student outcomes; describe basic characteristics of Sri Lanka's public school system and its teachers; and discuss student academic achievement and teacher correlates in Sri Lanka. Section V discusses the basic structure of and issues in key aspects of teacher management in Sri Lanka. Section VI discusses options and considerations for raising teacher effectiveness in Sri Lanka. Section VII provides concluding remarks.

II. Teacher effectiveness

International evidence suggests that school quality is an important determinant of student academic achievement (measured in terms of standardized test scores), and that teachers are an important determinant of school quality (Hanushek and Rivkin 2006). U.S. studies using matched teacher-student panel data consistently find that teacher effectiveness, measured in terms of student test score value added (hereafter referred to as teacher value-added scores), varies widely among teachers within school districts and even within schools, persists over time, and influences the longer-term outcomes of students.² One standard-deviation increase in teacher effectiveness (that is, going from an average teacher to one at the 84th percentile) corresponds to a 0.1–0.2 standard-deviation increase in average test scores over a single school year for public primary and secondary school students (see, for example, Rivkin, Hanushek, and Kain 2005; Aaronson, Barrow, and Sander 2007; Kane, Rockoff, and Staiger 2008; Rockoff 2004; Chetty, Friedman, and Rockoff 2013). Examined over five- and ten-year periods, the effectiveness of teachers in earlier years of service is significantly correlated with their effectiveness in later years of service (McCaffrey, Sass, Lockwood, and Mihaly 2009; Goldhaber and Hansen 2013).

Having a relatively more effective teacher even for only one school year is positively associated with key individual outcomes in adulthood such as the likelihood of a student going to college, the quality of the college that the student attends, and annual labor earnings (Chetty,

² See Koedel, Mihaly, and Rockoff (2015) for a description of the teacher value-added method. The method is prominent and applied in research and increasingly in practice (Kane, Taylor, Tyler, and Wooten 2011). Notwithstanding this, questions have been raised on its validity and reliability (Baker et al 2010, Rothstein 2010).

Friedman, and Rockoff 2014). The total effect of a teacher on longer term outcomes of students appears to operate partly through test scores of students and partly through other skills of students not captured by test scores (Chamberlain 2013), presumably their socioemotional skills (Jackson 2012).

III. Public schools and teachers in Sri Lanka

A. Schools

Sri Lanka has an extensive system of public primary and secondary schools, with schools located within reasonable distances of the homes of children. By policy, primary schools are located within two kilometers of the homes of primary school-aged children, which in effect translates into a school in every village. Secondary schools are located within five kilometers of the homes of secondary school-aged children (World Bank 2011). Spatial plotting of schools shows that there is, on average, one school per six square kilometers (Tilakaratna, Galapattige, Jayathilaka, and Perera 2008).

Following the establishment of Provincial Councils in 1987, the national government transferred control of virtually all schools to provincial Departments of Education. Eighteen schools were retained by the national government under the management of the Ministry of Education and designated as national schools. Over time, some provincial schools were redesignated as national schools (largely following predefined criteria). According to the 2014 school census administered by the Ministry of Education—which is the data source for all tables and figures in the paper—the number of national schools now stands at 351, whereas there are 9,770 provincial schools. National schools are generally considered elite schools. They are typically better resourced and staffed, located in cities and towns, offer instruction in English, provide schooling up to grade 13, and prepare students for the General Certificate in Education (GCE) advanced level exam (World Bank 2011, Tilakaratna et al 2008).

Table 1 reports basic descriptive statistics separately for provincial schools (Column 1), national schools (Column 2), and both types combined (Column 3). Relative to provincial schools, national schools are more likely to be found in Southern, Uva, and Western provinces, which are the richer and more developed provinces. National schools are by and large Type 1AB (advanced level with science stream) at 92 percent, followed by Type 1C (advanced level

without science stream) at 8 percent. Provincial schools are mostly Type 2 (up to grade 11) at 37 percent, or Type 3 (up to grade 5 or grade 8) at 38 percent, followed by Type 1C at 19 percent.

The differences in the distributions of national and provincial schools across grade spans and languages (or mediums) of instruction correspond to the difference in the distribution of type designation across national and provincial schools. National schools span grades 1–13 (60 percent), or grades 6–13 (39 percent). Provincial schools mainly span grades 1–11 (37 percent), or grades 1–5 (36 percent). National schools mainly offer dual instruction in English and Sinhala (58 percent), followed by English and Tamil (18 percent) and Sinhala only (17 percent). Provincial schools mainly offer instruction in Sinhala only (65 percent) or Tamil only (30 percent).

National schools have on average 2,270 students and 105 teachers, whereas provincial schools have on average 336 students and 20 teachers. Figure 1 depicts the densities of school-level enrollment separately by national and provincial schools. The difference in the average size of provincial and national schools is partly due to how the school size distributions are shaped. Specifically, there is a sizeable percentage of small provincial schools. The vertical red line in the figure denotes school enrollment of 100 students. Thirty-one percent of provincial schools have 100 students or less. In contrast, only one national school has 100 students or less. These small provincial schools tend to be in disadvantaged locations—typically rural and estate communities—and are more poorly resourced and staffed, and their students tend to have lower academic achievement (Balasooriya 2012; Little, Aturupane, and Shojo 2013; Aturupane, Glewwe, and Wisniewski 2013).

B. Teachers

Table 2 reports basic descriptive statistics for teachers in provincial schools (Column 1), national schools (Column 2), and both types combined (Column 3). There are over 230,000 teachers in the system – 84 percent and 16 percent of them are in provincial and national schools, respectively. Seventy-three percent of teachers are female, and teachers have an average age of 44 years and average years of public teaching service of 16 years. These characteristics are similar for both provincial and national school teachers.

In terms of academic qualifications, the vast majority of teachers have either a GCE advanced level (50 percent) or a bachelor's degree (45 percent). However, national school

teachers tend to be somewhat more academically qualified than provincial school teachers. In terms of professional qualifications, 39 percent of teachers have a trained teacher certificate (either through classroom or distance based education), 28 percent have a postgraduate diploma in education, and 18 percent have a diploma in teaching. Thirteen percent of teachers do not have any professional qualifications. Again, national school teachers tend to be more professionally qualified than provincial school teachers. Sixty-three percent of national school teachers have obtained either a postgraduate diploma in education or a diploma in teaching, compared to 42 percent for provincial school teachers. (The types of professional qualifications are described later in Section V.) The differences in average academic and professional qualifications between provincial and national school teachers are likely in large part due to differences in qualification requirements to serve in provincial versus national schools.

IV. Student academic achievement and teacher correlates in Sri Lanka

Evidence from standardized tests for Sri Lanka suggests shortfalls in student learning. A 2013 national assessment of basic learning competencies of grade-4 students in a representative sample of public schools indicates average scores of 52 percent in English and 60 percent in mathematics (National Education Research and Evaluation Center 2014). Average scores also appear to vary markedly between provinces; between urban, rural, and estate schools; between Tamil and Sinhala medium schools; and between school types (1AB, 1C, 2, and 3) (Little et al 2013, Aturupane et al 2013).

The variation in academic achievement across students is likely attributable to variation in multiple factors originating from different sources and points in time, such as community, household, school, and early life experiences and investments. Among these factors, teacher attributes and behaviors are presumably important.

While there is a large and growing literature on the relationship between teacher attributes and behaviors and student outcomes in middle- and low-income countries (see, for example, the review by Glewwe and Kremer 2006), there is scant comparable rigorous evidence for Sri Lanka. As an exception, using 2003 data, Aturupane et al (2013) examined the effect of years of experience of teachers and principals and find small, positive effects on test scores of grade-4 students. The findings, however, are sensitive to the choice of estimator and to subject test score data (Tamil or Sinhalese, English, and math). As noted at the outset, evidence on

teacher effectiveness, measured in terms of teacher value-added scores, is presently absent for Sri Lanka.

V. Teacher management in Sri Lanka

Based on existing documentation and data, this section mainly describes the structure of teacher management in Sri Lanka. When available, this section also presents claims and evidence on the performance of teacher management.

A. Responsibility for teacher management

The Ministry of Education is responsible for setting service rules for public education employees—principals, teachers, teacher educators, and education administrators. It is also responsible for executing all aspects of human resource management for national schools. Primary responsibility for executing all aspects of human resource management for provincial schools lies with the provincial Departments of Education and their offices at the zonal and divisional levels.

In 1995, the Ministry of Education introduced a single structure composed of five tiers for public school teaching service. All public school teachers that previously served under different categories and salary structures were subsumed within the new structure. The new structure streamlined eligibility criteria for entry and promotion (Pillay, Muttaqi, Pant, and Herath 2015).

The roles and responsibilities of zonal and divisional education officials are considered to not be well defined or sufficiently enabled, which may hamper the effective execution of human resource management for provincial schools (World Bank 2011). There are instances, associated with political cycles, when the recruitment, deployment, and promotion of public education employees are considered to have been subject to political influence (Institute of Policy Studies of Sri Lanka [IPS] 2014, Aturupane 2009, Pillay et al 2015). As a result, less deserving teachers may have benefited. In addition, irregularities may create uncertainty and a sense of unfairness, potentially dampening interest in public school teaching by higher-caliber prospective teachers, and potentially discouraging effort by incumbent teachers.

B. Recruitment

There are two entry paths into public teaching: recruitment by the Provincial Councils; or by the Ministry of Education. Recruitment under both paths is generally based on subject-specific job vacancies. Interested individuals are required to apply. The qualifying age range for applicants is 18 to 35 years.

