Evaluating the Effect of School Kits on Child Labour: Experimental Evidence from Ghana's Cocoa Communities *

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February 9, 2024

Abstract

We assess the impact of distributing school kits as an educational intervention to reduce child labour in low-income, rural settings. To do so, we conducted a clustered Randomized Control Trial (RCT) across 64 primary schools, involving 1,743 children and their caregivers in cocoa-growing communities in Ghana. The school kits provided to children included a school uniform, a pair of shoes, a school bag, 10 exercise books, five notebooks, 10 pens, and a mathematical set. We find that school kits reduced household education-related expenses and increased costs of hired adult labour for cocoa farming. This shift resulted in a reduction of children's involvement in cocoa work by about six percentage points across both six-month and seven-day periods, but did not reduce the overall likelihood of children working on the farm (or other work). Consequently, although school kits significantly reduced participation in hazardous activities, commonly associated with cocoa farming, by about seven percentage points, it did not alter child labour, as children are still exposed to hazardous situations on the farm. Finally, the school kits were particularly effective in reducing child labour among children from poorer households and those with fewer initial school supplies.

Keywords: Agriculture, Child labour, Cocoa, Ghana, RCT, School inputs
JEL Classification:

*Declarations of interest: none. The study was funded by the Chair of Development Economics at ETH Zurich, the SWISSCHAIN research incubator of the Institute of Science, Technology and Policy (ISTP) at ETH Zurich and the International Cocoa Initiative (ICI). We wish to express our profound appreciation to Anna Brüderle, Megan Passey, Laurent Foubert and Prince Gyamfi for their unwavering support and inputs throughout the project as well as Faustina Bechaiyiri and Isaac Vifa for their exceptional field support. We extend our sincere gratitude to Dorcas Sowah and Benedict Opoku-Mensah.

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1 Introduction

Globally, work among children is common, with one in ten being classified in child labour (ILO & UNICEF, 2021). Child labour includes any form of work that is inappropriate for a child's age and/or work that, due to its nature or the conditions in which it is performed, poses a risk to children's health, safety, or moral. A large share of children in child labour are excluded from school or do not attend it regularly; thus, their current and future well-being is threatened. In Ghana, an estimated 65% of children aged 5–17 in cocoa-growing areas in agricultural households are engaged in child labour—more than 900,000 children (Sadhu et al., 2020).

In impoverished communities worldwide, a prevalent intervention involves distributing essential educational materials to children, most commonly in the form of "school kits." These kits typically include uniforms, bags, shoes, books, and writing supplies. Within the cocoa industry, this strategy is widely employed as a dual-purpose policy tool aimed at alleviating household financial constraints and enhancing educational participation, thereby indirectly mitigating child labour (ICI, 2021; Sadhu et al., 2020).

While a rich literature has covered the impacts of various education programmes on child schooling and learning (see Conn, 2017; Evans & Mendez Acosta, 2021; Glewwe & Muralidharan, 2016; Snilstveit et al., 2016, for a comprehensive overview of education interventions), only a limited subset has specifically examined their effects on child work and child labour (Dammert et al., 2018). Importantly, empirical research on the impact of school materials has been notably limited. Studies have typically focused only on the effects of providing a *single* type of school item on educational outcomes, with *none* examining the impact on child labour. These cover the effect of either textbooks (Falisse et al., 2019; Glewwe et al., 2009; Sabarwal et al., 2014) or school uniforms (Duflo et al., 2015; Evans & Ngatia, 2021). Two recent reports have applied mixed-method approaches to assess the influence of different interventions in the cocoa sector on child labour in Ivory Coast and Ghana (ICI, 2021; Sadhu et al., 2020). Both reports specifically evaluated the provision of school materials as a potential solution. While Sadhu et al. (2020) reported no significant impact, ICI (2021) found a significant reduction in child labour. Despite these mix findings, limitations related to type and content of school materials, methodology, sample size and purposive sampling, among others, restrict the ability to draw definitive conclusions.

To date, no study has explored the efficacy of comprehensive school kits in alleviating school-related financial constraints and increasing household's perceived value of education as a means to reduce child labour. In cocoa-growing communities, the underlying theory is that by providing school kits, households will have more resources to increase expenses on hired adult farm labour, thus reducing the need for children to work on hazardous tasks, most commonly found in cocoa farming. This should lead to increased school engagement, reduced involvement in hazardous farm work and, by extension, child labour. This gap is particularly relevant in such low-income settings, where children often lack multiple essential school materials.

To fill this research gap, this study implemented a clustered Randomized Control Trial (RCT) designed to evaluate the effect of school kit on child labour in Ghana's cocoa communities. Specifically, 64 primary schools in the Ashanti and Eastern regions—with an average of 28 students per school in primary 4 and 5 (P4–P5)—were randomly and equally allocated to either

a treatment or control group. Children in the treatment group received a comprehensive school kit, containing one school uniform, one set of shoes, one school bag, 10 exercise books, five notebooks, 10 pens and one mathematical set at a value of 600 GHS/kit (approximately 50 USD/kit), following baseline data collection, while those in the control group did not. We conducted interviews with 1,743 children, approximately 12 years old, along with their caregivers at baseline. The data was collected during the cocoa harvest seasons in November-December 2022 (baseline) and 2023 (endline), when children are most at risk of being involved in hazardous activities or exposed to hazardous situations. The measurement of child labour is based on children's self-reports, in line with the methodology used to measure child labour in cocoa-growing communities of the Ivory Coast and Ghana (ICI, 2021; Sadhu et al., 2020). This study's context is particularly salient given the high incidence of hazardous labour and frequent school absenteeism among children in cocoa-growing communities.

Our findings reveal three sets of results. First, we find that children who received school kits benefited in two direct ways: they ended up with more school items and in good condition at endline (1), and their households experienced a decrease in school-related expenses for these children (2). Furthermore, the distribution of school kits led to a noticeable change in attitudes among caregivers in the treatment group. They increased their expenditure on hired adult labour for cocoa farming and expressed a preference for prioritising school attendance over work skills acquisition for their children. However, this shift in attitude and financial relief did not translate into increased school attendance.

Second, we find that school kits significantly reduced children's involvement in cocoa work by about six percentage points over a six months and seven day reference period. This reduction aligns with households allocating more resources to hired adult labour for cocoa farming. Nonetheless, the school kits did not diminish the overall likelihood of children working on the farm or in other types of work. In line with this, we observed a significant seven-percentage-point decrease in children's participation in hazardous activities, typically associated with cocoa farming. Despite these reductions, the intervention did not impact the overall incidence of child labour, as children continued to be exposed to hazardous situations on the farm. These findings were observed after adjusting for relevant covariates.

Third, we find that children who received school kits from poorer households (1) and who had school items missing at baseline (2) are significantly less likely to be in child labour over a six months and seven day reference period. Overall, these results suggest that while school kits did not significantly affect the average rates of child labour, they did lead to a reduction in hazardous activities. Importantly, the intervention showed significant heterogeneity in its impact, with a disproportionately larger effect in reducing child labour among children from less wealthy backgrounds and those who initially lacked school items.

This study makes XX key contributions to the existing literature.

The remainder of the paper is structured as follows. Section 2 discusses some related literature. Section 3 discusses the research design. Section 4 explains the data. Section 5 lays out the empirical strategy. Section 6 presents the results. Section 7 concludes.

2 Context & Theory of Change

Given that most child labour occurs in agriculture (ILO & UNICEF, 2021), special attention has been paid to addressing this issue in cocoa-growing areas, as cocoa-related work is frequently associated with hazards for children. Over the past decade, various stakeholders in the cocoa sector have taken measures to eliminate child labour cocoa-growing areas of Ghana and Côte d'Ivoire, which are the two largest cocoa producers in the world and account for about 60% of the world's cocoa production (ICCO, 2023).

Children in low-income settings often suffer from a shortage of multiple essential school materials. Qualitative research documents that it is a significant barrier to both school enrolment and attendance for children in the context of cocoa-growing communities in Côte d'Ivoire and Ghana (Sadhu et al., 2020). Our study took place in cocoa communities in Ghana, specifically within four districts in the Eastern Region—Abwakwa South, Ayensuano, Suhum, and West Akim—as well as two districts in the Ashanti Region: Asante Akim Central and Asante Akim South.

