Tackling Teachers' Behaviour for Learning in Primary Education in Ethiopia

Alebel B. Weldesilassie, Ricardo Sabates, Tassew Woldehanna & Moses Oketch

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Abstract

Effective teaching and learning, leading to greater school completion, should occur where teachers are motivated, have knowledge of the subject, and engage with students using innovative teaching methods aiming to meet the diverse learning needs of the classroom. It is unclear, however, whether what teachers do and how teachers behave is perceived by the students and whether these perceptions are associated with positive school experiences for children. This study aims to analyse students' perceptions on teachers' behaviours, teachers' management practices and the use of inputs by teachers and whether these are associated with primary school completion. We conduct a quantitative analyses using cross sectional data collected from more than 4000 randomly selected primary school aged students, their parents and schools in 2016. The sample students are those who started school before 2006 and are potentially able to complete primary education before 2015. Our findings reveal that students' perceptions of some behaviours by teachers are associated not only with the probability of grade progression during primary school, but also whether students complete primary school. Particularly important are positive behaviours, such as students perceiving their teachers to be engaged and being praised by their teachers while in primary schools. Use of inputs by teachers was also associated positively with progression in primary school and primary school completion. These are important results which hold after accounting for school management, household and child level factors. Accordingly, we argue that reforms addressing teachers' behaviour is essential for improving learning in Ethiopia's primary education.

Keywords: *Primary school completion; Teachers behaviour; Students Perceptions; Quantitative analyses*
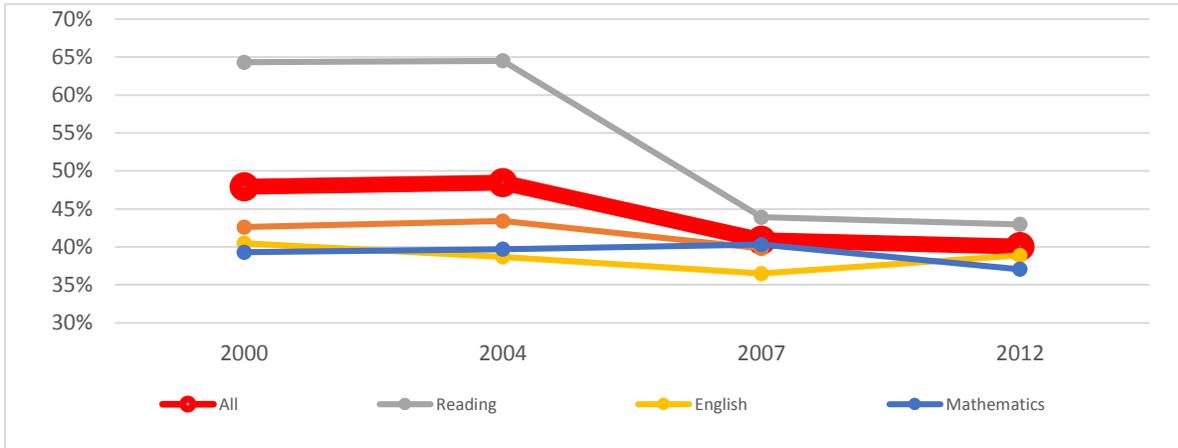
1. Introduction

Ethiopia has achieved a drastic increase in primary school enrolment during the last two decades. In 1992, nearly 80% of primary-school-aged children were not in school, and by 2014 less than 10% of primary aged children were not in school (Amanda, et al, 2015). This achievement puts Ethiopia as the country that managed the fastest increase in primary enrolment rates in Africa between 1990s and 2000s. However, the benefits of the massive increase in primary school enrolment largely depend on the quality of the education in delivering learning of diverse learners.

Emerging evidence from the National Learning Assessments indicates that educational outcomes have been declining since 2000 (see Figure 1 and Figure 2). Besides, the overall performance of students on the English EGRA is well below the standards set by the Ministry of Education. For instance, in primary grade 4, only 30% of the students can perform at a grade 4 level. The rest perform below their level, with the majority (54%) performing at most at grade 2 level in English assessment. In listening, only 7% of students in grade 4 were able to understand classroom instruction. In addition, when grade 4 students were asked to read a single word from the list of familiar words, 24% were not able to do so in 2012 (AIR, 2015). It is alarming, therefore, that no progress has been observed in learning, but that a massive improvement has been achieved in enrolment.
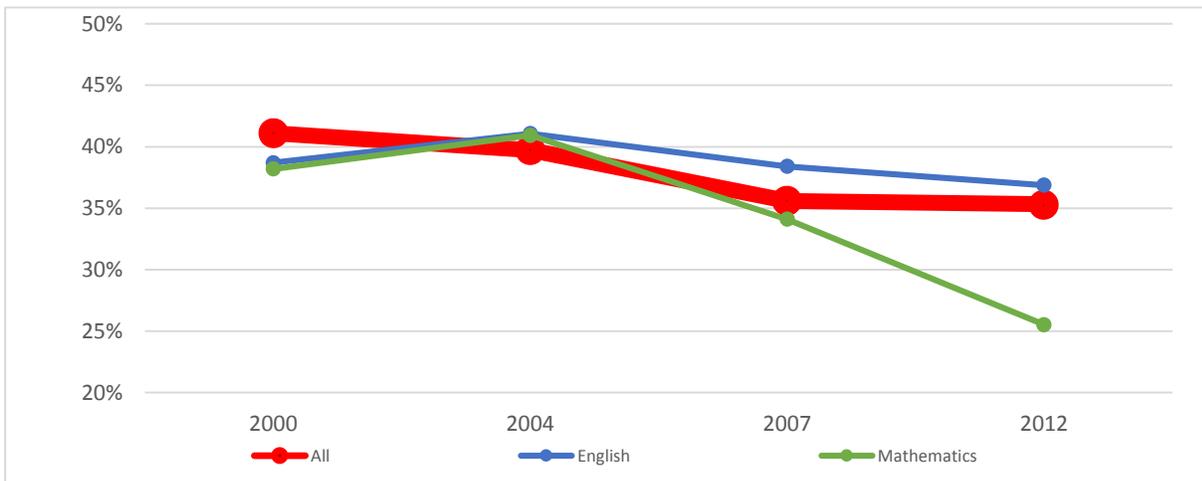
Moreover, equity continues to be an issue as learning improvements are stagnant in less privileged areas of Ethiopia. For instance, in rural areas the proportion of children in grades 5 or 6 of primary school who were not able to solve a two digit addition has remained unchanged since 2009. And although primary school enrolment has increased, primary school completion remains a massive challenge. Of all students enrolled in primary school in 2014, 30% dropped out before reaching grade 5 and 47% dropped out before reaching grade 8, the last year of primary school. The primary school completion rate for rural areas was only 31% whereas in the main urban areas it was 76% (World Inequality Database, 2019).