Provincial Councils, through their Public Service Commissions, recruit applicants with at least a bachelor's degree from across the country to serve as teachers at provincial schools. Recruitment is based on academic qualifications. However, if the number of applicants exceeds the number of vacancies, applicants are subject to a screening test and interview (Pillay et al 2015). The Ministry of Education recruits candidates with required GCE advanced level qualifications to become trainee teachers. Trainee teachers undergo a three-year Diploma in Teaching program at the National Colleges of Education (NCOE). Diploma recipients can be assigned to national or provincial schools across the country (Little et al 2013, Balasooriya 2012). All teachers are appointed on a probationary basis for three years, after which they are made permanent (Pillay et al 2015).

Figure 2 depicts the numbers of teachers that entered service in each year over the period 1985–2014 and their academic qualifications (GCE ordinary level, GCE advanced level, bachelors, masters or higher). Three patterns are noted. First, the numbers of entrants with a master's degree or higher are small in each of the years, and the numbers of entrants with a GCE ordinary level qualification become negligible after the 1990s. Second, there are large spikes in the numbers of entrants in some years such as 1989, 1990, and 2005, when over 15,000 entered service in each of those years. Third, the ratio of entrants with a GCE advanced level qualification to those with a bachelor's degree varies markedly across the years, from a low of 1:5 in 1985 to a high of 4:1 in 2007 (an average of 3:2 over the entire period). While these patterns are mainly due to formal adjustments in recruitment rules and requirements, some patterns—for example the recruitment spikes in certain years—are arguably due to arbitrary adjustments in recruitment requirements stemming from political considerations (IPS 2014, Aturupane 2009, Pillay et al 2015).

There have also been instances when rules related to minimum academic qualifications and subject-specific vacancies were relaxed (Pillay et al 2015). For example, Provincial Councils at times recruited individuals with GCE advanced level qualifications, rather than university degree holders, to fill critical vacancies in certain subjects or at disadvantaged locations. As

political concession, public sector jobs were dispensed to university degree holders during periods when the private labor market was weak. At these times, teacher recruitment was based on total vacancies rather than their subject breakdown, leading to over-recruitment in certain subjects (for example, arts and social science subjects) and under-recruitment in others (for example, science, math, English, and computer literacy) (Aturupane 2009, Balasooriya 2012, Pillay et al 2015).

C. Deployment

School-level student-teacher ratios across the entire public school system indicate that schools generally have *adequate numbers* of teachers (see figure 3). The average school-level ratio is 14:1. Ninety-five percent of schools have a student-teacher ratio of 29:1 or lower, which is within the range considered acceptable internationally.

However, a sizeable share of schools are considered not to have the *right mix* of teachers. Rural schools (which here includes estate schools) find it especially difficult to attract and retain subject teachers in English, science, and mathematics (Balasooriya 2012, World Bank 2011). Because of their relative undersupply in the teaching force and better alternative labor earnings options, these particular subject teachers are able to exert significant internal market power and secure positions in desirable schools (Balasooriya 2012).

Newly recruited teachers are required to serve in rural schools for a fixed term. After completion of this term, teachers can apply to transfer to other schools. Typically, teachers apply to transfer to urban schools or to schools near their original residence (Pillay et al 2015).

Deployment rules, conditions, and practices are posited to induce responses from teachers which hamper effective teaching and learning in rural schools. Newly recruited teachers may not yet have gained minimum teaching proficiency (Wehella and Balasooriya 2014). U.S. studies find that gains in teacher effectiveness resulting from experience tend to be highest in the early years of teaching (Harris and Sass 2011, Papay and Kraft 2015). This means that the exit of teachers from rural schools after only a few years and their replacement with newly recruited teachers can constrain student learning. Whether newly recruited or not, teachers assigned to rural schools expend considerable time and effort visiting education administration offices to submit and push through their transfer applications (IPS 2014). Those who are unsuccessful in

their transfer requests can become demoralized, potentially undermining their job motivation and effort (Balasooriya 2012).

D. Training

Pre-service training

Applicants recruited by the Ministry of Education with GCE advanced level qualifications proceed through the NCOE Diploma in Teaching program. Diploma recipients are then assigned to schools. A small number of these recruits (with on average higher GCE advanced level z -scores than with the recruited pool at large) elect for a Bachelors in Education program offered by the University of Colombo. Both types of training programs cover subject knowledge, pedagogy, and supervised practical teaching experience. In the Diploma in Teaching program, the entire third year is spent teaching in a school (Pillay et al 2015).

In-service training

Incumbent teachers who have not undergone pre-service training are required to obtain training during service. There are two main options. First, universities offer a Post Graduate Diploma in Education program through full- or part-time classroom education. The Open University of Sri Lanka offers the same program through distance education. Second, Teacher Training Colleges offer a two-year Certificate of Teacher Training program. The National Institute of Education offers the Post Graduate Diploma in Education and Certificate of Teacher Training programs through part-time classroom and distance education modes (Pillay et al 2015).³

Table 3 reports the distribution of professional qualifications across teachers holding different academic qualifications. The patterns are consistent with the eligibility requirements for the various training options. Ninety-five percent of teachers with GCE ordinary level

³ In 2012, a pilot initiative for on-site training and support, called the School Based Teacher Development Program, was formally introduced. Administered jointly by zonal In-Service Advisors, school principals, and teachers themselves, the program has now been scaled up across the country, with guidebooks circulated to schools (Ministry of Education 2013). Program effectiveness is reported to be hampered by teachers' lack of time and the need for self-motivation given that active program participation and any resulting improvement in teaching are not rewarded through the formal teacher performance appraisal system (IPS 2014).

qualifications have obtained a trained teacher certificate. Sixty-four percent of teachers with GCE advanced level qualifications have obtained a trained teacher certificate, while 30 percent have obtained a diploma in teaching. More than half of teachers with at least a bachelor's degree have obtained a postgraduate diploma in education, but a sizeable share (26 percent of those with a bachelor's degree, and 13 percent of those with a master's degree or higher) have not obtained any training. Teachers who have not obtained any training tend to be those who joined teaching service in the last ten years (see figure 4).

Training effectiveness has been argued to be undermined by demand- and supply-side issues. On the demand side, first, in line with the current incentive structure for teachers, prospective and incumbent teachers obtain training to gain credentials directly for the purpose of entry or advancement rather than to become an effective teacher—which then feeds back to hollow out training programs. Second, teachers face a strong tension between satisfying requirements to both perform their school duties and to obtain training, for which authorized extended leave from school is needed. Third, training provided through part-time classroom or distance education modes helps to circumvent this tension, but teacher attention and absorption are impaired because teachers are taxed by having to perform their teaching and other school duties alongside their training (IPS 2014). Indeed, a U.S. study finds that contemporaneous in-service training is at times *negatively* associated with teacher effectiveness, presumably because training takes teachers away from teaching, or makes teaching additionally burdensome (Harris and Sass 2011).

On the supply side, first, trainer proficiency and performance are poor on average. Second, the pressure to expand the quantity of training to meet the needs of large numbers of teachers has degraded overall training quality. Third, the quality of training offered through part-time classroom and distance education modes is especially low given the even poorer proficiency of trainers under these modes and the negative effects of excess enrollment (Little et al 2013, World Bank 2011, IPS 2014, Pillay et al 2015).

E. Career advancement

In principle, promotion can be a mechanism for inducing effective teaching and school leadership, as promotion confers job status, authority, and autonomy, as well as a pay jump. Leveraging promotion towards this end would mean that effective teachers are rewarded by

being promoted to senior teacher and principal positions and that effective principals are rewarded by being promoted to education administration positions.

However, in line with the practice across Sri Lanka's government service, promotion is based on length of service (along with professional qualifications and satisfactory performance in basic professional bar exams) (Ministry of Education 2014). U.S. studies find that, although teaching experience, from early to late career, is positively associated with teacher effectiveness (Harris and Sass 2011, Papay and Kraft 2015, Wiswall 2013), teaching experience tends to explain only a small fraction of the variation in teacher effectiveness (Jackson et al 2014, Goldhaber and Hansen 2013).

F. Accountability

While, in principle, promotion, school inspection, teacher performance appraisal, and dismissal can encourage teacher performance, they are not designed or implemented in this way in Sri Lanka. As noted earlier, promotion is essentially linked to seniority rather than effective teaching and school leadership (World Bank 2011). School inspections, performed by zonal and divisional education officials, are considered to be weak due to inadequate time and funds for officials to visit schools, particularly schools that are further away from education administration offices (IPS 2014). Teacher performance is appraised annually by school principals, using standardized forms, and following written guidelines provided by the Ministry of Education and the provincial Departments of Education, but the exercise is considered to be perfunctory for virtually all teachers. Departures from teaching are predominantly through retirement.⁴ Dismissals are exceedingly rare. For example, less than a handful of teachers were dismissed in 2013 and 2014, and the grounds for dismissal were not directly related to teaching performance.