In our study context, the scarcity of school materials was initially highlighted in a scoping study conducted in January 2022. This shortage was further quantitatively confirmed by a pre-test pilot in August 2022 and on a larger scale during our baseline data collection from November to December 2022. Figure 1 provides an illustration of this issue. The left side of Figure 1 depicts the percentages of students lacking essential items from a standard school kit. This kit includes seven items: a uniform, shoes, a school bag, exercise books, notebooks, pens, and a math set. Only 13% of students had a complete kit, and more than half were missing at least two of these essential items. The right side of Figure 1 delves deeper into these shortages. While the most common missing item is the math set, other gaps are notable. For instance, 10% of students do not have the mandatory school uniform, 19% are without shoes, and 28% lack a school bag. Additionally, it is worth noting that even when students do have these items, they are often in poor condition as noted by the enumerators (see in red, although this observation involves some level of subjective interpretation).

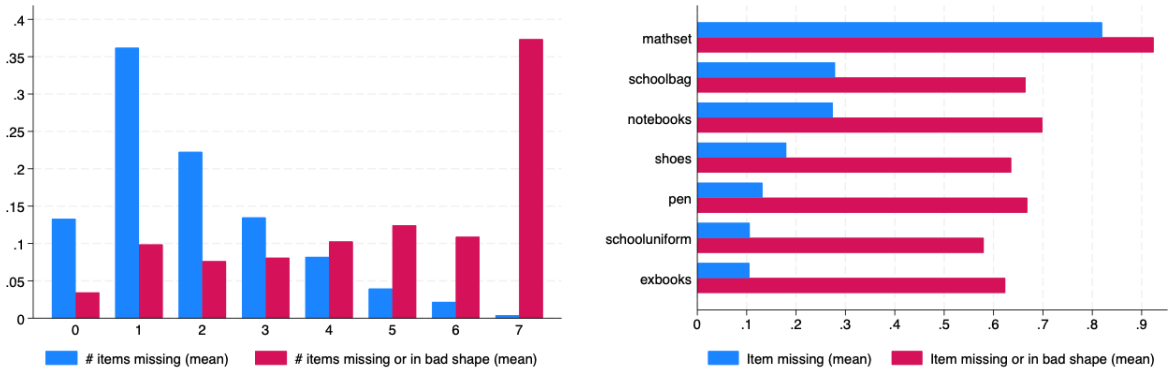

Figure 1: School items (baseline)

Our intervention involves distributing school kits, which are typically provided by our partner organisation, the International Cocoa Initiative (ICI), in cocoa-growing communities in Ghana.

The ICI is a non-profit foundation dedicated to promoting child protection and addressing child labour in cocoa-growing communities. Each kit, valued at approximately 600 GHS (50 USD) includes a school uniform, a pair of shoes, a school bag, 10 exercise books, five notebooks, 10 pens, and a math set. An image of the kit is available in the Appendix (Figure A1).

The Theory of Change for distributing school kits in Ghana's cocoa communities is based on two key channels: firstly, it addresses the financial aspect of education, and secondly, it focuses on enhancing the perceived value of education, as shown in Figure 2.

First, the provision of comprehensive school kits is expected to alleviate the financial burden on families regarding school-related expenses. This reduction in economic strain is crucial as many households live in extreme poverty, defined as earning less than 2.15 international dollars per day. Given this context, the distribution of single school items would not suffice to make a significant impact. The households' financial constraints are such that multiple essential school materials are either lacking or in poor condition. Therefore, only a complete kit, containing all the necessary educational materials, can meaningfully ease these financial burden and encourage education.

Second, the distribution of these kits is anticipated to elevate the household's perceived value of education. By easing financial constraints, it is anticipated that households will redirect resources towards hiring additional labour for farm work, particularly in cocoa farming, as cocoa work is mostly hazardous for children. This shift is likely to result in children spending less time engaging in farm work, especially in cocoa farming, and more time in educational activities, including attending school. Consequently, with reduced involvement in cocoa farming, children's exposure to hazardous work and, by extension, child labour is expected to decrease.

The significance of the school kit's value is highlighted by our pilot study's findings. On average, the value of one school kit is equivalent to 9% of a household's annual cocoa sales (based on the 2021-2022 season), representing a substantial income gain. In addition, during our baseline study, 63% of households reported earning less than 1000 GHS in the past month. Therefore, the value of a single school kit amounts to approximately 60% of their monthly income. The indirect income gain provided by the school kits is expected to outweigh potential income losses that might arise due to a reduction in child work and child labour.

The Theory of Change posits that the comprehensive nature of the school kits, alongside their significant relative value to household income, will not only ease financial constraints but also foster a greater appreciation for education, leading to improved educational outcomes and a decrease in child labour.

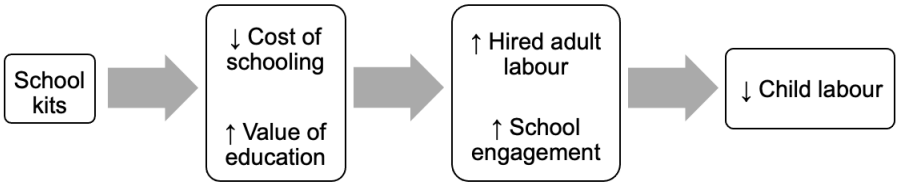

Figure 2: Theory of Change

3 Research design

3.1 Child labour measurement framework

Three main international human and labour rights standards—the United Nations Convention on the Rights of the Child, the International Labour Organization (ILO) Minimum Age for Admission to Employment Convention (No. 138) and the ILO Worst Forms of Child Labour Convention (No. 182)—set the legal boundaries that define child labour (ILO & UNICEF, 2021). These legal boundaries, however, permit some flexibility, leaving room for the competent national authority to determine how child labour is defined in their respective countries, thus there is no single statistical measure of child labour.

Our study focuses on child labour in cocoa-growing communities of Ghana, which falls under the Hazardous child labour Activity Framework for Ghana (HAF) in crop agriculture developed by the the Labour Department of the Ministry of Employment and Social Welfare of Ghana, in line with relevant ILO conventions No. 138 and No. 182. Since these ILO conventions require each country through tripartite arrangements to develop a list of hazardous sectors and activities, the overall objective of the HAF is to "*develop a comprehensive, age–appropriate contextually relevant and acceptable hazardous child labour framework to drive research, intervention, monitoring and enforcement.*" (Amoo, 2016, p. 7).

Our study categorises a child as being in child labour if they have been involved in or exposed to any hazardous task or situation (condition) listed in the Hazardous Activities Framework (HAF) for crop agriculture in Ghana as shown in Table 1. Therefore, engagement in any of the listed hazardous activities or situation is defined as child labour.[1]

We considered two distinct timeframes for this assessment: a short-term period covering the last seven days and a longer-term period. The longer-term period differed between the baseline and endline data collections. At the baseline, we assessed the child's exposure over the past 12 months, while for the endline, we focused on the last six months. The rationale for this variation was to more accurately capture the impact of the school kits distributed in March 2023, given that the endline data collection occurred in November 2023.

This measurement framework aligns with NORC, a research institution based at the University of Chicago, who defined a common measurement framework for the estimation of child labour in cocoa production and, more broadly, in agriculture in the cocoa-growing communities of Ghana and Côte d'Ivoire (Sadhu et al., 2020). Ghana's national measurement framework (i.e., HAF) is similar to NORC's framework, but it is marginally more restrictive, as it includes a few additional hazards. Furthermore, the HAF defines excessive working hours as more than two hours per day on school days and over three hours per day on weekends. We also assess the robustness of our results by using NORC's definition (hazardous child labour) instead (see Table A1 in the Appendix to see the differences between the HAF and NORC's framework).

[1]Engagement in any of the listed hazardous activities or situation is defined as child labour, irrespective of the specific work context in which these activities occurred (e.g., cocoa work). Only hazardous situations listed (HAF Hazardous situations) specifically pertain to agricultural work, (i.e., work on the farm or field).

Table 1: Child labour (HAF for crop agriculture in Ghana)

HAF Hazardous activities
Clearing of forest and/or falling of trees
Bush burning
Application of agro-chemicals
Harvesting overhead cocoa pods with harvesting hook
Breaking cocoa pods with breaking knives
Using machetes/long cutlass for weeding or pruning
Carrying heavy load, i.e. above 30% of body weight for more than 2 miles (3 km)
Working with motorized farm machinery
Climbing trees higher than 2.5 meters to cut mistletoe or harvest or prune with sharp cutlass
Removing tree stumps
HAF Hazardous situations
Being present or working in the vicinity of farm during spraying of agro-chemicals or re-enter a sprayed farm after less than 12 hours
Working at night (between 6:00pm and 6:00am)
Working alone on the farm (without adult supervision)
Working without shoes
Working without body protective clothing
Working long hours on school days (more than 2hrs/day)*
Working long hours on weekends (more than 3hrs/day)*

Notes: Hazardous situations listed (HAF Hazardous situations) specifically pertain to agricultural work, (i.e., work on the farm or field).
*The classification of long working hours differs form NORC's common definition, which considers working more than 43 hours per week as excessive.

