

# MSc Global Development

## Master's Thesis

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## **1. Summary**

Child sponsorship programmes represent one of the most visible schemes in the NGO international development landscape to channel small private donations to the Global South. Despite the billions of dollars that pass through these channels, the existing literature analysing the impact of such schemes is surprisingly limited. At the request of Link Ethiopia, a UK-based NGO that operates solely in Ethiopia, this paper analyses the impact of their two parallel child sponsorship programmes, the Link Ethiopia sponsorship scheme and The Kindu Trust (Kindu) sponsorship scheme.

Both schemes support students on the condition that the student is in some form of educational programme. The Link Ethiopia scheme provides school resources and uniforms, access to sponsorship clubs and access to an emergency health and contingency fund to sponsored students, as well as raising money for an 'Educational Environment Improvement Fund' allocated to the school where the student attends. The Kindu Trust scheme provides school resources and access to a 'training fund' to sponsored students. The Kindu scheme also supports the family of the sponsored student, with a cash transfer, reimbursement of medical expenses, medical check-ups, and access to other Kindu programmes.

Both schemes are assessed for their ability to improve the educational outcomes of the sponsored students that are supported through the scheme, although this paper places more emphasis on the Link Ethiopia sponsorship scheme. Given that child sponsorship schemes can vary greatly in nature, in many ways this paper is best placed within the strand of literature that seeks to measure and understand the effectiveness of programmes that seek to improve educational outcomes in the Global South.

Two main research questions are addressed in this paper:

*'Are Child Sponsorship Programmes an Effective way to Improve Educational Outcomes?'*

*'Do Conditional Cash Transfers, in Addition to the Provision of School Resources, Improve Educational Outcomes?'*

This paper uses a mixed-methods approach, as it not only measures the impact of the programmes, but also seeks to understand the mechanisms that underlie the sponsorship schemes. It provides recommendations as to how Link Ethiopia can improve the programme, and its monitoring and evaluation processes across the organisation. The research is based on a two-month field research placement at the Link Ethiopia regional office, in the town of Gondar, located in the Amhara region of Ethiopia.

The quantitative analysis uses difference-in-difference analysis on individual-level annual academic data to estimate the programme effects of the two sponsorship programmes, by comparing three groups of students. These are: 98 students sponsored by Link Ethiopia; 71 students sponsored by The Kindu Trust; and 184 non-sponsored students. The time period for valid observations for this study was from the 2005/6 academic year (1998 Ethiopian Calendar), to the 2014/15 academic year (2007 Ethiopian Calendar).

This analysis finds evidence of improved educational outcomes as the duration of sponsorship increases, and this represents a result that is generalisable to many sponsorship schemes that directly support individuals with education. There is little evidence that the programmes improve attainment at school, however there was strong evidence of a relationship between access to, and progress through the education system, and sponsorship duration.

Curiously, there is convincing evidence that there is a non-linear relationship between the duration of Link Ethiopia sponsorship and enrolment and promotion rates, where for the first years of sponsorship these rates decline, but thereafter improve exponentially. There are a number of reasons for this relationship, many of

them idiosyncratic to the Link Ethiopia programme, however they serve to highlight the importance of an effective student selection process in maximising the impact of a sponsorship programme.

This study estimates that at the end of the 2014/15 academic year, the Link Ethiopia sponsorship programme had resulted in an additional 0.31 years of schooling per student, at a cost of £391.53 per additional year of schooling. The efficiency of this programme and positive impact on educational outcomes seem set to improve in the following years. There was no quantitative evidence that conditional cash transfers (CCTs), when present in addition to the provision of school resources improve educational outcomes for students. However, there was qualitative evidence to suggest that CCTs incentivised education.

The qualitative analysis is based on ethnographic observations from the fieldwork, which involved working with the Link Ethiopia and Kindu country staff, visiting schools where sponsored students attend in order to collect the academic data, and through semi-structured interviews with nine sponsored students and one 'Link Coordinator'. The collaboration with staff and schools helped to inform the hypotheses, enhance the reliability, and improve the interpretation, of the quantitative data; and helped to develop potential improvements in monitoring and evaluation for both the sponsorship programmes and across Link Ethiopia's work. The semi-structured interviews found that sponsorship is an effective model to improve educational outcomes, through reducing the private costs to education, providing school uniforms and school resources, and by offering emotional support to raise student's educational aspirations. The interviews also helped to inform recommendations for improving the sponsorship programmes.

The remainder of the paper is organised as follows. Section 2 provides a literature review of both child sponsorship literature and measuring impact in education in the Global South. Section 3 provides the context of the education system in Ethiopia, and background information on Link Ethiopia, The Kindu Trust and the sponsorship programmes. Section 4 describes the fieldwork methodology and observations. Section 5 outlines the empirical strategy employed on the quantitative data. Section

6 presents the results from the quantitative data and interprets these findings. Section 7 places the quantitative findings back into the broader context of the effectiveness of educational programmes in the Global South, and uses the semi-structured interviews to explore the mechanisms that allow sponsorship programmes to be effective. Section 8 is a consultancy report, primarily targeted at Link Ethiopia, which summarises the main findings, and presents possible recommendations to improve both the sponsorship programmes, the monitoring and evaluation of the programme and potential future research to be carried out on the programme, before offering ways in which Link Ethiopia can improve its monitoring and evaluation across its Ethiopian programmes.

## 2. Literature Review

### 2.1. Child Sponsorship around the World<sup>1</sup>

Child sponsorship is a model of north-south private financial flows, one that varies from NGO to NGO; however programmes typically include regular giving, a desire for donations to primarily benefit individuals and the provision of regular updates to sponsors (Watson & Clarke 2014). Child sponsorship may be to some organisations little more than an effective fundraising mechanism where donations are ‘given in the name of a sponsored child...to create village-level public goods’ (Wydick et al. 2013: 397), whereas in others, child sponsorship is ‘programmatically defining as an individualised model of development’ (Robinson 2016: 9).

Organisations such as Plan International and Save the Children favour the former model, whereas at Compassion International ‘sponsors pay for children’s school tuition and uniforms, several nutritious meals per week, health care, and tutoring’ (Wydick et al. 2013: 395). This individualised model of development is perhaps the most recognisable model of child sponsorship, particularly in the eyes of the donor, and for Rabbitts (2012) child sponsorship ‘usually takes the form of long-term commitments to monthly remittances that cover the medical and educational requirements of individual children in the Global South’.

Proto-models of child sponsorship were arguably pioneered by Save the Children UK and the Society of Friends in Austria as early as 1920, providing rations to children (Watson 2014b). Organisations built on the initial successes of these programmes. Schemes that ‘involved direct handouts, service provision and cash transfers to children and their families for food, medicine and school needs’ (Watson 2014a) grew particularly in the 1960s and 1970s. In the 1980s criticism of child sponsorship programmes in an international development context grew, and these arguments were crystallised in the famous ‘Please do not sponsor this child’ (Stalker 1982) article. The article criticised sponsorship programmes for high operational costs, favouring certain individuals over others in deprived communities rather than

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<sup>1</sup> This section draws heavily on the background material found in Robinson (2016) – See Section 4.1 Child Sponsorship Models

supporting community development, and for cultivating empty aspirations that would never be realised for beneficiaries.

This shift in attitudes prompted the emergence of the village-level public goods model of child sponsorship as a fundraising mechanism for community development programmes, as these were considered to be schemes with greater potential for sustainable poverty reduction than individualised giving (Watson et al. 2014).

However, in recent times, there has been a re-evaluation of whether such criticism is completely warranted. Whilst sponsorship is still not considered a solution for sustainable or systemic poverty reduction, 'if designed wisely, targeted carefully, and implemented efficiently, sponsorship programmes usefully add to the livelihoods of disadvantaged families in environments that lack alternative safety nets' (van Eekelen 2013: 474).

Whilst the variety of child sponsorship programmes makes it difficult to define what is, and what is not a sponsorship scheme, when including both the public goods and individual support models, an estimated \$3.29bn (Wydick et al. 2013) is thought to flow through child sponsorship schemes annually. Given the large volume of monetary flows through child sponsorship programmes, the amount of literature measuring the impact of these programmes is surprisingly limited. Until 2013, the only example of a widely available impact evaluation was a randomised control trial (RCT) analysed by Kremer et al. (2003), which measured the impact of the provision of classroom construction, school uniforms and textbooks through a sponsorship model conducted by a Dutch NGO, International Christelijk Steunfonds (ICS). Such a programme could be considered to be both a combination of the public-goods model (classrooms) and individual support (uniform and textbooks). This paper found that these interventions had a positive impact on attendance at school, and reduced dropout rates, resulting in a 17% increase in years of schooling, and improved grade attainment (grade progressed in the time period), by 15%.

As programmes, models of individual support, and public goods models are very different, and therefore measuring the impact of the two different models would require two very different approaches. Wydick et al. (2013: 397) suggest that the

potential impacts of programmes that use the village-level public goods models are 'more diffuse and more difficult to assess'. In light of this issue, when carrying out an impact assessment of Plan International's sponsorship scheme, Pettit & Shutt (2008:13) opt for a 'comparative analysis of Plan's own intentions, practices and outcomes, rather than [ ] a test against a specific set of standards or indicators'.

In the aforementioned paper, Kremer et al. (2003) are able to overcome this challenge for a number of reasons. Firstly, the analysis was carried out as a prospective RCT, with treatment and control schools, meaning that the study did not have to be concerned with other factors influencing school performance due to the treatment schools being randomly selected. In the case of the Plan International analysis, any assessment would have been both retrospective, and the distribution of public goods non-random, meaning any analysis would be subject to omitted variable bias. Secondly, the ICS sponsorship scheme was designed such that the vast majority of students received free uniforms, and the textbooks were distributed to the schools to be used by students. This meant that the effect of the programme, could be measured at a school-level, with the entire package of uniforms, textbooks and classroom construction treated as a school-level public good, rather than measuring the impact of individual support for a child, at an individual level.

This lack of research estimating the impact of individualised models of child sponsored changed with Wydick et al.'s (2013) paper, '*Does International Child Sponsorship Work? A Six-Country Study of Impacts on Adult Life Outcomes*'. This represented a comprehensive evaluation of a large-scale child sponsorship programme, analysing data 'on the life outcomes of 10,144 individuals...from six developing countries that are representative of the Compassion program's work worldwide: Bolivia, Guatemala, India, Kenya, the Philippines, and Uganda' (Wydick et al. 2013: 394).

Wydick et al.'s (2013) paper examines the impact of the programme on the educational, employment and community leadership outcomes of sponsored students. In terms of educational outcomes, the outcome variables of interest to Wydick are total years of formal education, and the percentage of students

completing primary, secondary, and university education. The study uses both OLS and IV regressions, with fixed-effects at a household level, and estimates for spillover effects, both within, and between households, to estimate the impact of the Compassion sponsorship programme on these outcome variables. The paper ultimately finds that the Compassion sponsorship programme has positive impacts on all of these outcomes, and suggests that the focus of the Compassion programme on building the self-esteem and aspirations of the students is the driving factor of these positive outcomes. Glewwe et al. (2013) confirm this causal relationship between the Compassion sponsorship programme and improved self-esteem, and higher expectations for educational and employment outcomes.

This, and the Kremer et al. (2003) paper remain the only two, widely available quantitative studies that measure the impact of child sponsorship. However, as Wydick et al. (2013: 395) indicates, 'Compassion [sponsorship] projects are similar to many government and international donor programmes that promote education. Sponsors pay for children's school tuition and uniforms, several nutritious meals per week, health care, and tutoring.' Keeping this in mind, studies that explore effective ways to improve educational outcomes in the Global South represent a broader strand of literature that child sponsorship impact evaluations can be considered to be part of.

## **2.2. Measuring Impact in Education in the Global South<sup>2</sup>**

Despite criticism from esteemed economists such as Deaton (2010), RCTs are often seen as the 'gold standard' when measuring the effectiveness of development programmes. Glewwe et al. (2004) illustrate the advantages of prospective over retrospective analysis by carrying out different analytical approaches to measure the impact of introducing flipcharts to schools in Kenya. They demonstrate how that even when controlling for observable school inputs, results from OLS regressions can suggest that the introduction of flipcharts increases test scores by 20% of a standard

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<sup>2</sup> This section draws on the background material found in Robinson (2016) – See Section 5.1 How do we measure impact in education?

deviation. However, when the same experiment is carried out as an RCT, there is no evidence that flipcharts have a statistically significant impact on test scores.

They attribute this difference to a failure of the retrospective methodology to adequately account for omitted variable bias, and thus upwardly biasing the programme effects. This occurs if 'it is more plausible that variation in the input of interest is influenced by variation in the unobserved inputs, or that unobserved inputs vary in response to the (observed) input of interest' (Glewwe et al. 2004: 256). Whilst this means that prospective analysis is generally preferable, clearly the possibility to do so does not always exist. The study also shows that when retrospective analysis is used, the results from a difference-in-difference analysis, whilst still overstating the impact of flipcharts compared to the prospective analysis, are much closer to the prospective analysis than a mere OLS regression. Thus, if a difference-in-difference approach is used, and awareness of possible upward bias is maintained, this may represent a best-case scenario when retrospective analysis is necessary.

Irrespective of the method, understanding the results from different impact assessments of educational programmes provides important context, allowing different programmes to be compared in their effectiveness. Common to such studies, is an understanding of education as a system that takes in a range of inputs, to produce educational outcomes, and then an attempt to measure the effect of a change in these inputs. Across the literature, this is done by a construction of counterfactual outcomes (outcomes in the absence of the programme), which allows the isolation and estimation of the change in educational outcomes due to a change in a given input or inputs.

Given the preference in the literature for RCTs, many studies use this methodology. Often quoted examples of these studies include Evans et al. (2009), which shows that the distribution of free school uniforms reduced absenteeism by 39% across all students, and by 66% when only considering the poorest students; and Kremer et al. (2009) who find that a merit-based scholarship in the form of school fees and grants for girls in Kenya improved attendance by 5% and possibly caused small improvements in test scores for both boys and girls. Alternatively, Glewwe et al.

(2009) find that textbook provision has little effect on test scores, except for the best performing students. As well as educational inputs, health and nutrition inputs may also have an effect on educational outcomes, as Vermeersch & Kremer (2004) found that the provision of school meals can increase school participation by 30%.

One form of programme that has received more extensive analysis is the impact of conditional cash transfers (CCTs), where families receive cash in exchange for the attendance of their children at school, on educational outcomes. The best known, and most-evaluated of the schemes (due to it being designed as an RCT) is the PROGRESA programme in Mexico, now known as Oportunidades. The programme resulted in higher enrolment rates, lower grade repetition, and lower dropout rates (Behrman et al. 2005), with further analysis estimating that receiving the cash transfers for 5.5 years increased grades completed by 0.8–1.0 years (Behrman et al. 2011).

Despite the preference for RCTs there are also a range of studies that use retrospective analysis to assess the impact of different inputs on educational outcomes. One example is Filmer & Schady's (2008) analysis of an annual \$45 scholarship for girls in Cambodia, which increased both enrolment and attendance by about 30 percentage points, with greater benefits for girls with lower socio-economic indicators. In another study, Handa & Peterman (2007), find that child attainment in South Africa is partly a function of their nutritional status, Kingdon & Drèze (2001) demonstrate that the provision of midday meals, as means to reducing the private costs of schooling, increases the chance of a girl completing primary education by 30%, and improves their attendance by 15%.

In recent years, the measurement of impact in development programmes has been influenced by effective altruism. Effective altruism is best understood as a movement constituted of academics, think-tanks, such as the Centre for Effective Altruism, and non-profit organisations, such as GiveWell, that encourage individuals to donate more of their income, but only to those causes that have the most effective outcomes. MacAskill (2015) and Singer (2015) combine the moral philosophy of utilitarianism with the growing evidence base of econometric analysis to make the

case for increases in foreign aid, particularly through private channels. At the same time, they argue that given that the financial resources for foreign aid are finite, the distribution of aid should be directed towards those programmes that have the biggest impact per dollar expended, meaning that cost-effectiveness is a more relevant consideration than merely an aggregate measure of programme effects.

In the field of education in the Global South, however, such evaluations are limited in number, and 'little reliable information is available regarding how to improve school attendance and school quality, or on the true relationship between schooling and later-life outcomes such as income' (GiveWell 2009). Some exceptions to this are Miguel & Kremer (2004), who calculate that a deworming programme can deliver an additional year of schooling for \$3.50; Evans et al. (2009), who calculate that a uniform distribution programme costs \$91 for each additional year of schooling, and Evans & Ghosh (2008), who calculate that the PROGRESA programme costs \$614 for each additional year. Whilst the first two studies both take place in a Kenyan context, the PROGRESA programme of course operates in a Mexico, a middle-income country, which at least in part explains the higher costs to improving educational outcomes.

Whilst a retrospective study is carried out on a limited set of already available data, as opposed to a prospective study where the data collection is planned prior to the intervention, the metrics used in assessing the impact of educational programmes are largely similar across the literature. Educational impact assessments often refer to 'increased years of schooling'. In the deworming study Miguel & Kremer (2004) estimate years of schooling gained through improved attendance, whereas Schultz (2004) calculates the increased years of schooling on the basis of increased enrolment rates under the Mexican PROGRESA programme. The use of such standard metrics facilitates the easy comparison of the effectiveness of different programmes.

'Increased years of schooling', however, is not the only relevant metric when measuring educational programmes. In the examples mentioned so far, attendance rates, enrolment rates and test scores have all been relevant outcomes to measure.

As already mentioned, in Wydick et al.'s (2013) analysis of the Compassion child sponsorship scheme, the chosen metrics are the completed years of schooling, and completion rates of primary, secondary and university education.

Many impact evaluations not only account for the impact of the programme on the targeted beneficiaries, in this case the sponsored children, but also account for any spillover effects. In identifying the impacts of a deworming programme in Kenya, Miguel & Kremer (2004) measure the impact of the treatment at a school level to account for externalities between students, and the impact on neighbouring schools for inter-school spillovers. Likewise, Wydick et al. (2013) estimate the effects of sponsorship on younger siblings.

Circumstances though, require that in this paper historic data is used, and that retrospective analysis is required. This paper therefore uses a difference-in-difference approach similar to that used in Glewwe et al. (2004), an approach that is elaborated on in the 'Empirical Strategy'.

### 3. Programme Context

#### 3.1. Education in Ethiopia<sup>3</sup>

The backdrop to education in Ethiopia is the prevalence of poverty, with 30% of Ethiopians living in extreme poverty (based on a national poverty line of \$0.6 a day). This has however, fallen from 39% since 2005 due to strong recent economic growth (Ministry of Education 2015a). Despite spending 25.2% of government expenditure on education in 2013/14 (Ministry of Education 2015b), this still only amounted to 39,857 million Ethiopia Birr (ETB) ( $\approx$  \$1,811 million) (Ministry of Education 2015b), approximately only \$20 per capita, a very low level by international standards. Figure 1 illustrates this lack of finance for education in Ethiopia, and its dependence on foreign aid, as it is facing a financing gap of 70,131 million ETB over the next five years.

	2015/16	2016/17	2017/18	2018/19	2019/20	Total
(a) Total cost	73,635	81,350	91,831	98,781	108,225	453,822
(b) Gov't budget	58,838	66,944	76,102	86,445	95,362	383,691
Gap (a-b)	14,796	14,406	15,729	12,336	12,863	70,131

**Figure 1: Estimated financing gap for each year of ESDP V (million birr)**

Source: (Ministry of Education 2015a)

In spite of these challenges though, in working towards the Millennium Development Goals (MDGs) Ethiopia has seen significant progress in increasing its Net Enrolment Rate at primary school from 82% in 2009/10 to 93% in 2013/14 (Ministry of Education 2015b), suggesting that enrolment in the early stages of schooling is not the greatest challenge the Ethiopian education system faces. Given improvement in this area, the subsequent challenge facing Ethiopia is to address the high dropout and repetition rates, and to improve the progression of students through the education system (UNESCO 2015). Dropout and grade repetition is high in the early

<sup>3</sup> This section draws heavily on the background material found in Robinson (2016) – See Section 4.2 Education in Ethiopia

grades, and therefore completion of primary school remains low, with only 69.5% of students completing Grade 5, and only 46.7% do likewise for Grade 8. These rates of completion have fluctuated up and down on an annual basis, and in fact indicate an decreasing trend over the past five years (Ministry of Education 2015b).

The issue of dropout and repetition appears to be endemic to the system, and government targets of 1% rates of dropout and repetition from ESDP IV have been missed by a large margin. Repetition rates remain at about 8% (Promotion = 92%), and dropout rates in Grade 1 are 22%, and 11% thereafter (Ministry of Education 2015a). The Ethiopian governments attributes these high rates of dropout to 'low quality educational inputs, i.e. skilled teachers, relevant teaching and learning materials etc.' (Ministry of Education 2015a: 19). A major quantitative study of the causes of dropout in Ethiopia identified a range of school-level factors that impact on the dropout rate including pupil-teacher ratios, textbook-pupil ratios, and the ratio of teachers with teaching qualifications. The study recommends improving these ratios at a school-level, but also 'developing further guidance for schools to identify and support children at risk of dropping out while they are still in school' (Jennings & Poppe 2012: 60), suggesting that the circumstances of individual students are as big a determinant of dropout as school-level factors.

Access to education, is not evenly distributed, in particular with respect to geography (rural/urban), gender and socio-economic differences. ESDP V (Ministry of Education 2015a: 36) states that after Grade 4 'those of lower socio-economic status do not have equal access to education', citing financial and geographic barriers. There has however, been significant progress in closing the gender gap, particularly in relation to primary education where both enrolment, dropout and completion rates are all very similar for both genders (Ministry of Education 2015b). This transformation though has not translated to secondary education, where a gender gap still exists and widens (Ministry of Education 2015b; Gretland et al. 2014).