Evidence from Sri Lanka on the effectiveness of monitoring and accountability policies and practices on teacher and student behavior and outcomes is limited. As an exception, Aturupane, Glewwe, et al (2014) evaluated the *Program for School Improvement*, an intervention that aimed to enhance school autonomy and parental engagement with schools, thereby potentially incentivizing teacher and principal effectiveness. Randomizing the assignment of the intervention across sample schools, the study finds short-term positive impacts on test scores of grade-4 students. The channels through which the impacts materialized do not

⁴ The mandatory retirement age is 60 years.

appear to run through teachers—the study does not find any effects on various measures of teacher management by principals, or teacher behavior.⁵

G. Compensation

The basic pay scale for public school teachers fits within the country’s overall basic pay scale for public sector employees. It follows a single salary structure, based on service grade and years of service (Ministry of Education 2014). Apart from basic pay, standard cash benefits include a flat-rate cost of living adjustment allowance and, at times, a percentage special allowance (Ministry of Public Administration and Home Affairs 2010).⁶ There is no incentive pay linked to any measure of teacher performance. Both basic pay and allowances are revised periodically by government-appointed pay commissions. Pay and allowances are transferred electronically to the bank accounts of schools. Principals then distribute pay and allowances in cash to teachers at school on a monthly basis. Pay delivery is reportedly problem free, in terms of delays and leakages.

The current pay level for public school teachers appears to be low relative to other countries in South and Southeast Asia. Average public school teacher pay is equal to national income per capita. In contrast, in other South Asian countries, average public school teacher salaries are two to three times their respective national incomes per capita (Aturupane, Savchenko, et al 2014; Dundar, Beteille, Riboud, and Deolalikar 2014).

The pay scale also appears to be compressed relative to other countries (World Bank 2011). Candidates recruited with GCE advanced level qualifications enter service at the lowest grade in the teacher pay scale. Moving from this grade to the highest teacher pay grade can take roughly two decades of service, and results in less than a doubling of pay, even if expected future revisions in pay scales are accounted for based on past revision events (Ministry of Education 2014).

H. Subject teacher deficiencies

One symptom of weaknesses in teacher management, spanning mainly recruitment to deployment to training, is acute and chronic deficiencies in teaching of specific key subjects at

⁵ The study however finds effects on measures of school management by principals.

⁶ A special allowance of 5 percent of basic pay was introduced in 2011.

the secondary level. Studies of subject teachers in English, mathematics, and science indicate that a significant share of schools have subject teachers who are underproficient or lack subject teachers altogether (Pillay et al 2015).

The posited reasons are manifold. Deployment appears to be highly imbalanced, with surpluses of these subject teachers in urban schools and shortages in rural and estate schools. There are cases of Tamil and Sinhala subject teachers being reassigned to teach English, math, and science. Education officials and teachers report that training programs are not sufficiently strong enough for teachers to gain proficiency in subject knowledge and teaching practice. Training weakness appears to be partly due to the lack of teacher trainers with sufficient subject proficiency. The contents of training programs are designed under the assumption that trainers and teachers have gained subject proficiency through their schooling and university education. Yet, results from school-leaving and teacher recruitment exams suggest otherwise. Significant shares of teachers are found to perform poorly in subject knowledge tests pegged at the difficulty level of the GCE ordinary level exam. Unsurprisingly, tests of students indicate that they are weakest in the concepts that teachers are weakest in (World Bank 2011, Perera 2011).

I. Absence

Another likely symptom of weaknesses in teacher management is teacher absence. Absence from the job is a visible indicator of job performance. The most direct effect of teacher absence is lost instruction time for students. If absence reflects a poor work ethic by the teacher, its effect may be compounded by other unfavorable job behaviors such as arriving late to school, departing early, and reducing time-on-task when at school. Irrespective of the operative pathways, higher teacher absence is found to be associated with lower student test scores in different settings (see, for example, Herrmann and Rockoff 2012 for the United States and Duflo, Hanna, and Ryan 2012 for India).

Teacher leave provision matches that of other government employees (Aturupane 2009). Teachers are entitled to 21 days of personal leave and 20 days of sick leave. Teachers however have a considerably shorter work year (200 work days). If teachers take most or all of their leave during the school year, which appears to be the norm, the service loss experienced by beneficiaries is more acute under public education than under other public services.

In 2012, leave taken per teacher was found to be 30 days. Across provinces, leave taken per teacher varied between 23 to 33 days. Assuming that all leave days were taken during the school year, teacher absence is estimated to be 15 percent of the school year (Aturupane, Savchenko, et al 2014).⁷ In comparison, estimated rates of teacher absence, whether or not the absence was officially authorized, vary from 11 percent to 30 percent across a large, disparate set of middle- and low-income countries (Patrinos 2013, Chaudhury et al 2006).

The average level of teacher absence may be due to a more uniform level that is spread out widely across the teaching force, or to higher levels concentrated among certain segments of the teaching force (Glewwe, Ilias, and Kremer 2003). Absence in Sri Lanka is reported to be concentrated among teachers assigned to rural schools, potentially reflecting the disutility that teachers experience from being assigned to these schools (Aturupane 2009).

VI. Improving teacher effectiveness

The issues in teacher management in Sri Lanka discussed in the previous section may still be symptoms, consistent with multiple underlying causes related to the public school system generally and to teachers more specifically. This section discusses potential policies and practices to raise teacher effectiveness in Sri Lanka. Recommendations are largely based on evidence from rigorous evaluations of interventions related to teachers and teaching in other countries.

Sri Lanka's social, economic, and public service context may differ in important ways from the contexts of the other countries where evidence is drawn from. To increase the likelihood that it is relevant, unless otherwise specified, evidence is drawn from studies of public school systems that share many of the main features and issues of Sri Lanka's public school system, including with respect to teacher management. The evidence is drawn from studies of high-, middle-, and low-income countries. Across all country income types, unless otherwise specified, the evidence pertains to schools that serve to students from socioeconomically-disadvantaged backgrounds.

A. Overcoming deployment difficulties by improving working conditions, transporting teachers, and setting up residential schools

⁷ The pattern of absence levels across provinces mechanically mirrors the pattern of leave levels across provinces.

The Sri Lankan government has attempted to address challenges in attracting and retaining teachers in rural schools by, for example, assigning newly recruited teachers to first serve in rural schools for a fixed term, providing cash “hardship” allowances and housing, and accelerating promotion. Several other countries with rural schools face the same problem with teacher deployment, and have attempted similar initiatives (Vegas 2005). Overcoming teacher unwillingness to serve in rural schools can be unsuccessful for a variety of reasons: hardship allowance values are modest; the disbursement of allowances is irregular or unfair; the quality of offered housing is poor; faster promotion is not accompanied by an appreciable jump in position, prestige, and pay; and teachers lack confidence that the government will apply its school assignment and transfer rules to and from rural schools in a transparent, objective, and fair manner. These are all concerns which may apply to Sri Lanka’s efforts (IPS 2014, Balasooriya 2012). Even if such initiatives are successful in overcoming teacher unwillingness to serve in rural schools, they may nevertheless not be as successful in preventing the loss in motivation and effort that can result from serving in rural schools.

Improving working conditions in rural schools may be an important way to attract and retain teachers in these schools, and promote their motivation and effort. While the research mainly pertains to schools in poor urban neighborhoods, U.S. studies have examined the effects of different dimensions of teacher-rated working conditions covering “physical conditions” such as facilities and resources and “social conditions” such as school leadership, professional relations, professional authority and autonomy, engagement with school governance, relations with the community and parents, and school culture. These studies find that better working conditions, especially better social conditions, are associated with higher teacher satisfaction and a lower likelihood of teachers exiting schools, after accounting for school, teacher, and student body characteristics (Boyd et al 2011; Johnson, Kraft, and Papay 2012; Ladd 2011).

In order to circumvent the undesirability of being assigned to rural schools far from the original residences of teachers, the Sri Lankan government has also preferentially recruited teachers from rural districts and assigned them to schools in their own districts. This approach can be beneficial. Although it does not isolate the effect of local hiring from other contract terms, an experimental evaluation in public primary schools in rural Kenya finds that locally- (or community-) hired teachers under short- and fixed-term, renewable contracts (contract teachers) were substantially less likely to be absent from school than their centrally-hired counterparts on

open-ended civil service contracts (regular teachers). In addition, students assigned to contract teachers observed test score gains while those assigned to regular teachers in the same schools did not, even though regular teachers were, on average, more qualified and experienced than contract teachers and received higher salaries (Duflo, Dupas, and Kremer 2015). Similarly, a study that randomly assigned locally-hired contract teachers across public primary schools in rural India finds that the intervention raised student test scores (Muralidharan and Sundararaman 2013).

Sri Lanka's rural schools tend to have the lowest performing students. Providing effective teachers is critical for improving the learning of these students. However, the undesirability of serving in rural schools may be insurmountable, even with significant investments in these schools. Alternatively, it may be more cost effective to permit teachers to travel daily from nearby towns to rural schools, either by providing transport or subsidizing the cost of their own transportation from home to school.

It may also be more cost effective to bring students from rural communities to teachers, through residential public schools situated in towns. Added benefits of residential urban schools over rural schools are that they can be better resourced and that data-driven practices for measuring and promoting effective teaching identified in U.S. studies (discussed later in this section) can be easier to implement. Evaluations that took advantage of lottery-based admission of applicants to high-performing residential schools find test score gains for students who joined these schools in the United States (Curto and Fryer 2014), and for initially higher achieving students among those who joined these schools in France (Behaghel, de Chaisemartin, and Gurgand 2015).

B. Strengthening performance incentives through standard pay and monitoring

Teacher pay is perceived as chronically and acutely low in Sri Lanka, prompting constant calls for a substantial pay hike. Rigorous evidence on the association between standard teacher pay and performance is limited.⁸ A study for Indonesia experimentally evaluated teacher access to a certification process, where once certified, the teacher's salary was permanently doubled.