3.2 Methodological framework

To evaluate the impact of school kits on child labour, we carried out a clustered Randomized Control Trial (RCT) in Ghana's cocoa-growing communities, where primary schools were randomly assigned to either a treatment group, which received school kits, or a control group, which did not receive anything until after the endline data collection (delayed treatment). The assignment was stratified by region, ensuring an equal distribution of schools in both the Eastern region (including four districts: Abwakwa South, Ayensuano, Suhum, West Akim) and the Ashanti region (two districts: Asante Akim Central and Asante Akim South).

In collaboration with the district-level Ghana Education Service (GES) and with the assistance of ICI field officers, who have in-depth knowledge of the ground, we created a list of primary schools in cocoa-growing communities. These schools were specifically chosen from areas without any Child Labour Monitoring and Remediation Systems (CLMRS)[2] and where, to the best of our knowledge, there were marginal or no existing programs addressing child labour and improving education. To avoid spillover effects and for ethical considerations, we selected communities with only one primary school,[3] and we included all children in the selected classes, regardless of whether they belonged to households involved in cocoa farming. The focus was

[2]Child Labour Monitoring and Remediation Systems (CLMRS) are embedded in company supply chains in order to identify, address, and prevent, child labour.
[3]We note only two schools in the Ashanti region where multiple schools were in the same community.

on children at the end of P4–P5 at baseline, who are approximately 12 years old. According to research, children in this age group are most vulnerable to transitioning into child labour and abandoning formal education due to financial difficulties (Sadhu et al., 2020; Sviatschi, 2022).

3.3 Sample and statistical power

We conducted our power calculations using data gathered by NORC.

The original sample size was determined to achieve a statistical power of 80% at the 5% significance level. These calculations are based on an intra-cluster correlation of 0.046, aiming to detect a reduction in child labour in agriculture by seven percentage points from an initial rate of 83% in the cocoa-growing communities of the Ashanti and Eastern regions. This pertains to children at least nine years old, currently enrolled in primary school and engaged in child labour in agriculture during the previous 12 months.[4] These power calculations were conducted using a conservative approach assuming only one wave of data collection, i.e., without incorporating covariates that can reduce the variance of the point estimate and thus the minimum detectable effect size.

The power analysis suggests a sample size that comprises approximately 60 primary schools, with 30 households represented per school. Consequently, this results in 60 schools, encompassing 1,800 children and an equivalent number of caregivers, equally divided between the control and treatment groups (a detailed breakdown can be found in Table A2 in the Appendix). We aimed to achieved this sample size at endline, factoring in anticipated attrition. Drawing on data from past studies in similar settings, we projected an attrition rate of approximately 10% (Wolf & Lichand, 2023).

To ensure we interviewed an average of slightly more than 30 students per school (taking into account attrition), we established the following selection criteria for the baseline data collection: In cases where a school's P5 enrolment was 20 or more students, we only interviewed those in P5. However, if the P5 enrolment was less than 20, we expanded our interviews to include all students in both P4 and P5. This approach resulted in an average of 28 students per school at baseline, which was slightly below our target. Therefore, to maintain the same level of statistical power, we included four additional schools in our study, bringing the total to 64 schools instead of the initially planned 60. The schools included in our study were chosen randomly from the list we had compiled (described in section 3.1 Methodological framework).

4 Data

4.1 Timeline of project & data collection

This study was registered with the American Economic Association's registry for randomized control trials (AEA RCT Registry).[5] Ethical clearance was obtained from both the Ethics

[4] Subsequently, when narrowing our analysis to child labour specifically in cocoa, the calculations are equivalent to a 10 percentage point reduction from a baseline of 77%, with an intra-cluster correlation of 0.085, for the same regions and age group.

[5] Asiedu, E., Günther, I., & Lefoll, E. (2023). Reducing child labour and improving education in cocoa- growing communities: experimental evidence on the impact of school kits from Ghana. *AEA RCT Registry. March 30. https://doi.org/10.1257/rct.10918-1.0.*

Commission at ETH Zurich[6] and the Ethics Committee for the Humanities at the University of Ghana.[7]

The project was conducted in three main phases, as outlined in Figure 3.

In Phase 1 (January–December 2022), we conducted a scoping study in January 2022, followed by a pilot in August 2022 in the Suhum district in the Eastern region of Ghana to test and refine our survey instruments and sampling method. The baseline data collection was conducted by 25 enumerators and took place during the main cocoa harvest season in Ghana in November–December 2022, when children are more at risk of being involved in child labour in cocoa-growing communities. In this phase, the targeted children were in P4 and P5. The enumerators underwent a training session the week prior to data collection, followed by a brief additional pilot test in the field. To ensure thorough oversight, at least one Principal Investigator (PI) was actively involved and present in the field throughout the entire duration of the data collection.

In Phase 2 (January– September 2023), the children we interviewed at baseline were in P5 and primary 6 (P6). For the treatment group, measurements for footwear and uniforms were taken in February 2023, and the distribution of school kits was completed by March 2023 during the first term of the new school year.

In Phase 3 (September 2023–March 2024), due to the GES unexpectedly reverting to the pre-COVID academic calendar, students who were in P5 during Phase 1 and P6 in Phase 2 transitioned to Junior High School 1 (JHS1) on October 3rd 2023. This shift occurred sooner than anticipated, taking place before our scheduled endline data collection in November 2023. Consequently, a second batch of school uniforms was distributed to a subgroup of children in the treatment group who were moving to JHS1 and required new uniforms, often due to changing schools. Primary school headteachers and parents in this subgroup were notified that would receive new school uniform for the new academic year in summer 2023. Measurements were taken right before the new school year started in September, and school uniform distribution was completed in October in the Ashanti region and the first week of November in the Eastern region. To ensure timely distribution in the Eastern region, endline data collection began in the Ashanti region in the second week of November 2023. The same team of enumerators conducted the endline data collection, following a training session and a pilot test, similar to Phase 1. At least one Principal Investigator (PI) was present in the field to oversee the process. The control group had their measurements taken in February 2024, with the distribution of school kits completed by March 2024.

[6]IRB approval number: EK 2022-N-149.
[7]IRB approval number: ECH 067/ 22-23.

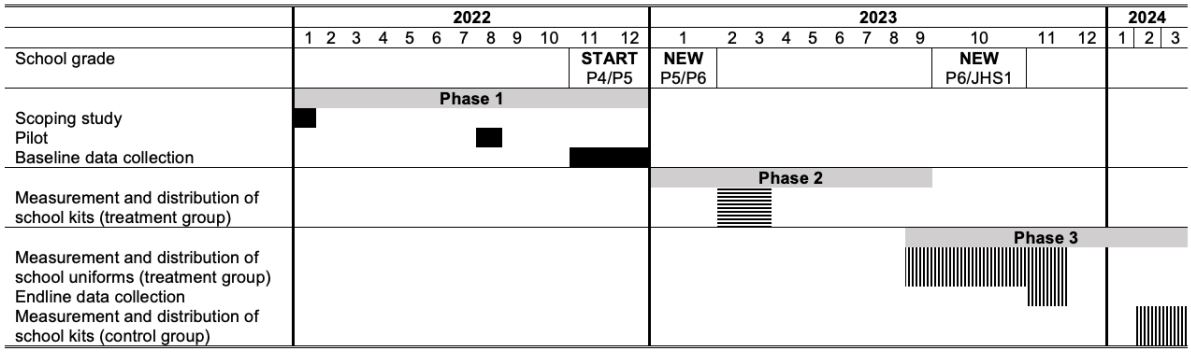

Figure 3: Timeline of project

We conducted interviews with children and their primary caregivers during both the baseline and endline phases, while interviews with the headteachers of the schools were conducted only at the baseline. In the child survey, we focused on collecting information about their work activities (including both hazardous and non-hazardous work), school attendance, learning, and overall well-being. The caregiver survey gathered data on socio-economic factors, farm characteristics, labour involvement, education, and literacy levels. Meanwhile, the headteacher survey collect data about general school characteristics, costs, and any challenges they faced. In addition to these interviews, our enumerators also gathered observational data regarding the schools' physical structure. The surveys were carried out using the Offline Qualtrics App on digital tablets (see Appendix X to see the original survey instruments).