Figure 1: Grade 4 – mean scores of students, 2000-2012

Source: statistics extracted from National Learning Assessments, National Educational Assessment and Examinations Agency, 2004, 2008 2010, 2012

Figure 2: Grade 8 – mean scores of students, 2000-2012

Source: statistics extracted from National Learning Assessments, National Educational Assessment and Examinations Agency, 2004, 2008 2010, 2012

Overall, evidence shows that children in Ethiopia are indeed being enrolled in school, making slow progress, but many are failing to learn and therefore failing to complete a meaningful episode of primary schooling. But what are the experiences of students who have recently enrolled in primary schools? What do they perceive as the quality teaching, the use of examinations, or whether their

teachers use the whole time for teaching? Do students perceive that teachers were intimidating or did they receive praises from their teachers? These are important questions which help to capture the experiences of students as well as their perceptions on teaching and learning. It raises the question as to whether students who have completed primary school actually reported different experiences from their teachers relative to students who dropped out from primary school.

The aim of this paper is therefore to explore students' perceptions about their teachers' behaviours, management practices and use of inputs and to examine whether these are associated with likelihood of progression and completion of primary school. This paper fills a gap in the empirical literature from Ethiopia as it uses a unique dataset generated to investigate primary school completion and which captures students' experiences of primary school. In the context of an educational system which has accelerated enrolment and which is pushing for improvements in retention, completion and learning outcomes, that using students' perceptions is important to test for associations with progression in primary school as well as primary school completion. Unfortunately, the dataset did not collect information on students' learning outcomes so we are unable to examine the association of students perceptions with learning.

2. Conceptual Framework & Research Questions

Empirical research on school factors affecting student learning focuses on teachers: students with more effective teachers perform better on achievement tests (Carnoy et al., 2015; Hanushek et al., 2005; Boyd et al., 2006). There is also a long history of trying to link teaching practices and styles to student achievement (Oketch et al. 2012; Ngware et, 2014). Another theme in explaining better student performance and completion is opportunity to learn (OTL). In Ethiopia, OTL is predominantly an issue of time on task. The factors that constitute time-on-task are: hours in school year, days school is open, teacher attendance and punctuality, student attendance and punctuality, teacher-student ratio, instructional materials per student, and time in classroom on task (Carnoy et al., 2015). Parents are willing to invest their children's time in education if they believe they will gain something useful from it, but if they lose confidence in the system they often pull their children out (Avenstrup et al., 2004). Poverty is normally blamed for low access and poor achievement, but little systematic research has been undertaken in Ethiopia to understand how teachers, within the context of increased government spending in education and improvements in

access manage time on task to produce or undermine learning outcomes. In developing countries, instructional time is wasted through informal school closures, teacher absenteeism, delays in lesson start time, early departures and poor use of classroom time (Abadzi 2007; Gillies and Quijada 2008). Opportunity to learn is therefore determined by access to school (affected by the logistics and educational provision), learner motivation (affected by home environments), and quality of teaching practices (affected by teachers' access to professional development). Furthermore, the literature on pedagogy shows that the best use of instructional time would recognise the value of (i) formative feedback (Black and Wiliam, 2009); (ii) experiential learning through practice (Kolb and Kolb, 2005); (iii) social learning (Palincsar, 2005); (iv) the role of self-efficacy (Linnenbrink and Pintrich, 2003); (v) peer assessment as a process of learning as well as formative assessment (Topping, 2005). All these hinge on effective and motivated teachers. All of these factors are associated with students perceptions of their educational experiences and whether they had an opportunity to learn.