## 3.2. Child Sponsorship Programmes in Gondar, Ethiopia

### 3.2.1. About Link Ethiopia<sup>4</sup>

Link Ethiopia is a small education charity, which began existence as a series of informal projects in 1996, but has been a registered charity since 2006. The head office is based in London, UK. The charity operates in Ethiopia, with regional offices in Gondar and Bishoftu (Debre Zeit), and its programmes run across the Amhara and Oromiya regions of Ethiopia. In 2014/15 Link Ethiopia had an income of £488,769 and expenditure of £476,357 (Link Ethiopia 2015a).

In 2016, Link Ethiopia experienced a major change in the organisation, in that it formally ‘merged’ with another UK-Ethiopian education charity, ‘The Kindu Trust’, under one governance structure in the UK. Previously the two charities had worked very closely together, and as things stand in Ethiopia, the organisations still run in parallel, despite now sharing several resources such as staff and office space, although an Ethiopian merger will also be complete in the near future.

According to Link Ethiopia’s own mission statement, ‘*Link Ethiopia changes lives through education. We work in partnership with local communities to improve access to quality education for all students in Ethiopia, encouraging mutual understanding and respect between different cultures*’ (Link Ethiopia 2016). The organisation has a range of programmes to this end, including improving school infrastructure, facilities and resources in Ethiopian schools, teacher training, and schemes that promote inclusive education by improving access to education for marginalised groups, namely girls, young people with disabilities, and rural students (Robinson 2016). In every large school, one teacher is appointed as a ‘Link Coordinator’, who, along with the school director, is the main point of contact in the school for Link Ethiopia, and helps to facilitate Link Ethiopia projects in the school.

One of Link Ethiopia’s major programmes to increase access to education is a child sponsorship programme. The programme seeks to identify children who without

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<sup>4</sup> This section draws heavily on the background material found in Robinson (2016) – See Section 2.1 About Link Ethiopia

additional (primarily in-kind financial) support would not be able to continue their education, and seeks to prevent their dropout from school.

### **3.2.2. Link Ethiopia Sponsorship Model<sup>5</sup>**

As a response to both the criticisms of individual models of child sponsorship, and the recent re-evaluation of those criticisms, Link Ethiopia's model combines aspects of both the individual and public goods models of sponsorship, in what can be termed a 'hybrid model'. Link Ethiopia has three categories of sponsorship, 'standard', 'bespoke' (where donors support a specific individual with additional cash transfers), and 'further' (where an individual is sponsored through tertiary education). Given that out of a total of 197 sponsored students, only 17 are categorised as bespoke sponsorships and 3 are further sponsorships, this impact assessment only concerns the standard sponsorship model. Whilst Link Ethiopia sponsors students in both the Amhara and Oromiya regions, this study only concerns the Amharan programme, based out of the Gondar office, which represents just over half the total students sponsored through Link Ethiopia.

Link Ethiopia describes its sponsorship programme as follows:

*“sponsorship is the provision of support to an intended beneficiaries’ educational attainment, achievement, and progress and school attendance. It is a conditional assistance to enable children or adults who are at risk of dropping out from education, to enable them continue their education to the best of their ability, and within the limitations of the LE sponsorship programme.”* (Link Ethiopia 2015b)

Figure 2 outlines the budgeted financial expenditure of the programme, where each sponsor pays £15 per month. 16.67% is spent on sponsor feedback and operational costs. Of the remaining budget 45% is spent on the educational environment improvement fund. This represents the public goods aspect of the model, as this money is used to improve the school that the child attends through other Link Ethiopia programmes such as classroom building, WASH, and literacy projects.

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<sup>5</sup> This section draws heavily on the background material found in Robinson (2016) – See Section 4.3 Link Ethiopia's model

## Sponsorship Guidelines



Changing lives through education

### Financial Model

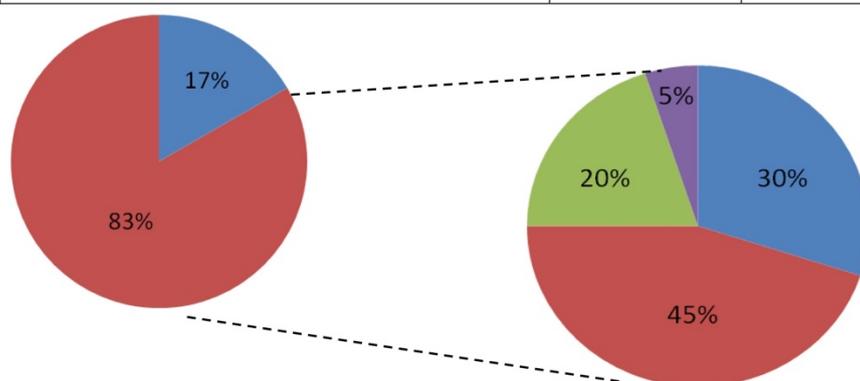
£15 (pounds) per month for a beneficiary paid by the sponsor.

The **standard sponsorship budget** per student is:

Area of spending	Annual budget	Percentage
Sponsor feedback and operational costs	£30	16.67%
Charitable spending <i>(sub divided below)</i>	£150	83.33%
<b>Total budget</b>	<b>£180</b>	<b>100%</b>

The charitable spending budget is sub divided as follows:

Charitable spending	Annual budget	Percentage
School clothing and resources fund	£45	30%
Educational environment improvement fund	£67.50	45%
Sponsorship club fund	£30	20%
Health and contingency fund	£7.50	5%
<b>Total charitable spending budget</b>	<b>£150</b>	<b>100%</b>



**Figure 2:**

Source: (Link Ethiopia 2015b)

The corresponding 55% is therefore spent on educational support for the individual students that are supported by the sponsorship programme. This is split between school resources and clothes, sponsorship clubs, and an emergency health and contingency fund. The focus on education is clear, with only 5% of charitable spending allocated for emergency health and contingency, with no money available for routine health expenditure. School clothing and resources includes school uniform, a school bag, shoes, stationery, and exercise books to help reduce the private financial cost of education. Sponsorship clubs are also only attended by direct beneficiaries of the programme, designed to provide a safe space for students to spend time with one another, gain confidence and improve social skills.

This model was adopted and first implemented in the 2012/13 academic year. Prior to that Link Ethiopia had more heavily favoured the public goods model, with 80% of charitable spending being allocated towards the educational improvement fund, and the remaining 20% being spent on school clothing and resources. Sponsorship clubs have only been implemented in the Amhara region since the 2014/15 academic year. Up until 2013, the monthly contribution by a sponsor was £12 per month, but this figure was changed to £15 to compensate for inflationary pressures in Ethiopia. In 2014/15 the Amharan sponsorship scheme had a total expenditure of £13,821.

As a purely educational programme, opposed to a poverty reduction scheme or a holistic child sponsorship model, the programme can also be viewed similarly to 'scholarship' schemes, however the term scholarship implies that selection for the scheme includes educational ability as one of the criteria. In contrast, Link Ethiopia selects students for its standard scheme on a 'needs' basis. An effective selection process is likely to be a key determinant of the success of the programme, as the premise of the programme is that without additional support the selected students would dropout from school. Link Ethiopia identifies students as shown in Figure 3. Whilst at the advent of the scheme, students were recommended for sponsorship by the schools that the scheme operates in, as of 2014, due to the introduction of new government regulations, only students on a list (of deprived families) were eligible for sponsorship.

### **Identification & Recommendation for Sponsorship**

Based on school assessment, Ethiopian Women & Children's Office recommendation and Sponsorship Manager assessment, children can be identified as in need of support.

The identification and recommendation of a child or young adult will be performed by the Sponsorship Manager (with support from other staff members when necessary), and the school (with reference to Ethiopian Women & Children's Office advice/lists). These beneficiaries need to be identified by the school/learning institution in conjunction with Link Ethiopia according to the following criteria:

- Children and young adults, 4 to 18 years of age.
- Children and young adults who are currently enrolled in and attending full-time education, and students who are or were attending full-time education but are currently struggling to cope with school and demands at home, e.g. working.
- Score on "Baseline Survey - Simple Poverty Scorecard" document.

Priority shall be given to: Single or double orphaned children who are identified as vulnerable and in need of support by the school/learning institution in conjunction with Link Ethiopia.

Gender: Considering the difficult circumstances facing girls' attempts to access education, Link Ethiopia has set a minimum limit on the number of female sponsorships. This number is set at 75% or two-thirds.

#### **Figure 3**

Source: (Link Ethiopia 2015b)

### **3.2.3. About The Kindu Trust**

The Kindu Trust was founded in 1998 and also has its head office in London. In 2014/15 it had an income of £124,533 and an expenditure of £147,451 (The Kindu Trust 2015), although unlike Link Ethiopia, its work is solely focused in the Amhara region. For its first four years of existence The Kindu Trust existed as a series of residential homes, taking 80 vulnerable children into care, however, after four years the residential homes were closed so that the children could live with relatives or be

placed with foster families. Instead of funding residential homes, the scheme was transformed into the current Child Sponsorship Programme (The Kindu Trust 2016b).

Also, unlike Link Ethiopia, the child sponsorship programme is the centrepiece of The Kindu Trust's work, however, it does also have a range of community-based projects, such as a playgroup and income-generating projects, which sponsors and their families may also benefit from.

#### **3.2.4. The Kindu Trust Sponsorship Model**

The Kindu Trust Sponsorship model is primarily a model of conditional cash transfers for attendance in school. The family of the sponsored child receive 300 ETB a month (approx. £10), conditional on the student being enrolled in school. This cash transfer increases to 330 ETB for students over the age of 18. The Kindu Trust currently supports over 350 children in this way. The scheme can be seen to be similar programmes such as PROGRESA, where cash grants to families were conditional on children attending 85% of school days (Schultz 2004), however the sponsorship is not conditional on set attendance rate, but rather a judgement call of whether that student is attending education or not.

The programme though is more than just a CCT, in that there are other benefits to the family other than just cash, benefits which are still conditional on the sponsored student's being in school. These benefits include school resources, including uniforms and exercise books (but not shoes and a school bag as with Link Ethiopia), medical check-ups for the entire family, reimbursement for medical expenses, and contributions to a 'training fund', which beneficiaries can apply for to take vocational courses (The Kindu Trust 2016a). The total cost of the sponsorship programme to the donor is £19 per month.

Compared to the Link Ethiopia scheme, the Kindu sponsorship programme is a more holistic sponsorship model, with greater expenditure on health and direct transfers, but with less expenditure on school resources than Link Ethiopia. There are also greater benefits to the family of the sponsored child, than just reduced costs to education, as they also benefit from the cash transfer and medical support. The cash transfer is seen to be an incentive for a household to send their child to school, but to

also have real benefits to the family. When considering the impact of the programme, it is clear that the impact on educational outcomes are not the only benefits, but for this evaluation, only the impact on educational outcomes is being considered.

Students for the sponsorship programme were initially selected based on the judgement of the Ethiopian social workers, however, like Link Ethiopia, since 2014 students have been selected from lists from the Women’s and Children’s Office and a home visit assessment. The Kindu Trust gives priority to children who are disabled, orphaned, are HIV positive, or have parents who are HIV positive (The Kindu Trust 2014).

<b>Resource Provided</b>	<b>Link Ethiopia</b>	<b>The Kindu Trust</b>
Learning Resources	Yes	Yes
Uniform	Yes	Yes
School Bag and Shoes	Yes	No
Cash Transfer	No	Yes
School Fund Contributions	Yes	No
Sponsorship Club	Yes	Yes**
Medical Expenses	Yes*	Yes
Family Health Checks	No	Yes
Training Fund	No	Yes

**Table 1: Comparison of Link and Kindu Sponsorship Programmes**

\* Only for medical emergencies

\*\* Access to a separately funded after-school club

## **4. Fieldwork Methodology and Observations**

### **4.1. Fieldwork Summary**

The data for this study was gathered through a two-month field study based in the town of Gondar, in the Amhara region of Ethiopia. Based out of the Link Ethiopia Gondar office I worked with different members of the staff team, including the Sponsorship Coordinator to visit schools where sponsored students attend in order to collect academic data on students. These school visits formed the basis of the fieldwork.

A mixed-methods approach has been taken, combining quantitative analysis with ethnographic observations from my time working with Link Ethiopia and visiting schools and semi-structured interviews with sponsored students and school link coordinators. In measuring the effectiveness of programme, greater weight is given to the quantitative analysis, although qualitative data has helped to inform the hypotheses to be tested and the interpretation of the data rather than using the qualitative data as a free-standing piece of analysis into the impact of the programme.

The quantitative analysis is found in the 'Empirical Strategy', and 'Results and Interpretation' sections. The qualitative data features in this section under 'School Visits', and the semi-structured interviews are analysed in the 'Discussion', providing evidence for the mechanisms of sponsorship, and in the 'Consultancy Report' informing programme recommendations.

Whilst the Kremer et al. (2003) analysis of the ICS programme was able to measure the impact of both individual support and public goods, the number of students supported by Link Ethiopia and Kindu does not constitute a high enough proportion of students in a school to measure the impact at a school-level. Therefore, this study only measures the impact of the individual educational support to students.

### **4.2. Sampling**

This impact assessment takes the individual as the unit of investigation, in that it seeks to measure the impact of the individual educational support of the programme

on the individuals participating in the programme, as opposed to any wider benefit to the school, families or local community. With this in mind the sample for the study is drawn from schools and colleges where Link Ethiopia currently has sponsored students attending, as the sampling decision had to be based on information available prior to starting the fieldwork, and often only the current school of the student was known.

The study can be seen to consist of three groups, Link Ethiopia sponsored students, Kindu sponsored students, and non-sponsored students, all of which attend or attended the schools where Link Ethiopia students currently attend. With such a sampling frame all schools that were part of the study were government state schools or colleges.

Students who receive bespoke sponsorship i.e. support above the standard support of either the Link or Kindu scheme were removed from the study. A small number of students who receive additional funds because of health problems such as HIV/AIDS are still included in the study, as such support was merely designed to mitigate the costs and challenges of this for the student, rather than as extra support towards their education. Likewise, if a student did require extra support, for example to pay school fees for a government college, but had been on the standard sponsorship model prior to this, they were still included in the study. Further details of the sampling for both the quantitative data and semi-structured interviews can be found below.

#### **4.2.1. Quantitative Sampling**

As mentioned, the initial sampling frame for the study was the schools in which Link Ethiopia students, who were supported through its standard sponsorship model were currently attending, giving a total of 18 schools.

Once the 18 schools were selected the internal Link Ethiopia database of sponsored students was used to identify the students that were attending, or had previously attended these schools. This produced an initial sample of 119 students, of which 6 were removed as they had received bespoke sponsorship and a further 15 students were removed when no academic data was found, leaving a final sample of 98

students sponsored by Link Ethiopia. The sample of 98 students included not only current students, but also students who were no longer on the scheme, either because they had dropped out, moved schools, or no longer required sponsorship. Information was drawn from the database for each student, including date of birth, gender, start date of Sponsorship and end date of sponsorship (if applicable).

For the Kindu students, the only list that included the information of the school currently attended was a list of current beneficiaries attending school. There was an initial sample of 121 students attending the 18 sample schools, with 6 students then removed from the sample for being bespoke sponsorships, and then a further 44 students removed when no data was found, leaving a final sample of 71 students sponsored by Kindu. Data was matched from a corresponding database to gather the same background data on Kindu students as available for Link students.

The final group of students in the quantitative study are the non-sponsored students. The non-sponsored students are randomly selected from the 18 schools visited. For half of the primary schools, five students were randomly selected from Grade 1 in each of 2000, 2002 and 2004 (Ethiopian Calendar [E.C.]), (2007/08, 2009/10 and 2011/12 Gregorian Calendar [G.C.]), and in the other half of the primary schools 5 students were randomly selected from Grade 1 in each of 2001, 2003 and 2005 (E.C.) (2008/09, 2010/11 and 2012/13 G.C.). In secondary schools 5 students were randomly selected from Grade 9 in 2004, 2005 and 2006 (E.C) (2011/12, 2012/13 and 2013/14 G.C.). This sampling method was used to ensure that observations were captured across a range of years in the 10-year study period, and to include students that are currently of different ages and grades, whilst ensuring that there were large number of observations (a Grade 1 student in 2007 E.C. (would only have had one possible observation), to ensure that the random sample was robust. Age and gender data from these students was taken from the school rosters.

Some schools were less willing to give their support to tracking randomly selected students, and in schools where record-keeping was poor and there were a large number of students tracking randomly selected students was very difficult. In certain schools therefore, random students' data was not collected, and in schools where

random students' data was collected, this was sometimes for less than 15 students. In total, data was collected on 184 randomly selected students. There was at least one observation for all non-sponsored students, so all 184 students remained in the sample.

#### **4.2.2. Qualitative Sampling**

Semi-structured interviews took place with sponsored students of both Kindu and Link Ethiopia. Initially it was also planned to carry out interviews with students who had dropped out and left the scheme, however, communication was generally lost with these students so they were unable to be contacted for interviews. Non-sponsored students at the schools were to be interviewed to understand their view of sponsorship schemes, however interviews with sponsored students suggested that very few non-sponsored students would have been aware of the Link Ethiopia and Kindu programmes, and therefore these interviews were considered of a lower priority, and not realised due to time constraints.

Five Kindu and four Link Ethiopia students were interviewed, and the students were selected to cover a range of ages, schools, grades, and sponsorship experiences. Two Link Ethiopia primary school students were interviewed, a preparatory school student and a student at a government polytechnic college. Of the five Kindu students, one primary school student was interviewed, one secondary school student, one preparatory school student, one polytechnic student and one university student. Not all of the students selected ended up in the final data set due to not finding their historic academic data on school visits, but with the exception of the Kindu University student, all students were part of the initial data set drawn from the databases. Finally, a Link Coordinator from a school who was familiar with the sponsorship programme and sees the children regularly was interviewed. A summary of the students interviewed is shown in the table below.

<b>Initials</b>	<b>Age</b>	<b>Gender</b>	<b>Grade</b>	<b>School</b>	<b>Years of Sponsorship</b>	<b>Organisation</b>
<b>TE</b>	19	M	11	Fasilides Preparatory	7	Link
<b>FT</b>	16	F	TVET	Gondar Polytechnic	7	Link
<b>EA</b>	17	F	7	Felege Abyiot	2	Link
<b>MM</b>	11	F	5	Atse Bekafa	3	Link
<b>FG</b>	24	M	TVET	Gondar Polytechnic	15	Kindu
<b>MB</b>	11	F	6	Arbartu Ensesa	6	Kindu
<b>SA</b>	16	M	11	Fasilides Preparatory	11	Kindu
<b>AE</b>	16	M	9	Angereb	9	Kindu
<b>HB</b>	23	M	University	University	15	Kindu

**Table 2: List of sponsored students interviewed**

### **4.3. School Visits**

#### **4.3.1. Observations**

The visits to the 18 schools in the study formed the bulk of the fieldwork, as these visits were used to collect the historic academic data on the students in the sample. They involved working with a Link Ethiopia staff member as a translator, and then working through the academic records with the school record keeper to find the historic data on the sample students. By working with the record keepers and Link Ethiopia staff I was able to gain a better understanding of the outcomes of students, especially as the records were not always definitive and so required collective interpretation was required.

In most schools, there was a designated record keeper employed at the school, with historic school rosters, sometimes dating back over 30 years, and transcripts and

certificates of current students kept in a separate designated 'record room'. Only in small schools, such as Andinet Elementary, which only served grades 1-4, was this lacking, in which case the school director was responsible for the record-keeping and records were kept in the director's office. Access to the records was negotiated between Link Ethiopia staff and the school director, as Link Ethiopia already has good working relationships with the schools involved in the study, and it was agreed that photos of rosters and transcripts of students could be taken for use in the study, to then be entered into the dataset.

The role of the record keepers in the school is to manage the record room, keeping records organised, and to prepare official documentation such as certificates and transcripts. They are also on hand when teachers, students or parents have queries about previous results. The rosters, which provided the bulk of the data, are the responsibility of the class teachers to fill out, whilst the record keeper merely organises them, and this perhaps explains a lack of consistency not only between schools but between classes. This also means that except at peak times, such as exam time, there is spare capacity in the role of the record keepers. At the same time, record keepers suggested that data collection of this type was extremely unusual and represented a significant increase in their workload. Reactions to this increased work were varied, from engagement with the research and questions as to the purpose of the data, to a reticence to help and demands for additional payments, which were refused.

#### **4.3.2. Collection of Quantitative Data**

The rosters, an example of which can be seen in Figure 4, were largely standardised between schools, suggesting they were from a government or local authority template, which could vary slightly from school to school or class to class. All rosters contained space for the student's name, age, gender, their promotion to the next grade or their being 'detained' and having to repeat the year, and then the internal exam results for each subject taken, overall average, and days absent for the first semester, second semester and average/total for the year. In secondary schools these records were kept in English, and tended to not collect data on days absent,

and in primary schools, records were kept in the regional/national language, Amharic.

Age data was nearly always kept, and the age listed was assumed to be the age of the student on the first day of the Ethiopian calendar year (12<sup>th</sup> September) as this represents the start of the school year. Given that dates of birth are often unknown in Ethiopia it made little sense to attempt to be more precise in the age of students than this. Results from internal exams were recorded for each subject, however the subjects taken varied from year to year, and occasionally by school, and this level of detail was not required, so an average of all exam results for the year was recorded as measure of attainment.