We conducted the interviews with children and caregivers at schools instead of homes. This decision, informed by our pilot observations, aimed to avoid the influence of other household members on the child's responses, a factor that could introduce bias and extend the interview time. School-based interviews not only ensured privacy but also increased efficiency by eliminating the need to locate children at their homes, especially outside school hours. If it was not feasible to interview children or caregivers at school, interviews were conducted at home or another location.

Both the child and caregiver questionnaires were designed to be completed under 25 to 30 minutes to mitigate biases related to respondent fatigue (Ambler et al., 2021; Jeong et al., 2023) and boredom among child repondents, who are more likely to lack the motivation to answer survey questions (Borgers et al., 2000).

4.2 Attrition

At baseline (November–December 2022), we interviewed 1,743 children along with their respective caregivers across 64 different schools. A year later, in November 2023, our goal was to re-interview the same children, including their baseline caregivers. If the original caregiver was unavailable, we interviewed another primary caregiver of the child.

As children in P5 at baseline had moved to Junior High School by the endline, we faced the challenge of tracking a subsample of children who had switched to geographically distinct schools. Of the 1,743 children interviewed at baseline, we successfully tracked and interviewed 1,571 at endline, resulting in an attrition rate of 9.81%.

To assess whether attrition varies by treatment status, we estimate the following equation:

$$M_{isr} = \beta_0 + \beta_1 T_s + \gamma_r + \varepsilon_{isr}$$

where M_{isr} is an binary variable indicating if child i located in school s in region r is missing at endline. T_s is an indicator for school s being in the treatment group (receiving school kits). γ_s denotes strata (region) fixed effects. Standards errors are clustered at the school level.

We find that attrition is orthogonal to treatment assignment (see Table A3 in the Appendix). Nevertheless, we construct and report Lee (2009) bounds for all our main results TO ADD.

4.3 Balance checks

The randomisation of schools into the treatment and control groups was done electronically. To verify whether the randomisation successfully orthogonalized the two groups with respect to confounding factors, we verify if covariates at baseline are balanced across groups. For completeness, this was done using the full initial sample at baseline (see Tables A4, A6 and A8 in the Appendix) and then using only the subset of children who could be tracked at endline (see Tables A5 and A7 in the Appendix). We report the mean values for all covariates for each treatment and p-values from a T-test for equality of means across the two groups.

We achieve a high degree of balance across covariates in both our initial sample at baseline and the final sample at endline. The only notable difference was observed in the difference in the most importance source of income stemming from cocoa or other crops at 10% significance level (see Tables A6 and A7 in the Appendix). Regarding the final sample of households that we could track at endline, as detailed in Table A7 in the Appendix, the control group had fewer female respondents, higher wealth levels, and a greater likelihood of caregivers having worked during their childhood, with these differences being significant at the 10% level. To address any potential imbalance bias in our main analysis of the impact of school kits on child work and child labour, we incorporate three baseline covariates: a household wealth index, which we calculated using Principal Component Analysis, a variable indicating whether the caregiver worked as a child and a dummy indicating whether the most importance source of income stemming from cocoa or other crops

The balance tables provide insights into the characteristics of our sample (at baseline). Notably, around 93% of the interviews with children were conducted at school. The demographic breakdown reveals that approximately 42% of the children were female, with an average age of about 12 years, and 68% were in class P5 at the baseline. In terms of school supplies, children on average possessed five out of seven essential school items, but only two of these items were in good condition. A significant portion, about 66%, had worked in cocoa farming in the past 12 months. Furthermore, 77% of the children were identified as being in child labour during the last 12 months, a figure that is consistent with child labour statistics reported by NORC. On average, these children were exposed to approximately four different hazards over the same 12-month period.

Concerning the caregivers in our study, approximately 70% were female and married, with an average age of 43 years. Educationally, they had typically only completed primary school, and only 24% were able to read and write in English. Notably, 60% of them served as the head

of their household. On average, these households consisted of about three children between the ages of 5 and 17. In terms of income, households generally had around two different sources, with cocoa or other crop-related activities being the most important source for 71% of them. Land ownership was reported by 39% of the households and 43% of these households reported experiencing at least a slight shortage of labour during the harvest season.

Regarding the schools in our study, the average class size for children in P5 was approximately 18 students. Typically, these schools offered around two educational levels, with Kindergarten and Primary being the most common, indicating that the schools were relatively small in size. On average, there were about seven teachers for the primary level, equating to roughly one teacher per grade. In terms of infrastructure, the predominant building material for 77% of these schools was concrete. Additionally, 60% of these schools had a school feeding program in place.

5 Empirical strategy

We estimate the following regression model:

$$Y_{isr}^{1} = \beta_0 + \beta_1 T_s + \beta_2 Y_{isr}^{0} + \boldsymbol{X_{isr}^{0}}' \boldsymbol{\theta} + \gamma_r + \varepsilon_{isr} \tag{1}$$

where Y_{isr}^{1} is the outcome of child i in school s in region r at endline. The main dependent variable of our study is whether a child is identified as being in child labour (dummy). T_s is an indicator for school s being in the treatment group (receiving a school kit). Therefore, coefficient β_1 measures the intent to treat (ITT), or the effect of school kits on the mean outcome. Y_{isr}^{0} is the outcome variable measured at baseline. γ_s denotes strata (region) fixed effects. Standards errors are clustered at the school level.

For our main regressions where child work or child labour are the outcome variable, we include a set of covariates measured at baseline $\boldsymbol{X_{isr}^{0}}$ at the child, household and school to increase the precision of our points estimates. Adjusting for known prognostic covariates, despite being less common in practice, can lead to significant increases in statistical power, far outweighing the potential risks associated with such adjustments (Kahan et al., 2014).

Specifically, we included 11 covariates as follows. First, the endline questionnaire included a survey experiment, where half of the children were asked about hazardous activities with the aid of illustrations, while the other half were asked the same questions but without visual aids. To ensure that the visuals were perfectly orthogonal to the school kit intervention, randomisation was stratified at the school level. Still, we include a dummy indicating whether the child was shown visuals (when applicable).

Second, we include a set of ten prognostic covariates measured at baseline. At the child level, we included the child's gender child as a binary variable. At the household level, we included a household wealth index (calculated using Principal Component Analysis), whether the household faced at least a little shortage of adult labour for cocoa farming or other crops, whether the household owns land, whether the most important source of income is from cocoa or other crops, whether the caregiver worked when she/he was a child, whether the caregiver thinks a child should support if there is a shortage of adult labour during harvest season, all represented as binary variables. Lastly, at the school level, we included the number of teachers

in primary school, the share of primary teachers with a Diploma of Education and whether the school's infrastructure is primarily made of concrete (dummy).

As a robustness check, we conducted additional checks on our regression model (see table B1 in the Appendix). First, we estimate our regression model without covariate adjustments. Second, we employ the double lasso procedure to address the potential arbitrariness in the selection of covariates (Belloni et al., 2014), as failing to control for valid covariates could lower the statistical power of our analysis. This method allows to identify the key covariates impacting both treatment assignment and outcomes. Third, we use the treatment assignment as an instrumental variable (IV) for the number of school items included in a school kit to estimate a local average treatment effect (LATE) instead.

Multiple hypothesis testing

6 Results

6.1 Assessment of treatment delivery

Table 2 presents the effectiveness of distributing school kits and the second batch of school uniforms to the designated recipients (treatment group). To determine this, we asked and verified whether the children had received a school kit in the past year and whether they had been given a school uniform for the new school year in the last two months. The data shows a high success rate in delivery: 97% of children in the treatment group received a school kit. The 23 children who did not receive one were either no longer enrolled in school at the time of distribution or absent during the delivery.

About 4% of children in the control group also received a school kit (30 children). This was primarily due to one school where all students received parts of a school kit from another small local organisation, which included school uniforms, notebooks, pens, and shoes, but these items were not custom-fitted for the children. While this could potentially lead to an underestimation of our intervention's impact, we assess the robustness of our result when this school is excluded from our sample (TO ADD APPENDIX). The other children in the control group who received a school kit also got only parts of it, and these distributions were targeted individually from external organisations.