⁸ While not discussed in this paper, there is an extensive literature evaluating the impacts of teacher incentive pay, that is, additional cash payments to teachers directly linked to gains in student test scores and/or other school, teacher, and student performance indicators (see, for example, Glewwe, Holla, and Kremer 2009; Jackson et al 2014; Neal 2011; and USAID 2014 for reviews).

The study finds that, whereas the intervention increased teacher income and teacher satisfaction with their income and reduced reported financial stress and the likelihood of holding a second job, the intervention did not raise teacher effort (measured through self-reported indicators) or student test scores two to three years after the intervention was introduced (Ree, Muralidharan, Pradhan, and Rogers 2015). A study for Pakistan assessed the effectiveness of regular teachers versus contract teachers in public schools exploiting a sharp shift in recruitment from regular to contract teachers, and finds that contract teacher effectiveness was either similar to or higher than regular teacher effectiveness. Among other differences in contract terms between regular and contract teachers, average salaries for contract teachers were roughly half of average salaries for regular teachers. The authors interpret the evidence as indicating that, in this case, lower teacher pay does not come with lower teacher effectiveness (Bau and Das 2015). These studies suggest that higher teacher pay may not produce higher teacher effectiveness if higher pay does not promote greater teacher effort.

Government monitoring through regular inspections of schools by local education officials can be effective in countering undesirable teacher behavior. Using village-level panel data, a study for India finds that increases in the frequency of school inspections are associated with reductions in unauthorized teacher absence, with the rise in school inspections presumably driven by reductions in the acute understaffing of local education official positions. In contrast, the study does not find increases in community monitoring, measured by the holding of parent-teacher association meetings, to be associated with reductions in unauthorized teacher absence (Muralidharan, Das, Holla, and Mophal 2014).⁹ The lack of an association may be because parent-teacher associations in India lack the authority to manage public school teachers including sanctioning teachers for being absent, a position shared by Sri Lanka's school development committees, its counterpart institution to India's parent-teacher associations.

C. Attracting, identifying, retaining, and supporting effective teachers

The Sri Lankan government uses academic credentials (and, at times, basic tests and interviews) to recruit teachers, and invests significantly in training newly recruited teachers, with the expectation that these processes help in yielding effective teachers. U.S. evidence however suggests that academic and professional qualifications obtained before entering teaching are

⁹ Parent-teacher associations are now called school management committees in India.

weak predictors of teacher effectiveness (Kane, Rockoff, and Staiger 2008; Harris and Sass 2011). Some U.S. studies find that composite measures of cognitive ability and socioemotional ability (such as values, aptitudes, personality traits, and motivations) are stronger predictors of new teacher effectiveness (Dobbie 2011; Rockoff, Jacob, Kane, and Staiger 2011). Nevertheless, teacher characteristics measured at entry into teaching appear to explain a small fraction of the variation in teacher effectiveness (Jackson et al 2014). The evidence suggests that *screening in* prospective teachers, even on the basis of evaluations currently viewed as state-of-the-art, is unlikely to work well enough.

Newly recruited teachers proceed through a three-year probation period before being made permanent in Sri Lanka; in practice, this transition is by default. The effectiveness of teachers measured in the early years of teaching is found to be a strong predictor of their effectiveness in later years of teaching in the United States (Kane, Rockoff, and Staiger 2008). This evidence suggests that early-career teacher effectiveness can be used to *screen out* the least-effective teachers or to target in-service training.

While dismissing the least-effective teachers can raise aggregate hiring and dismissal costs, these costs should be traded off against the costs of retaining less-effective teachers: lost gains in learning and other longer-term outcomes for the student. Empirical simulations for the United States suggest that:

- (1) dismissing the least-effective teachers and replacing them with teachers of average effectiveness substantially raises the test scores and lifetime earnings of students (Hanushek 2011);
- (2) dismissing the least-effective teachers and replacing them with teachers of average effectiveness produces gains in students' lifetime earnings that well exceed costs, including the costs of higher pay to teachers to compensate for increased risk of dismissal (Chetty, Friedman, and Rockoff 2014; Rothstein 2015); and
- (3) dismissing most teachers on the basis of their effectiveness after the first year of teaching is optimal in raising student test scores, even if effectiveness is measured with substantial imprecision (Staiger and Rockoff 2010).

Providing information on teacher effectiveness, even if personnel decisions are not officially conditioned on it, can favorably influence perception and action. Randomizing the provision of reports of teacher effectiveness (value-added reports) to principals across schools, a

U.S. study finds that principals more closely aligned their views of individual teacher performance with the value-added information, particularly when the value-added information was more precise or when the principal had worked with the teacher for a shorter period of time. In addition, in schools where principals received the value-added information, less effective teachers were more likely to exit and student test scores increased (Rockoff, Staiger, Kane, and Taylor 2012).

Training programs of various types, intensities, modalities, and timing in the teacher's career have been evaluated in different settings. Evidence on the efficacy of training programs is mixed. In U.S. studies that find positive impacts of training on student test scores, the programs tend to be intensive, over a year or longer in duration, and include classroom observation and evaluation, feedback, and coaching as integral parts. For example, an experimental evaluation of in-service training that focused on improving the extent and quality of teacher-student interactions to raise student motivation and effort finds that the intervention increased student test scores. The training comprised of cycles of observation, reflection, and consultation based on videos of the teacher's classroom practice (Allen et al 2011). In-service mentoring provided to new teachers on a weekly basis by external, trained, professional mentors is found to be positively associated with teacher effectiveness (Rockoff 2008). Among a limited set of program features that were examined, teacher preparation and certification programs which provided oversight of real teaching experiences and formal opportunities for teachers to conduct research projects on teaching and learning while teaching their students are found to be positively associated with teacher effectiveness (Boyd et al 2009). While the core elements of effective training programs are not absent in Sri Lanka's various training programs, its training system is not based on these elements.

Improvements in public school teacher pay, benefits, and working conditions in Sri Lanka are perceived to be overdue. Teaching job attributes are also perceived to have become less attractive over time, especially when contrasted against improvements in these attributes in prospective private sector jobs in Sri Lanka and major destination countries for labor outmigration from Sri Lanka. Pay, benefits, and working conditions can matter in attracting and retaining effective teachers. In addition, they can matter for teacher motivation and effort. Consistent with these hypotheses, better working conditions, measured by various dimensions,

are found to be associated with higher teacher satisfaction and student test scores in the United States, after accounting for school, teacher, and student body characteristics (Johnson et al 2012).

D. Evaluating teacher effectiveness through alternative measures

Teacher performance evaluation is a basic and largely perfunctory exercise in Sri Lanka. The country is not unique in this regard. For example, a U.S. study finds: that less than 1 percent of teachers were rated as unsatisfactory; that the majority of teachers, including new teachers, did not receive any specific feedback to improve their practice based on their evaluation; and that 41 percent of principals reported that they had always renewed contracts for teachers completing their probation period. Yet, large shares of principals and teachers reported at least one tenured teacher in their school who performs poorly, and at least one tenured teacher in their school that they reported should be dismissed for poor performance (Weisberg, Sexton, Mulhern, and Keeling 2009). International evidence generally indicates that traditional teacher performance evaluation systems fail to provide reliable, relevant, and sufficiently differentiated information for identifying and rewarding effective teachers. While teacher value-added scores appear to perform well in identifying effective teachers, they do not help in identifying effective *teaching*.

Recent U.S. studies point to the promise of using classroom observations and student surveys of their classroom learning experience for identifying effective teachers and teaching. Classroom observations, conducted by, for example, trained, external professionals with detailed rubrics to score observed practices, are found to perform well in predicting teacher effectiveness, measured by teacher value-added scores. While teacher performance in overall classroom practice appears to perform best in predicting teacher value-added scores, performance in different specific classroom practices are associated with teacher value-added scores in math versus reading (Kane et al 2011).¹⁰ A composite measure which combines classroom observation, student perception survey, and student test score data also appears to perform well in predicting teacher value-added scores. Randomizing teachers across classrooms within schools, the predicted gains in student test scores on the basis of the composite measure are

¹⁰ In terms of design, having multiple observers/raters, from inside and outside the school, helps in raising the reliability of classroom observations. In addition, the reliability of observations does not appear to be particularly sensitive to whether or not classroom observations are unannounced (Ho and Kane 2013).

found to on average match actual gains in student test scores (Kane, McCaffrey, Miller, and Staiger 2013).¹¹

Apart from its measurement role, classroom observations can also help improve teacher effectiveness. Using matched teacher-student panel data, a U.S. study evaluated the impacts of a year-long teacher performance evaluation intervention, comprised of classroom observation, scoring, and verbal and written feedback by both a school administrator and a high-performing teacher from another school. Teacher performance evaluation results were also used for promotion and tenure decisions. The study finds that the intervention increased teacher effectiveness during the intervention period and even more in the years after (Taylor and Tyler 2012).

E. Resolving the mismatch between teacher instruction and student learning levels

Tangential from a pure teacher management perspective but nonetheless critical, teacher effectiveness can be impaired if teachers are required to align their teaching to the curriculum, but the curriculum is too advanced for most students. As a result of the misalignment between teacher instruction and student learning ability, students can experience acute learning shortfalls which deepen as they progress to higher grades (Banerjee and Duflo 2011, Pritchett and Beatty 2015). Consistent with this prediction, test scores of public primary school students in rural India indicate that learning trajectories flatten as the students progress through grades (Muralidharan and Zieleniak 2013).