IN200 7E.C EDGET FELEG G/S/SCHOOL GRADE 9<sup>2</sup> STUDENT'S CONSOLIDATED MARK LIST

NO	STUDENT'S NAME	SEX	AGE	SEMESTER	AMHARIC	ENGLISH	MATHS	PHYSICS	CHEMISTRY	BIOLOGY	GEOGRAPHY	HISTORY	CIVICS	INFOTECH	H.P.E.	TOTAL	AVERAGE	RANK	REMARK
49	SELAMAWIT BIRHANIE WOLDIE	F	15	I	57	54	58	53	54	54	44	48	63	65	60	610.555	52		
				II	72	60	65	61	60	52	79	42	34	81	79	725.659	28		
				AV.	64.5	57	61.5	57	57	53	61.5	48	68.5	73	69.5	667.5	60.7	41	P
50	SALEAMLAX MUCHE DNGNEW	M	17	I	56	64	62	47	57	45	64	50	55	54	69	623.566	50		
				II	63	56	65	59	76	64	38	31	49	75	84	660.60	50		P
				AV.	59.5	60	63.5	53	66.5	54.5	51	40.5	52	64.5	76.5	642.5	58.4	49	P
51	SAMUEL MEKASHAW ABUHAY	M	16	I	72	71	89	86	83	78	78	79	82	87	91	896.815	2		
				II	79	79	87	95	85	97	89	70	86	91	78	936.85	2		
				AV.	75.5	75	88	90.5	84	87.5	83.5	74.5	84	89	84.5	916	83.3	2	
52	SEIDU WOGEME KEMAL	M	15	I	73	70	68	71	57	41	70	77	65	69	82	743.675	16		P
				II	73	59	70	61	73	65	75	62	66	79	81	764.695	15		
				AV.	73	64.5	69	66	65	53	72.5	69.5	65.5	74	81.5	733.5	68.5	16	P
53	SEMAGN GEBRIE YIHUNIE	M	19	I	52	65	44	50	50	57	58	63	55	72	62	628.571	46		
				II	71	56	63	55	63	63	70	53	54	75	73	696.633	36		P
				AV.	61.5	60.5	53.5	52.5	56.5	60	64	58	54.5	73.5	67.5	662.60	43		
54	SHEGAYE GEBRU Getahun	F	18	I	58	57	74	49	80	75	71	67	88	64	69	752.684	12		P
				II	69	37	56	42	60	60	50	51	62	76	77	640.582	53		
				AV.	63.5	47	65	45.5	70	67.5	60.5	59	75	70	73	696.633	30		

1<sup>st</sup> SEMESTER HOME ROOM TEACHER'S NAME: Eduqna A.  
SIGN: [Signature] DATE 9/6/07

2<sup>nd</sup> SEMESTER HOME ROOM TEACHER'S NAME: Eduqna Awol  
DATE 29/10/07

1<sup>st</sup> SEMESTER SCHOOL PRINCIPAL'S NAME: \_\_\_\_\_ SIGN: \_\_\_\_\_ DATE \_\_\_\_\_

2<sup>nd</sup> SEMESTER SCHOOL PRINCIPAL'S NAME: \_\_\_\_\_ SIGN: \_\_\_\_\_ DATE \_\_\_\_\_

Figure 4: A secondary school roster

Whilst guidelines for promoting or detaining a student based on internal exam results do exist, ultimately the decision was at the discretion of the school, as evidence of the guidelines being ignored was found. At the end of primary school (Grade 8), students take regional exams, which they must pass in order to proceed to

secondary school, and Grades 10 and 12 finish with national exams. Grade 10 exams determine if a student continues to preparatory school (Grades 11 and 12), college, or drops out, and Grade 12 exams determine if the student continues to university education. Thus whilst the results of these exams were recorded for purposes of promotion (Grade 10 students who then went to college were considered not promoted), due to their different format they were not included as measures of attainment.

The historic academic data was collected and recorded by academic year, and when tracking a student, it was important to consider all possible outcomes for a student in a given year, in order to be able to find the student in the subsequent year. When a sample student was identified in a given grade and year, whether moving forwards or backwards, it was important to bear in mind that the student could have been promoted to the next grade, have repeated the year, changed school, dropped out, or been promoted by an additional grade (for exceptional attainment), and this was not always immediately clear from the roster. It was also noted that there were a large number of students who would be listed in the roster and therefore registered as enrolled, yet there was little evidence of the student actually attending school in a meaningful way, with no results at the end of either semester. This trend was particularly noticeable in Grade 1 rosters. This trend may help to explain why enrolment rates have increased rapidly in recent years, but this has been matched by high dropout rates.

The timeframe for the data collection was from 1998 – 2007 E.C. (2005/6 – 2014/15 G.C.), as 2007 E.C. was the most recent completed academic year at the time of data collection, and the first Link Ethiopia sponsorship started in 2001 E.C. (2008/9 G.C.), and thus a 10-year timeframe allowed for the possible collection of pre-intervention data for all Link Ethiopia students. For each student their academic data was recorded up until 2007 E.C., or until they dropped out or appeared to leave the school with an ultimately unknown outcome, and was recorded 'backwards' until their first year attending Grade 1, or to when they first joined the school that was in the sample frame (they may have attended a non-sample school previously), or until 1998 E.C.

Finally, whether a student had dropped out from school was not always a clear cut case. Merely the absence of a student from the roster did not necessarily indicate dropout. According to Link Ethiopia staff, school directors and record keepers, students could often change school, or move away from the area without notifying the school. Thus unless dropout was certainly reported by Link Ethiopia or the school, if a student was missing from the roster, dropout was only recorded if the previous year there was evidence of a 'bad' outcome e.g. the lack of exam results from the first or second semester indicated that student had not attended school throughout the year, or a failure to be promoted to following grade.

The data collection process yielded a large amount of missing data, due to a number of reasons such as: students moving both away from and to the sample schools, a lack of historic information on the school and grade of the student to be able to identify them in school records, name changes of students, missing rosters, or because a student dropped out too long ago to find their academic records or to make contact with the student. As mentioned in the sampling section this meant that for some students no historic academic study was found, and therefore these students were removed from the dataset. In spite of this, over 900 observations for each outcome variable were collected, and the study was not compromised.

#### **4.4. Semi-Structured Interviews**

Semi-structured interviews, were carried out with nine sponsored students across the two organisations and were based around two main themes. One set of questions was geared towards trying to understand the relative poverty of the students and their families, to assess how effective the targeting of the programmes was towards those students most in need, and to understand to what extent the sponsorship schemes appropriately addressed the barriers to education associated with poverty. The second main area to explore was the effectiveness of the scheme from the point of view of the students. The students were asked what their experience of being a sponsored student was like, the impact of sponsorship on both them and their family, which parts of the sponsorship they valued more than others, and their recommendations for improvements to the programme.

The interviews also began with an introductory section about the students' experience at school to 'settle' interviewees into the interview, and to understand the educational aspirations of sponsored students. The semi-structured interviews focussed on these issues to complement the quantitative data, and to answer questions that the quantitative data could not. The quantitative data can demonstrate the size of the impact of the sponsorship, but it cannot answer why it is or isn't working, or which aspects of the programme are working and which aspects aren't in as nuanced a way. Furthermore, the lack of quantitative background socio-economic data available for both the treatment and control students meant that the effectiveness of the selection process had to be explored through qualitative methods.

## **5. Empirical Strategy**

### **5.1. Research Questions**

Based on the mission of Link Ethiopia (see Section 3.2.1), the design and intent of the sponsorship programme, and the availability of data, it became clear that two main research questions could be addressed. Firstly, this study ultimately seeks to answer the question *'Are Child Sponsorship Programmes an Effective way to Improve Educational Outcomes?'*; that is can a positive causal relationship between sponsorship programmes improved access to, and the quality of education be identified? Access implies the basic ability to attend school, on the basis that sponsorship reduces the private costs to education, and quality alludes to improved school performance when attending school due to improved access to, and resources at, school. Secondly, by comparing the results between the students sponsored by Link Ethiopia and Kindu, a secondary research question can be addressed that is, *'Do Conditional Cash Transfers, in addition to the provision of School Resources, Improve Educational Outcomes?'*.

### **5.2. Outcome Variables**

Both programmes are relatively young, in that there is no data on the scale required, as to whether students completed primary, secondary or tertiary education, or on the total completed years of schooling, to carry out the analysis on the same outcomes as in the Compassion analysis (Wydick et al. 2013), as the majority of students in both schemes are still in education. The use of educational annual data for each student though, can in many ways be considered a strength of this study.

Whilst there may be possible spillover effects from the sponsorship programme, both within households and within schools, a lack of data on other children in households of sponsored children, or control schools makes this difficult to estimate these. Intra-household spillovers would probably be considerably larger for the Kindu model, as the family benefits from both health checks and the CCT, however evidence for intra-household spillovers in the Compassion sponsorship programme was negligible, (although the Compassion programme does not include CCTs or family health checks). Likewise, evidence for intra-village spillovers was negligible (Wydick 2013),

and the number of sponsored students in a given school are such a small proportion of total students, no more than 30 in a school of 1000, that intra-school spillovers would be expected to be minimal as well. Thus the failure to account for spillovers should not have a major impact on the results.

### 5.2.1. Access

To measure the impact on access this paper focuses on two core outcome variables, the first of which is **enrolment rates**. Enrolment rates are estimated based on the binary outcome of either enrolled or not enrolled, for a given student, in each academic year, from the first (chronological) observation until the 2014/15 academic year or the last known observation. This study uses a stricter definition of enrolment than is normally applied. Enrolment normally implies that a student is registered at a school, however in this study if the roster showed no evidence of the student attending school in a given year, this student was considered to be not enrolled. The enrolment variable gives us a clear indication of the number of years that a student attended school.

The second 'access' variable is attendance, which in this case is measured in terms of the discrete variable, '**days absent**'. Attendance is an important measure of access to education, as a student who attends school on half the days compared to another student, say due to family work obligations, has a much lower exposure to education, but this is not captured in the binary enrolment variable.

### 5.2.2. Quality

The improved quality of education should manifest itself in improved academic performance from the sponsored students, and this can be measured in two ways. The first is a simple measure of attainment, that is the **average** result from internal exams in a given year.

The second set of variables relate to progress through the academic system, given that repetition of grades, or years absent from education are common in the Ethiopian education system. Progress is measured in two ways, firstly, through **promotion rates** (which are estimated in the same way as enrolment rates), and

secondly using ratios comparing expected grade based on age (dividing the actual grade by the expected grade).

Expected Grade, in this study, is calculated in two different ways. '**Grade Ratio 1**' calculates the expected grade based purely on age. In Ethiopia students are expected to start Grade 1 aged 7, and therefore students aged 8 should be in Grade 2 and so on. This ratio gives an overall indication of the educational progress for the student in relation to their age. '**Grade Ratio 2**' calculates the expected grade based on the age and grade of the student at the first (chronological) observation. For example, if the student is first observed in Grade 1 aged 10, then aged 11 they would be expected to be in Grade 2.

For Grade Ratio 1, a student who starts school at a later age, but then progresses efficiently through the system, will have a low grade ratio for the early grades, but that ratio will improve as they progress through the system, reflecting that that student is 'catching up' with their peers, and that the grade they are in is now more reflective of their age than when they started school. Grade Ratio 2 ignores the actual age of the student and only measures how efficiently a student progresses through the education system, and will mean that such a student will consistently have a 'high' grade ratio.

For both grade ratios, the maximum value for each observation is set to 1, in that if a student is in a grade at a younger age than expected, say due to starting school at a younger age, this is not considered to suggest that the student is progressing through the system more efficiently, especially as this study is more concerned with whether students are 'falling behind' in their education or not. If such an approach was not used, then a student aged 7 in Grade 2, would have an expected grade of 1, and thus a grade ratio of 2, and given that most values for the grade ratios are 1 or just below such a value would disproportionately affect the results.

If a student dropped out, then the grade they were in at the time of dropout, is then held fixed at that grade from the year of dropout through to the 2014/15 academic year, and thus the grade ratio for that student would decline over time, and therefore these ratios can be seen as composite indicators of both progress and access.

These two ratios may yield different results, as in Ethiopia many students start Grade 1 older than aged 7. This is illustrated by the fact that the Apparent Intake Rate (number of students enrolled in Grade 1 divided by population aged 7) of 152.9% is much higher than the Net Intake Rate (number of students aged 7 enrolled in Grade 1 divided by population aged 7) of 105.6% in 2013/14 (Ministry of Education 2015b).<sup>6</sup>

### **5.3. Difference-in-Difference Analysis**

Whilst the results section presents some initial descriptive statistics showing the difference between the sponsored and control students, difference-in-difference analysis is used to understand the programme effects with greater precision.

Although the preference for prospective analysis was stated, by definition the impact evaluation of this scheme is retrospective, as it requires the analysis of existing data of the programme to date. In this analysis the ‘input of interest’ [sponsorship] does vary in accordance with unobserved variables, as the sponsorship is means-tested, and the baseline ‘poverty scorecard’ used in the selection process is not included in the data set, this analysis should be wary of any omitted variable bias, that may upwardly bias the programme effect. As discussed though, in such a case, a difference-in-difference approach can go a long way to reducing the size of this bias.

The difference-in-difference analysis comes close to an experimental approach to research, even when gathering data retrospectively post-treatment, as the historic data available means that both the treatment and control students can be observed both pre- and post-treatment. Importantly, a difference-in-difference approach accounts for the pre-existing differences in the treatment and control groups. In this case, prior to intervention the sponsored students would be expected to have poorer educational outcomes, as the selection of students for sponsorship is means-tested, and access to education is unequal across socio-economic groups (Ministry of Education 2015a: 34).

The data from the control group allows the estimation of what would have happened to the treatment group in the absence of the treatment. A ‘parallel-trend assumption’

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<sup>6</sup> Net Intake Rate should theoretically not exceed 100%, these results are probably due to underestimates in population

is applied, as is the norm in difference-in-difference analysis, that in the absence of treatment, the outcomes of the sponsored students would have the same trend (slope) as the control group. The trend of the control group represents the unobserved changes that impact on educational outcomes in Link Ethiopia schools over the time-period. The difference-in-difference approach can be understood as a regression on the outcome of interest. The basic regression model (5.1) is below:

$$Y_{it} = \beta_1 T_i + \beta_2 t + \beta_3 (S_i \cdot t) + \beta_4 (X) + \varepsilon_{ijklt} \quad (5.1)$$

Where:

$Y_{it}$  = the educational outcome for a student  $i$  at time  $t$

Where:  $i = 1, \dots, N$

Where:  $N$  = the finite number of students in the study

And:  $t = (t_1, \dots, t_{10})$  is time-series data across 10 evenly spaced and of equal length time periods (academic years). Here  $t_1$  is the academic year 2005/06 and  $t_{10}$  is the academic year 2014/15

$T = \{0, 1\}$ , a dummy variable determined by whether the student is part of the control group [ $T=0$ ] or the control group [ $T=1$ ]

$S$  = the treatment variable that interacts with  $t$ .

$\beta_{1, \dots, 4}$  = constants to be found in the regression model.

$\beta_3$  = the constant of interest as this is the coefficient of the programme effect.

$X$  = a vector of control variables, which may affect the outcome in question.

$\varepsilon_{ijklt}$  = is the error term where:

$j$  = school index

$k$  = grade index

$l$  = age in years (discrete values)

With there being multiple time periods the model is more complex than a simple difference-in-difference model, in that the time trend observed is not as simple as pre- and post-intervention, but rather there are multiple observations both pre- and post-intervention.

The nature of the treatment variable  $S$  is a major methodological consideration, and this study employs four different models of  $S$ . In many difference-in-difference analyses  $S = \{0, 1\}$ , where 0 is the value applied for all observations before the student receives treatment (including never receiving treatment), and 1 is applied to all observations that occur post-intervention (irrespective of whether the treatment was received in that year or not). This can be considered the basic model 'Model 1'.

Alternatively, we can view the treatment (or non-treatment) of sponsorship as something that occurs on an annual basis, where  $S$  is a continuous variable representing the number of months that a student received sponsorship in a given academic year. This 'Model 2' may be considered superior to Model 1, in that it differentiates between those students that have received sponsorship and continue to receive sponsorship, and those students where sponsorship has been received but has now been terminated.

In the Link Ethiopia programme sponsorship can be terminated for one of two reasons. The first is that the family situation of the student improves, such that they are considered to no longer need sponsorship. Much more common though, is that the sponsorship is terminated due to the child having dropped out of school, with no intent to return to education. This model is therefore more effective in estimating the impact of the programme in terms of the expenditure of resources in the programme. It may be considered, however, that by not including the observations of dropped out students in the treatment variable, as once the student has dropped out  $S = 0$ , the size of the programme effect may be upwardly biased. It should be noted that when a student has dropped out, the data for promotion, days absent, and average is not recorded, and thus the results from these outcomes are not affected by dropped out students. The results for the outcomes of enrolment and grade ratios will, however, be affected.

Alternatively, it is possible that the impact of sponsorship may be linked to the length of sponsorship, in that a student who had received two years of sponsorship would be expected to have better educational outcomes than a student who had received sponsorship for one year. This logic is applied in 'Model 3', where  $S$  is the cumulative months of sponsorship at time  $t$ , and in this model, for dropped out students who are no longer sponsored, the treatment variable remains as the total months of sponsorship from when dropout occurs through to  $t_{10}$ .

In 'Model 4', a non-linear relationship between the cumulative months of sponsorship and the outcome variables is investigated, where a positive coefficient would indicate that the benefits to sponsorship accrue exponentially with time sponsored. In such a case, if the turning (minimum) point on the regression line is where ( $S > 0$ ) then the effect of sponsorship is below the parallel trend up until the turning point, at which point the effect will then then tend back towards 0 and the continue to increase exponentially.

For the remainder of this paper  $S$  can be any of  $S_1$ ,  $S_2$ ,  $S_3$  or  $S_4$  where:

$S_1 = \{0, 1\}$ , a dummy variable determined by whether the observation at time  $t$  occurs before student receives or if a student never receives sponsorship [ $S_1=0$ ] or after receiving sponsorship [ $S_1=1$ ]

$S_2$  = the number of months that sponsorship is received during the time period  $t$ .

$S_3$  = the cumulative number of months of sponsorship has been received at time  $t$ .

$$S_4 = S_3 + (S_3)^2$$

### 5.3.1. Control Variables

Control variables are introduced into the model, to account for any difference in the outcomes that is due to differences in observed characteristics of the students in both the treatment and control groups, and to increase the explanatory power of the model in relation to its ability to predict the outcome variable, and reduce standard errors. Of the data available there are four control variables that warrant inclusion in the model.

The first is **gender**. As mentioned previously, in Ethiopian primary school girls perform as well as or better than boys, but do not perform as well as boys in secondary school (Gretland et al. 2014; Ministry of Education 2015a).

The **school** of a given student is controlled for to account for school quality, which may vary due to differences in resources, administration quality and school-level training.

**Grade** is controlled for, as dropout rates vary from grade to grade. For example, the dropout rate is 21.8% in Grade 1, 11.6% in Grade 5, and 10% in Grade 8, but as low as 1.5% in Grade 7, 3.1% in Grade 6 and 5.4% in Grade 3 (Ministry of Education 2015b). It is also reasonable to expect that exams may vary in difficulty from grade to grade, affecting attainment and progress.

Finally, **age** is controlled for, as within a given grade, an older student may be expected to perform better, especially as this may be their second or third attempt at the grade. Given that both age and grade in this dataset are discrete data and therefore dummy variables, the addition of controls to equation 5.1 produces equation 5.2:

$$Y_{it} = \beta_1 T_i + \beta_2 t + \beta_3 (S_i \cdot t) + \beta_4 Gender_i + \sum_{j \in J} \beta_j [School_{it} = j] + \sum_{k \in K} \beta_k [Grade_{it} = k] + \sum_{l \in L} \beta_l [Age_{it} = l] + \varepsilon_{ijklt} \quad (5.2)$$

This regression is applied to all outcome variables, except when the outcome is a grade ratio, where grade is removed as a control variable, as it is not independent to the outcome variable in this case.

### 5.3.2. Fixed Effects

For each treatment model fixed effects are applied independently at two different levels to implicitly control for everything that is fixed about a group of observations, even when those characteristics are not observed in the data set. Fixed effects are

used when the outcomes within a group of observations are expected to be correlated due shared characteristics.

Thus, in equation 5.3 fixed effects are applied at a student level ( $\alpha_i$ ), to account for anything that is unobserved for the student, such as socio-economic status or IQ. In equation 5.4 observations are categorised into groups by school and grade and fixed effects are applied at this level ( $\alpha_{jk}$ ). This fixed effects accounts for differences in school and grade, for the same reasons as to they are included as control variables. As some students attend more than one school through the time observed, these fixed effects are applied independently rather than in the same model, as the student-level observations are not always nested within the “school-grade” groups. For both equations 5.3 and 5.4, standard errors clustered at the same level as fixed effects are applied, as the standard errors within these groups are also expected to be correlated.

$$Y_{it} = \beta_1 T_i + \beta_2 t + \beta_3 (S_i \cdot t) + \beta_4 Gender_i + \sum_{j \in J} \beta_j [School_{it} = j] + \sum_{k \in K} \beta_k [Grade_{it} = k] + \sum_{l \in L} \beta_l [Age_{it} = l] + \alpha_i + \varepsilon_{ijklt} \quad (5.3)$$

$$Y_{it} = \beta_1 T_i + \beta_2 t + \beta_3 (S_i \cdot t) + \beta_4 Gender_i + \sum_{j \in J} \beta_j [School_{it} = j] + \sum_{k \in K} \beta_k [Grade_{it} = k] + \sum_{l \in L} \beta_l [Age_{it} = l] + \alpha_{jk} + \varepsilon_{ijklt} \quad (5.4)$$

Thus, ultimately there are eight possible models that estimate the programme effect, as there are two different models (equations 5.3 and 5.4) depending on the level at which fixed effects are applied, and four different models of the treatment effect  $S$ . These eight models can be tested across all outcome variables, with the exception of grade ratios as school-grade fixed effects cannot be applied to the grade ratio outcomes, as fixed effects need to be independent of the outcome variable in the same way that control variables do.