Additionally, Table 1 indicates that about 66% of children in the treatment group received a second batch of school uniforms for the new academic year. This proportion nearly covers all the children who transitioned to Junior High School. Conversely, only approximately 1% of children in the control group, spread across various schools, received a new school uniform, typically as part of isolated external programmes.

Table 2: Treatment delivery

	Group	
	Treatment	Control
Received school kit	97.07%	3.82%
	(762)	(30)
Received school uniform	66.37%	1.40%
(2nd round)	(521)	(11)
Total	785	786

Table 3 shows the effect of school kits (treatment group) on the number of school items owned by the child and whether they are in good shape (columns 1 and 2) and on whether they owned a school uniform and in good shape (columns 3 and 4). The results in columns 1 and 2 indicate that children in the treatment group are more likely to own a greater number of school items, and these items are in good condition. Additionally, columns 3 and 4 reveal that children in the treatment group are also more likely to own a school uniform, and these uniforms tend to be in good shape. This suggests that the distribution of school kits positively influenced both the quantity and quality of essential school items and uniforms among the children in the treatment group.

Lastly, we gathered feedback from the children who received a school kit, inquiring about any issues they encountered with it. It was found that only 10% of the recipients reported facing any issues, with the most common problem being incorrect sizing of the items (shoes or school uniform). This finding aligns with expectations, considering that the children were, on average, 12 years old at the time of the baseline and would have naturally grown until they we re-interviewed again, one year later.

Table 3: School items owned and in good shape

	# of school items		School uniform (1,0)	
	Owned	In good shape	Owned	In good shape
	(1)	(2)	(3)	(4)
School kit (treatment)	0.785***	2.471***	0.120***	0.440***
	(0.118)	(0.261)	(0.028)	(0.043)
Constant	4.751***	2.103***	0.798***	0.395***
	(0.236)	(0.212)	(0.039)	(0.036)
Observations	1571	1571	1571	1571
R^2	0.137	0.265	0.062	0.229

Notes: Strata (region) fixed effects and baseline outcome variable included in all regressions. The school items considered consist of seven specific elements: a school uniform, a pair of shoes, a school bag, 10 exercise books, five notebooks, 10 pens, and a math set. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

6.2 Did school kits reduce school costs and increase the value of education?

Table 4 shows the effect of school kits (treatment group) on school-related costs (columns 1 and 2), the costs of hired adult labour for cocoa farming[8] (column 3), whether the caregiver thinks going to school is more important than learning how to work (column 4), school enrolment (column 5) and the number of times the child missed school in the last school week (column 6). The lower number of observations in columns 1 and 2 is due to the presence of multiple participating children within the same household: In households with more than one participating child, to minimise repetition and reduce the burden on respondents, caregivers were asked about the school costs of only one randomly selected study child. Additionally, we only included responses from caregivers who could estimate all the school costs, excluding those who could not.

The findings in columns 1 and 2 reveal that households who received school kits (treatment group) incurred significantly lower expenses on school items[9] and total school costs.[10] Column 3 shows that households who received school kits (treatment group) are significantly more likely to increase costs on adult labour for cocoa farming. This pattern suggests that these households are reallocating a portion of their savings from school-related costs towards hiring adult labour for cocoa farming activities. In addition, column 4 reveals that these households are more likely to think that going to school is more important than learning how to work. This shift in attitude supports the notion that by hiring adult labour for cocoa farming, these households may be making a conscious effort to enable their children to spend more time on educational pursuits and other activities, rather than on hazardous agricultural work.

Column 4 and 5 suggest that school kits did not significantly influence the likelihood of children being enrolled in school (because almost all children were enrolled at endline) or their frequency of school absences in the last school week.

Overall, the results from Table 3 highlight the effectiveness of school kits in reducing financial barriers to education (column 1 and 2) and influencing caregiver attitudes towards the value of schooling compared to work (column 3 and 4). However, these did not necessarily translate into more consistent school attendance.

[8]The costs of hired adult labour for cocoa farming are calculated by multiplying the number of adult labour hired for cocoa farming by their pay per worker.

[9]School items include the following: school uniform, shoes/scandals, school bag, exercise books, notebooks, pens/pencils, math set, textbooks and other school supplies.

[10]Total schools costs include schools items and the following fees: exam or printing fees, school tuition, school admission fees, facility use fees, PTA dues, required extra class fees and other school-related fees.

Table 4: School costs and value of education

	School costs per child (GHS)		Costs hired adult labour cocoa (GHS)	School more important than work (1,0)	Enrolled in school (1,0)	# times child missed school last school week
	Items	Total				
	(1)	(2)	(3)	(4)	(5)	(6)
School kit (treatment)	-99.270***	-114.951***	49.343**	0.055**	0.008	0.033
	(20.850)	(29.727)	(23.321)	(0.027)	(0.007)	(0.060)
Constant	281.739***	421.276***	77.757***	0.794***	0.978***	0.413***
	(15.438)	(21.650)	(10.180)	(0.030)	(0.005)	(0.048)
Baseline outcome variable	No	No	Yes	Yes	No	Yes
Observations	1301	1275	1567	1571	1571	1543
R^2	0.055	0.055	0.017	0.009	0.001	0.013
Mean	232.370	364.206	108.975	0.857	0.982	0.463

Notes: Strata (region) fixed effects included in all regressions. Column 1: The cost of school items include the following: school uniform, shoes/scandals, school bag, exercise books, notebooks, pens/pencils, math set, textbooks and other school supplies. Column 2: Total schools costs include schools items costs and the following fees: exam or printing fees, school tuition, school admission fees, facility use fees, PTA dues, required extra class fees and other school-related fees. In column 3, the costs of hired adult labour for cocoa farming are calculated by multiplying the number of adult labour hired for cocoa farming by their pay per worker. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

6.3 Children's work allocation

Table 5 presents the effects of school kits on children's work allocation. Specifically, the table breaks down the effect on work related to cocoa (shown in columns 1 and 4), work encompassing both cocoa and farm work (columns 2 and 5), and engagement in productive activities, which includes work in cocoa, on the farm, or in non-farm work (excluding household chores), as presented in columns 3 and 6. These effects are measured over two time periods: the past six months (for columns 1 to 3) and the past seven days (for columns 4 to 6).

Additionally, columns 7 to 9 present the influence of school kits on the frequency of children's involvement in farm work (column 7), productive activities (column 8), and any type of work, including farming, other work, and household chores, specifically focusing on work carried out yesterday (morning, afternoon, and evening). Lastly, column 10 shows the effect of school kits on the total number of hours worked yesterday on any work (including farm, other work and household chores). All regressions included covariates as described in equation 1.

We find that children who received school kits (treatment group) are about 6–6.4 percentage points significantly less likely to work on cocoa in the last six months and seven days, respectively (columns 1 and 4). This finding aligns with the results presented in Table 4, column 3, which indicate that households with access to school kits are significantly more inclined to invest in adult labour for cocoa farming. This pattern suggests a notable shift in labour dynamics within these households, moving from reliance on children to employing adult labour for cocoa farming activities.

However, results in columns 2–3 and 5–10 indicate that children who received school kits are just as likely as their counterparts who did not receive kits to engage in farm work or other forms of work. This suggests that while the school kits may lead to a decrease in cocoa-specific activities, they do not significantly reduce the overall likelihood of children working on the farm or in other types of work. This pattern holds true even when we consider the number of days

children worked in these various activities over the past week, confirming the robustness of our results (TO ADD APPENDIX). Essentially, while school kits influence the nature of the work (less cocoa-related), they do not appear to reduce the overall incidence of children's work on farms or in other forms of work.