But many students are facing what is known as a learning crisis, where years of attending school results in low or limited learning acquisition. Tackling such a learning crisis requires an analysis of the immediate and underlying causes. In the literature, at least four factors have been considered as immediate causes for low learning among children. These include teachers' behaviour, unprepared learners, school inputs as well as school management practices (World Bank, 2018). Tackling these factors requires an understanding of the context and the views of different stakeholders about these issues. Teacher behaviour may be perceived differently by teachers themselves, than by the students or indeed by head teachers or school inspectors. Therefore, understanding the country specific context and stakeholders' views remain an important aspect of the research which is needed to address the learning crisis which many students are experiencing.

Teachers are at the heart of learning. There is general agreement among researchers and policymakers on the importance of teacher quality for better student achievement. Eric and Rivkin (2011) reviewed the importance of teacher quality in the determination of student achievement. In their review, they found that research has followed three distinct lines. Firstly, many studies have examined improvement in teachers' quality as a result of incentives, monetary and non-monetary. These studies focused on the importance of pay and non-pecuniary factors in determining the

distribution of teachers among schools. Secondly, studies have focused on students' performance as a function of differences in quality of teachers, measured in terms of specific observable characteristics, for example use of pedagogy or experiences of in-service training. The final set of studies focused on what is non-measurable, or difficult to measure, which includes issues of non-cognitive skills, communication and motivations, as well as being a role model and whether these factors are important in enhancing student performance.

Research on teacher motivation and its relationship with student achievement has been growing since the late 1990s. Jiying han and Hongbiao Yin (2016) conducted a review of the literature on the concept of teacher motivation relevant to the teaching profession. There is also empirical evidence on the relationship between teacher behaviour and student achievement. Teacher behaviour is particularly relevant to this study as the Teacher Development Program (TDP) component of the General Education Quality Improvement Program (GEQIP) of the MoE in Ethiopia stipulates that teachers should have good academic, motivational and moral qualities. The question which remains in this paper is whether students perceive their teachers as having these qualities, as being engaged, and not intimidating, but praising for their work. These are key aspects of students' perceptions which have not been captured in the empirical literature in Ethiopia.

Therefore, this paper raises the following question: What are the students' perceptions on teachers' behaviors, management practices and use of inputs which are associated with greater primary school progression and primary school completion?

3. Methodology
3.1. Data

This paper uses data from the Primary School Completion Study (PSCS). The PSCS collected information from a nationally representative sample of 4,004 children (47% were female) who were enrolled in school between 2003/04 and 2006/07 academic years. These children therefore had the potential to have completed primary school by the academic year 2014/15; one year before the PSCS took place. The PSCS selected children from the nine regional states and the two city administrations following a three stage sampling procedure. During the first stage, schools were stratified into urban, semi-urban and rural. Schools in rural areas were further stratified according
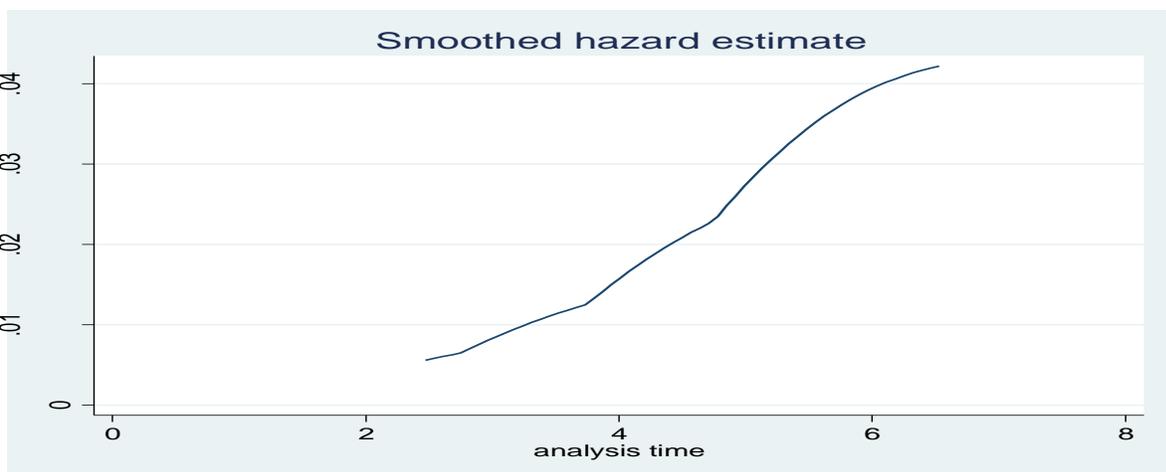
to distance to the main road (close, mid distance and remote). During the second stage schools were selected proportionally to the student population in primary and secondary schools in 2013-14 academic year. Finally, catchment villages of the selected schools were divided into grids. Kebeles within these grids were selected randomly and then households had to be visited to verify if they had children who started school between 2003/04 and 2006/07. Within selected kebeles, every third household in rural areas and every fifth household in urban areas were selected. If there was more than one child who qualified for the sample, only one respondent was selected randomly.

3.2. Description of key variables

a. *Outcome variables: School survival & primary school completion*

There are two outcomes of interest in this paper. The first outcome of interest focuses on grade progression/survival until the academic year 2014-15. In the context of Ethiopia, many children start school and do not complete the full cycle of primary education, yet they remain enrolled in school, potentially repeating many years of basic education. It is therefore important to measure whether students' perceptions on the teacher quality and use of teaching inputs are associated with school survival. Figure 3 shows the inverse relation between school increased in school dropout and progress through primary school.