Finally, it is worth noting that certain variables ‘drop out’ or are ‘absorbed’ by the fixed-effects parameter, when the variable is fixed across all observations for that group. When student fixed effects are applied as in equation 5.3, the treatment and gender variables are absorbed resulting in equation 5.5. When the school-grade fixed effects are applied as in equation 5.4, the school and grade variables are absorbed resulting in equation 5.6.

$$Y_{it} = \beta_2 t + \beta_3 (S_i \cdot t) + \sum_{j \in J} \beta_j [School_{it} = j] + \sum_{k \in K} \beta_k [Grade_{it} = k] + \sum_{l \in L} \beta_l [Age_{it} = l] + \alpha_i + \varepsilon_{ijklt} \quad (5.5)$$

$$Y_{it} = \beta_1 T_i + \beta_2 t + \beta_3 (S_i \cdot t) + \beta_4 Gender_i + \sum_{l \in L} \beta_l [Age_{it} = l] + \alpha_{jk} + \varepsilon_{ijklt} \quad (5.6)$$

### 5.3.3. Weights

A simple weighting is applied to the regression such that each student is equally weighted in the analysis. Before the application of weights there are different numbers of observations for different students, thus biasing the results towards the outcomes of students for which there are more observations. By weighting in this way the effect estimated is the average treatment effect per student.

### 5.3.4. Comparing Kindu and Link

As mentioned in the sampling section, the sample of beneficiaries sponsored by the Kindu Trust was drawn from a database of students currently in education. This meant that when carrying out analysis comparing the Link Ethiopia students, the Kindu students, and the non-sponsored students, all students that had dropped out from education were removed from the datasets to allow for unbiased comparisons between the groups. For this reason, the outcome variable of enrolment became obsolete, and so is not explored when comparing Link and Kindu students, however

all other outcomes were still tested, using the same difference-in-difference approach, and same eight models outlined above.

Given this new data set, the first step was to run the difference-in-difference analysis, again comparing the Link and non-sponsored students, to establish if the impact of sponsorship was similar, even with the new dataset. The next step was to then compare the Kindu students to the non-sponsored students in the same way, to look for evidence of the impact of the Kindu sponsorship programme. Then finally, difference-in-difference analysis was run comparing the Kindu students to the Link Ethiopia students, treating the Link Ethiopia students as the control group (as both groups receive school resources), and Kindu students as the treatment group, as they are the group to receive the CCT in addition to school resources.

## 6. Results and Interpretation

This section is divided into two parts, the first section addresses the first research question, *‘Are Child Sponsorship Programmes an Effective way to Improve Educational Outcomes?’*, by comparing the outcomes of Link Ethiopia students against the non-sponsored students. The second section seeks to answer the question, *‘Do Conditional Cash Transfers, in Addition to the Provision of School Resources, Improve Educational Outcomes?’*. This section uses a second data set, comparing the outcomes of Link, Kindu and non-sponsored students, all of whom were, in their most recent observation, in education.

### 6.1. Are Child Sponsorship Programmes an Effective way to Improve Educational Outcomes?

This section starts with some “naïve” descriptive statistics comparing the key outcome variables for the Link Ethiopia sponsored students with the non-sponsored students, without any adjustments such as weights or otherwise. The results of the difference-in-difference analysis comparing the two groups follow the descriptive statistics.

#### 6.1.1. Descriptive Statistics

Table 3 shows the outcomes of interest for the two groups of students, those not sponsored, and those sponsored by Link Ethiopia, as either percentages (for binary variables), or as means (for continuous variables), or in the case of days absent, the estimated mean. These initial results would seem to suggest an effective programme, with Link students exhibiting higher enrolment and promotion rates, missing less days of school, and progressing faster through the education system.

<b>Sponsorship Status</b>	<b>Enrolment Rate</b>	<b>Days Absent</b>	<b>Promotion Rate</b>	<b>Grade Ratio 1</b>	<b>Grade Ratio 2</b>	<b>Average</b>
<b>Not Sponsored</b>	80.11%	14.11	83.87%	0.74	0.88	66.24
<b>Sponsored by Link</b>	93.37%	9.85	90.06%	0.86	0.95	64.98
<b>Total</b>	<b>85.82%</b>	<b>12.05</b>	<b>86.77%</b>	<b>0.79</b>	<b>0.91</b>	<b>65.65</b>

Table 3: Comparing Link Ethiopia and Non-Sponsored Students

The only outcome for which the Link Ethiopia students do not perform as well as the non-sponsored students is in pure attainment terms, with their average results being slightly lower than the non-sponsored students.

For the non-binary variables one can look beyond the means and into the distribution of observations for each outcome. In the following boxplots group 0 are the non-sponsored students, and group 1 are the Link Ethiopia students. Figure 5 reinforces the suggestion that sponsored students miss less days of school than their non-sponsored counterparts, with lower values for each quartile for sponsored students. Likewise, when looking at the grade ratios in Figure 6,  $Q_1$  and  $Q_2$  have higher values for Link Ethiopia students than non-sponsored students, suggesting that for their age sponsored students have generally progressed further through the education system. In Figure 7,  $Q_1$ ,  $Q_2$  and  $Q_3$  are all equal to 1 for sponsored students, but for non-sponsored students, whilst  $Q_3$  and  $Q_2$  are equal to 1,  $Q_1$  is lower for non-sponsored students than Link students, reflecting the higher promotion rates for Link students. For both groups across both grade ratios a lot of observations are equal to 1, partly due to 1 being the maximum value, but also due to 1 being the value representing the expected rate of progress through the education system.

When looking at attainment in Figure 8,  $Q_1$  and  $Q_2$  are very similar across both groups, however  $Q_3$  is higher for non-sponsored students than Link students, suggesting that the top half of students in this group outperform the top half of Link Ethiopia students, whereas the bottom halves of each group perform similarly.

These results suggest that sponsored students have better access to education, and progress faster through the education system, although they perform slightly worse in attainment terms. To establish a causal relationship between sponsorship and improved outcomes though, requires the difference-in-difference analysis.

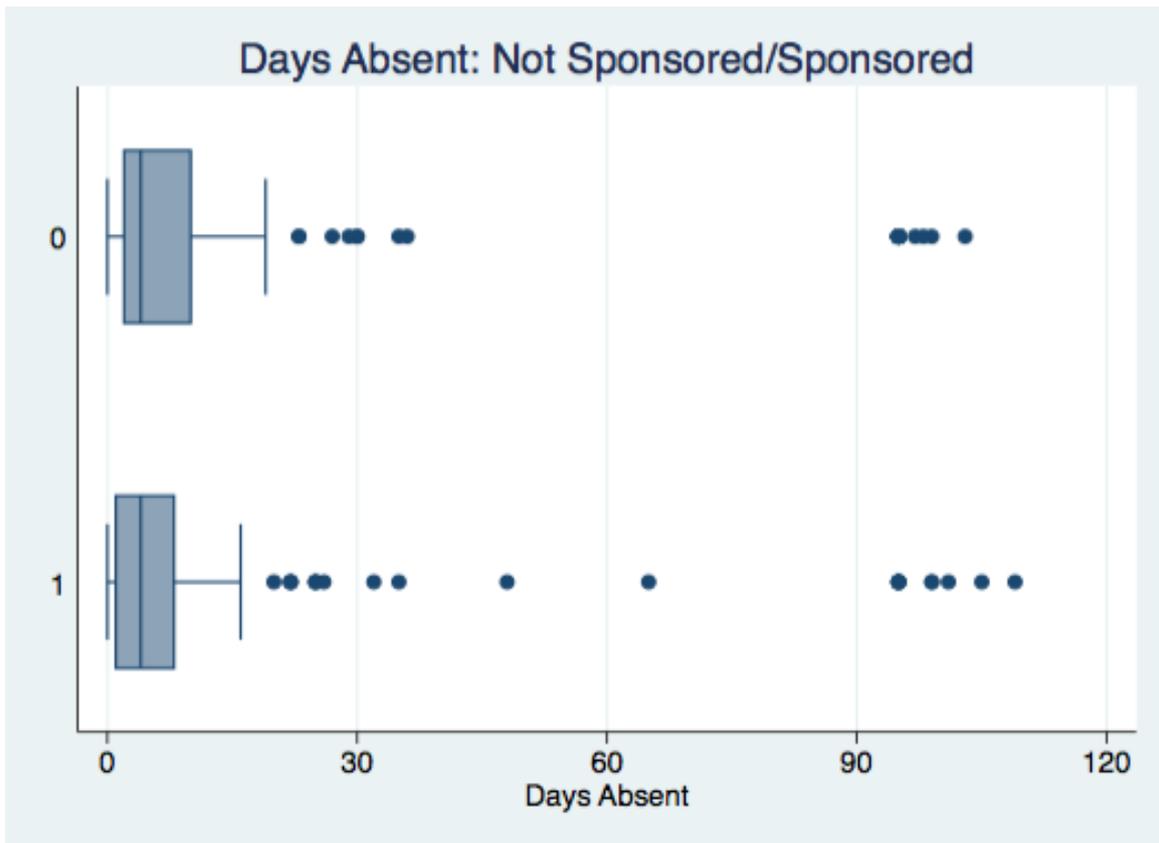


Figure 5

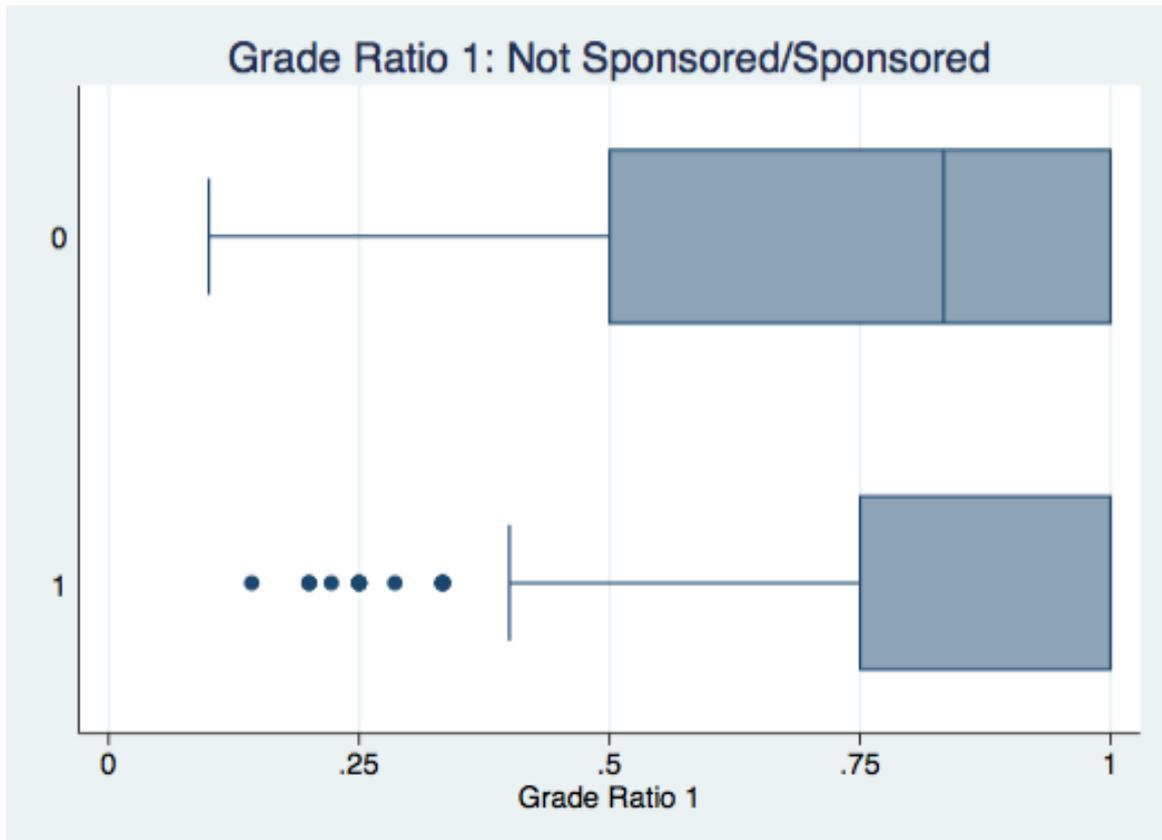


Figure 6

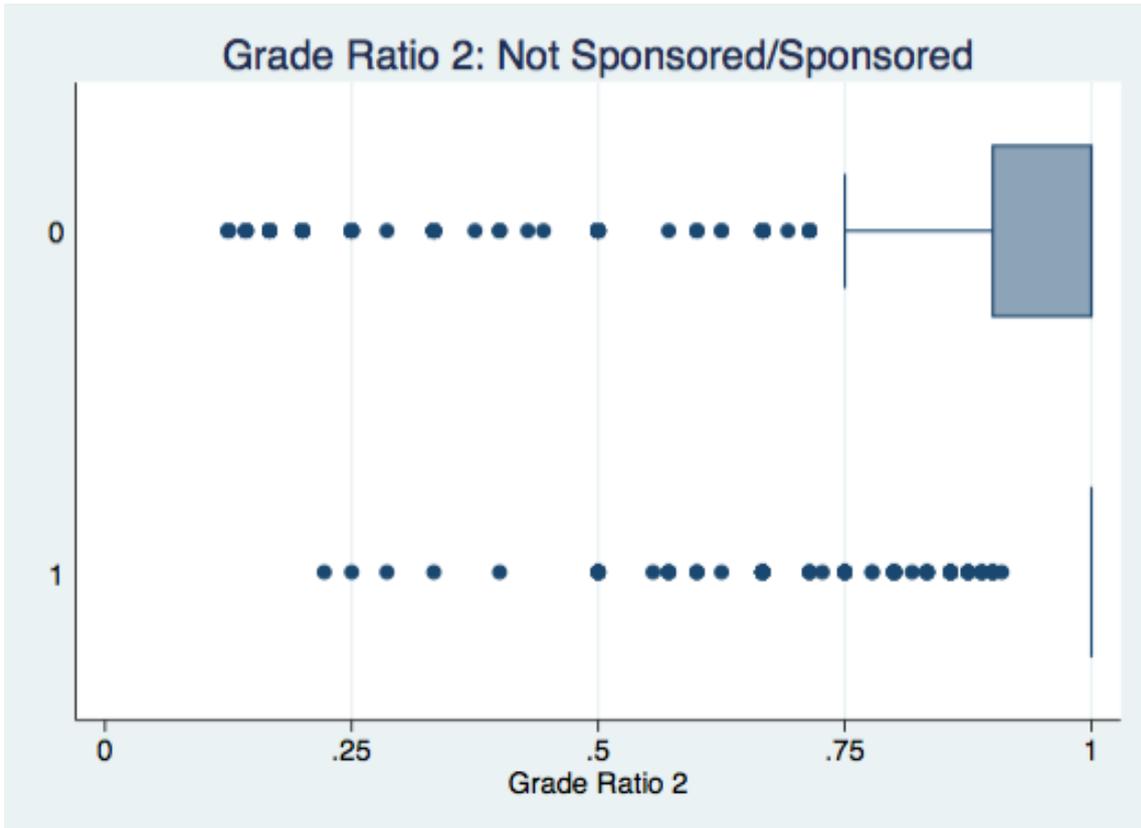


Figure 7

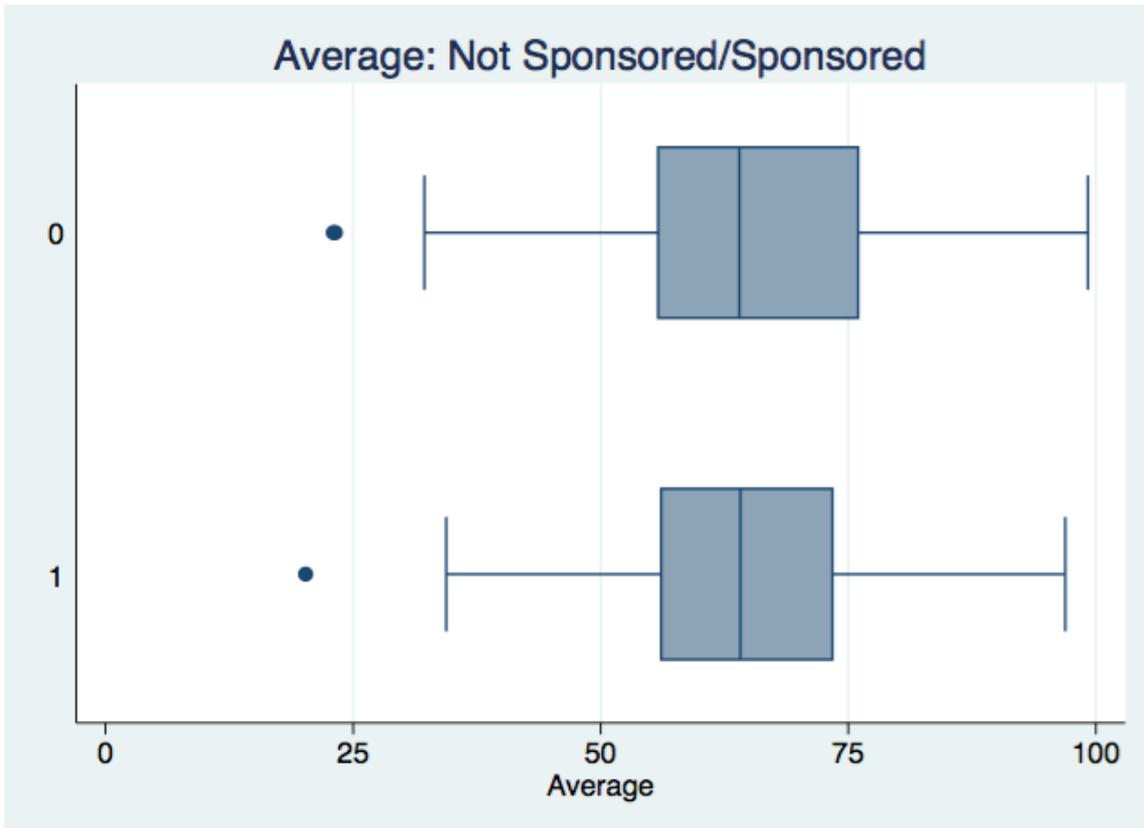


Figure 8

### 6.1.2. Difference-in-difference analysis

For each of the outcome variables, difference-in-difference analysis was carried out, as outlined in the empirical strategy. As mentioned there were four different models of treatment effect, and for each model, fixed effects either at a student, or a school-grade level were applied independently. The table below gives a summary of the results for each outcome variable, where yes means the programme effect was significant to a 95% confidence interval. Of the significant results, all were positive programme coefficients.

	Model 1 <sup>1</sup>		Model 2 <sup>2</sup>		Model 3 <sup>3</sup>		Model 4 <sup>4</sup>	
Fixed Effects	Student	SG <sup>5</sup>						
Enrolment	No	No	No	No	No	No	Yes	Yes
Days Absent	No	No	No	No	No	No	No	No
Promotion	No	Yes	No	No	No	No	Yes	Yes
Grade Ratio 1	Yes	N/A	Yes	N/A	No	N/A	No	N/A
Grade Ratio 2	Yes	N/A	Yes	N/A	Yes	N/A	No	N/A
Average	No	No	No	No	No	No	No	Yes

**Table 4: Summary of Difference in Difference Results: Link vs. Non-sponsored students**

1: All observations post-treatment

2: Months of sponsorship student received in a year

3: Cumulative months of sponsorship for student

4: Cumulative months of sponsorship + (Cumulative months of sponsorship)<sup>2</sup>

5: School-Grade fixed effects

Yes =  $p < 0.05$

As Table 4 shows, all significant results are found, with the exception of the grade ratios, and one result for promotion for Model 1 with school-grade fixed effects, for Model 4, suggesting that for most educational outcomes there is a non-linear relationship between sponsorship duration and educational outcomes. There are different possible explanations of this, but the implication is that the benefits to sponsorship increase with the duration of sponsorship, rather than sponsorship being merely a repeated annual treatment, and that this impact increases exponentially; the longer the duration of sponsorship the greater the benefits of an

additional month of sponsorship. For all of these significant results the turning (minimum) points of the regression line occur when  $S > 0$ , indicating that in the first years, the average effect per student is below the parallel trend, but after this turning point (as the duration of sponsorship increases) the average effect per student tends back towards, and then exceeds 0.

The possible reasons for this relationship between sponsorship and outcome variables include self-selection, where sponsorship is ineffective for a subset of students who dropout with in the first years of sponsorship; time lags, where the sponsorship takes times to have an impact; the 2012/13 increase in individual support for students; and also a possible failure of difference-in-difference analysis to fully capture the impact of sponsorship. How these factors would contribute to this non-linear relationship is explored further in the 'Discussion'.

The evidence for a relationship though, between duration of sponsorship and educational outcomes is very convincing. Therefore, whilst significant results for grade ratios for Models 1 and 2 are found, Model 3 is the preferred model as this corresponds with the relationship between length of sponsorship and educational outcomes. Grade ratios may not follow Model 4 as the way they have been constructed, comparing expected and actual grades and thus incorporating previous historic outcomes in each observation, and having a maximum value of 1, would not lend itself to a non-linear relationship.

In the following regression tables only the coefficients of the treatment variables are shown, as the large number of categorical variables used as control variables means that including the full regression tables is not practical.

### **Access**

The outcomes of interest in relation to access are enrolment, and the number of days absent. As noted above, the significant results for enrolment are for Model 4, and thus Table 5 shows the results for this model. It shows that the non-linear treatment model is robust to both student and school-grade level fixed effects at a 95% confidence level, suggesting a strong result.

<b>Enrolment Rate</b>	<b>Student Fixed Effects</b>	<b>School-Grade Fixed Effects</b>
<b>S<sub>3</sub></b>	-0.00356* (0.017)	-0.00265 (0.107)
<b>(S<sub>3</sub>)<sup>2</sup></b>	0.0000499* (0.029)	0.0000424* (0.044)
<b>Constant</b>	1.216 (1.000)	1.276*** (0.000)
<b>Observations</b>	1219	1219

**Table 5**

*p*-values in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

In the case of the enrolment variable, the self-selection hypothesis would seem the more plausible, as after a student drops out, in subsequent years they were recorded as not enrolled, and the cumulative months of sponsorship would have remained fixed for these students, but for those who remain in the sponsorship scheme they continue to be enrolled in school as the duration of sponsorship increases.