Table 5: Children's work allocation

	6 months			7 days			Yesterday			
	Cocoa	Farm & Cocoa	Prod. Activity	Cocoa	Farm & Cocoa	Prod. Activity	Frequ. Farm	Frequ. Prod. Activity	Frequ. Any Activity	Hours Worked
	(0,1)	(0,1)	(0,1)	(0,1)	(0,1)	(0,1)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
School kit (treatment)	-0.060**	-0.005	-0.014	-0.065*	-0.032	-0.021	-0.003	-0.040	0.003	-0.032
	(0.029)	(0.021)	(0.017)	(0.036)	(0.034)	(0.036)	(0.026)	(0.054)	(0.087)	(0.100)
Female	-0.075***	-0.091***	-0.039***	-0.122***	-0.145***	-0.088***	-0.046**	0.006	0.177***	0.155**
	(0.025)	(0.018)	(0.014)	(0.024)	(0.028)	(0.028)	(0.019)	(0.031)	(0.052)	(0.060)
Wealth index (PCA)	-0.038**	-0.038**	-0.025**	-0.005	-0.034	-0.005	-0.028**	-0.004	-0.005	-0.063
	(0.017)	(0.017)	(0.012)	(0.016)	(0.023)	(0.015)	(0.012)	(0.018)	(0.029)	(0.040)
Shortage labour: cocoa	0.057***	0.025*	0.015	0.061**	0.040	0.026	0.022	0.071**	0.165***	0.067
or other crops	(0.020)	(0.015)	(0.011)	(0.027)	(0.025)	(0.027)	(0.022)	(0.031)	(0.055)	(0.063)
Household owns land	0.061**	0.038**	0.021	0.022	0.038	0.021	-0.012	-0.024	-0.030	0.068
	(0.025)	(0.018)	(0.013)	(0.027)	(0.031)	(0.027)	(0.024)	(0.038)	(0.055)	(0.078)
Most important source of	0.107***	0.078***	0.041**	0.080**	0.080**	0.026	0.008	0.026	0.040	-0.047
income: cocoa or other crops	(0.031)	(0.020)	(0.018)	(0.033)	(0.039)	(0.038)	(0.029)	(0.042)	(0.074)	(0.087)
Caregiver worked when was	-0.058**	-0.036**	-0.040***	-0.020	-0.017	-0.012	-0.009	-0.017	-0.053	-0.148**
a child	(0.024)	(0.016)	(0.013)	(0.030)	(0.031)	(0.028)	(0.025)	(0.032)	(0.054)	(0.069)
Child should support if	0.046*	0.010	0.025	0.036	-0.017	-0.039	0.020	-0.058	0.075	-0.062
shortage adult labour	(0.025)	(0.018)	(0.016)	(0.030)	(0.031)	(0.030)	(0.019)	(0.039)	(0.057)	(0.060)
Number of teachers in	-0.016*	-0.013	-0.011	-0.034***	-0.025*	-0.024*	-0.003	-0.014	-0.051**	-0.016
primary	(0.008)	(0.009)	(0.007)	(0.009)	(0.013)	(0.013)	(0.006)	(0.012)	(0.021)	(0.036)
Share of teachers with a	-0.015	-0.021	0.034	-0.282*	-0.227	-0.087	-0.255**	-0.416	-1.045***	-1.528***
Diploma of Education	(0.117)	(0.106)	(0.076)	(0.163)	(0.153)	(0.158)	(0.104)	(0.295)	(0.369)	(0.450)
School infrastructure:	-0.030	-0.007	0.009	0.013	0.010	0.050	0.030	0.128**	0.179*	0.203
concrete	(0.037)	(0.020)	(0.016)	(0.046)	(0.050)	(0.052)	(0.030)	(0.060)	(0.100)	(0.131)
Baseline outcome variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Observations	1571	1571	1571	1571	1571	1571	1571	1571	1571	1571
R^2	0.158	0.109	0.058	0.115	0.102	0.044	0.033	0.027	0.059	0.033
Mean	0.751	0.891	0.933	0.394	0.611	0.695	0.141	0.348	1.739	1.959

Notes: Strata (region) fixed effects included in all regressions. The baseline outcome variable for columns 1–4 is the 12 months reference period instead of 6 months. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table 6 presents the effects of school kits on child labour, the number of hazards experienced, and on the likelihood of having accomplished in hazardous activity or being involved in a hazardous situation, over the past six months or seven days. Recall that child labour is defined by having either accomplished a hazardous activity or been exposed to a hazardous situation (see Table 1 for the complete list). All regressions included covariates as described in equation 1. Additionally, to adhere to the legal definition of child labour (and hazardous work), which applies to individuals under 18 years old, we omitted data from seven individuals who were over 18 years old at the time of the endline.

We find that school kits have an insignificant effect on child labour, the number of hazards and the probability of being exposed to a hazardous situation. However, we find that school kits lower the probability of having accomplished a hazardous activity in the last six months and seven days, by 6.4–7.4 percentage points, respectively (columns 3 and 7). The findings from Table 6 align with results from Table 5, in which children are less likely to work on cocoa, which often entails accomplishing hazardous activities. Despite this decrease in engagement in

hazardous activities, children continue to work on farms where they are still exposed to hazardous situations (or conditions). These conditions, rather than the activities themselves, pose risks, thus keeping the children in situations that can be classified as child labour due to the hazardous nature of their work environment. The findings from Table 5 suggest that while school kits do not completely eliminate the risk of child labour, they play a crucial role in diminishing the participation of children in hazardous tasks.

The results are robust to alternative definitions of child labour TO INCLUDE. In addition, results are robust to different regression models (see Table B1 in the Appendix) However, it is important to note that when we ran our analysis (equation 1) without adjusting for covariates, we observed a decrease in the precision of coefficients, a halving in their magnitude, and they became statistically insignificant. This outcome is likely attributed to the original design of our sample size, which may be insufficient to identify smaller effects in the absence of covariate adjustments.

Table 6: Child labour

	6 months				7 days			
	Child labour (0,1)	Number hazards	Hazardous Activity (0,1)	Hazardous Situation (0,1)	Child labour (0,1)	Number hazards	Hazardous Activity (0,1)	Hazardous Situation (0,1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
School kit (treatment)	-0.007	-0.360	-0.064**	-0.011	-0.026	-0.211	-0.074*	-0.026
	(0.014)	(0.318)	(0.028)	(0.016)	(0.035)	(0.226)	(0.041)	(0.037)
Illustration hazardous	0.046***	0.696***	0.073***		0.068**	0.641***	0.080***	
activity	(0.016)	(0.172)	(0.021)		(0.027)	(0.145)	(0.024)	
Female	-0.070***	-1.288***	-0.144***	-0.069***	-0.105***	-0.653***	-0.148***	-0.095***
	(0.017)	(0.132)	(0.028)	(0.016)	(0.028)	(0.113)	(0.030)	(0.026)
Wealth index (PCA)	-0.033*	-0.252**	-0.040**	-0.038*	-0.019	-0.046	-0.016	-0.020
	(0.017)	(0.123)	(0.019)	(0.020)	(0.019)	(0.086)	(0.019)	(0.021)
Shortage labour: cocoa or	0.035***	-0.099	0.032*	0.043***	0.019	0.024	0.034	0.028
other crops	(0.012)	(0.174)	(0.018)	(0.013)	(0.029)	(0.155)	(0.032)	(0.029)
Household owns land	0.031*	0.298*	0.062***	0.046**	0.026	0.258*	0.043*	0.036
	(0.017)	(0.176)	(0.022)	(0.018)	(0.027)	(0.142)	(0.025)	(0.028)
Most important source of	0.072***	0.486**	0.096***	0.069***	0.088***	0.163	0.102***	0.076**
income: cocoa or other crops	(0.019)	(0.223)	(0.024)	(0.020)	(0.032)	(0.168)	(0.032)	(0.031)
Caregiver worked when was	-0.032*	-0.280	-0.048*	-0.036**	-0.016	-0.047	-0.044	-0.027
a child	(0.016)	(0.205)	(0.026)	(0.016)	(0.034)	(0.173)	(0.036)	(0.034)
Child should support if	0.003	0.183	0.027	-0.005	0.002	0.101	0.013	0.007
shortage adult labour	(0.015)	(0.212)	(0.021)	(0.017)	(0.028)	(0.149)	(0.029)	(0.028)
Number of teachers in	-0.008	-0.158*	-0.006	-0.012*	-0.021*	-0.147**	-0.012	-0.023*
primary	(0.006)	(0.092)	(0.012)	(0.006)	(0.011)	(0.062)	(0.013)	(0.012)
Share of teachers with a	-0.016	0.257	-0.104	-0.014	-0.295*	-0.561	-0.128	-0.371**
Diploma of Education	(0.048)	(1.266)	(0.099)	(0.071)	(0.154)	(1.089)	(0.184)	(0.155)
School infrastructure:	-0.019	0.079	0.024	-0.023	-0.007	0.162	0.012	-0.016
concrete	(0.016)	(0.428)	(0.036)	(0.018)	(0.056)	(0.288)	(0.050)	(0.057)
Observations	1564	1564	1564	1564	1564	1564	1564	1564
R^2	0.095	0.264	0.127	0.097	0.082	0.187	0.114	0.084
Mean	0.901	5.175	0.793	0.883	0.653	2.435	0.518	0.614

Notes: Strata (region) fixed effects and baseline outcome variable included in all regressions. The baseline outcome variable for columns 1–4 is the 12 months reference period instead of 6 months. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

6.4 Child labour heterogeneous effects

Table 7 shows the heterogeneous effect of school kits and household wealth (measured at baseline) and the number of school items missing in a school kit (measured at baseline) on child labour and the number of hazards encountered.