In Sri Lanka, as elsewhere, teacher training and resources for teaching and learning provided to principals, teachers, and students (for example, syllabi, teacher instruction manuals, and textbooks) are aligned with the curriculum.¹² The high-stakes exams at the end of grades 5, 10, and 13 are also aligned with the curriculum. Sri Lanka's national curriculum is considered not well suited to most students but instead caters to the strongest students (World Bank 2011). If

¹¹ Classroom observation, student perception survey, and student test score data are all found to partially reflect a common factor of teacher effectiveness. If this common factor is of interest, a composite measure that weights each of the individual measures equally is considered to be optimal. In addition, the results do not appear to be highly sensitive to the number of data points per teacher, suggesting that less-intensive data collection may work well enough (Mihalay, McCaffrey, Staiger, and Lockwood 2013).

¹² A study that randomly assigned government textbooks across public primary schools in rural Kenya did not find that textbooks raised average student test scores. The study however finds that textbooks raised the test scores of initially higher achieving students (Glewwe, Kremer, and Moulin 2009). The evidence is consistent with the hypothesis that the textbooks, through the curriculum, were misaligned with the learning levels of most students.

Sri Lanka wants to widen and strengthen academic achievement gains for its students, it would help to adapt the curriculum so that its level and pace more closely match the learning abilities of most students.

Aside from better aligning the curriculum, other reforms can help to more closely match teaching to student learning abilities. One option is ability tracking of students within schools—that is, splitting up students in a grade into different sections based on their initial learning abilities. In a study in public primary schools in rural Kenya, ability tracking was randomly assigned to schools. In tracked schools, students were assigned to one of two sections based on initial academic achievement. In control schools, students were randomly assigned to one of two sections. The sections were taught by different teachers. Comparing tracked schools to untracked schools, the study finds that all students—initially low, middle, and high achieving—observed test score gains and that the gains were sustained after tracking ceased. Initially lower achieving students gained in basic skills while initially higher achieving students gained in advanced skills (Duflo, Dupas, and Kremer 2011).

Splitting students by ability across schools may produce results similar to within-school ability tracks. A potential downside is that prospective colleges and employers may use the school type to straightforwardly identify and select high-ability students, dampening the payoffs to effort for students across school types (Macleod and Urquiola 2015).

Another option is intensive remedial education. A study that randomly assigned additional teachers for daily remedial sessions across public schools in urban India finds that the intervention increased test scores of initially lower achieving students (Banerjee, Cole, Duflo and Linden 2007). Nevertheless, under remedial education programs, initially higher achieving students are left out by design.

Ability tracking or remedial education may make the status of lower achieving students known among peers and salient. This might stigmatize them, discouraging their effort. Teaching methods that are student centered may help to discretely match teaching to student learning. One example is classroom-based computer-assisted learning customized to the student's learning level, with individualized support provided by the teacher. Although the research was not motivated by or does not explore the issue of stigma and its effects, an evaluation that randomly assigned computer-assisted learning across public schools in urban India finds that it increased student test scores (Banerjee et al 2007).

VII. Conclusion

Many of the teacher management reforms proposed in this paper are radical. Dislodging teacher effectiveness from its current low level and setting it off on a positive path requires nothing less. Given that Sri Lanka's public school system is the main supply of educated individuals for the labor market, including for the teacher labor market, the quality of public school teachers today matters for the quality of public school teachers tomorrow. Thus, this positive path subsumes gains in effectiveness over cohorts of teachers.

The proposed teacher management reforms will require significant investment in building support from a range of stakeholders, including, importantly, teachers and parents. The reforms will certainly mean adjusting the composition of public education spending, and may mean higher spending. The Sri Lankan government has committed to the latter. More spending without reforms will, however, yield lower student learning dividends.

In addition, without reforms to improve teaching and learning, initiatives aimed at increasing school progression and attainment can be counterproductive. For example, Sri Lanka's policy of automatic grade promotion can exacerbate learning shortfalls as students progress through grades. In recent policy statements, the Sri Lankan government has expressed interest in extending compulsory education from 11 years (legislated in 1978) to 13 years, that is, until the start of tertiary education. If students who currently drop out of school before completing grade 13 tend to be academically weaker students, extending compulsory schooling raises the specter of additional schooling without learning for these students. In addition, the learning of all students, including academically stronger students, can be harmed due to heightened competition for scarce school resources.

To end, while international evidence lays out possible options and considerations, the specific form and substance of teacher management reforms that Sri Lanka pursues in its national and provincial schools should be informed by its own evidence from well-designed and -implemented needs assessments, process evaluations, and impact evaluations. At present, such research is limited. The lack of credible evidence on causes, effects, and mechanisms applies to all aspects of teacher management, and also applies more broadly to education supply and demand behavior in the country, indicating the need for a wide-ranging, high-quality education research program for Sri Lanka.

References

- Aaronson, Daniel, Lisa Barrow, and William Sander. 2007. "Teachers and student achievement in the Chicago public high schools." *Journal of Labor Economics*, 25(1): 95–135.
- Allen, Joseph P., Robert C. Pianta, Anne Gregory, Amori Yee Mikami, and Janetta Lun. 2011. "An interaction-based approach to enhancing secondary school instruction and student achievement." *Science*, 333(6045): 1034–37.
- Aturupane, Harsha, Paul Glewwe, and Suzanne Wisniewski. 2013. "The impact of school quality, socioeconomic factors, and child health on students' academic performance: Evidence from Sri Lankan primary schools." *Education Economics*, 21(1): 2–37.
- Aturupane, Harsha, Paul Glewwe, Renato Ravina, Upul Sonnadara, and Suzanne Wisniewski. 2014. "An assessment of the impacts of Sri Lanka's programme for school improvement and school report card programme on students' academic progress." *Journal of Development Studies*, 50(12): 1647–69.
- Aturupane, Harsha, Yevgeniya Savchenko, Mari Shojo, and Kurt Larsen. 2014. "Sri Lanka: Investment in human capital." South Asia Human Development Sector Report No. 69. Washington, D.C.: World Bank.
- Aturupane, Harsha. 2009. "The Pearl of Great Price: Achieving Equitable Access to Primary and Secondary Education and Enhancing Learning in Sri Lanka." Research Monograph No. 29. UK: Consortiums for Research on Educational Access, Transitions, and Equity. Institute of Education, University of London.
- Baker, Eva L., Paul E. Barton, Linda Darling-Hammond, Edward Haertel, Helen F. Ladd, Robert L. Linn, Diane Ravitch, Richard Rothstein, Richard J. Shavelson, and Lorrie A. Shepard. 2010. "Problems with the use of student test scores to evaluate teachers." EPI Briefing paper 278. Washington, D.C.: Economic Policy Institute.
- Balasooriya, B. M. Jayantha. 2012. "Teacher recruitment and teacher mobility in Sri Lanka." In *Commonwealth Education Partnerships 2012/13* by Commonwealth Secretariat. Cambridge: Nexus Strategic Partnerships.
- Banerjee, Abhijit V., Shawn Cole, Esther Duflo, and Leigh Linden. 2007. "Remedying education: Evidence from two randomized experiments in India." *Quarterly Journal of Economics*, 122(3): 1235–64.
- Banerjee, Abhijit, and Esther Duflo. 2011. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. United States: Public Affairs.
- Bau, Natalie, and Jishnu Das. 2015. "The misallocation of pay and productivity in the public sector: Evidence from the labor market for teachers." Manuscript.
- Behaghel, Luc, Clement de Chaisemartin, and Marc Gurgand, Marc. 2015. "Ready for boarding? The effects of a boarding school for disadvantaged students." The Warwick Economics Research Paper Series 1059. Warwick: University of Warwick, Department of Economics.
- Boyd, Donald J., Pamela L. Grossman, Hamilton Lankford, Susanna Loeb, and James Wyckoff. 2009. "Teacher preparation and student achievement." *Educational Evaluation and Policy Analysis*, 31(4): 416-40.
- Boyd, Donald, Pam Grossman, Marsha Ing, Hamilton Lankford, Susanna Loeb, and James Wyckoff. 2011. "The influence of school administrators on teacher retention decisions." *American Educational Research Journal*, 48(2): 303-33.