For the student level fixed-effects model for the first 35.67 months of sponsorship the average effect per student is negative and declining, and thereafter the marginal effect per student of an additional month of sponsorship is positive, and it takes 71.34 months for the net average effect of the sponsorship on enrolment to be positive, and from there on the average effect continues to rise. In the school-grade fixed effects the turning point is 31.25 months, taking 62.50 months for the average effect to become positive. Whilst the case for sponsorship impacting enrolment is strong, there was however, no evidence of a statistically significant relationship between the sponsorship at the number of days absent from school.

## **Progress**

The most rudimentary measure of progress through the education system, is whether a student is promoted to the next grade at the end of each year. And as with enrolment, Model 4, indicating a non-linear relationship between promotion rates and sponsorship duration yielded a statistically significant result.

Promotion Rate	Student Fixed Effects	School-Grade Fixed Effects
$S_3$	-0.00428 (0.127)	-0.00524* (0.028)
$(S_3)^2$	0.0000875* (0.049)	0.000103** (0.002)
<b>Constant</b>	0.385 (0.283)	0.514 (0.053)
<b>Observations</b>	933	933

**Table 6**

*p*-values in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 6 shows that for Model 4 the result is again statistically significant when either student or school-grade fixed effects are applied. In the student fixed effects model, the turning point is slightly earlier than in the enrolment model, at 24.46 months, with sponsorship having a net positive effect after 48.91 months, and in the school-grade fixed effects model, the turning point is at 25.44 months, with a net positive effect after 50.88 months. This earlier turning point than in the enrolment example may be due to promotion data not being recorded once the student has dropped out (as evidenced by the lower number of observations). Thus these results add weight to the self-selection interpretation of the data, as grade repetition and dropout are linked (Ministry of Education 2015a), and therefore these students may be causing the negative average effect on educational outcome in the first years of sponsorship.

When looking at ratios of actual grade to expected grade, significant results for both ratios are found not for Model 4, but for both Models 1 and Model 2 with fixed-effects at a student level (Table 7 and Table 8). The positive coefficients in these models demonstrate that after sponsorship, and whilst continuing to receive sponsorship that students are more likely to be in a higher grade than if they were not sponsored. As mentioned earlier, a positive effect on Grade Ratio 1 implies a faster catching up in grade related to age, and a positive effect on Grade Ratio 2 implies faster progression through the education system. For Grade Ratio 2 there is also a

significant result for the preferred Model 3, which indicates a relationship between the duration of sponsorship and a student's overall progression through the education system.

<b>Grade Ratio 1</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>S<sub>1</sub></b>	0.0393* (0.022)		
<b>S<sub>2</sub></b>		0.00371* (0.021)	
<b>S<sub>3</sub></b>			-0.000371 (0.457)
<b>Constant</b>	0.810*** (0.000)	0.810*** (0.000)	0.802*** (0.000)
<b>Observations</b>	1189	1189	1189

**Table 7**

*p*-values in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

<b>Grade Ratio 2</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>S<sub>1</sub></b>	0.0613*** (0.000)		
<b>S<sub>2</sub></b>		0.00645*** (0.000)	
<b>S<sub>3</sub></b>			0.00188*** (0.000)
<b>Constant</b>	1.321*** (0.000)	1.324*** (0.000)	1.292*** (0.000)
<b>Observations</b>	1218	1218	1218

**Table 8**

*p*-values in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

As mentioned in the empirical strategy, these grade ratios are composite indicators of both enrolment and promotion. These results do suggest that sponsored students have currently progressed further through the education than they would have done in the absence of sponsorship. Given the combined evidence from both the grade ratios, and the promotion rates, there is strong evidence that the sponsorship programme has a positive effect on educational progress, however again, the positive impact may be limited to a subset of students.

### Attainment

The only result to yield a significant result on the outcome of average score is for Model 4, when school-grade fixed effects are applied. No significant results are found when student fixed effects are applied, and whilst the result in this model is nowhere near statistical significance, it is worth noting that it produced a negative rather than a positive effect. Given that there is only a significant effect when school-grade fixed effects are applied the evidence for sponsorship having an effect on average score is not particularly robust.

<b>Average</b>	<b>Student Fixed Effects</b>	<b>School-Grade Fixed Effects</b>
<b>S<sub>3</sub></b>	0.0385 (0.575)	-0.105 (0.225)
<b>(S<sub>3</sub>)<sup>2</sup></b>	-0.000865 (0.365)	0.00219* (0.042)
<b>Constant</b>	37.87*** (0.000)	61.86*** (0.000)
<b>Observations</b>	1017	1017

**Table 9**

*p*-values in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

### **6.1.3. Impact of Link Ethiopia Sponsorship**

There is strong evidence that the sponsorship scheme can have a positive impact on educational outcomes for students, particularly in relation to access to education and progress through the educational system. Improvement in educational outcomes is though reliant on the student remaining in the sponsorship programme for a sufficient period of time. Typically, to see an improvement in both enrolment and promotion rates the sponsorship has to last longer than a little under 6 years. The evidence for a positive impact on the attainment of sponsored students is less convincing, however given that promotion is contingent on reaching a minimum level of attainment, there can be considered to be a link between sponsorship and meeting this required level.

The strong results for a positive impact on grade ratios suggest that on average sponsored students progress further through the education system that in the absence of sponsorship. The collective evidence though, notably the non-linear relationships between cumulative months of sponsorship and both enrolment and promotion, seems to suggest that the sponsorship is only effective for a subset of students, and that for the other students, the sponsorship is not effective. The evidence from these results would suggest that this non-linear relationship is due to self-selection within the data, and that some students do not benefit from sponsorship, whilst others do, however competing explanations for this non-linear relationship are explored further in the 'Discussion'.

## **6.2. Do Conditional Cash Transfers, in Addition to the Provision of School Resources, Improve Educational Outcomes?**

This analysis is again divided into descriptive statistics and the difference-in-difference analysis. Using the data set of students who were still in education at their most recent observation, this analysis compares three groups, Link Ethiopia students, Kindu students and non-sponsored students.

### **6.2.1. Descriptive Statistics**

Table 10 shows the key outcome variables for the three groups of students from the dataset. As expected for such students, the enrolment rates are very high across all

groups, with only the occasional student missing a year of education and then returning to school, and thus do not warrant further investigation. The results initially seem similar to the original comparison between Link Ethiopia and non-sponsored students, with both Kindu and Link students missing less days of school, whilst having slightly lower levels of attainment than the non-sponsored students. Likewise, for Grade Ratio 1 both Kindu and Link groups have a higher mean than the non-sponsored students, suggesting that these students have progressed further through the education system in relation to their age. Unlike the original observations though, the promotion rates and means for Grade Ratio 2, are similar across all groups, whereas the original analysis comparing Link and non-sponsored students showed better results for these variables for sponsored students compared to non-sponsored students.

<b>Sponsorship Status</b>	<b>Enrolment Rate</b>	<b>Days Absent</b>	<b>Promotion Rate</b>	<b>Grade Ratio 1</b>	<b>Grade Ratio 2</b>	<b>Average</b>
<b>Not Sponsored</b>	99.60%	10.37	89.80%	0.81	0.97	67.27
<b>Sponsored by Link</b>	98.67%	8.37	91.67%	0.88	0.96	65.45
<b>Sponsored by Kindu</b>	98.26%	5.05	90.27%	0.93	0.98	64.52
<b>Total</b>	<b>98.98%</b>	<b>8.64</b>	<b>90.60%</b>	<b>0.86</b>	<b>0.97</b>	<b>66.04</b>

**Table 10: Comparing non-sponsored students with both Kindu and Link Ethiopia sponsored students**

Again, for the non-binary variables boxplots can reveal greater insight into the distribution of outcomes for each group. In the following boxplots group 1 are the non-sponsored students, group 2 are the Link Ethiopia students and group 3 are the Kindu students. The boxplot for Figure 9 illustrates that for days absent there are similar skews in each group, with the quartiles having higher values for sponsored students than for Link students, which are in turn higher than for Kindu students, perhaps suggesting that the CCT boosts school attendance.

Figure 10 clearly suggests that sponsored students tend to progress faster through the education system in relation to their age than non-sponsored students, and that

Kindu students progress faster than Link students. For the Kindu group  $Q_1$ ,  $Q_2$  and  $Q_3$  are all equal to 1, and for Link students  $Q_2$  and  $Q_3$  are equal to 1, and for the non-sponsored group only  $Q_3$  is equal to 1. As Figure 11 shows though, for Grade Ratio 2 there is little evidence of this trend, and that the majority of students progress at the expected rate across all groups and therefore for all groups  $Q_1$ ,  $Q_2$  and  $Q_3$  are all equal to 1.

In relation to attainment, Figure 12 shows the distribution of average results, where non-sponsored students slightly out-perform Link Ethiopia students, who slightly outperform Kindu students. It is worth noting that the Kindu students have a much smaller range and interquartile range, however any explanation for this is unclear. Whilst these small differences do exist, they are only small and no conclusions should be drawn at this stage.

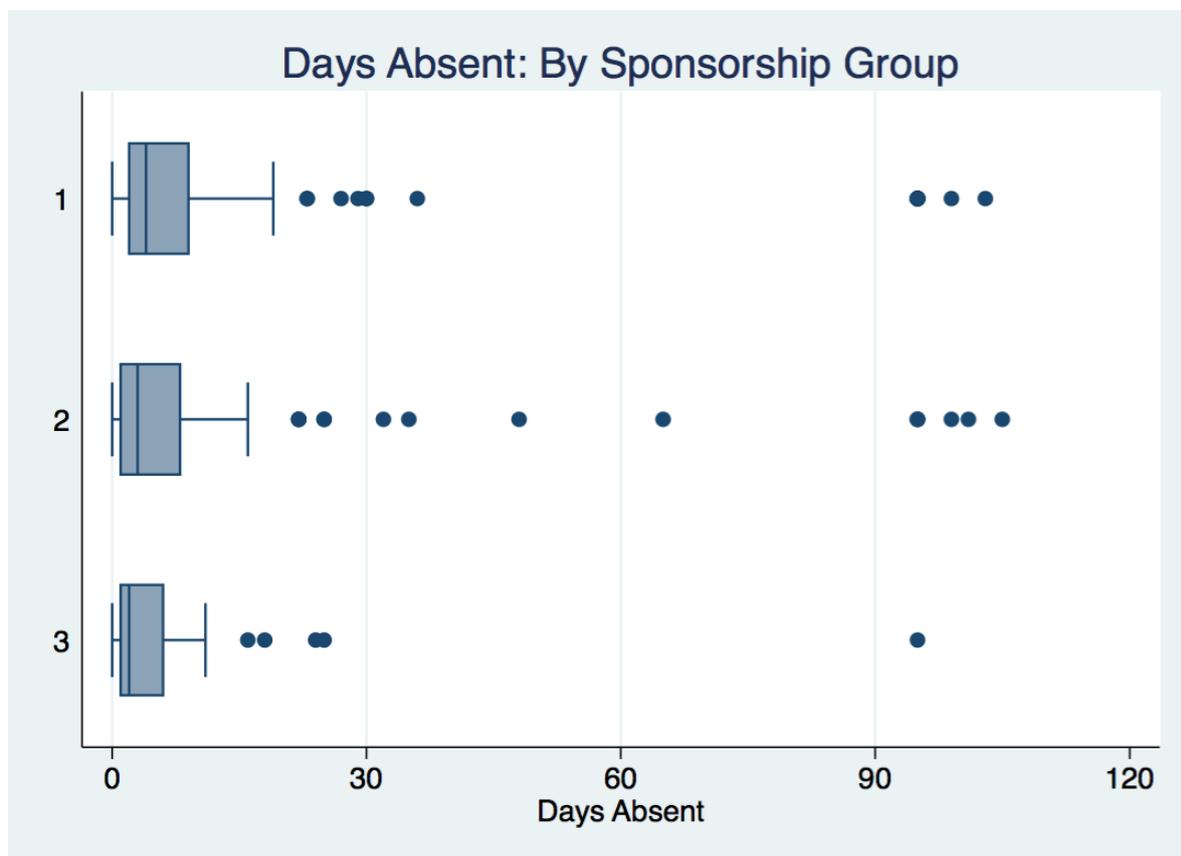


Figure 9

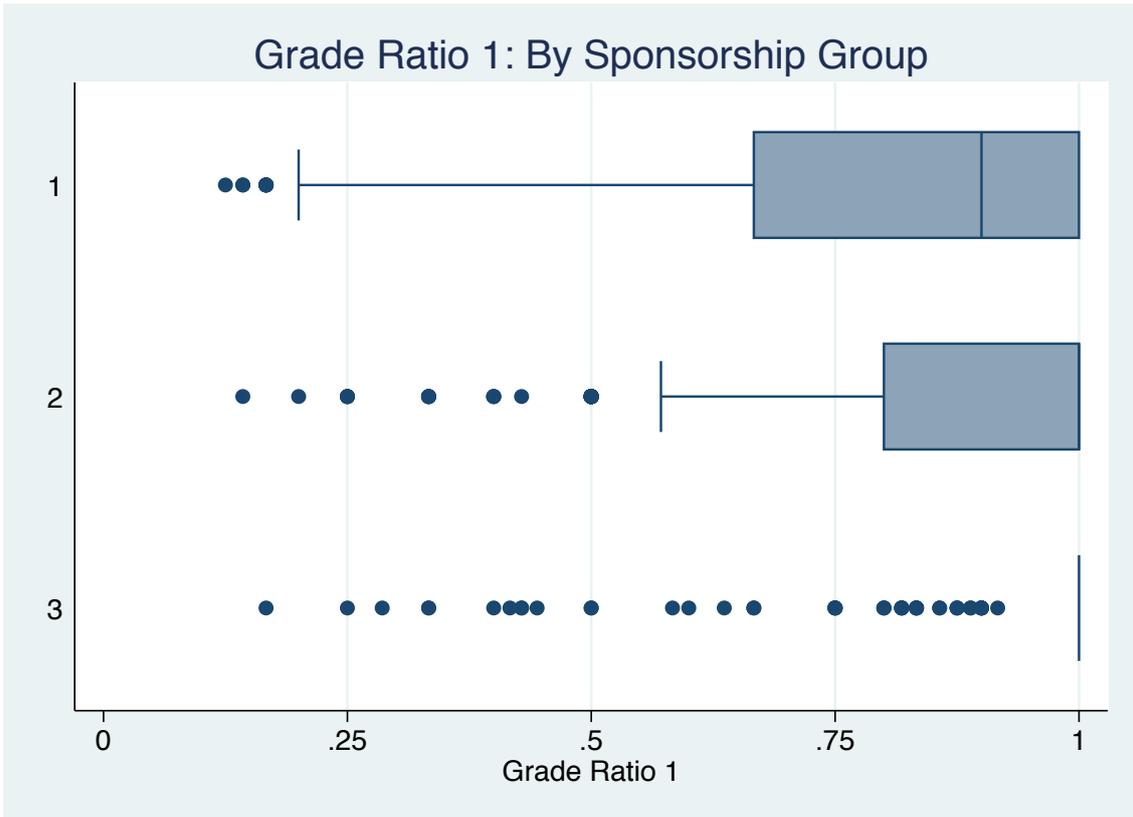


Figure 10

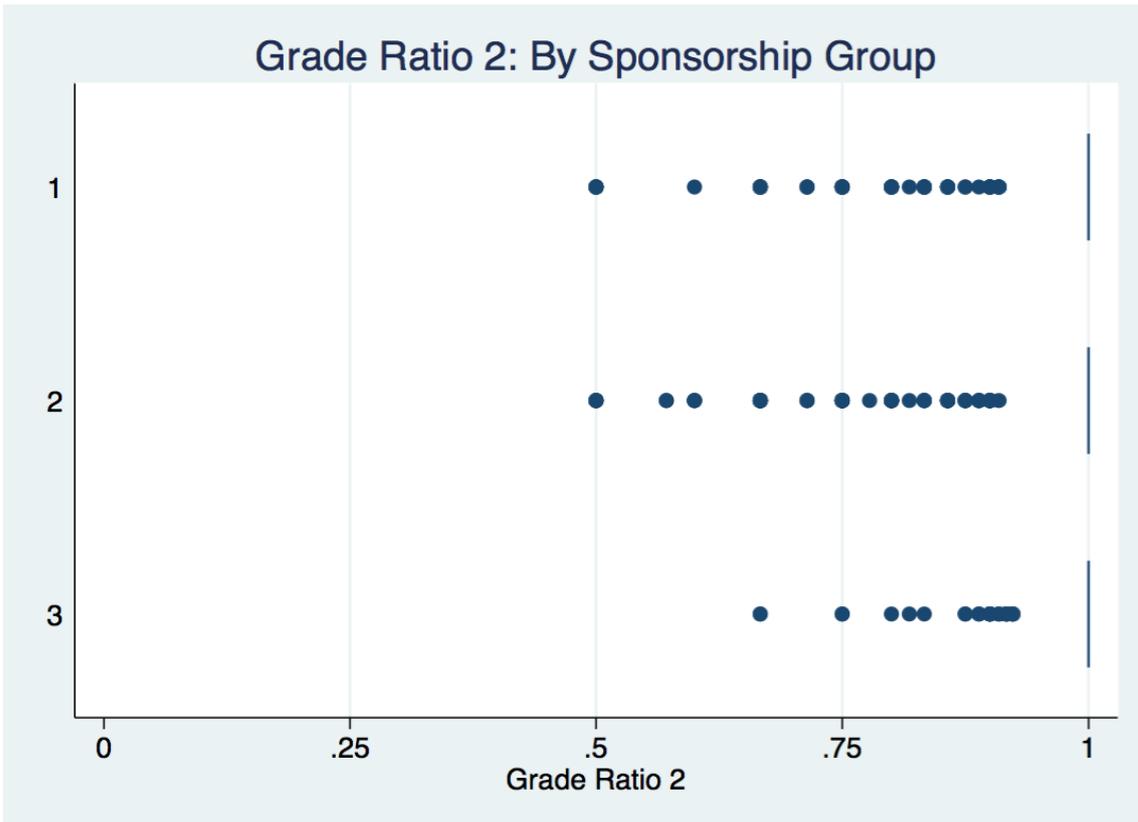


Figure 11

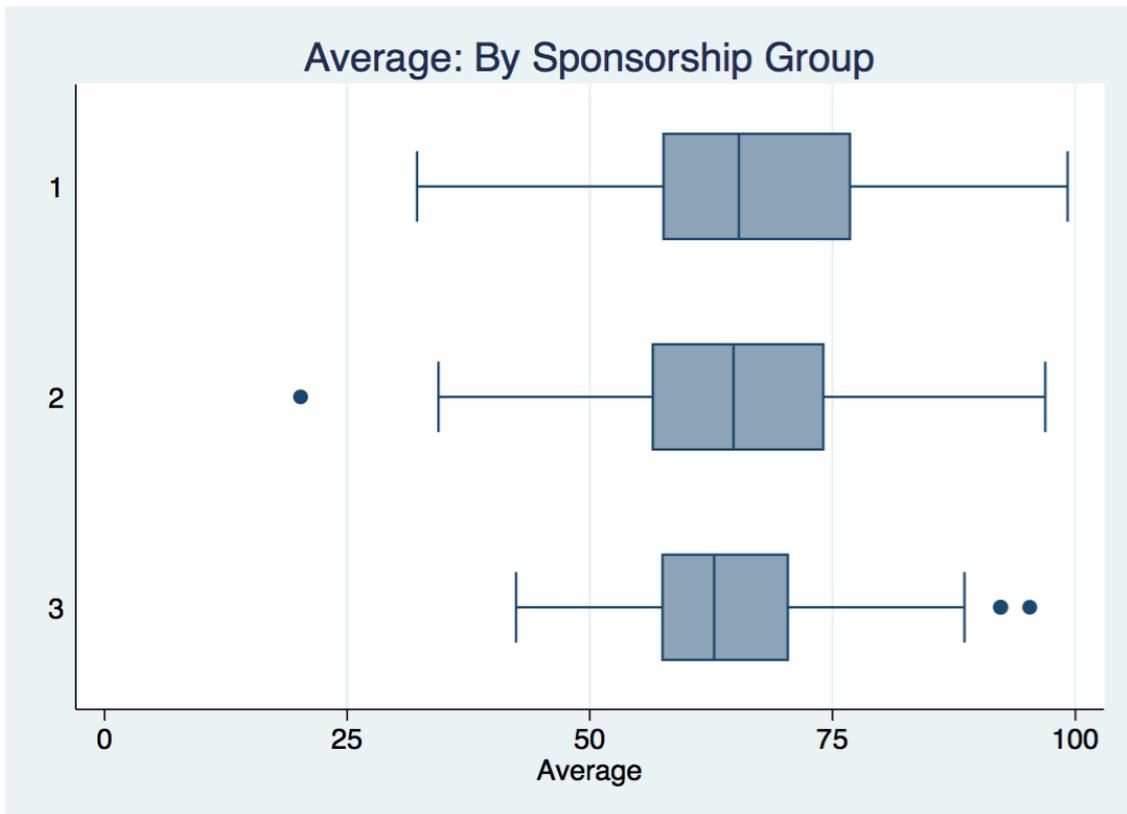


Figure 12

### 6.2.2. Difference-in-difference analysis

The difference-in-difference analysis involves three steps. First, Link Ethiopia students are compared with the sponsored students to see if there are any differences in the results when compared to the original difference-in-difference analysis. Any results should not be considered to either contradict or reinforce the results from the initial analysis, however some of the results do suggest that self-selection may not be the sole cause of the non-linear relationship, and this should not be ignored.

This comparison is primarily intended to help to understand the effect of limiting the dataset to students who are still enrolled. This enables better understanding of the results when comparing the Kindu students to the non-sponsored students when looking for evidence of the effectiveness of the Kindu programme. For example, for a given variable there may have been an effect when comparing the original Link and non-sponsored students, but no effect when comparing the Kindu students with the non-sponsored students in the second dataset. If when comparing the Link and non-

sponsored students in the second dataset there is also no effect, then the Kindu results should be understood in this context. Finally, the results between the Kindu students and Link Ethiopia students are compared to see if the conditional transfers, on top of school resources, have a significant impact.