We find that school kits are particularly effective at mitigating child labour for children from poorer households in the past six months and seven days, respectively (columns 1 and 5). School kits are also particularly effective at mitigating child labour for children who had missing school items at baseline in the past six months and seven days, respectively (columns 3 and 7). These patterns hold when we look at the number of hazards accomplished or exposed to: the number of hazards is lower for poorer households receiving school kits (columns 2 and 6) and for children who were initially lacking school items and who received a school kit (columns 4 and 8).

These findings consistently demonstrate that school kits not only reduce the prevalence of child labour but also decrease the exposure to hazards, among the most economically disadvantaged children and those who were previously without essential school supplies.

Table 7: Child labour heterogeneous effects

	6 months				7 days			
	Child Labour (0,1)	Number Hazards	Child Labour (0,1)	Number Hazards	Child Labour (0,1)	Number Hazards	Child Labour (0,1)	Number Hazards
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
School kit (treatment)	-0.079**	-0.816*	0.086*	0.546	-0.105*	-0.663**	0.174**	0.531
	(0.036)	(0.474)	(0.046)	(0.546)	(0.058)	(0.311)	(0.079)	(0.393)
Wealth index (PCA)	-0.075***	-0.540***			-0.071***	-0.285***		
	(0.017)	(0.160)			(0.019)	(0.106)		
School kit (treatment) ×	0.056**	0.367*			0.064**	0.326**		
Wealth index (PCA)	(0.023)	(0.188)			(0.026)	(0.134)		
School items missing= 1			0.033	0.634*			0.112**	0.473**
			(0.040)	(0.358)			(0.053)	(0.229)
School items missing= 2			0.019	0.604*			0.124**	0.455
			(0.041)	(0.355)			(0.051)	(0.281)
School items missing= +3			0.032	0.911**			0.173***	0.547**
			(0.045)	(0.393)			(0.059)	(0.264)
School kit (treatment) ×			-0.127**	-1.235**			-0.227***	-1.136***
School items missing =1			(0.048)	(0.498)			(0.076)	(0.339)
School kit (treatment) ×			-0.052	-0.726			-0.211***	-0.696
School items missing =2			(0.048)	(0.520)			(0.077)	(0.422)
School kit (treatment) ×			-0.055	-0.526			-0.168*	-0.416
School items missing =+3			(0.051)	(0.604)			(0.086)	(0.473)
Constant	0.942***	4.484***	0.788***	2.993***	0.656***	2.178***	0.426***	1.304***
	(0.030)	(0.357)	(0.059)	(0.383)	(0.037)	(0.229)	(0.058)	(0.243)
Observations	1564	1564	1564	1564	1564	1564	1564	1564
R^2	0.055	0.207	0.033	0.204	0.049	0.145	0.051	0.150
Mean	0.901	5.175	0.901	5.175	0.653	2.435	0.653	2.435

Notes: Strata (region) fixed effects and baseline outcome variable included in all regressions. The baseline outcome variable for columns 1–4 is the 12 months reference period instead of 6 months. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

7 Conclusion

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Appendix A

Figures

Figure A1: School kit

Tables

Table A1: Hazardous work

HAF Hazardous activities	**NORC**
Clearing of forest and/or falling of trees	✔
Bush burning	✔
Application of agro-chemicals	✔
Harvesting overhead cocoa pods with harvesting hook	✔
Breaking cocoa pods with breaking knives	✔
Using machetes/long cutlass for weeding or pruning	✔
Carrying heavy load, i.e. above 30% of body weight for more than 2 miles (3 km)	✔
Working with motorized farm machinery	✔
Climbing trees higher than 2.5 meters to cut mistletoe or harvest or prune with sharp cutlass	×
Removing tree stumps	×
HAF Hazardous situations	**NORC**
Being present or working in the vicinity of farm during spraying of agro-chemicals or re-enter a sprayed farm after less than 12 hours	✔
Working at night (between 6:00pm and 6:00am)	✔
Working alone on the farm (without adult supervision)	×
Working without shoes	×
Working without shoes body protective clothing, e.g., shoes	×
Working long hours on school days (more than 2hrs/day)*	×*
Working long hours on weekends (more than 3hrs/day)*	×*

Notes: *NORC defines long working hours as working more than 43 hours per week.

Table A2: Sample size calculations

Control group	Treatment group
30 schools with each:	30 schools with each:
30 children per school	30 children per school
30 caregivers per school	30 caregivers per school
Total:	Total:
900 children	900 children
900 caregivers	900 caregivers
Total: 60 schools, 1800 children, 1800 caregivers	

Notes: The sample size was chosen to achieve 80% statistical power at a 5% significance level. These are based on an intra-cluster correlation of 0.046, aiming to detect a 7% drop in child labour (period of reference is 12 months) from an 83% baseline in the cocoa-growing communities of Ashanti and Eastern regions for children aged nine and above in school and involved in agricultural labour. For child labour in cocoa specifically, the target is a 10% drop from a 77% baseline, with an intra-cluster correlation of 0.085.

Table A3: Attrition

	Child missing at endline (1,0)
	(1)
School kits (treatment)	-0.016
	(0.018)
Constant	0.107***
	(0.015)
Observations	1743
R^2	0.001
Mean	0.099

Notes: Strata (region) fixed effects included. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A4: Child balance checks – Full sample

Variable	(1) Control Mean/SE	(2) Treatment Mean/SE	T-test Difference (1)-(2)
Female	0.439	0.410	0.028
	(0.017)	(0.017)	
Class P5	0.675	0.680	-0.005
	(0.052)	(0.050)	
Age	12.290	12.386	-0.096
	(0.127)	(0.101)	
Interview at school	0.938	0.919	0.019
	(0.028)	(0.024)	
Lives with at least one parent	0.802	0.815	-0.012
	(0.022)	(0.018)	
Number of times child missed school in last school week	0.718	0.869	-0.151
	(0.082)	(0.169)	
Number of school items owned (0-7)	5.174	5.031	0.143
	(0.113)	(0.148)	
Number of school items in good shape (0-7)	2.274	2.133	0.141
	(0.224)	(0.275)	
Worked on cocoa (12 months)	0.652	0.665	-0.013
	(0.044)	(0.041)	
Worked on cocoa (7 days)	0.388	0.435	-0.047
	(0.038)	(0.038)	
Child labour (12 months)	0.738	0.805	-0.068
	(0.042)	(0.029)	
Child labour (7 days)	0.559	0.633	-0.074
	(0.047)	(0.036)	
Number of hazards (12 months)	4.308	4.403	-0.095
	(0.432)	(0.392)	
Number of hazards (7 days)	2.297	2.479	-0.182
	(0.300)	(0.298)	
N	880	863	
Clusters	32	32	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable school level. Strata fixed effects (region) included in all estimation regressions. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A5: Child balance checks – Final sample (tracked at endline)

Variable	(1) Control Mean/SE	(2) Treatment Mean/SE	T-test Difference (1)-(2)
Female	0.433	0.403	0.030
	(0.021)	(0.018)	
Class P5	0.678	0.687	-0.009
	(0.053)	(0.050)	
Age	12.276	12.382	-0.106
	(0.128)	(0.102)	
Interview at school	0.936	0.918	0.018
	(0.030)	(0.024)	
Lives with at least one parent	0.805	0.824	-0.019
	(0.021)	(0.018)	
Number of times child missed school in last school week	0.739	0.855	-0.116
	(0.088)	(0.171)	
Number of school items owned (0-7)	5.183	5.041	0.142
	(0.098)	(0.150)	
Number of school items in good shape (0-7)	2.285	2.143	0.142
	(0.218)	(0.280)	
Worked on cocoa (12 months)	0.653	0.669	-0.016
	(0.045)	(0.042)	
Worked on cocoa (7 days)	0.389	0.437	-0.048
	(0.040)	(0.040)	
Child labour (12 months)	0.740	0.811	-0.071
	(0.042)	(0.030)	
Child labour (7 days)	0.565	0.643	-0.078
	(0.046)	(0.038)	
Number of hazards (12 months)	4.319	4.482	-0.162
	(0.440)	(0.413)	
Number of hazards (7 days)	2.294	2.555	-0.262
	(0.309)	(0.321)	
N	786	785	
Clusters	32	32	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable school level. Strata fixed effects (region) included in all estimation regressions. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A6: Caregiver balance checks – Full sample