- Chamberlain, Gary E. 2013. "Predictive effects of teachers and schools on test scores, college attendance, and earnings." *Proceedings of the National Academy of Sciences of the United States of America*, 110(43): 17176-82.
- Chaudhury, Nazmul, Jeffrey Hammer, Michael Kremer, Karthik Muralidharan, and F. Halsey Rogers. 2006. "Missing in action: Teacher and health worker absence in developing countries." *Journal of Economic Perspectives*, 20(1): 91–116.
- Chetty, Raj, John N. Friedman, and Jonah E. Rockoff. 2013. "Measuring the impacts of teachers I: Evaluating bias in teacher value-added estimates." *American Economic Review*, 104(9): 2593–632.
- Chetty, Raj, John N. Friedman, and Jonah E. Rockoff. 2014. "Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood." *American Economic Review*, 104(9): 2633–79
- Curto, Vilsa E, and Roland G. Fryer Jr. 2014. "The potential of urban boarding schools for the poor: Evidence from SEED." *Journal of Labor Economics*, 32(1): 65–93.
- De Ree, Joppe, Karthik Muralidharan, Menno Pradhan, and Halsey Rogers. "Double for nothing? Experimental evidence on the impact of an unconditional teacher salary increase on student performance in Indonesia." Working Paper 21806. Cambridge: National Bureau of Economic Research.
- Dobbie, Will. 2011. "Teacher characteristics and student achievement: Evidence from Teacher for America." Available at: http://scholar.princeton.edu/sites/default/files/wdobbie/files/dobbie_tfa_2011.pdf (Accessed: December 2015).
- Duflo, Esther, Pascaline Dupas, and Michael Kremer 2015. "School governance, teacher incentives and pupil-teacher ratios: Experimental evidence from Kenyan primary schools." *Journal of Public Economics*, 123: 92–110.
- Duflo, Esther, Pascaline Dupas, and Michael Kremer. 2011. "Peer effects, teacher incentives, and the impact of tracking: Evidence from a randomized evaluation in Kenya." *American Economic Review*, 101(5): 1739–74.
- Duflo, Esther, Rema Hanna, and Stephen P. Ryan. 2012. "Incentives work: Getting teachers to come to school." *American Economic Review*, 102(4): 1241–78.
- Dundar, Halil, Tara Beteille, Michelle Riboud, and Anil Deolalikar. 2014. *Student learning in South Asia: Challenges, opportunities, and policy priorities*. Directions in Development. Washington, D.C.: World Bank.
- Glewwe, Paul, Alaka Holla, and Michael Kremer. 2009. "Teacher incentives in the developing world." Matthew Springer, ed., *Performance Incentives: Their Growing Impact on K-12 Education*. Washington, D.C.: Brookings Institution Press.
- Glewwe, Paul, and Michael Kremer. 2006. "Chapter 16: Schools, teachers, and education outcomes in developing countries." In *Handbook of the Economics of Education*, Vol. 2, ed. E. Hanushek and F. Welch, 945–1017. Elsevier.
- Glewwe, Paul, Michael Kremer, and Sylvie Moulin. 2009. "Many children left behind? Textbooks and test scores in Kenya." *American Economic Journal: Applied Economics*, 1(1): 112–35.
- Glewwe, Paul, Nauman Ilias, and Michael Kremer. 2003. "Teacher incentives." Working Paper No. 9671. Cambridge: National Bureau of Economic Research.
- Goldhaber, Dan, and Michael Hansen. 2013. "Is it just a bad class? Assessing the long-term stability of estimated teacher performance." *Economica*, 80: 589–612.

- Hanushek, Eric A., and Steven G. Rivkin. 2006. "Chapter 18 Teacher Quality." In *Handbook of the Economics of Education*, Vol. 2, ed. E. Hanushek and F. Welch, 1051–78. Elsevier.
- Hanushek, Erik A. 2011. "The economic value of higher teacher quality." *Economics of Education Review*, 30: 466–79.
- Harris, Douglas N., and Tim R. Sass. 2011. "Teacher training, teacher quality and student achievement" *Journal of Public Economics*, 95: 798–812.
- Herrmann, Mariesa, and Jonah Rockoff. 2012. "Worker absence and productivity: Evidence from teaching." *Journal of Labor Economics*, 30(4): 749-782.
- Ho, Andrew D., and Thomas J. Kane 2013. "The reliability of classroom observations by school personnel." MET project research paper. Seattle: Bill and Melinda Gates Foundation.
- Institute of Policy Studies of Sri Lanka (IPS). 2014. *Sri Lanka State of the Economy 2014: Rising Asia-Opportunities and Challenges for Sri Lanka*. Colombo: Institute of Policy Studies.
- Jackson, C. Kirabo, Jonah E. Rockoff, and Douglas O. Staiger. 2014. "Teacher effects and teacher-related policies." *Annual Review of Economics*, 6: 801–25.
- Jackson, C. Kirabo. 2012. "Non-cognitive ability, test scores, and teacher quality: Evidence from 9th grade teachers in North Carolina." Working Paper 18624. Cambridge: National Bureau of Economic Research.
- Johnson, Susan M., Matthew A. Kraft, and John P. Papay. 2012. "How context matters in high-need schools: The effects of teachers' working conditions on their professional satisfaction and their students' achievement." *Teachers College Record*, 114(10): 1–39.
- Kane, Thomas J, Daniel F. McCaffrey, Trey Miller, and Douglas O. Staiger. 2013. "Have we identified effective teachers? Validating measures of effective teaching using random assignment." MET project research paper. Seattle: Bill and Melinda Gates Foundation.
- Kane, Thomas J, Eric Taylor, John Tyler, and Amy Wooten. 2011. "Identifying effective classroom practices using student achievement data" *Journal of Human Resources*, 46(3): 587-613.
- Kane, Thomas J., and Douglas O. Staiger. 2012. "Gathering feedback on teaching: Combining high-quality observations with student surveys and achievement gains." MET project research paper. Seattle: Bill and Melinda Gates Foundation.
- Kane, Thomas J., Jonah E. Rockoff, and Douglas O. Staiger. 2008. "What does certification tell us about teacher effectiveness? Evidence from New York City." *Economics of Education Review*, 27(6): 615–31.
- Koedel, Cory, Kata Mihaly, and Jonah Rockoff. 2015. "Value-added modeling: A review." *Economics of Education Review*, 47: 180-195.
- Ladd, Helen F. 2011. "Teachers' perceptions of their working conditions: How predictive of planned and actual teacher movement?" *Educational Evaluation and Policy Analysis*, 33(2): 235–61.
- Little, Angela W., Harsha Aturupane, and Mari Shojjo. 2013. "Transforming primary education in Sri Lanka: From a 'subject' of education to a 'stage' of education." South Asia Human Development Sector Report No. 61. Washington, D.C.: World Bank.
- Maclead, W. Bentley, and Miguel Urquiola. 2015. "Reputation and school competition." Available at: [http://www.columbia.edu/~msu2101/MacLeod-Urquiola\(2015\).pdf](http://www.columbia.edu/~msu2101/MacLeod-Urquiola(2015).pdf) (Accessed: November 24, 2015).
- McCaffrey, Daniel F., Tim R. Sass, J. R. Lockwood, and Kata Mihaly. "The intertemporal variability of teacher effect estimates." *Education Finance and Policy*, 4(4): 572–606.

- Mihaly, Kata, Daniel F. McCaffrey, Douglas O. Staiger, and J. R. Lockwood. 2013. "A composite estimator of effective teaching." MET project research paper. Seattle: Bill and Melinda Gates Foundation.
- Ministry of Education, Government of Sri Lanka. 2013. *Guidebook on School Based Teacher Development*. Colombo: Ministry of Education.
- Ministry of Education, Government of Sri Lanka. 2014. *Service minute of Sri Lanka teachers' service*. Colombo: Ministry of Education.
- Ministry of Public Administration and Home Affairs, Government of Sri Lanka. 2010. *Revision of salaries and allowances of the public service in terms of budget proposals 2011*. Public Administration Circular No 28/2010. Colombo: Ministry of Public Administration and Home Affairs.
- Muralidharan, Karthik, and Venkatesh Sundararaman. 2013. "Contract teachers: Experimental evidence from India." Working Paper 19440. Cambridge: National Bureau of Economic Research.
- Muralidharan, Karthik, and Yendrick Zieleniak. 2013. "Chasing the syllabus: Measuring learning trajectories in developing countries with longitudinal data and item response theory." Manuscript.
- Muralidharan, Karthik, Jishnu Das, Alaka Holla, and Aakash Mohpal. 2014. "The fiscal cost of weak governance: Evidence from teacher absence in India." Working Paper 20299. Cambridge: National Bureau of Economic Research.
- National Education Research and Evaluation Centre. 2014. *National Report: National Assessment of Achievement of Students Completing Grade 4 in Year 2013*. Colombo: National Education Research and Evaluation Centre, Faculty of Education, University of Colombo.
- Neal, Derek. 2011. "The Design of Performance Pay in Education." In E. Hanushek, S. Machin, and L. Woessmann (Eds), *Handbook of the Economics of Education*, Volume 4, 495–550. Amsterdam: Elsevier B.V.
- Papay, John P., and Matthew A. Kraft. 2015. "Productivity returns to experience in the teacher labor market: Methodological challenges and new evidence on long-term career improvement." *Journal of Public Economics*, 130: 105–19.
- Patrinos, Harry A. 2013. "The hidden cost of corruption: Teacher absenteeism and loss in schools." In *Global Corruption Report: Education*, ed. G. Sweeney, K. Despota, and S. Linder, 70–73. New York: Routledge; Berlin: Transparency International.
- Perera, Marie E. S. 2011. *Status of English Language Teaching in Sri Lanka*. Colombo, Sri Lanka. Processed.
- Pillay, Hitendra, Iqbal Aziz Muttaqi, Yagya Raj Pant, and Nihal Herath. 2015. *Teacher professional development*. TA-6637 REG: Development Partnership Program for South Asia: Subproject 11: Innovative Strategies for Accelerated Human Resources Development in South Asia. Manila: Asian Development Bank.
- Pritchett, Lant, and Amanda Beatty. 2015. "Slow down, you're going too fast: Matching curricula to student skill levels." *International Journal of Educational Development*, 40: 276–88.
- Rivkin, Steven G., Eric A. Hanushek, and John F. Kain. 2005. "Teachers, schools, and academic achievement." *Econometrica*, 73(2): 417–58.
- Rockoff, Jonah E. 2008. "Does mentoring reduce turnover and improve skills of new employees? Evidence from teachers in New York City." Working Paper 13868. Cambridge: National Bureau of Economic Research.
- Rockoff, Jonah E., 2004. "The impact of individual teachers on student achievement: Evidence from panel data." *American Economic Review, Papers and Proceedings*, 94(2): 247–52.