Figure 3: Likelihood of school dropout throughout time

Source: Primary School Completion Study 2016

The second outcome of interest is primary school completion, which, in the context of Ethiopia, is completing up to grade 8. From the total sample, 3,996 children had information on primary school completion. Of this subsample, 57.5% (2,296) completed primary school and 42.5% (1,700) did not. However, patterns for school completion are more complex if one considers current enrolment. Out of those children who completed primary school, 67.6% (1,915) of children were still enrolled in school at the time of the PSCS and 32.8% (381) had dropped out (Table 1). Of those who did not complete primary school, 54.1% (919) were still in school whereas 45.9% (781) had dropped out. Therefore, our analyses of survival and primary school completion complement each other in terms of measures of school outcomes which could be associated with students' perceptions of teacher quality and use of teaching inputs.

Table 1: schooling status of sample students

Schooling status	Dropped out	Still in school	Total
	781	919	1,700
Not completed	**45.94**	**54.06**	**100.00**
	67.21	32.43	42.54
	381	1,915	2,296
Completed	**16.59**	**83.41**	**100.00**
	32.79	67.57	57.46
	1,162	2,834	3,996
Total	29.08	70.92	100.00
	100.00	100.00	100.00

Source: Primary School Completion Study 2016.

b. *Students' perceptions of teacher behaviour, teaching inputs & managerial practices*

Teacher behaviours, teaching inputs and teacher managerial practices are operationalised by students' perceptions of the experiences of the teacher and teaching during primary school. In terms of teacher behaviours, students were asked to recall general behaviours of the teacher when they were in primary school. The first factor to capture teacher behaviour was *teacher intimidation*, which was taken from the question on whether the student saw the teacher using a cane/ stick/ ruler during the lesson to intimidate the students, for example hitting the desk or direct threatening children. Table 2 shows that a slightly higher proportion of children who reported the teacher using methods which were intimidating during lessons completed primary school (58.3%) compared with those who did not report teachers using these methods (56.2%).

The second factor to describe teacher behaviour was *teacher engagement*, which was recorded from students' responses on a four point scale on whether the teachers were engaged and enthusiastic, slightly engaged and enthusiastic, slightly disinterested or very disinterested. Table 2 shows little differences in primary school completion between children who reported teachers being engaged and enthusiastic versus teachers who were at most slightly engaged and enthusiastic. How often the students saw the *teacher praising* for correct answers or completing exercises was another variable to capture positive teaching behaviour. Students who reported teachers praising their work during primary school were more likely to have completed primary school (59.8% against 55.2% for those who were not praised as shown in Table 2).

Table 2: Relationship between teacher behaviour and primary school completion in Ethiopia

Primary School	Teacher intimidation		Teacher engagement		Teacher praising	
	No	Yes	Teacher not Engaged & enthusiastic	Teacher Engaged & enthusiastic	No	Yes
Not Completed	43.8	41.8	42.6	42.4	44.8	40.3
Completed	56.2	58.3	57.4	57.6	55.2	59.8

Source: Primary School Completion Study 2016.

In terms of teaching inputs, students were asked to recall if teachers used different materials or had access to equipment during their time in primary schools: use of diagrams; pictures or photos; slogans or proverbs; laboratory equipment; provide worksheet or hand-outs; books for reading in English language; books for reading in language of instruction; materials produced by children; computers/laptops or plasma. Table 3 shows interesting differences between students reporting their experiences with inputs used by the teachers and whether students completed primary school. For example, 60% of pupils who reported that their teachers used pictures completed primary school and only 40% of pupils who did not report their teachers using pictures completed primary school. Similarly, 64% of pupils who reported that their teachers used laboratory equipment completed primary school, while only 35% of pupils who did not report their teachers using laboratory equipment completed primary school. Similar trends are shown for other inputs such as use of reading materials in English and in language of instruction, materials produced by children (drawing, poster) and use of IT in classrooms.

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Table 3: Relationship between teaching inputs and primary school completion in Ethiopia

Primary School status	Inputs used by teacher																
	Use of diagram		Use of pictures/photo		Use of slogans/proverbs		Use of laboratory equipment		Use of worksheet/handouts		Use of reading in English		Use of reading in language of instruction		Use of materials produced by children		Use of computer (plasma, laptop)	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Not completed	48.0	42.3	55.3	40.4	46.9	39.9	45.4	35.5	47.2	35.4	48.0	37.5	47.9	37.6	47.0	39.5	43.9	32.6
Completed	51.9	57.7	44.7	59.6	53.1	60.1	54.6	64.5	52.9	64.6	52.0	62.5	52.1	62.4	53.0	60.6	56.1	67.4

Source: Primary School Completion Study 2016

Finally, two teacher managerial factors were reported by students. First, students recorded if classes during primary school lasted for the standard time or if teachers used to leave the class early (*teaching time*). The second managerial factor was the use of assessments, quiz, midterm examinations and final examinations by the teachers during primary school, again as reported by the students. Table 4 shows very little differences between students report of the class lasting the standard time and primary school completion, however, students reporting of teacher assessments indicates a higher likelihood of primary school completion (58.2% of students who reported having assessments completed primary school in comparison with 50.6% of students who did not report having assessments and who completed primary school).