Again, in the following regression tables only the coefficients of the treatment variables are shown, as the large number of categorical variables used as control variables means that including the full regression tables is not practical.

### Link vs. Not Sponsored

Table 11 shows the results of the difference-in-difference analysis comparing Link Ethiopia students against non-sponsored students from the second data set. As before there is no effect on attendance, and there is a positive effect on promotion when applying Model 4.

	Model 1 <sup>1</sup>		Model 2 <sup>2</sup>		Model 3 <sup>3</sup>		Model 4 <sup>4</sup>	
Fixed Effects	Student	SG <sup>5</sup>						
Days Absent	No	No	No	No	No	No	No	No
Promotion	No	No	No	No	No	No	Yes	Yes
Grade Ratio 1	No	N/A	No	N/A	Yes (-)	N/A	No	N/A
Grade Ratio 2	No	N/A	No	N/A	No	N/A	No	N/A
Average	No	No	No	No	No	No	No	No

**Table 11**

1: All observations post-treatment

2: Months of sponsorship student received in a year

3: Cumulative months of sponsorship for student

4: Cumulative months of sponsorship + (Cumulative months of sponsorship)<sup>2</sup>

5: School-Grade fixed effects

Yes =  $p < 0.05$

Table 12 shows the results from the difference-in-difference analysis on promotion between the two groups. This suggests that this relationship may not be the product of self-selection, but that promotion rates across all students decline before improving as the duration of sponsorship increases. Possible explanations for this are found in the 'Discussion'. The time-period for this trend is also the similar to the

initial result, with the average effect decreasing for 25.9 months, and taking 51.8 months to return to before-sponsorship levels.

Promotion Rate	Student Fixed Effects	School-Grade Fixed Effects
$S_3$	-0.00428 (0.127)	-0.00524 <sup>*</sup> (0.028)
$(S_3)^2$	0.0000875 <sup>*</sup> (0.049)	0.000103 <sup>**</sup> (0.002)
Constant	0.385 (0.283)	0.514 (0.053)
Observations	933	933

**Table 12**

*p*-values in parentheses  
<sup>\*</sup> *p* < 0.05, <sup>\*\*</sup> *p* < 0.01, <sup>\*\*\*</sup> *p* < 0.001

When looking at grade ratios there are also different results to the original analysis. The evidence of positive impact of sponsorship on grade ratios from the moment after sponsorship (Model 1), or in the years when sponsorship is received (Model 2), and the only significant effect is effect on Grade Ratio 1 for Model 3, which in fact has a negative coefficient. Thus failure of the Kindu programme to improve grade ratios does not suggest that the programme is ineffective.

When looking at the effect of sponsorship on average score, the results from Model 4, shown in Table 13 are similar to the results in the original analysis, however the *p*-value for the school-grade fixed effects model is slightly higher, meaning there is not a significant result at the 95% confidence interval any more. This may be due to the smaller sample size, rather than a marked change in the nature of the effect, and so little should be read into this.

Average	Student Fixed Effects	School-Grade Fixed Effects
$S_3$	0.0691 (0.337)	-0.0961 (0.293)
$(S_3)^2$	-0.00124 (0.202)	0.00206 (0.070)
Constant	45.39 (.)	60.86 <sup>***</sup> (0.000)
Observations	909	909

**Table 13**

*p*-values in parentheses

*p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

### Kindu vs. Not Sponsored

The results for the Kindu sponsored students in relation to the non-sponsored students, shown in Table 14, are largely similar to the results comparing Link and non-sponsored students from the same dataset, however there are some variations.

	Model 1 <sup>1</sup>		Model 2 <sup>2</sup>		Model 3 <sup>3</sup>		Model 4 <sup>4</sup>	
Fixed Effects	Student	SG <sup>5</sup>						
Days Absent	No	No	No	No	Yes	No	No	No
Promotion	No	No	No	No	No	No	No	Yes
Grade Ratio 1	No	N/A	No	N/A	Yes (-)	N/A	No	N/A
Grade Ratio 2	No	N/A	No	N/A	No	N/A	Yes	N/A
Average	No	No	No	No	Yes (-)	No	No	No

**Table 14**

1: All observations post-treatment

2: Months of sponsorship student received in a year

3: Cumulative months of sponsorship for student

4: Cumulative months of sponsorship + (Cumulative months of sponsorship)<sup>2</sup>

5: School-Grade fixed effects

Yes = *p* < 0.05

As the descriptive statistics indicated, the Kindu students did have better attendance rates, and the difference-in-difference analysis suggests that this may well be due to impact of sponsorship. Table 15 shows that the positive impact on attendance is significant when using Model 3, suggesting that improved attendance increases with the length of sponsorship.

<b>Days Absent</b>	<b>Student Fixed Effects</b>	<b>School-Grade Fixed Effects</b>
<b>S<sub>3</sub></b>	0.223* (0.049)	0.0454 (0.257)
<b>Constant</b>	75.67 (.)	-7.867 (0.528)
<b>Observations</b>	297	297

**Table 15**  
*p*-values in parentheses  
*p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

For attainment, whilst there were no significant results for the average result when comparing Link and non-sponsored students, for Kindu students there was a significant result for the Model 3, with a negative coefficient, the results for which can be seen in Table 16. When looking at both days absent and average, it should be noted in both of these cases the result was only significant in the student fixed-effects model, and not in the school-grade fixed effects, so wariness of the certainty of this result is warranted.

When looking at promotion rates there is some evidence of an effect when using Model 4. The significant result using for Model 4 does hold for school-grade fixed effects, however it does not hold for student fixed-effects, as shown in Table 17, meaning that it is less certain whether the Kindu model is as effective in increasing promotion rates as the Link Ethiopia model.

Average	Student Fixed Effects	School-Grade Fixed Effects
$S_3$	-0.102* (0.024)	-0.00559 (0.760)
Constant	19.14 (.)	51.78*** (0.000)
Observations	703	703

**Table 16**  
p-values in parentheses  
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Promotion Rate	Student Fixed Effects	School-Grade Fixed Effects
$S_3$	-0.00189 (0.682)	-0.00393* (0.011)
$(S_3)^2$	0.00000799 (0.702)	0.0000250* (0.033)
Constant	-0.748 (.)	0.771*** (0.000)
Observations	715	715

**Table 17**  
p-values in parentheses  
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

When looking at grade ratios there was only a significant result for Model 3 for Grade Ratio 1, and Model 4 for Grade Ratio 2. As with the analysis of Link students in the second dataset, for Grade Ratio 1 this produced a negative coefficient, and thus it can be dismissed as non-pertinent. For Grade Ratio 2 there is a significant positive effect for Model 4. These are seemingly contradictory results, so the effect of Kindu sponsorship on grade ratios is unclear.

	Grade Ratio 1		Grade Ratio 2	
	Model 3	Model 4	Model 3	Model 4
$S_3$	-0.00133** (0.002)	-0.000598 (0.431)	0.000182 (0.614)	0.00165* (0.047)
$(S_3)^2$		-0.00000379 (0.294)		-0.00000770* (0.035)
<b>Constant</b>	0.770*** (0.000)	0.766*** (0.000)	1.130 (.)	1.160 (1.000)
<b>Observations</b>	701	701	723	723

**Table 18**

*p*-values in parentheses

*p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

By comparing the Kindu students with the non-sponsored students there is evidence that the Kindu sponsorship programme has a positive impact on attendance and promotion rates, although the evidence for a positive impact on promotion rates is less convincing for Kindu than for Link. The results also suggest some evidence that Kindu students perform below the parallel trend in terms of attainment and the evidence for any impact on grade ratios is unclear. Thus the evidence for the Kindu programme having a positive effect of educational outcomes is limited. This may be due to limited dataset involving only students who were enrolled at the last observation. The scheme is primarily aimed at improving access to education, and thus not being able to measure the impact on enrolment and the subsequent effect on grade ratios may hide the effect of the programme.

### **Kindu vs. Link Ethiopia**

When running a difference-in-difference analysis of Kindu students against Link Ethiopia students, with Link Ethiopia students as a control group, across all outcomes, difference-in-difference analysis yielded no statistically significant results with positive coefficients, suggesting that there was little evidence that CCTs, in addition to the provision of school resources improve educational outcomes.

Following this, the difference-in-difference analysis was reversed, treating Kindu students as the control group and Link students as the treatment group, the results of which can be seen in Table 19. Whilst with exception of CCTs they are largely similar programmes, in the provision of school resources, there could be differences in efficiency in the administration of the programme that lead to different outcomes for the two groups. The Link Ethiopia scheme also includes greater school resources in terms of school bags and shoes, and this could also result in better outcomes for Link Ethiopia students compared to Kindu students.

	<b>Model 1<sup>1</sup></b>		<b>Model 2<sup>2</sup></b>		<b>Model 3<sup>3</sup></b>		<b>Model 4<sup>4</sup></b>	
<b>Fixed Effects</b>	<b>Student</b>	<b>SG<sup>5</sup></b>	<b>Student</b>	<b>SG<sup>5</sup></b>	<b>Student</b>	<b>SG<sup>5</sup></b>	<b>Student</b>	<b>SG<sup>5</sup></b>
<b>Days Absent</b>	No	No	No	No	No	No	No	No
<b>Promotion</b>	No	No	No	No	No	No	No	Yes
<b>Grade Ratio 1</b>	Yes	N/A	Yes	N/A	No	N/A	No	N/A
<b>Grade Ratio 2</b>	No	N/A	No	N/A	No	N/A	No	N/A
<b>Average</b>	No	No	Yes	No	No	No	No	Yes

**Table 19**

1: All observations post-treatment

2: Months of sponsorship student received in a year

3: Cumulative months of sponsorship for student

4: Cumulative months of sponsorship + (Cumulative months of sponsorship)<sup>2</sup>

5: School-Grade fixed effects

Yes =  $p < 0.05$

The table suggests that there is no evidence that the Link Ethiopia scheme is any more effective than the Kindu scheme in terms of improving attendance or Grade Ratio 2. As Table 20 shows though, when looking at Grade Ratio 1, these values improve more for the Link students than for the Kindu students, under models 1 and 2, suggesting the Link programme is better at supporting older students 'catch-up' in their education.

The results may also be in part due to positive effect of sponsorship on promotion in Model 4. Given that this result only holds for school-grade fixed effects, and not-

student fixed effects, see Table 21, and that a theoretical explanation for such a non-linear relationship is unclear, firm conclusions cannot be drawn from this.

<b>Grade Ratio 1</b>	<b>Model 1</b>	<b>Model 2</b>
<b>S<sub>1</sub></b>	0.0323* (0.033)	
<b>S<sub>2</sub></b>		0.000952** (0.009)
<b>Constant</b>	0.884 (.)	0.917 (.)
<b>Observations</b>	646	646

**Table 20**  
*p*-values in parentheses  
 \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

<b>Average</b>	<b>Model 2</b>		<b>Model 4</b>	
	<b>Student Fixed Effects</b>	<b>School-Grade Fixed Effects</b>	<b>Student Fixed Effects</b>	<b>School-Grade Fixed Effects</b>
<b>S<sub>2</sub></b>	0.106** (0.003)	0.0124 (0.473)		
<b>S<sub>3</sub></b>			0.101 (0.214)	-0.225* (0.022)
<b>(S<sub>3</sub>)<sup>2</sup></b>			-0.00173 (0.097)	0.00359** (0.004)
<b>Constant</b>	33.04*** (0.000)	54.42*** (0.000)	30.70*** (0.000)	53.63*** (0.000)
<b>Observations</b>	650	650	650	650

**Table 21**  
*p*-values in parentheses  
 \* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

Finally, when comparing attainment between the two groups there is some evidence of the Link Ethiopia scheme being more effective than the Kindu programme. There are statistically significant results, both for Model 2 and Model 4, the former holding for student fixed effects, but not school-grade effects, and the opposite being true for Model 4. Again, there is little theoretical backing for there being a non-linear relationship, and with the months of sponsorship model only holding for student-fixed effects, the evidence for an impact on attainment is ultimately limited.

### **6.2.3. Comparing the two sponsorship programmes**

Overall, there is some suggestion that the Link Ethiopia programme, may be more effective than the Kindu programme in improving educational outcomes, in relation to progress and attainment. Ultimately though, the evidence-base is not strong enough to draw solid conclusions from. There was no evidence for the Kindu programme being more effective than the Link Ethiopia programme, which is surprising given that it has the additional CCT. It may be that CCTs may be an effective way to boost access to education, but not necessarily progress and attainment, however due to the limited data employed, such a theory has not been able to be tested.

## **7. Discussion**

With the quantitative results established, and the impact of sponsorship on a student-level estimated, it remains to place the impact of the programme back into the context of other educational programmes in the Global South. This section also explores the mechanisms through which sponsorship may be an effective programme, largely drawing on the semi-structured interviews with the different stakeholders of the programme. Then the wider applicability of these findings are discussed. Finally, some thoughts on the usefulness of student level data in measuring educational impact are offered.

### **7.1. Relative Effectiveness of the Link Ethiopia Programme**

As discussed earlier the effectiveness of an educational programme, should not be seen in isolation, but in comparison to other programmes. This can be effected by comparing the improvement (or otherwise) in the outcome variables of the Link Ethiopia programme with other studies and programmes. Such an approach, whilst comparing outputs, often says little about effectiveness in relation to inputs, and thus it is also crucial to compare the impact of the programme in terms of cost-effectiveness. The majority of evidence suggested that there were increased benefits to longer periods of sponsorship. These models (Model 3 and Model 4) are useful as they allow the prediction of the expected outcomes for students, where the model holds, based on the cumulative months of sponsorship that student has received. The average length of Link Ethiopia sponsorship at the end of the 2014/15 academic year was 46.2 months.

For the variables of enrolment and promotion the relationship with cumulative months of sponsorship is non-linear, and on average sponsored students perform below the parallel trend during the first years of sponsorship. Then at a turning point the average effect begins to increase back towards and then above a net average effect of 0. This may be due to self-selection within the data where for a certain subset of students, in spite of sponsorship, they perform significantly below the parallel trend, dragging the average effect down. These students then dropout, and the average effect of sponsorship begins to increase, reflecting the positive impact of

sponsorship on a different subset of students. It should be noted however, that when only looking at students who are currently enrolled, the relationship between sponsorship and promotion remained non-linear, suggesting that this relationship is not be entirely contributable to self-selection.

Two other possible explanations for this non-linear relationship are time-lags to the benefits of sponsorship, or changes in the programme design. Time-lags may be due to the vulnerable situations of the sponsored students and their families, such that it takes time for sponsorship to reliably make attending school financially viable.

Alternatively, the increase in expenditure on individual support from the start of the 2012/13 may explain this non-linear relationship, especially as the programme has not been established long enough for the start date of sponsorship and the length of sponsorship to not be correlated. Educational outcomes may have performed below the parallel trend when only 20% of charitable expenditure was allocated for individual support, but since this has increased to 55% sponsored students may have performed above the parallel trend. It is entirely possible that a combination of self-selection, time-lags, and increased individual support are all at play simultaneously.

Finally, it may also be possible that the impact on the sponsored students is not fully captured by the difference-in-difference analysis. When looking at the descriptive statistics of the two groups, the non-sponsored students have considerably lower enrolment and promotion rates than the sponsored students. This may imply that, for those sponsored students who do remain in education, the data prior to intervention is suggesting that those students would have remained in and progressed through the education system even without sponsorship. Prior enrolment and promotion, however, may not necessarily be indicative of future enrolment and promotion. For example, a student may be able to comfortably attend education, but then experience a shock such as a family death and a subsequent fall in income. The student may then become eligible for sponsorship, but, in such a case the full impact of the sponsorship on enrolment would not be represented in the estimated programme effect.

Based on the average length of Link Ethiopia sponsorship of 46.2 months the average impact for each student by the end of 2014/15 can be calculated. For enrolment, if the student-fixed effects are used, then the enrolment rate for the average student has decreased by 5.8 percentage points, and if the school-grade fixed effects model is used then this decreases by 3.2 percentage points.

Irrespective of the underlying cause of the non-linear relationship, the model predicts cumulative exponential benefits to sponsorship. So if the average length of sponsorship increases, the programme can have a net beneficial impact on enrolment. Given that the scheme is still relatively young, with many students only having been sponsored for a short length of time so far, providing Link Ethiopia can keep students in the scheme and in school, then that average length of sponsorship will increase.

Analysing the PROGRESA programme estimates that receiving the CCTs for 5.5 years increases the years of schooling by (0.8-1.0 years) (Behrman et al. 2011). If Link Ethiopia sponsorship was received for 5.5 years (66 months) then under the student fixed effects model the enrolment rate would have reduced by 1.76 percentage points, but using school-grade fixed effects the enrolment rate increases by 0.98 percentage points (.05 years of schooling). The Wydick et al. (2013) analysis of Compassion has students being sponsored for an average of 111.6 months. Estimating the effects of this length of sponsorship on enrolment rates increases enrolment rates by 22.4 percentage points (2.08 years of schooling) using student fixed effects, or 23.2 percentage points (2.16 years of schooling) for school-grade fixed-effects. Of course, enrolment rates have a ceiling of 100%, and thus the effects might not be quite so large, however it does serve to highlight the point that, if the scheme continues, there is potential for large increases in enrolment due to the scheme.

The same analysis can be carried out when examining the effect of sponsorship on the promotion rates, which also follow the cumulative non-linear model. Again using the average length of sponsorship of 46.2 months, the estimated effect of the programme is a reduction in the promotion rate by 1.10 percentage points for student

fixed effects, and 2.22 percentage points for school-grade fixed effects. When estimating the impact for 66 months of sponsorship, promotion rates are increased by 9.87 percentage points, or 10.28 percentage points for student and school-grade fixed effects respectively.

The relationship between the sponsorship and grade ratios was found to be more simple, and calculations can be based on the result from the linear relationship between Grade Ratio 2, which is a composite measure of enrolment and promotion, and cumulative months of sponsorship. Using this and the average length of sponsorship, the average student can be seen to have a grade ratio of .087 points (out of 1), higher due to sponsorship. If years of schooling are considered to represent the years progressed through the system, rather than mere attendance, then after 42.6 months, sponsored students have 0.31 additional years of schooling.

Based on the sponsorship budget, 42.6 months of sponsorship provides £292.88 of individual educational support for a student. Using this estimate and the additional years of schooling based on Grade Ratio 2 the scheme can currently be seen to cost £944.75, approximately \$1239 at current exchange rates for an additional year of schooling. As the Link Ethiopia model only changed from a 20/80 individual support/school fund split to 55/45 split for the start of the 2012/13 academic year, the actual expenditure is much lower than this. According to the Link Ethiopia financial accounts, including overheads contributable to individual student support, a total of £16,299 has been spent supporting individual students. This computes to a mean expenditure per student of £168.03. With the average length of sponsorship still being 42.6 months, the cost per additional year of schooling is £542.05 (\$710.79). If the overhead costs of the programme are removed, then this estimate falls further to (£391.53).

In terms of cost-effectiveness this puts the programme in a similar region as the PROGRESA programme (\$614 per additional year of schooling), but much less cost-effective than other Sub-Saharan educational programmes such as uniform distribution (\$91) or deworming (\$3.50). These studies based their calculations on the attendance at school, rather than progression through the education system, and

considering this as a direct comparison is therefore, not completely accurate. The lack of reliable attendance data from Ethiopian schools limits the ability to compare this study to others that measured the impact on attendance. It is also possible that since the uniform study, inflation may have increased costs in the last 10 years, and improvements to education systems may have also increased the marginal costs of an additional year of schooling. The significantly higher costs of the sponsorship model, compared to mere uniform purchase, highlights how much the uniform is an important aspect of increasing access to education. Finally, with greater improvements in educational outcomes predicted, merely by an increase in the average length of sponsorship, the cost-effectiveness of the programme seems set to increase with time.

## **7.2. Mechanisms of Sponsorship**

The semi-structured interviews shed light on three main ways in which sponsorship can impact on educational outcomes. They demonstrate how school resources and CCTs both reduce the private costs to, and therefore incentivise, education; how the provision of those resources is more important than just as mere incentives; and finally they highlight the role that emotional support and the raising of aspirations can play in improving educational outcomes.

Students consistently reported that the provision of uniform and exercise books positively impacted their ability to attend school, and expressed the view that the cost of these resources is a barrier to education. When one student was asked what would happen if they didn't receive exercise books and their uniform they responded, *'If I don't have exercise books and uniform, then sometimes the food money will go for exercise books so maybe some days we will not have food'*. Alternatively, another student stated that their guardian, their aunt, was delighted about her receiving sponsorship saying, *'it is enough for your school so I can help you with the rest of your things'*. Both students are expressing here how the private costs to education are a real factor in family decision-making of whether a child attends school, and how sponsorship reduces this cost and incentivises education. One Kindu student also cited the CCT as a major reason for continuing to attend school, stating *'I love to go to school, because I want to help my parents, because they get support from*

*the organisation*', and another student stated that *'the money'* was the most important aspect of Kindu support to their mother.

One student expressly stated that the lack of uniform was the main reason that they didn't attend school until the age of 14, due to it being a mandatory requirement of the school, and the families' poverty being the reason that she didn't have a uniform. Likewise, the school link coordinator suggested that exercise book provision was important because *'they cannot buy exercise books they cannot learn, it is important'*, i.e. without the ability to write in class and take notes and do exercises then a student's ability to learn was particularly limited. Thus, as well as reducing the private costs of education, the provision of exercise books promotes learning and contributes to the student's ability to progress through the education system.