Variable	(1) Control Mean/SE	(2) Treatment Mean/SE	T-test Difference (1)-(2)
Number of children interviewed in household	1.158	1.166	-0.008
	(0.022)	(0.021)	
Age	42.938	43.123	-0.185
	(0.532)	(0.577)	
Female	0.713	0.677	0.036
	(0.023)	(0.019)	
Married	0.697	0.685	0.012
	(0.021)	(0.021)	
Education level (1-5)	2.413	2.369	0.044
	(0.055)	(0.061)	
Caregiver is head of household	0.595	0.616	-0.021
	(0.021)	(0.027)	
Number of children aged 5-17 in household	2.870	2.934	-0.064
	(0.082)	(0.071)	
Number of children aged 5-17 attending school	2.684	2.761	-0.077
	(0.075)	(0.062)	
Number of sources of income	2.086	2.111	-0.025
	(0.078)	(0.066)	
Most important source of income: cocoa or other crops	0.664	0.746	-0.081*
	(0.037)	(0.029)	
Wealth index (PCA)	1.630	1.441	0.189
	(0.094)	(0.082)	
Total land under cultivation (Acres)	5.295	6.043	-0.748
	(0.439)	(0.411)	
Household owns land	0.383	0.393	-0.010
	(0.027)	(0.030)	
Shortage labour: cocoa or other crops	0.405	0.464	-0.058
	(0.040)	(0.033)	
Cost hired adult labour cocoa	72.897	59.348	13.550
	(10.335)	(5.631)	
Caregiver worked when was a child	0.704	0.639	0.065
	(0.033)	(0.041)	
Child should support if shortage adult labour during harvest season	0.361	0.359	0.001
	(0.043)	(0.042)	
Awarness raising campaigns about hazardous child work in the last 5 years	0.432	0.408	0.023
	(0.044)	(0.038)	
Household received school materials in the last 5 years	0.283	0.226	0.057
	(0.035)	(0.041)	
Can read and write in English	0.224	0.254	-0.030
	(0.023)	(0.021)	
N	760	740	
Clusters	32	32	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable school level. Strata fixed effects (region) included in all estimation regressions. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A7: Caregiver balance checks – Final sample (tracked at endline)

Variable	(1) Control Mean/SE	(2) Treatment Mean/SE	T-test Difference (1)-(2)
Number of children interviewed in household	1.151	1.168	-0.016
	(0.019)	(0.022)	
Age	42.853	43.062	-0.209
	(0.544)	(0.579)	
Female	0.719	0.670	0.049*
	(0.021)	(0.019)	
Married	0.690	0.698	-0.008
	(0.024)	(0.022)	
Education level (1-5)	2.401	2.387	0.014
	(0.058)	(0.063)	
Caregiver is head of household	0.600	0.610	-0.010
	(0.020)	(0.028)	
Number of children aged 5-17 in household	2.871	2.941	-0.071
	(0.083)	(0.072)	
Number of children aged 5-17 attending school	2.672	2.769	-0.097
	(0.074)	(0.064)	
Number of sources of income	2.079	2.127	-0.047
	(0.077)	(0.074)	
Most important source of income: cocoa or other crops	0.657	0.750	-0.092*
	(0.038)	(0.029)	
Wealth index (PCA)	1.646	1.435	0.211*
	(0.094)	(0.086)	
Total land under cultivation (Acres)	5.391	6.097	-0.706
	(0.460)	(0.415)	
Household owns land	0.385	0.386	-0.001
	(0.027)	(0.030)	
Shortage labour: cocoa or other crops	0.406	0.459	-0.054
	(0.042)	(0.034)	
Cost hired adult labour cocoa	74.080	59.036	15.044
	(11.649)	(5.663)	
Caregiver worked when was a child	0.719	0.629	0.090*
	(0.030)	(0.041)	
Child should support if shortage adult labour during harvest season	0.357	0.358	-0.001
	(0.043)	(0.042)	
Awarness raising campaigns about hazardous child work in the last 5 years	0.440	0.411	0.029
	(0.043)	(0.038)	
Household received school materials in the last 5 years	0.284	0.234	0.050
	(0.033)	(0.043)	
Can read and write in English	0.219	0.255	-0.036
	(0.026)	(0.022)	
N	680	679	
Clusters	32	32	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable school level. Strata fixed effects (region) included in all estimation regressions. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A8: Headteacher/school balance checks

Variable	(1) Control Mean/SE	(2) Treatment Mean/SE	T-test Difference (1)-(2)
Respondent is the headteacher/deputy head	0.844	0.906	-0.062
	(0.065)	(0.052)	
Headteacher has Teacher or University degree	0.781	0.812	-0.031
	(0.074)	(0.070)	
Number of levels of education taught in school (1-4)	2.250	2.219	0.031
	(0.127)	(0.133)	
Class size (P5)	18.562	18.344	0.219
	(1.516)	(1.723)	
Share of teachers with a Diploma of Education	0.971	0.957	0.015
	(0.015)	(0.018)	
Number of teachers in primary	7.094	6.812	0.281
	(0.400)	(0.306)	
School feeding	0.656	0.594	0.062
	(0.085)	(0.088)	
Number of fees charged to students in primary	1.688	1.781	-0.094
	(0.165)	(0.184)	
School infrastructure: concrete	0.844	0.688	0.156
	(0.065)	(0.083)	
School has toilet	0.812	0.750	0.062
	(0.070)	(0.078)	
Toilet quality (0-4)	1.719	1.812	-0.094
	(0.212)	(0.226)	
School water source: Tube well or borehole	0.406	0.562	-0.156
	(0.088)	(0.089)	
N	32	32	
Clusters	32	32	

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable school level. Strata fixed effects (region) included in all estimation regressions. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Appendix B – Results

Figures

Tables

Table B1: Work in cocoa and child labour

	6 months				7 days			
	Work Cocoa (0,1)	Child labour (0,1)	Hazardous Activity (0,1)	Hazardous Situation (0,1)	Work Cocoa (0,1)	Child labour (0,1)	Hazardous Activity (0,1)	Hazardous Situation (0,1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: OLS without covariates								
School kit (treatment)	-0.026	0.014	-0.039	0.014	-0.038	-0.001	-0.049	0.004
	(0.037)	(0.020)	(0.033)	(0.024)	(0.043)	(0.041)	(0.046)	(0.045)
Observations	1571	1564	1564	1564	1571	1564	1564	1564
R^2	0.095	0.025	0.050	0.026	0.066	0.039	0.066	0.047
Panel B: OLS with covariates (main specification)								
School kit (treatment)	-0.060**	-0.007	-0.064**	-0.011	-0.065*	-0.026	-0.074*	-0.026
	(0.029)	(0.014)	(0.028)	(0.016)	(0.036)	(0.035)	(0.041)	(0.037)
Observations	1571	1564	1564	1564	1571	1564	1564	1564
R^2	0.158	0.095	0.127	0.097	0.115	0.082	0.114	0.084
Panel C: Double Lasso								
School kit (treatment)	-0.061***	-0.007	-0.063***	-0.012	-0.065***	-0.027	-0.075***	-0.024
	(0.021)	(0.015)	(0.020)	(0.016)	(0.024)	(0.024)	(0.025)	(0.024)
Observations	1571	1564	1564	1564	1571	1564	1564	1564
Panel D: IV with controls								
Number of school items	-0.074**	-0.008	-0.078**	-0.014	-0.080*	-0.032	-0.091*	-0.031
	(0.038)	(0.017)	(0.034)	(0.019)	(0.043)	(0.042)	(0.048)	(0.045)
Observations	1571	1564	1564	1564	1571	1564	1564	1564
R^2	0.120	0.098	0.111	0.102	0.116	0.092	0.122	0.094

Notes: Strata (region) fixed effects and baseline outcome variable included in all regressions. The baseline outcome variable for columns 1–4 is the 12 months reference period instead of 6 months. Standard errors are clustered at the school level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.