Table 4: Relationship between teacher managerial practice and primary school completion in Ethiopia

	Class last standard time		Teacher assessment	
Primary school status	No	Yes	No	Yes
Not completed	41.3	42.9	49.4	41.9
Completed	58.7	57.1	50.6	58.2

Source: Primary School Completion Study 2016

c. *School management:*

Pupils' perceptions of teacher behaviour, teaching inputs and teacher management practices are embedded within the school management system. To capture school factors which are associated with both pupils' perceptions and their likelihood to remain and complete primary school we operationalised indicators which reflect school management and other key characteristics of the school. First, we differentiate the type of school, whether it is a government school from other type of providers, namely private, public-private partnership, NGOs or faith based providers. Secondly, the level of participation of community in school was obtained from head teachers reporting whether there was active participation, just participation or no participation from the community. The educational qualifications and experience of the head teacher was measured by the highest educational qualifications of the head teacher and also whether the head teacher had training on educational planning and management. In order to account for school crowding, enumerators gathered information on the teacher-pupil ratio which was obtained during visits to schools. Finally, enumerators also gathered information from the schools whether the school

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received school grants, whether it received additional support for children's educational materials, school feeding and whether the school was a model school.

Table 5 shows the relationship between school management and primary school completion in Ethiopia using these school management factors. As expected, model schools and schools with active participation from the community are more likely to have children who completed primary school. However, schools which received school grants have lower likelihood of primary school completion, in part due to this schools being in more need of resources. Also, government schools have lower primary school completion (55.8%) compared with other types of schools (75.4%). Additional type of support for educational materials, tutorial support, school feeding, purchase of uniforms or other types of support show little variation in terms of school level factors associated with the likelihood of primary completion.

Table 5: Relationship between school management and primary school completion in Ethiopia

Primary school status	Model school		Participation of community		School receive grant		School type		Additional educational support		Tutorial support		Support to school feeding		Support to purchase of uniform		Any other support	
	No	Yes	No	Yes	No	Yes	other	Gov	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Not completed	44.2	41.2	43.5	40.8	30.2	44.1	24.6	44.2	43.8	42.1	42.8	42.6	42.6	42.8	42.2	43.7	42.2	44.9
Completed	55.8	58.8	56.5	59.2	69.8	55.9	75.4	55.8	56.2	57.9	57.2	57.4	57.4	57.2	57.8	56.3	57.8	55.2

Source: Primary School Completion Study 2016

d. Control variables at household and child level

Key variables that relate to children and their household characteristics are included in modelling survival during primary school as well as the likelihood of primary school completion. We condition for household characteristics which capture potential barriers to school as well as enabling factors at household level which are associated with school survival and primary school completion, for example number of siblings, whether the parents are alive, or the highest educational achievements of parents and/or siblings. Similarly, age, sex, health problems, having three meals per day and being enrolled in school at the right age are important factors that relate to the child's likelihood of remaining and completing primary school. Table 6 shows the descriptive statistics for household and individual level variables.

Table 6: Descriptive statistics of household and individual level variables

	Obs	Mean	Std. Dev.	Min	Max
1. Household characteristics					
# of older siblings	3,996	1.47	1.81	0	12
# of younger siblings	3,993	2.00	1.78	0	11
# of younger brother	3,995	1.05	1.17	0	8
# of younger sister	3,993	0.95	1.11	0	8
Mother alive (1 = yes)	3,996	0.88	0.33	0	1
Father alive (1 = yes)	3,996	0.77	0.42	0	1
Mothers' years of schooling	3,549	3.23	4.20	0	17
Fathers' years of schooling	3,196	5.10	5.05	0	18
Older brothers' years of schooling	1,865	9.71	3.82	0	18
Older sisters' years of schooling	1,545	8.83	4.29	0	18
Assets ownership	3,995	5.69	2.55	0	14
2. Child characteristics					
Sex (1 = male)	3,996	0.53	0.50	0	1
Any health problems that cause headaches at school (1 = yes)	3,996	0.10	0.29	0	1
Age child started school	3,996	8.32	1.83	1	19
Child started at correct age (6 or 7 years = 1)	3,996	0.35	0.48	0	1
Child attended preschool (1 = yes)	3,996	0.28	0.45	0	1
Dropped out of school (1 = yes)	3,996	0.35	0.48	0	1
Child had 3 meals or more per day (1 = yes)	3,996	0.93	0.26	0	1
Child has health problems (1 = yes)	3,996	0.16	0.37	0	1
Vulnerable child - Sum of d*	3,987	21.53	7.63	13	216
3. School characteristics					
Dummy for toilet	3,980	0.98	0.12	0	1
School facilities -	3,980	6.12	1.68	0	8