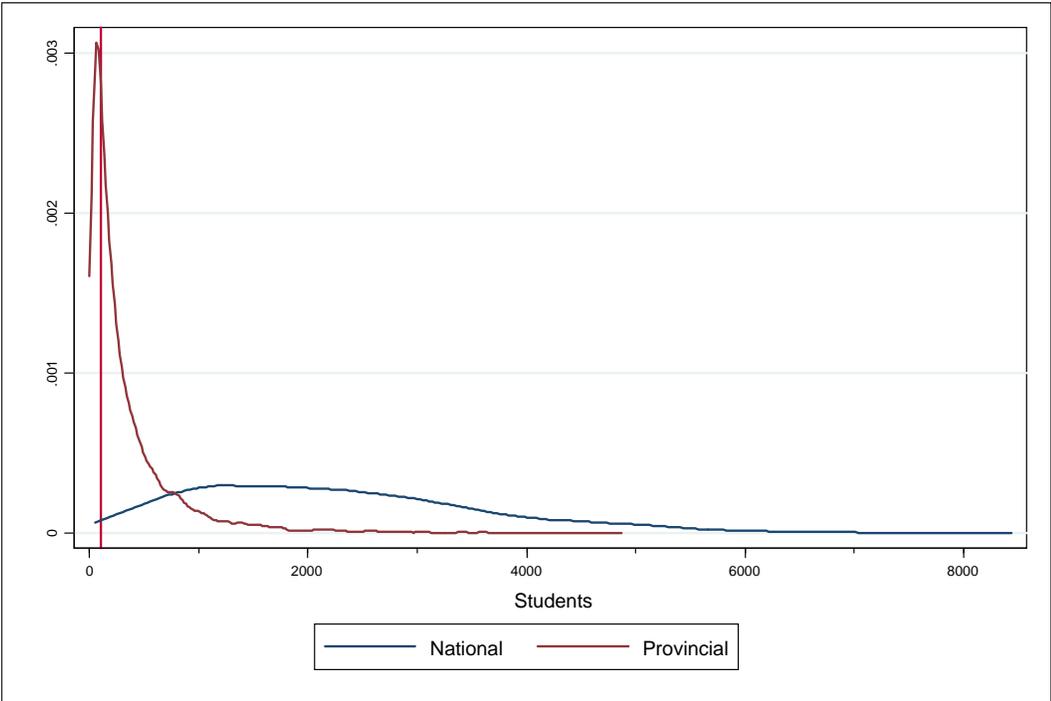
- Rockoff, Jonah E., Brian A. Jacob, Thomas J. Kane, and Douglas O. Staiger. 2011. "Can you recognize an effective teacher when you recruit one?" *Education Finance and Policy*, 6(1): 43–74.
- Rockoff, Jonah, Douglas Staiger, Thomas J. Kane and Eric Taylor. 2012. "Information and employee evaluation: Evidence from a randomized intervention in public schools." *American Economic Review*, 102(7): 3184–213.
- Rothstein, Jesse. 2010. "Teacher quality in educational production: Tracking, decay, and student achievement." *Quarterly Journal of Economics*, 125(1): 175–214.
- Rothstein, Jesse. 2015. "Teacher quality policy when supply matters." *American Economic Review*, 105(1): 100–30.
- Staiger, Douglas O., and Jonah E. Rockoff. 2010. "Searching for effective teachers with imperfect information." *Journal of Economic Perspectives*, 24(3): 97–117.
- Taylor, Eric S., and John H. Tyler. 2012. "The Effect of Evaluation on Teacher Performance." *American Economic Review*, 102(7): 3628–51.
- Tilakaratna, Ganga, Ayodya Galapattige, Ruwan Jayathilaka and Ramali Perera. 2008. "Educational opportunities for the poor in Sri Lanka: Assessing spatial disparities." Human Resource Development Series No. 6. Colombo: Institute of Policy Studies of Sri Lanka.
- United States Agency for International Development (USAID). 2014. *Incentives and accountability in education: A review*. Washington, D.C.: USAID.
- Vegas, Emiliana. 2005. *Incentives to improve teaching: Lessons from Latin America*. Directions in Development. Washington, D.C.: World Bank.
- Wehella, Madura M., and B. M. Jayantha Balasooriya. 2014. Free education policy and its challenges: Sri Lanka. In *Commonwealth Education Partnerships 2014/15* by Commonwealth Secretariat. Cambridge: Nexus Strategic Partnerships.
- Weisberg, Daniel, Susan Sexton, Jennifer Mulhern, and David Keeling. 2009. *The widget effect: Our national failure to acknowledge and act on differences in effectiveness*. New York: The New Teacher Project.
- Wiswall, Matthew. 2013. "The dynamics of teacher quality." *Journal of Public Economics*, 100: 61–78.
- World Bank. 2011. *Transforming school education in Sri Lanka: From cut stones to polished jewels*. Colombo: World Bank Sri Lanka Country Office.

Table 1. Descriptive statistics for public schools

Characteristic	Provincial (1)	National (2)	All (3)
<i>Province</i>			
Central	0.150	0.154	0.150
Eastern	0.109	0.083	0.108
North Central	0.081	0.028	0.079
North Western	0.123	0.100	0.122
Northern	0.098	0.063	0.097
Sabaragamuwa	0.113	0.080	0.112
Southern	0.107	0.188	0.110
Uva	0.087	0.103	0.087
Western	0.132	0.202	0.134
<i>School type</i>			
1AB	0.065	0.915	0.095
1C	0.187	0.077	0.183
2	0.369	0.006	0.356
3	0.379	0.003	0.366
<i>Grade span</i>			
Grades 1–11	0.367	0.006	0.354
Grades 1–13	0.202	0.604	0.216
Grades 1–5	0.364	0.000	0.352
Grades 1–8	0.015	0.003	0.015
Grades 6–11	0.002	0.000	0.002
Grades 6–13	0.049	0.387	0.061
<i>Medium</i>			
Sinhala	0.648	0.171	0.631
Sinhala, Tamil, English	0.003	0.031	0.004
Sinhala, English	0.030	0.578	0.049
Sinhala, Tamil	0.005	0.006	0.005
Tamil	0.304	0.034	0.295
Tamil, English	0.011	0.179	0.016
Enrollment	336	2270	403
Teachers	20	105	23
<i>N</i>	9,770	351	10,121

Notes: Own calculations based on 2014 school census data provided by the Ministry of Education.

Figure 1. Densities of school-level enrollment



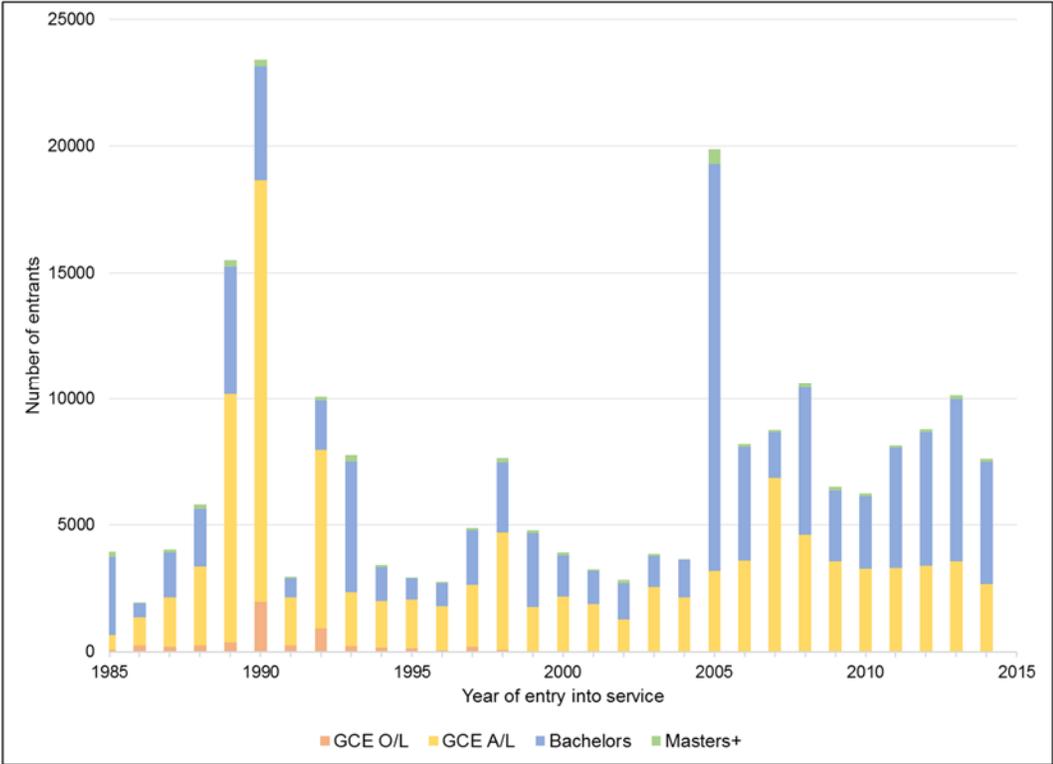
Notes: Own calculations based on 2014 school census data provided by the Ministry of Education.