The final mechanism that sponsorship may be effective through is the raising of aspirations, and the positive experience of being supported through education (Glewwe et al. 2013). Sponsored students expressed very high levels of educational aspiration, with expressions such as *'I have to study before the examination, so it's my passion to go to university so I will succeed'*, and *'If I get a good score then I will go to university and then I will get a job'*, which also expressed a need for determination and hard work to study well to attend university. Of course, these may be the answers that would be expected from students, irrespective of whether they were sponsored or not, but such responses correspond with Glewwe et al.'s (2013) quantitative analysis, that found higher aspiration levels of sponsored students compared to non-sponsored students. Given that Link students are means-tested and from low socio-economic backgrounds, these responses were very encouraging. As well as expressing such aspirations, students also expressed how being sponsored contributed to this. When asked about how it felt to receive sponsorship one student stated *'I was so happy'*, and another emphasised the importance of emotional support in education, *'I must be happy. If you have a person who helps you, you try harder and harder.'*

This anecdotal evidence provides qualitative evidence to back up the various claims about how education is perceived on a cost-benefit basis, how poverty is a barrier to

education, and how changing the costs of education affects the decision to attend school. The interviews also explain how exercise books and uniforms are particularly important inputs into the educational system, as well as showing how sponsorship can support students emotionally and raise educational aspirations, and how these mechanisms operate to improve educational outcomes. The consultancy report provides further insights from the qualitative interviews.

### **7.3. Generalisability of Findings**

As already mentioned, the existing literature on the impact of educational programmes in the Global South, let alone child sponsorship programmes is extremely limited. The use of individual level data to estimate the impact of supporting individuals in their education is even more so. Thus the finding of improvements in individual educational outcomes with increased sponsorship duration is difficult to corroborate with other literature. Given that the mechanisms of sponsorship identified in the semi-structured interviews correspond with other studies of educational programmes in the Global South; uniform (Kremer et al. 2003), CCTs (Schultz 2004; Behrman et al. 2005; Behrman et al. 2011) and raised aspirations (Glewwe et al. 2013), this result of improved outcomes with time could be generally applicable across sponsorship schemes that provide similar support. Given the wide variety of sponsorship schemes however, including public goods models, this should not be considered applicable to all models of sponsorship.

The non-linear relationship between the length of sponsorship and educational outcomes is less likely to be widely applicable. Given the wide range of possible factors driving this relationship, including reasons that are specific to the Link Ethiopia programme such as the change in sponsorship model, there is little evidence to suggest that such a relationship is inherent to child sponsorship models. This example does though, serve to illustrate how the selection of students for a sponsorship programme can greatly affect the impact of the programme. If the programme is either insufficient for some students, or not required by others then the programme is not effective. Alternatively, the programme may be effective, but if students become eligible for sponsorship due to a shock, then the effect of the sponsorship programme will not be captured by difference-in-difference analysis.

Finally, consideration should be given to how geographically generalisable these findings are. Firstly this study focussed on urban schools and students, and in Ethiopia rural students have lesser access to education (Ministry of Education 2015a). Likewise, within Ethiopia there are large regional differences in educational outcomes, and Amhara region, the site of this study, consistently performs above the national average (Ministry of Education 2015b). Thus care should be taken in considering whether such findings are representative of either Ethiopia or Sub-Saharan Africa. However, given that the provision of uniform has been found to be effective in Kenya (Evans et al. 2009) and the raising of aspirations through sponsorship was found in Kenya and Indonesia (Glewwe et al. 2013), the positive impact on educational outcomes of sponsorship and the mechanisms underlying sponsorship identified will be applicable well beyond the Amhara region.

#### **7.4. Usefulness of Student-Level Data**

The availability of student-level data, often stretching back many years, can be seen as useful source of data for evaluating educational programmes in Ethiopia. Studies such as Wydick et al. (2013) often rely on estimation strategies, based on group-level data on educational outcomes, and the probability of an individual's exposure to a programme, to measure programme effects. By using actual student-level data there is greater confidence in the accuracy of the outcomes of students for programmes that are focussed on the individual, and this approach also allowed for the inclusion of student-fixed effects, compared to household fixed-effects in the analysis of the Compassion programme.

Given that the data is available historically there is potential usefulness for other individual-level programmes and studies using difference-in-difference in analysis. As Glewwe et al. (2004) argued though, prospective RCTs can produce more accurate results, and this data would be very suitable for such an approach, whether looking at individual or school-level programmes. Carrying out prospective analysis would also allow for more certainty in the eventual of outcomes of students, as to whether they have dropped out or changed school for example, which would provide more reliable data, and more accurate results. The only other concern with the data as it is currently managed is that attendance data does not seem to be collected

consistently across schools. Finally, noting that often the outcomes for students were unknown, and that often students were enrolled with little evidence of attending school, it suggests that collecting data at an aggregate level, whether that is at a district, regional or national level is an extremely challenging process.

## **8. Consultancy Report**

This section is primarily targeted towards Link Ethiopia, to provide useful insight into the effectiveness of the sponsorship programme, and the implications of this for the programme and organisation as a whole. This section presents a summary of the findings that are of interest to Link Ethiopia followed by recommendations for improvements to the programme, based on the findings from both the quantitative and qualitative data. The report finishes with suggestions on how the monitoring and evaluation of the programme can be improved, with suggestions for future research on the programme, and any implications for the monitoring and evaluation policy of the organisation.

### **8.1. Summary of Main findings from the Quantitative Analysis**

The majority of evidence suggests that the benefits from the Link Ethiopia sponsorship programme increase as the duration of sponsorship increases, and that in its current form, the sponsorship programme is only beneficial to a subset of students. At the end of the 2014/15 academic year, the average length of sponsorship was 42.6 months and therefore the net average effect per student was close to 0 for both enrolment and promotion rates. In the same time period however, the scheme was responsible for improvements in Grade Ratio 2, a composite indicator of enrolment and promotion. This indicated an average increase of 0.31 additional years of schooling for sponsored students over this period, and should be considered a success by the organisation.

Based on the actual expenditure of the organisation, the estimated cost of an additional year of schooling is £542 (including overheads) or £391 (not including overheads). This suggests that the programme is less effective than others that take place in similar geographic and socio-economic contexts, such as those that focus on uniform provision (Kremer et al. 2003), or deworming programmes (Miguel & Kremer 2004). The Link Ethiopia sponsorship programme is more similar in cost-effectiveness to the PROGRESA programme of CCTs in Mexico, a middle-income country.

There are many possible reasons for this higher than expected cost of an additional year of schooling. For one, the method of measurement has been different for this study, due to unreliable data on attendance. Secondly since those studies, the marginal costs of additional years of schooling may have increased. Thirdly and perhaps most importantly, by increasing the average length of sponsorship Link Ethiopia can expect to see rapid improvements in average effects per student across educational outcomes for its sponsored students.

This assessment is based on the indication that the relationship between sponsorship duration and both enrolment and promotion rates is non-linear. This means that the average effects per student for these indicators decline in the first years of sponsorship before improving. Whilst the average length of sponsorship is currently just short of the required length to return the average effects on these indicators back to 0, a small increase in the average length of sponsorship will achieve this, and thereafter average effects will continue to increase. An increase in the average length of sponsorship, whilst not inevitable if students continue to dropout, is certainly plausible, the average length of Compassion sponsorship was 9.3 years (Wydick et al. 2013), longer than the Link Sponsorship scheme has even been in existence.

The reasons for this non-linear effect warrants serious consideration by the organisation. One possible cause is that within the students who are selected for sponsorship there are some students for whom the sponsorship programme is not sufficient to maintain their education, and therefore those students' outcomes continue to decline and they then dropout within the first few years of sponsorship. Thereafter, when those students have dropped out, the average effect per remaining student for both enrolment and promotion is positive, and thus for these students the sponsorship programme can be seen to having a positive effect.

Given that the descriptive statistics show higher promotion and enrolment rates for sponsored students compared to non-sponsored students, but the difference-in-difference analysis found limited programme effects on enrolment and promotion, this would suggest that, prior to intervention, that some of the students selected for

sponsorship may have had good outcomes for enrolment and promotion. The organisation may wish to reflect on whether the students selected would have continued with these good educational outcomes in the absence of sponsorship.

It may be that when the selection process was carried out by schools, there was a subconscious bias towards students who were performing well in school, within that subset of eligible students. Link Ethiopia should consider whether this may be the case, and if it is, whether those students were still at risk of dropout in spite of strong educational outcomes prior to sponsorship. One such example where this may be the case is if a student should suddenly become eligible for sponsorship due to a shock such a parental death. Their educational outcomes may have been good prior to sponsorship, and therefore the impact of sponsorship will have not been captured in the difference-in-difference analysis.

Alternatively, given that at this early stage the months of sponsorship is linked to the amount of time the programme has been in existence, Link Ethiopia should also consider whether this non-linear relationship reflects the effectiveness in the programme over time; does the organisation feel that the programme may well have been ineffective at the start, and has now improved and become more effective? In particular, the change in model from 20% to 45% of charitable spending being introduced in 2012/13 could be a significant factor.

Link Ethiopia should also consider whether sponsorship simply takes time to be effective, as this would also explain the non-linear effect. It may be that there are significant time lags between the provision of resources and impact on educational outcomes. For such a lag, however, to be more than a year or two, as the results suggest it would have to be to entirely explain the non-linear relationship, seems unlikely.

Importantly, whatever the cause of the non-linear relationship, the quantitative analysis predicts that the biggest improvements in educational outcomes across all indicators occur when a student is sponsored for a long period of time. It may take 6 years for the average student to see improvements in all educational outcomes, with outcomes declining in the first years before improving. This means that Link Ethiopia

must view individual sponsorship should as a long term commitment to students, rather than as an intervention that has immediate effects.

The other key takeaway from the research is that there is little evidence that CCTs through the Kindu model are a more effective mechanism for improving educational outcomes. It should be borne in mind that there is some evidence that the CCT improves attendance in relation to non-sponsored students, more than under the Link Ethiopia model, but the data available meant that carrying out analysis on the effect of the CCT in preventing dropout was not possible. There is also anecdotal evidence from the interviews that CCTs are an effective incentive to education.

There is no evidence though that the CCT improves progress or attainment beyond what the Link programme offers. On the contrary, the evidence, whilst inconclusive, suggests that the Link Ethiopia programme is more effective in improving progress and attainment than the Kindu programme. Given the lower cost of the Link scheme, the programme can also be considered to be more efficient in improving educational outcomes. Of major consideration however, is that this analysis does not account for the benefits of the Kindu model to the family, particularly in relation to the CCT and medical support.

Finally, for Link Ethiopia, it is relevant to consider the effectiveness of the individual support provided to students, in relation to the effectiveness of its other programmes. So far to date the sponsorship programme in Gondar has cost £11,733 in individual students support and £34,925 has been raised for the school improvement fund (not including overheads in either figure). In total, based on the Grade Ratio 2 calculations, this individual support has provided an additional 30 years of schooling between the 97 students supported. It is recommended that the organisation carries out further analysis to compare this return to the impact of its other programmes.

If its other programmes are considered more effective, then the emphasis of sponsorship should be on raising funds for the educational environment improvement fund. Of course, if it is felt that the non-linear relationship between sponsorship duration and educational outcomes is due to the increase in individual support, then this would not be an efficient use of resources, unless the programme

was to move entirely to a school-level public goods model. If Link Ethiopia considers the returns to the sponsorship programme to be more efficient than some of its other programmes, and wants to focus more on individual support, more resources to students may not necessarily lead to improved educational outcomes. It may be more efficient to use the money raised for the educational environment fund to sponsor one additional student. With economies of scale to be gained through reduced overheads of sponsoring more students, two students could probably be sponsored through the £15 provided monthly by sponsors.

## **8.2. Programme Recommendations**

Some of the recommendations to improve the programme stem from the quantitative analysis, which have highlighted some of the weaknesses in the programme. The vast majority of evidence however, for the recommendations, is drawn from both the semi-structured interviews and observations from my time in the Link Ethiopia office.

The main takeaway from the quantitative analysis was that for the average student in the programme most of the educational outcomes tend to get worse before getting better. Accepting that students tend to dropout in the first few years of the sponsorship scheme suggests that if this issue can be addressed by the programme it will bring about dramatic improvements in its effectiveness, particularly given the improved outcomes that are evident after this stage. The two areas that warrant consideration are the selection process, and ways to improve school retention in the first years of sponsorship.

### **8.2.1. Improving the Selection Process**

The quantitative analysis has yielded two main possibilities about the sponsored students. The first is that it is possible that within the group there may be students who are being sponsored for whom the sponsorship is not sufficient to prevent their dropout. Link Ethiopia currently struggles to contact students who have dropped out under the scheme, as evidenced by the difficulty of getting interviews with such students. When students drop out, more needs to be done understand why they are not staying in their education, to build up a bank of evidence about how to improve the scheme.

Secondly, there is the suggestion that, within the sponsored students, there are certain students receiving sponsorship who would have stayed in school anyway. This may be attributable to the selection process initially being in cooperation with schools, rather than the Women's and Children Association (WCA). Link Coordinators and School Directors may have favoured students within the group of eligible students who had stronger educational outcomes prior to intervention. It is also possible that, for some of the students, they may have become eligible for sponsorship due to a 'shock', such as the loss of a parent, which dramatically alters their circumstances. If this was the case, then such students would have required sponsorship, but this is not reflected in the difference-in-difference analysis.

Now that the selection process is carried out with the WCA rather than schools, this may help to reduce selection bias in the system. Given the findings of this research however, Link Ethiopia should not expect that, simply because a student is eligible for sponsorship they are an appropriate candidate for the sponsorship programme. It is recommended that Link Ethiopia arranges a time to meet with the WCA to better understand the selection process, with these concerns in mind, to be more certain that for the students selected, the sponsorship is both required and sufficient. If Link Ethiopia develops strict criteria for its selection process, on the basis that it will boost the effectiveness and efficiency of the programme, they may want to consider if this will conflict with principles of equity, fairness and equality of opportunity. Limiting the sponsorship programme based on the expected impact of sponsorship of certain indicators may remove the opportunity for some children to access sponsorship who could potentially benefit from the support.

### **8.2.2. Understanding the Situations of Sponsored Students**

The interviews with students helped to shed some light on the individual situations of sponsored students, and whether they were in a situation where sponsorship would be able to help them. Two students in particular mentioned that the inability to afford a uniform was a major issue, with their first uniform paid for by either a teacher or a distant relative. Many Link Ethiopia students also mentioned that they often also had part-time jobs outside of school. Older boys often reported working as mechanics in their spare time, and girls reported helping their parents/guardians carrying injera as

part of the family business, suggesting that many sponsored students also had to bring in household income. Whilst this is not uncommon in Ethiopia, it certainly suggests that students selected for sponsorship were not from comfortable or 'middle-class' backgrounds, nor that sponsorship elevated students into such a category.

Other reported professions of parents or siblings of sponsored students included shopkeepers, guards, minibus ticket collectors, waitresses and bajaj drivers. Such jobs, would all be classified as low-skilled and low-waged. For most students however, there was evidence of some sort of income to the family. Given the high levels of unemployment in Gondar, this may suggest that the students were not from the most impoverished families in the town. The organisation may wish to consider if they want to reach such families, which probably corresponds to students who are not in school to begin with, or whether given the concern that sponsorship may not be sufficient for some families for the student to remain in education, that families with low-wage income are the appropriate target group.

There was also a suggestion from those students who were eligible for sponsorship due to being orphaned that this was understood by their peers, *'most of the students depend on their family and get support from their family. So I am orphan, so [Kindu] just like a family. They not insult me because, when I receive from The Kindu Trust, the issue of family. It's equal'*. This suggests that the priority given to orphans is justified, in that to attend education students have to be reliant on their parents. Students who had lost one or two parents however, often reported living with older siblings, with those siblings providing an income for the family. Again whilst these sources of incomes were generally from low wage jobs, income from siblings and not just parents/guardians should be included in any means-assessment. Likewise, given that employment situations can be fluid, such as an older sibling graduating from university, means assessment should be repeated at regular intervals to ensure that the student is still eligible for sponsorship.

Interviews also explored with students what would have happened to them in the absence of sponsorship. As mentioned previously, sponsored students had very high

educational aspirations, and coupled to this was a determination to succeed in education, *'I have to study before the examination, so it's my passion to go to university so I will succeed.'* Students showed a clear determination to stay in education, and when one student was asked what their family would say about their education in the absence of Link Ethiopia support stated *'They would say attend your education.'*

Despite this expression of aspiration and determination many students voiced that in the absence of sponsorship they would ultimately dropout from their education, stating it would be due to an inability to purchase resources, *'No one will facilitate my exercise books'*. It may be considered that this is the expected response from sponsored students, however other, more nuanced opinions were voiced. The Link Coordinator expressed that within the sponsored students there is variation in their situations, and that some would dropout, whilst others wouldn't. Another student voiced that school resources would be forgone to purchase food, even though their mother *'would not be happy about it'*. A further student thought that whilst they would still attend school, they would be repeatedly detained (repeat grades), as the lack of school resources would limit their ability to learn. Finally, another student suggested that if sponsorship did not exist, whilst they may not have dropped out immediately, it would have happened eventually, stating it would have happened about 4 years after the sponsorship started, as this was when their older brother went to prison, and this affected the family's income.

So whilst it is not clear cut that for all students that are part of the scheme, that sponsorship is the difference between attending school and dropout, the interviews suggested real trade-offs between education and other goods, and that sponsorship had had a positive impact on the educational outcomes of those students.

### **8.2.3. Improving Student Support in the First Years of Sponsorship**

If Link Ethiopia is ultimately satisfied with the selection process, then it must consider ways to improve the support provided to students in the first years of sponsorship. The analysis suggests that the first 2-3 years is when the sponsored students are most at risk of dropping out. After this point the risk of dropout and repetition of

grades is reduced. The organisation should think about the most appropriate support that can be provided for students in these years, whether that is additional incentives that are available for the first three years of sponsorship, or increased home visits to offer emotional support and raise educational aspirations. Increased home visits also improve the monitoring in this period, and monitoring efforts should be focussed on this phase of sponsorship. More regular monitoring of the students' needs through this period, and possible use of the contingency fund during this period could be a good use of resources. Finally, given that the benefits of sponsorship seem to increase with time, it would also be prudent to sponsor students in the earlier stages of their education. This allows for the longest possible period of sponsorship and should maximise the benefits from the programme.

#### **8.2.4. Relative Importance of School Resources Provided**

Link Ethiopia may also want to consider the relative importance of the types of individual support that students receive. Link Ethiopia students were asked to rank in order of priority the different resources they receive including the sponsorship clubs. Nearly all of the students interviewed stated that uniforms and exercise books, and school resources in general were the most important items they received. Of the remainder, typically, the school bag was ranked next, followed by shoes, and lastly the sponsorship clubs. Only one student stated that the bag was more important than the uniform. The reasons for the importance of the exercise books and uniforms have already been outlined previously, and in terms of efficiency and cost-effectiveness Link Ethiopia may need to consider whether the provision of the school bag and shoes is necessary, especially when exercise books and uniforms seem so highly valued.

#### **8.2.5. Improving Sponsorship Clubs**

The sponsorship clubs seemed to largely be ranked last due to a lack of awareness from students about the sponsorship clubs. One sponsored student stated that they were not an active participant at the club, and did not know what activities happened at the club. The Link Coordinator also stated the sponsorship club was merged with another club, perhaps suggesting that it wasn't getting the attention that it deserved. They also felt that the sponsorship clubs should be used to improve the spoken

English of students. One student who said that there was not a sponsorship club at their school stated that if there was and it focussed on teaching English that would be very helpful. The student even went so far to suggest that if there was a straight choice between receiving shoes and getting additional tuition then they would choose the tuition. This would suggest that whilst sponsorship clubs are not currently running efficiently, if they were to do so, they would be greatly welcomed by the students. The clubs should focus on additional tuition, and it should be a matter of priority of Link Ethiopia to establish how the clubs are being run in the various schools.

#### **8.2.6. Importance of Emotional Support**

The interviews also highlighted the important role that emotional support can play in a student's education. One student said that peer pressure could be very distracting for teenagers, and therefore the organisation should constantly interact with its students to help build their confidence and persuade them to stay in education, rather than seek work. The Link Coordinator, when mentioning another NGO in the region put a strong emphasis on the importance of home visits. These interviews suggested that it was important that a student feels that someone is directly interested in their education. Whilst home visits are time-consuming, and therefore costly, there is a strong suggestion that this emotional support can improve educational outcomes, and so ways to interact more with the students should be sought. This could be achieved by enhancing the sponsorship clubs, giving the Link Coordinator a greater role in the provision of welfare for sponsored students, but also through Link Ethiopia staff attending sponsorship clubs and interacting with students.

#### **8.2.7. Possible Additions to the Sponsorship Scheme**

If Link Ethiopia was considering adding or substituting something into the programme, food support would be an option. This paper has already mentioned studies that show that provision of food can be a strong incentive for education, and the provision of food was voluntarily raised by multiple stakeholders. Students often referred to lack of food at home being a priority concern, that may affect their education, and as the Link Coordinator put it, *'If they have school materials they can learn, but if they don't have enough to eat they cannot come to school'*, suggesting

that not only would food provision incentivise education, but that it was in fact a precursor to education, and that hungry students would simply not attend school.

The seemingly cost-effectiveness of the deworming programme at \$3.50 might make this an attractive option for Link Ethiopia. Given the potential benefits this possibility should certainly be explored, however Ethiopia has recently launched a national deworming programme (Weldon 2015). Link Ethiopia should seek to establish if its sponsored students are at risk of worms, and if they are whether this need would be met by the government. It may be that there is no role for Link Ethiopia if such a programme sufficiently met the needs of sponsored students, however it may be that Link Ethiopia can help its students access a deworming programme, or consider if it should expend its own resources on incorporating deworming into its sponsorship programme.

#### **8.2.8. Other Recommendations from Interviewees**

Interviewees were also asked to suggest any possible improvements to programme. As mentioned, food support, and a lack of food was raised by students and the link coordinator. The Link coordinator also suggested income support, stating that a simple lack of income was a cause of dropout, with students taking on jobs such as shoe cleaning instead. Of course, having a part-time job, and staying in education are not mutually exclusive, unless that job becomes full-time, or takes up so much time that there is no time for studying outside of school hours. Finally, students also highlighted that in the Kindu programme, inflation mean that the CCTs were reducing in value, and also suggested that whilst the support was sufficient for those in school, it was not sufficient for those attending university. Perhaps the most interesting recommendation came from one student who suggested, that if a student finishes education prior to attending university, then the option for a loan to start a small business should be considered as the final support offered by the organisation. This could either be in place of, or come after attending vocational college.