3.3. Model specification and estimation technique

a. Model specification

Different models could be adopted to analyse children's completion rate of primary school (see discussed in Glewwe (1999); Holmes (2003); World Bank (2004), Cox and Oakes (1984), Cox and Oakes (1984); Brown and Park (2002), Bhattacharjee and Das (2002), Lavado and Gallegos (2005), Cleves, Mario A., William W. Gould and Roberto G. Gutierrez. (2004). We are interested in estimating a model that is a function of students' characteristics, their household socioeconomic and demographic realities, and importantly their perceptions about primary school, in particular on teachers and teaching. This model should take into account that primary school completion is also influenced by other factors that operate at the level of the school, such as the school management and governance. Therefore:

$$D_i = \beta_0 + \beta_1 C_i + \beta_2 H_i + \beta_3 T_i + \beta_4 G_i + \beta_5 S_i + \beta_6 U_i + ei$$

where D is the completion rate of children from primary school of child i. It takes two forms: dummy for completion of primary school and grade survival. C is a vector of child characteristic variables. H is a vector of household characteristics. T is a vector of factors used to measure teacher behaviour, management practices and use of resources from the perspective of student i; G a vector of factors used to measure school management factors and school specific characteristics; U a vector of regional controls; and e represents the error term.

b. Model estimation technique

The above model is estimated for the two outcome variables explained above: grade survival in primary school and likelihood of primary school completion. The first of these outcome variables takes the values of one to nine as per the grades that children are enrolled in primary school and assumes a survival until that grade. Different estimation techniques can be used grade survival or progression. One of these is a censored ordered probit model devised by Lillard and King (discussed in Glewwe 1999; Holmes 2003; World Bank 2004) to identify the determinants of school completion. However, the use of censored ordered probit models to analyze school

attainment assumes that a child currently enrolled will achieve at least the grade level in which the child currently is. This is too restrictive an assumption, especially in a situation where there is a significant dropout rate. An alternative is to use a Cox proportional hazard model to analyze school attainment or drop-out (Cox and Oakes 1984). Hazard models account for the dependence of current enrolment on past enrolment decisions, and handle censored students (i.e. children enrolled at the time of the survey). The Cox hazard model does not require a parametric specification of the baseline hazard function and thus allows the baseline hazard rate for each community to vary (Cox and Oakes 1984; Brown and Park 2002). However, the use of this model requires that the variables under consideration must pass a proportionality test (Bhattacharjee and Das 2002). Since withdrawing the variables reduces the explanatory power of the model, the structure of the hazard function was evaluated to choose among different distributions with the assumption of which the estimations are made. Accordingly, the exponential distribution imposed on the Accelerated Failure Time Hazard (AFT) model is found to fit structure of the hazard function, as seen in figure xx, which shows that the risk of dropout was found to be monotonically increasing. Besides, the other advantage of using AFT models is that, they provide a way to estimate sequentially, based on a density function that is built from empirical information without the need to eliminate it (Lavado and Gallegos 2005). When one has a reason to believe that the hazard function follows a certain shape, imposing a hazard function improves the efficiency of the estimates (Cleves et al. 2004). Thus, we estimated an AFT model that estimates the dropping out of school conditional upon current enrolment among children (Lavado and Gallegos 2005). For the second outcome variable, the likelihood of primary school completion, we use a logit model to estimate the parameters of interest.

Our empirical estimation strategy is implemented as follows: first, we estimate a model which only includes students' perceptions on teachers' behaviours, management practices and use of inputs (Model 1). Then we estimate a model which only includes school management factors (Model 2). The aim of these models is to estimate the conditional association of each of these factors on primary school progression and primary school completion. Model 3 then includes both of these factors in the analysis and finally Model 4 conditions out for household and child level factors.

4. Results

4.1. Grade survival during primary school

This section presents results on the conditional association between students' reports on teachers' behavior, use of teaching inputs and teacher management practices and the probability that children progress through primary school (see Table 7). Results from Model 1 in Table 7 indicate that students' perceptions on teacher engagement and teacher intimidation were statistically associated with grade survival. Students who reported being taught by teachers who were engaged and enthusiastic were 11 percentage points less likely to drop out during primary school relative to students who reported being taught by less engaged teachers. Similarly, students who reported teachers using intimidating methods were 18 percentage points less likely to drop out during primary school relative to students who did not report teachers using intimidating methods. In terms of teacher management practices, the use of assessment was associated with 21 percentage points reductions in the likelihood of dropping out during primary school. Finally, the use of inputs by the teachers was associated with reductions in the likelihood of dropping out from primary school, or in other words greater survival. Among these inputs we find the use of pictures, laboratory equipment, written handouts, books in language of instruction and use of computers or ICT.

Clearly, teacher behaviour, use of inputs for teaching and teacher management factors are also influenced by the management of the school. Hence, Model 2 provides estimates for school level factors associated with the probability of primary school survival. Results from Model 2 in Table 7 indicate that greater pupil-teacher ratio, higher educational qualifications of the head teacher and whether the teacher has received management training are all associated with reductions in the likelihood of school dropout during primary school. On the other hand, whether the school receives school grants, school feeding or other forms of support, as well as government schools are more likely to have higher dropout during primary school relative to other schools.

What is important is to account for the possibility that students' perceptions on teacher behaviour, teacher management practices and use of inputs may depend on school factors and therefore Model 3 in Table 7 provides an estimate of the conditional probability for grade survival as a function of

students' perceptions and school factors. Except for teacher intimidation, which is not statistically significant, all other factors related to students' perceptions remain significantly associated with reductions in school dropout during primary school as indicated in Models 1 and 2. At school level, whether the school is a model school is associated with higher likelihood of school dropout during primary school (13 percentage points) relative to other schools. The educational qualifications of the head teacher and whether the head teacher had received training in management are no longer statistically significant associated with reduced risk of dropping out during primary school.