Table 2. Descriptive statistics for public school teachers, 2014

Characteristic	Provincial (1)	National (2)	All (3)
<i>Gender</i>			
Female	0.728	0.708	0.725
Male	0.272	0.292	0.275
Age (in completed years)	44	42	44
Years of service (in completed years)	16	16	16
<i>Academic qualification</i>			
GCE O/L	0.037	0.023	0.035
GCE A/L	0.502	0.472	0.498
Bachelors	0.442	0.480	0.448
Masters or higher	0.019	0.025	0.020
<i>Professional qualification</i>			
None	0.140	0.103	0.134
Trained teacher certificate – distance based	0.203	0.061	0.181
Trained teacher certificate – classroom based	0.214	0.169	0.207
Postgraduate diploma in education	0.266	0.329	0.276
NCOE diploma in teaching	0.150	0.306	0.175
Bachelors in education or higher	0.026	0.032	0.027
<i>N</i>	194,683	37,277	231,960

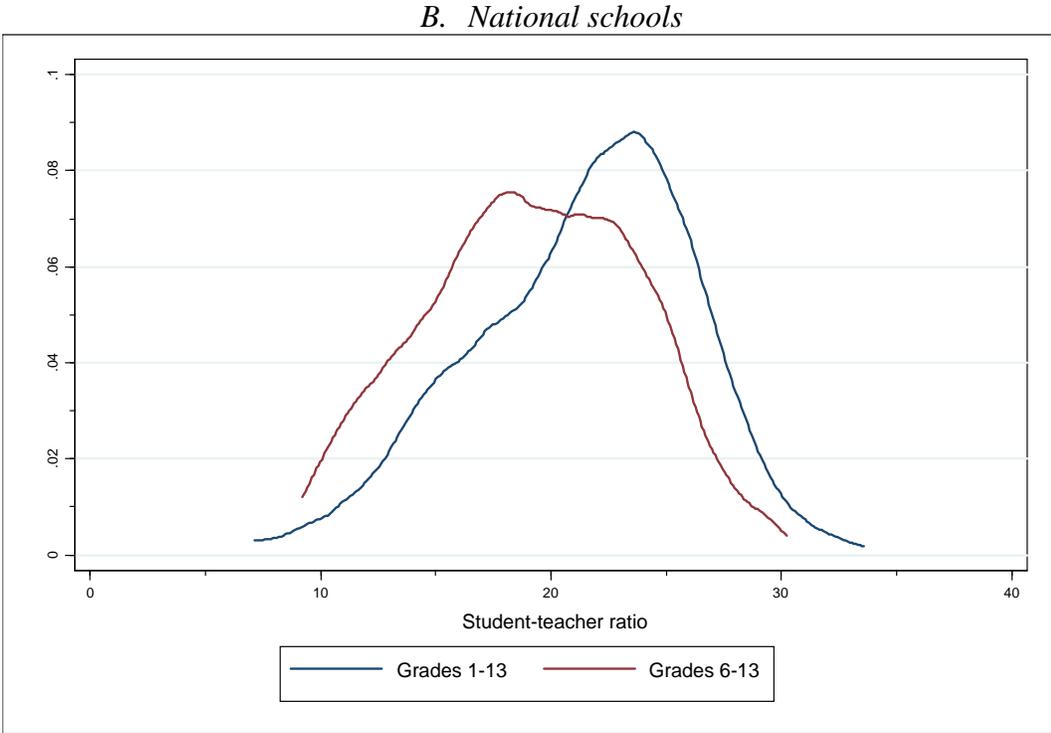
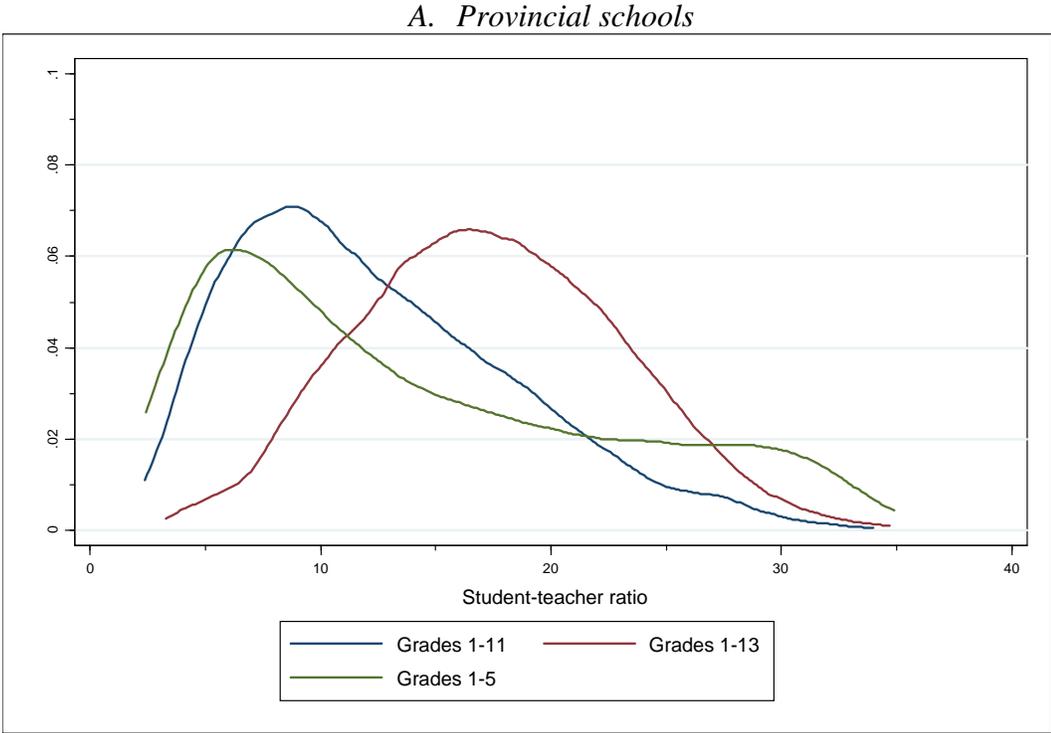
Notes: Own calculations using 2014 school census data from the Ministry of Education. NCOE: National Colleges of Education; GCE: General Certificate in Education; O/L: Ordinary Level; A/L: Advanced Level.

Figure 2. Academic qualification composition of teachers by year of entry into service



Notes: Own calculations using 2014 school census data from the Ministry of Education. GCE: General Certificate in Education; O/L: Ordinary Level; A/L: Advanced Level.

Figure 3. Densities of school-level student-teacher ratios



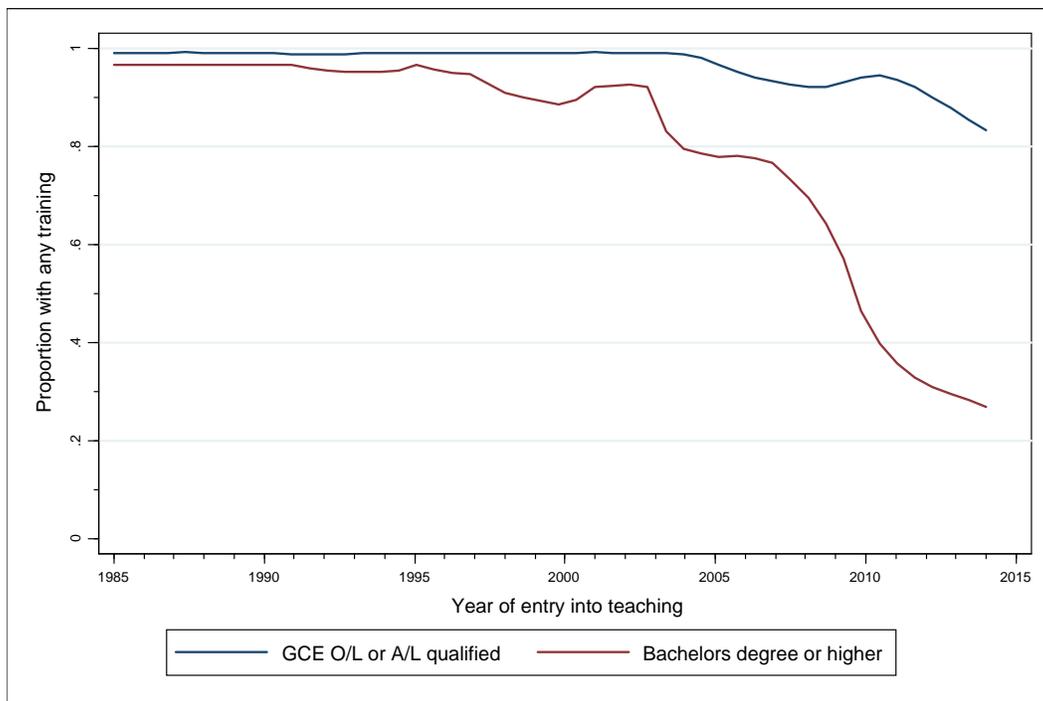
Notes: Own calculations using 2014 school census data from the Ministry of Education.

Table 3. Professional qualification distribution of teachers, by academic qualification

Professional qualification	Academic qualification			
	GCE O/L (1)	GCE A/L (2)	Bachelors (3)	Masters or higher (4)
None	0.024	0.031	0.259	0.127
Trained teacher certificate	0.949	0.644	0.070	0.043
Postgraduate diploma in education	0.011	0.021	0.572	0.530
NCOE diploma in teaching	0.015	0.302	0.051	0.032
Bachelors in education or higher	0.001	0.002	0.048	0.268
<i>N</i>	8,043	115,404	103,175	4,226

Notes: Own calculations using 2014 school census data from the Ministry of Education. NCOE: National Colleges of Education; GCE: General Certificate in Education; O/L: Ordinary Level; A/L: Advanced Level.

Figure 4. Proportion of teachers with any training versus year of entry into teaching, by level of academic qualification



Notes: Own calculations using 2014 school census data from the Ministry of Education. GCE: General Certificate in Education; O/L: Ordinary Level; A/L: Advanced Level.