#### **8.2.9. Other Issues Explored in Interviews**

The interviews also raised other unrelated issues, that may be of interest to the organisation. Students were asked to consider whether they discussed sponsorship

with their friends, if people knew they were sponsored, and how they felt about it. Some students had no issue with being known as sponsored students, often citing how the organisation simply supported their education in a way their family could not. There was little evidence of any student feeling that friends of theirs begrudged their sponsorship, simply describing it as *'lucky'*. This acceptance of sponsorship by peers was also attributed to friends not making them feeling *'anything'* about being sponsored.

One student specifically voiced that they would not want someone who was not their friend knowing that they were sponsored as, *'If someone says from outside I will feel sad, but the organisation does good things for me, so I will not feel sad, but for a moment I will feel embarrassed. If someone knows that I get help, or if his parents are rich then they will know this. People will think that you are poor'*. This illustrates that there is a stigma associated with poverty and therefore sponsored students could be stigmatised. This suggests that the organisation should always be mindful of ways in which sponsorship can remain as anonymous as possible. For example, sponsorship clubs could not be named as such at school, and resources could be distributed at homes rather than in school. Many students did however report not discussing sponsorship with their friends, and thus it doesn't seem that it is an issue that students feel a need to disclose or are questioned about.

#### **8.2.10. Merging the Link Ethiopia and Kindu Sponsorship Programmes**

Given that there are essentially two different sponsorship schemes being run by two different organisations, but these two organisations are due to merge there seem to be many ways in which the schemes can be combined to become more efficient. The evidence would suggest that the Link model is more efficient, in that it is producing better educational outcomes with a lower expenditure. This comes with the caveat that analysis on how much the CCTs improve access to education was not possible. More research should be done on exactly how effective the CCTs are in increasing enrolment, however the research did clearly suggest that the CCT does not have an additional positive effect on academic progress or attainment, when provided on top of school resources. Given that there is a concern with the Link Ethiopia selection process, in that for some students the provision of school

resources is not sufficient to prevent dropout, a unified selection process between the Kindu and Link programmes could have great benefits.

Assuming that CCTs do have positive outcomes on enrolment, the Kindu programme could be targeted at students from the poorest families, where the CCT can make the difference between attending school and dropout. It may also be that the Kindu programme can focus on students who are currently not part of the education system, whereas the Link Ethiopia programme can focus on students currently in school, who are identified as at risk of dropout. Given that the Link Ethiopia programme has so far selected from students in school, and some of these students have dropped out, it may be that in fact students currently in school are the most appropriate for both programmes, but within this group, students from the poorest families are more appropriate for the Kindu programme, and other students are more appropriate for the Link programme. For this to be efficient, both programmes would have to carry out the same method of means-testing, and to have an agreed set of criteria which determines the most appropriate scheme for the student. This coordination between the two schemes would also mean that, should through regular mean-testing, it be indicated that the financial situation of a student on the programme had improved, they could be moved from the Kindu programme onto the Link Ethiopia programme.

By merging the two programmes there are also efficiency gains to be made. Some gains are straightforward to implement. For example, aligning the resourcing cycle of both organisations should lead to reduced costs when purchasing school resources and uniforms due to purchasing larger quantities of both simultaneously. There should also be gains in the human resources expended in the distribution of resources process. Currently the two organisations are separately spending time visiting homes and schools to distribute resources, which is a time consuming process. The data showed that students from both programmes attend many similar schools, and therefore live in similar areas, meaning that this process can become more efficient. Going forward, focussing on the same schools and areas for both programmes can also improve efficiency, creating more time for home visits, and should reduce the costs when purchasing uniforms for each school.

Given the emphasis in the interviews placed on the importance of providing emotional support, one of the main strengths of the Kindu programme is the emphasis it places on home visits. The Kindu programme also employs trained social workers, and this expertise could enhance the Link sponsorship programme through increased home visits. By Kindu social workers combining more extensive home visits with resource distribution this can also reduce the resource distribution tasks of the Link Ethiopia sponsorship coordinator. The Link Ethiopia sponsorship coordinator could then focus more on programme management, monitoring and evaluation, and coordinating the two schemes with the Kindu sponsorship manager.

The strength of the Link Ethiopia programme is that it has much stronger relationships with the schools its students attend than The Kindu Trust does. This relationship with schools can be used more efficiently than it currently is. It may be more efficient for Link Coordinators to take on greater responsibilities in the sponsorship programme. As well as helping with resource distribution, they can also assist with gathering information and photos for sponsorship updates and sponsor feedback. Given that sponsorship clubs seem to currently be ineffective, Link Coordinators could also take on this responsibility, providing extra tuition and being appropriately compensated through the sponsorship clubs. The clubs could be open to Kindu students as well, and the Link Coordinators could also use the sponsorship clubs simultaneously to provide that additional emotional support and motivation. The clubs would form an integral part of the monitoring of the programme, highlighting problems faced by students and flagging any students struggling in their education and referring the case to Link Ethiopia. There are also gains to be made in a unified approach to monitoring and evaluation process between the two organisations, which is outlined in the following section.

### **8.3. Improving Monitoring and Evaluation of the Programme**

It is hoped that this study has laid the foundations for improving the quantitative evaluation process, through exploring the possibilities of data availability, and highlighting the possible form that analysis of the programme can take. The major outcomes identified: enrolment, promotion, days absent, average result (from internal exams), and the calculation of both grade ratios used in this study, can form

the basis for the organisation's approach to monitoring and evaluating the programme. As mentioned, the only unreliable metric of these is days absent, due to the inconsistent way in which this is calculated across schools. By recording such data on an annual basis, in future, the data will be more reliable than when collected retrospectively. Likewise, when done annually this collection and entering of data can be incorporated into the end of year sponsorship update as all the data required should be available as part of the students 'report card' from the school.

The collection of such data can significantly add to the monitoring process of the scheme. It makes it straightforward to identify when a student is struggling, repeating grades, performing badly in end of year of exams, or often absent from school. This will enable such cases to be investigated, and solutions to be found, improving the retention of students in education. In terms of effective evaluation, continued data collection on random students is required to maintain the control group. This would require cooperation with the schools involved, however this initial data set could provide an initial list of students to continue to track on an annual basis, and could be built on by each year simply adding five randomly selected students from Grade 1 at each school to maintain the control data set. By collecting this data annually, outcomes that in the historic data that were unknown, such as dropout or a change of school would be known, improving the reliability of the data and the accuracy of the analysis. Not only would this allow the repetition of this analysis on an annual basis with the updated data, but this data may also be useful beyond the sponsorship, as discussed in the next section.

As has already been suggested, the unification of the selection process between the Kindu and Link programmes, means-testing and collection of baseline data can improve the effectiveness of the organisation. Attached to this process should be the collection of the previous academic history of the sponsored student. This information will help the organisation better understand the student being sponsored, the type of support they require, and be important to any future analysis of the programme.

### **8.3.1. Further Research**

This section concludes with some suggestions about further research that could be carried out to improve the monitoring and evaluation of the programme. Firstly, as this study was only based on Gondar students, the same methodology could be applied to students supported through the Debre Zeit office. Different results may be found due to the regional variations that mean that Oromiya performs significantly worse than Amhara across all educational indicators (Ministry of Education 2015b).

More research could be undertaken to understand the selection process. To investigate this quantitatively, information on the socio-economic data of students, from both Kindu and Link could be linked to the educational data, to identify which students benefit the most from sponsorship. Even with the existing data set, further analysis could be run to see if the impact of sponsorship is gendered, or benefits students more who first receive sponsorship in a given grade or at a certain age.

Using the existing data, the educational outcomes of sponsored students prior to sponsorship could be compared with the non-sponsored students. This would help Link Ethiopia understand if the selection process currently favours students with either better or worse educational outcomes. Similarly, this analysis could also categorise the sponsored students based on their educational outcomes prior to sponsorship, to see if there are certain educational indicators that suggest that a student would benefit more from sponsorship than others. This analysis could highlight whether well-performing or poorly-performing students benefit more from the programme. By including academic history as part of the selection process, Link Ethiopia may be able to increase the impact of the programme.

Finally, tracking of all students who are ever part of the scheme, into the future is important, particularly recording the level of education that the students finally complete. This would allow Link Ethiopia to compare the impact of its programme against the same outcomes explored in the Compassion International impact evaluation (Wydick et al. 2013) at some point in the future when enough students have 'graduated' from the scheme to make the analysis viable. Tracking students for a length of time can also allow for improved qualitative analysis of the programme,

as students who have been through that journey can provide great insight into the challenges they faced, and reflect on the ways in which sponsorship did, and did not help them.

#### **8.4. Improving Link Ethiopia Monitoring and Evaluation**

The educational outcomes identified in this paper, given that they reflect both the relevant measures that allow impact to be compared across educational projects, and the nature of the available data in Ethiopian schools, could be considered as key performance indicators to be applied across Link Ethiopia projects. If Link Ethiopia does collect data on random students across the schools of sponsored students, this data can be used to build up a picture of how the different schools perform across these indicators. Alternatively, for each class the rosters have a summary sheet, and this information could also be used, rather than basing estimates on randomly selected students.

The benefit of collecting this data is twofold. Firstly, it may help Link Ethiopia to build up a picture of the different schools, and help identify schools with a greater need that perform less well, or alternatively identify well performing schools where new programmes will have a greater impact. Secondly, when Link Ethiopia do carry out a programme or project at a school level such an approach will allow them to measure the impact of the programme. Measuring the change in these indicators in the project school, as opposed to a control school where the project did not take place, using a difference-in-difference approach, can help the organisation to understand the impact of their projects on the schools.

As this paper has repeatedly stated prospective analysis is largely more accurate than retrospective analysis in measuring impact. When looking at historic projects, there may be too many unknown variables impacting outcomes at a school-level to carry out meaningful analysis on these. When introducing new projects though, whether it's a water station or teacher-training, identifying the key outcome variables in advance, and suitable control schools, and control variables to account for other school-level changes over the project period, and using difference-in-difference

analysis can be part of a robust monitoring and evaluation policy, applied across Link Ethiopia projects.

Whether evaluations are prospective or retrospective, the real strength of using the educational outcomes used in this study, is that such an approach will involve using data that is generally available across all schools, and a consistent approach to evaluation will allow Link Ethiopia to compare the impact of different projects, and thus learn which projects are more effective than others. As has been a consistent theme throughout this approach, impact analysis gains added meaning when considered in terms of cost-effectiveness, and thus these outcomes should always be considered in relation to the expenditure on the projects. Given the use of project budgets, cost-effectiveness metrics should be straightforward to calculate.

### **8.5. Conclusions for Link Ethiopia**

The average increase per student of 0.31 years of schooling, should be considered a success by Link Ethiopia. At £391 per additional year of schooling the scheme is less cost-effective than some comparable schemes. While the data suggests that up to the average sponsorship duration of 46.2 months, promotion and enrolment rates of sponsored students have not improved overall, the data predicts that Link can expect to see significant improvements in these indicators from now on. The non-linear relationship between duration of sponsorship and promotion and enrolment warrants serious consideration by the organisation, particularly to identify the cause of the declining trends in the first years of sponsorship. There was no quantitative evidence for CCTs in addition to school resources improving educational outcomes, however this may have been due to data limitations, and therefore this should be a top priority for future research, especially as the qualitative data supported the effectiveness of CCTs.

The organisation needs focus on how it can improve its student selection, and how it can support students in the first years of sponsorship, especially by expanding the emotional support provided to students. The most effective aspects of the programme are the provision of exercise books and uniforms, and Link Ethiopia needs to improve the functioning of its sponsorship clubs, but has real scope to

achieve this and other gains from merging the Kindu and Link Ethiopia sponsorship programmes. Finally, Link Ethiopia can use this report to build a robust monitoring and evaluation system for both the sponsorship programme and across the organisation's other programmes.

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## **Appendix A: Interview Guide – Sponsored Students**

### **About school**

- What do you think about your school?
- How do you get on with your teachers?
- What is your relationship like with other students?
- What do you do with your time when you are not in school?
- What subjects do you like?
- Why do you like those subjects?
- What do you find hard about school?
- Who decides in your family if you attend school?
  - Is it you, or your parents?

### **Life Story and Present Situation**

- Tell me about what it was like when you were very young?
  - How many brothers and sisters do you have?
  - Are they older or younger than you?
  - Which house did you grow up in?
  - What jobs did your parents do? Do they still do those jobs?
- When did you start going to school?
  - How old were you?
  - Did your brothers and sisters attend school?
  - Tell me about (year/grade before sponsorship) - do you remember what happened that year?
  - And tell me about the year after...
- How did you become to be sponsored?
  - Were you aware you were on a waiting list for sponsorship?
  - Who told you were being sponsored and what that meant?
  - Did you know about Link Ethiopia and sponsorship before you were sponsored?
  - Did you know of students at the school who were sponsored?
  - Did you talk about being sponsored with your family?

### **About the sponsorship scheme**

- Which bits of the support do you find most helpful to your education?
- What changes to the programme would you recommend?
- Do you talk about sponsorship with your family?
- Do you talk about being sponsored with your friends?
- Do you know the other children in the school who are sponsored? Are they friends of yours?
- Why are you happy to be part of the Link Ethiopia programme?
- What do you think would be different if you hadn't been sponsored by Link Ethiopia? Do you think you would still be in school?

## **Appendix B: Interview Guide – Link Coordinator**

- Tell me about the Link sponsorship scheme
  - How does it work?
  - What support do students receive?
  - Tell me about the resources Link provides the children with?
  - How are the children selected? What do you think of the selection process?
- Tell me about the Sponsorship Club?
- What do you think makes the difference for children to stay in school? Do you think the Link resources help them to stay in school?
- In school, do the sponsored children become friends with each other?
- Do you think the children are happy to be part of the Link Ethiopia programme?
- Do the other children know which students are sponsored? What do they think of this?
- What do you think would happen to the children if they didn't receive sponsorship?
- What more could Link do to support the children?
- Do you know of other sponsorship schemes in your school? How do they compare?
- Is there anything you can do to support the student?
- Do you know of any students on the scheme who have dropped out? What do you think the reasons for dropping out are?

## **Appendix C: Interview Ethics**

### **Orally shared at the beginning of each interview**

I am student from the UK, doing my master's thesis studying the impact of sponsorship in Ethiopia. I just wanted check that:

- You are happy to take part in this interview
- That anything you say will be reported anonymously
- Whatever you say in the interview will not be shared with Link Ethiopia or The Kindu Trust, and will in no way effect the support you receive from Kindu/Link Ethiopia
- That you are happy for the interview to be audio recorded.

Safeguarding – Link Ethiopia or Kindu staff member to be present

## Appendix D: Example Regression with Student Fixed Effects

Enrolment	Model 1	Model 2	Model 3	Model 4
<b>T</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>Gender</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>Age=5</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>Age=6</b>	-0.000176 (0.997)	-0.00659 (0.890)	-0.0144 (0.756)	-0.00694 (0.885)
<b>Age=7</b>	-0.0637 (0.237)	-0.0702 (0.186)	-0.0853 (0.085)	-0.0653 (0.209)
<b>Age=8</b>	-0.163* (0.024)	-0.169* (0.020)	-0.184** (0.009)	-0.162* (0.026)
<b>Age=9</b>	-0.306*** (0.000)	-0.313*** (0.000)	-0.328*** (0.000)	-0.305*** (0.000)
<b>Age=10</b>	-0.426*** (0.000)	-0.434*** (0.000)	-0.450*** (0.000)	-0.427*** (0.000)
<b>Age=11</b>	-0.510*** (0.000)	-0.520*** (0.000)	-0.537*** (0.000)	-0.512*** (0.000)
<b>Age=12</b>	-0.620*** (0.000)	-0.630*** (0.000)	-0.648*** (0.000)	-0.621*** (0.000)
<b>Age=13</b>	-0.726*** (0.000)	-0.736*** (0.000)	-0.753*** (0.000)	-0.726*** (0.000)
<b>Age=14</b>	-0.881*** (0.000)	-0.891*** (0.000)	-0.909*** (0.000)	-0.883*** (0.000)
<b>Age=15</b>	-0.986*** (0.000)	-0.997*** (0.000)	-1.014*** (0.000)	-0.991*** (0.000)
<b>Age=16</b>	-1.129*** (0.000)	-1.141*** (0.000)	-1.157*** (0.000)	-1.139*** (0.000)
<b>Age=17</b>	-1.351*** (0.000)	-1.362*** (0.000)	-1.379*** (0.000)	-1.363*** (0.000)
<b>Age=18</b>	-1.764*** (0.000)	-1.776*** (0.000)	-1.794*** (0.000)	-1.770*** (0.000)
<b>Age=19</b>	-2.066*** (0.000)	-2.078*** (0.000)	-2.098*** (0.000)	-2.069*** (0.000)
<b>Age=20</b>	-2.261*** (0.000)	-2.273*** (0.000)	-2.294*** (0.000)	-2.260*** (0.000)
<b>Age=21</b>	-2.939*** (0.000)	-2.951*** (0.000)	-2.973*** (0.000)	-2.935*** (0.000)
<b>Age=22</b>	-3.125*** (0.000)	-3.136*** (0.000)	-3.160*** (0.000)	-3.118*** (0.000)
<b>Year=2006</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>Year=2007</b>	0.142 (0.078)	0.143 (0.077)	0.145 (0.071)	0.141 (0.088)

<b>Year=2008</b>	0.144* (0.023)	0.142* (0.026)	0.138* (0.028)	0.144* (0.026)
<b>Year=2009</b>	0.0722 (0.199)	0.0700 (0.216)	0.0655 (0.240)	0.0718 (0.211)
<b>Year=2010</b>	0.0728 (0.128)	0.0724 (0.133)	0.0679 (0.150)	0.0755 (0.122)
<b>Year=2011</b>	0.0725 (0.068)	0.0705 (0.078)	0.0653 (0.093)	0.0734 (0.069)
<b>Year=2012</b>	0.0614 (0.062)	0.0618 (0.064)	0.0577 (0.077)	0.0646 (0.055)
<b>Year=2013</b>	0.0408 (0.144)	0.0418 (0.137)	0.0392 (0.159)	0.0453 (0.112)
<b>Year=2014</b>	-0.00554 (0.799)	-0.00442 (0.841)	-0.00627 (0.773)	-0.00120 (0.957)
<b>Year=2015</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>Grade=1</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>Grade=2</b>	0.0828** (0.005)	0.0820** (0.006)	0.0816** (0.007)	0.0809** (0.007)
<b>Grade=3</b>	0.239*** (0.000)	0.238*** (0.000)	0.235*** (0.000)	0.238*** (0.000)
<b>Grade=4</b>	0.368*** (0.000)	0.366*** (0.000)	0.361*** (0.000)	0.369*** (0.000)
<b>Grade=5</b>	0.484*** (0.000)	0.483*** (0.000)	0.476*** (0.000)	0.486*** (0.000)
<b>Grade=6</b>	0.639*** (0.000)	0.639*** (0.000)	0.631*** (0.000)	0.646*** (0.000)
<b>Grade=7</b>	0.741*** (0.000)	0.743*** (0.000)	0.736*** (0.000)	0.746*** (0.000)
<b>Grade=8</b>	0.906*** (0.000)	0.906*** (0.000)	0.898*** (0.000)	0.910*** (0.000)
<b>Grade=9</b>	0.107 (0.396)	0.102 (0.421)	0.0662 (0.593)	0.104 (0.409)
<b>Grade=10</b>	0.313* (0.023)	0.309* (0.027)	0.273* (0.045)	0.303* (0.028)
<b>Grade=11</b>	0.589*** (0.001)	0.586*** (0.001)	0.550** (0.001)	0.575*** (0.001)
<b>Grade=12</b>	0.999*** (0.000)	0.996*** (0.000)	0.959*** (0.000)	0.989*** (0.000)
<b>School=1</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=2</b>	-0.872*** (0.000)	-0.877*** (0.000)	-0.895*** (0.000)	-0.843*** (0.000)
<b>School=3</b>	0.947*** (0.000)	0.952*** (0.000)	0.988*** (0.000)	0.905*** (0.000)
<b>School=4</b>	0.197 (0.407)	0.194 (0.412)	0.198 (0.409)	0.190 (0.397)

<b>School=5</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=6</b>	-0.822*** (0.000)	-0.829*** (0.000)	-0.868*** (0.000)	-0.783*** (0.000)
<b>School=7</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=8</b>	-0.0302 (0.258)	-0.0295 (0.275)	-0.0383 (0.177)	0.00307 (0.928)
<b>School=9</b>	0.198 (.)	0.191 (.)	0.197 (1.000)	0.221 (1.000)
<b>School=10</b>	0.957*** (0.000)	0.963*** (0.000)	1.003*** (0.000)	0.912*** (0.000)
<b>School=11</b>	0.748*** (0.000)	0.756*** (0.000)	0.798*** (0.000)	0.687*** (0.000)
<b>School=12</b>	0.899*** (0.000)	0.908*** (0.000)	0.937*** (0.000)	0.936*** (0.000)
<b>School=13</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=14</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=15</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=16</b>	-1.100*** (0.000)	-1.103*** (0.000)	-1.104*** (0.000)	-1.129*** (0.000)
<b>School=17</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=18</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>School=19</b>	0 (.)	0 (.)	0 (.)	0 (.)
<b>S<sub>1</sub></b>	-0.0395 (0.085)			
<b>S<sub>2</sub></b>		-0.00302 (0.199)		
<b>S<sub>3</sub></b>			-0.000472 (0.509)	-0.00356* (0.017)
<b>(S<sub>3</sub>)<sup>2</sup></b>				0.0000499* (0.029)
<b>Constant</b>	1.218 (.)	1.227 (.)	1.250 (1.000)	1.216 (1.000)
<b>Observations</b>	1219	1219	1219	1219

*p*-values in parentheses  
*p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001