Finally, Model 4 in Table 7 introduces both household and individual level factors which can also influence the conditional probability of school dropout during primary school. Perceptions of students on teacher engagement, use of assessments, and use of inputs (pictures, laboratory equipment, written hand-outs, and use of computers or ICT) continue to remain statistically associated with reductions in school dropout during primary school. The use of books in language of instruction is no longer statistically associated with reductions in school dropout during primary school in the model that includes individual and household level factors. As per school factors, only teacher-student ratio and schools receiving tutorial support are associated with reduced dropout during primary school; whereas school receiving school feeding are associated with increased dropout during primary school.

4.2. Completion of Primary School

Table 8 shows the estimated parameters using the logit model for students' completion of primary school. Model 1 in Table 8 shows that students who perceived their teachers to be intimidating had 24 percentage points higher likelihood of completing primary school relative to students who did not find teachers as intimidating. Similarly, students who reported being praised by their teachers had 14 percentage points higher probability to complete primary school relative to students who were not praised by their teachers. With respect to teacher management practices, we did not find statistical evidence of differences in management practices associated with likelihood of primary school completion. On the other hand, however, the use of inputs by teachers such as photos, laboratory equipment, handouts, books for reading in local language and use of computers were all associated with higher likelihood of primary school completion.

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As with the models for grade progression in primary school, Model 2 in Table 8 introduces school level management factors which could be important for enhancing primary school completion. Results show that the education of the head teacher and whether the head teacher has training in management are associated positively with primary school completion. Children in school which receive support for school uniforms and government schools have lower likelihood of completing primary school. Model 3 in Table 8 therefore estimate students' perceptions on teachers and teaching and their association with primary school completion conditional on school management factors. Results show that only students perceptions remain statistically associated with likelihood of primary school completion (and results remain unchanged as those shown for Model 1 in Table 8). However, for school management factors, the qualifications and training of head teachers is no longer statistically significant associated with likelihood of primary school completion. Only children who attended government schools reported lower likelihood of primary school completion.

Finally, results conditioning on household and child level factors, Model 4 in Table 8 show that students who perceive their teachers to physically punished students were less likely to complete primary school (by 22 percentage points), whereas students who perceive their teachers to praise their work were 18 percentage points more likely to complete primary school. With school inputs, we found that use of pictures or photos, handouts and use of books in language of instruction were associated with higher likelihood of primary school completion. Children who attended primary school were 64 percentage points less likely to complete primary school relative to children who attended other types of schools.

Table 7: Parameter estimate for grade survival (robust standard errors)

	Variable Definition	Model 1	Model 2	Model 3	Model 4
Teacher behaviour	Teacher intimidate student	-0.18***		-0.11	-0.07
	Teacher physically punished student	0.031		0.031	0.08
	Teacher engaged and enthusiastic	-0.10**		-0.11**	-0.16**
	Teacher praising students	-0.08		-0.08	-0.07
Teacher management	Class last standard time	-0.009		-0.06	-0.06
	Teacher use of continuous assessment	-0.21***		-0.26***	-0.23**
Use of inputs	Teacher's use of word/diagram	0.05		0.07	0.21
	Teacher's use of picture/photo	-0.34***		-0.35***	-0.36***
	Teacher's use of slogans/proverbs	0.095		0.09	0.11
	Teacher's use of laboratory equipment	-0.43***		-0.34***	-0.34***
	Teacher's use of worksheet/written handout	-0.28***		-0.29***	-0.29***
	Teacher's use books for reading in English	-0.06		-0.04	-0.08
	Teacher's use books for reading in language of instruction	-0.18**		-0.20***	-0.15
	Teacher's use materials produced by children	-0.09		-0.06	-0.09
	Teacher's use computer plasma, laptop	-0.67***		-0.47***	-0.60***
School management	Model school		0.11	0.13**	0.06
	Active participation of community		-0.008	0.02	0.10
	School receives school grant		0.53***	0.39***	0.28
	Teacher-student ratio		-26.40***	-27.51***	-18.43***
	Education level of head teacher		-0.24**	-0.17	-0.06
	Head teacher training		-0.08**	-0.06	-0.01
	School additional educational materials		0.09	0.11	0.07
	School tutorial support		-0.13	-0.10	-0.24**
	School feeding		0.32***	0.38***	0.25**
	Support for uniform purchase		-0.14	-0.12	-0.08
	Other supports		0.26***	0.24***	0.13
	School facilities		-0.03	-0.008	0.04
	Government school		0.69***	0.59***	0.26
Individual	Sex male				-0.02
	School start age 6 or 7 years old				-0.31***
	Three times meal per day				-0.26**
	Child has health problem				0.27***

	Child vulnerability (index)				-0.009
Household	# of older siblings				-0.06***
	#of younger siblings				-0.03
	Mother alive				0.16
	Father alive				-0.29
	Mothers years of schooling				-0.03**
	Fathers years of schooling				-0.05***
	Ownership of different assets (index)				-0.06***
Regional	Regional Controls	Yes	Yes	Yes	Yes
	Constant term	-2.20***	-2.54***	-1.70***	-1.24
	No. of observation	3,910	3,980	3,894	2,897

Note: Analysis time (Spell) takes values from 1 to 9. For all students that are in grade 9 and above, the value of the spell variable is 9 to indicate that they completed primary school. **Failure (even)** takes the value 1 when a child has dropped out of school and 0 when he/she is still in school.

Asterisks ***, **, indicate significant at 1% and 5% level respectively

Table 8: Parameter estimate for probability of school completion (robust standard error)

Variable	Definition	Model 1	Model 2	Model 3	Model 4
Teacher behaviour	Teacher intimidate student	0.24***		0.23***	0.20
	Teacher physically punished student	-0.15		-0.16	-0.2216**
	Teacher engaged and enthusiastic	-0.07		-0.08	-0.0560
	Teacher praising students	0.14**		0.17**	0.1825**
Teacher management	Class last standard time	-0.15*		-0.13	-0.1341
	Teacher use of continuous assessment	-0.007		-0.002	-0.08
Use of inputs	Teacher's use of word/diagram	-0.17		-0.18	-0.35
	Teacher's use of picture/photo	0.51***		0.50***	0.51***
	Teacher's use of slogans/proverbs	0.08		0.11	0.05
	Teacher's use of laboratory equipment	0.22**		0.24***	0.16
	Teacher's use of worksheet/written handout	0.30***		0.28***	0.27***
	Teacher's use books for reading in English	0.09		0.06	0.07
	Teacher's use books for reading in language of instruction	0.27***		0.27***	0.30***
	Teacher's use materials produced by children	0.02		-0.005	0.04
	Teacher's use computer plasma, laptop	0.44***		0.26**	0.25
School management	Model school		-0.08	-0.04	0.15
	Active participation of community		0.13	0.09	0.01
	School receives school grant		-0.17	0.01	0.25
	Teacher-student ratio		3.56	2.79	1.92
	Education level of head teacher		1.58**	0.98	0.40
	Head teacher training		1.51**	0.91	0.21
	School additional educational materials		0.05	-0.01	0.03
	School tutorial support		-0.05	-0.13	-0.12
	School feeding		-0.001	-0.09	-0.12
	Support for uniform purchase		0.001	0.02	-0.06
	Other supports		-0.26**	-0.21	-0.07
	School facilities		0.05	0.03	-0.07**
	Government school		-0.96***	-0.9256***	-0.64***
Individual	Sex male				-0.02
	School start age 6 or 7 years old				-0.02

	Three times meal per day			0.03
	Child has health problem			-0.35***
	Child vulnerability (index)			0.002
Household	# of older siblings			0.02
	#of younger siblings			-0.002
	Mother alive			0.84***
	Father alive			0.16
	Mothers years of schooling			0.04**
	Fathers years of schooling			0.02
	Ownership of different assets (index)			0.07***
Regional	Regional Controls			-0.08***
	Constant term	-3.41	-2.19	-1.52
	No. of observation	3,980	3,894	2,897

Note: Asterisks ***, **, & * indicate significant at 1%, 5% and 10% level respectively

5. Conclusion and policy implications

There is a general agreement on the need to invest in teacher and school management to improve primary school completion rate among all stakeholders, and the views of students is particularly important. Despite huge government spending on teacher and school governance in primary education to improve completion rate, there is little empirical evidence on students' perceptions of the quality of teaching and teachers. Besides, given that teaching and learning requires both the teachers and the students to be prepared, motivated, and engaged in the learning process, researching students' perceptions of teachers behaviours, management practices and use of inputs is of importance given the current learning crisis experienced by many students in Ethiopia.

This study aimed to address these concerns using a cross sectional survey of around 4,000 students who have been enrolled in school in 2006 and should have completed primary school by the academic year 2014-15. We estimated the conditional association of students' perceptions of teachers' behavioural, management and use of inputs on two outcome variables: probability of primary school grade survival and primary completion. Four models with different specifications were estimated to account for individual specific factors, household and school management, and we focused on whether students' perceptions were robust (in statistical terms) in estimating associations with the outcomes of interest.

From the total sample of 3,996 children, 57.5% (2,296) completed primary school and 42.5% (1,700) did not. However, patterns for school completion are more complex if one considers current enrolment. The chance of dropping out of school increases as the student's year of schooling increases, suggesting the need to understand not only students' perceptions with primary school completion but also with grade progression during primary school.

Accordingly, our result revealed that students' perceptions of some teachers' behaviours were significantly associated with grade progression in primary school and primary school completion. In particular, students who perceived their teachers to be engaged and enthusiastic have longer progression in primary school. Similarly, students who perceived teacher to praise their work have higher likelihood to complete primary school. At the same time, students who perceived teachers to physically punish students were less likely to complete primary school. With respect to management practices, the use of assessments was significantly associated with progression in

primary school but not with primary school completion. Finally, different inputs used by teachers were associated with both outcomes. The use of inputs is of particular importance as several studies have indicated that books or use of technology is not associated with improved learning outcomes. However, in the context of low resource base, the use of inputs is of importance, at least in associational terms.

A fundamental implication of the findings of this study is that programmes and/or interventions that focus on improving teachers' behaviour as well as providing inputs should focus on how these are perceived by the different stakeholders and in particular by students. The teaching and learning process should not just focus on the teacher, but on how to maximise the opportunities to learn by the students. Students have a voice and an important role to play when in school.

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