

Impact Evaluation of the ‘Cash Education’ Programme in Senegal

Endline report

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Executive summary

Background

The education system in Senegal faces several challenges, which were already evident before the COVID-19 crisis. For example, in 2019 just around 46 per cent of boys and 54 per cent of girls were enrolled in lower secondary and 32 per cent of boys and 35 per cent of girls were enrolled in upper secondary schools (MEN, 2019).

Children's schooling was negatively affected by the consequences of COVID-19, mostly in terms of learning losses and school dropouts (see, for instance, Ndejjo, R., et al., 2023). Inflation and the cost-of-living crisis further increased the challenges for children in accessing school and completing their education cycle.

The Cash Education programme

To support the schooling of children from poor households, the Ministry of Education (MEN) together with the General Delegation for Social Protection and National Solidarity (*Délégation générale à la protection sociale et à la solidarité nationale*, DGPSN) has developed a COVID-19 response plan, which includes the Cash Education programme. This covers six disadvantaged regions (Kaffrine, Tambacounda, Kédougou, Kolda, Sédhiou and Matam) and provides an additional digital cash top-up to households that are already receiving the social protection National Family Security Grant Programme (*Programme national de bourse de sécurité familiale*, PNBSF).¹

The programme aims to improve school enrolment, attendance and transition, as well as reduce school dropout, for children in primary and lower secondary schooling. All PNBSF households including children with disabilities were eligible to receive the Cash Education top-up. Beneficiaries' selection further relied on a proxy means test (PMT) cut-off identifying the poorest tercile of PNBSF households. The programme has an additional focus on girls.

The Cash Education programme was designed with a variable amount based on the child's schooling level, gender and disability status. Amounts were to be transferred in two equal tranches, with the first tranche planned to be unconditional and transferred soon after the start of the school year (October–December 2022), and the second tranche planned to be conditional on school attendance, and to be delivered after the first three months of the school year (January–March 2023).

This report provides results from the programme impact evaluation, which was conducted by UNICEF Innocenti, in collaboration with UNICEF Senegal and *Société de Développement International (SDI)*.²

¹ The Cash Education programme is implemented by DGPSN, with support from UNICEF and funding from the government of Canada. The initiative is implemented within the framework of the broader government programmatic response to COVID-19, that is the Multisectoral Support Programme for the Inclusive Recovery of Basic Social Services (programme 'Relance').

² The evaluation was conducted as part of the Transfer Project, which is a broader research collaborative by UNICEF, the Food and Agriculture Organization of the United Nations (FAO) and the University of North Carolina at Chapel Hill (see <https://transfer.cpc.unc.edu/>).

Impact evaluation objectives and intended audience

The evaluation has the overall purpose to provide evidence on the schooling impacts of Cash Education, thus informing its potential scale up.

The primary objective of the evaluation is to identify the impact of Cash Education on school enrolment, attendance, transition to the next year, and dropout. Given the fungibility of cash, impacts were also estimated on household indicators including consumption, time use, savings, receipt of other transfers, and assets. Another objective of the study was to examine aspects of programme implementation, such as programme take-up and timeliness.

The results contribute to the evidence on the educational impacts of cash transfers and are especially relevant to UNICEF and the government of Senegal, primarily the MEN and DGPSN. Results can also inform the design or scale up of similar programmes in analogous contexts.

Methodology

The study has a quasi-experimental longitudinal design with a treatment and control group. Akin to a Regression Discontinuity Design (RDD), the PMT of Cash Education was used to identify an appropriate counterfactual. The sample was selected from households with a PMT score in the vicinity of the eligibility cut-off, one standard deviation above (control) and below (treatment).

Two rounds of data collection were implemented in November–December 2022 (baseline) and at the same time in 2023 (endline), which were used in a Difference-in-Difference (DiD) analysis to estimate the effects of receiving the cash top-up, versus receiving PNBSF only. While having elements of an RDD, our approach differs from a classical RDD due to availability of both baseline and endline as well as sampling in the vicinity of the cut-off. Taken together, these elements made DiD estimation more appropriate.

Key findings

Despite programme implementation deviating significantly from the original design due to operational challenges, the programme resulted in a positive impact on school attendance and a reduction in school dropout. The sections below provide a summary of results.

Barriers to schooling

- Endline data from the evaluation sample (control group) show an overall enrolment rate of 80 per cent for the sample of children aged 6–18 years, with school enrolment being highest among younger children (aged 6–14 years), at 84 per cent for boys and 87 per cent for girls. The enrolment rate is lowest among older children aged 15–18 years, at about 69 per cent among girls and 64 per cent among boys.
- The primary reasons for children never enrolling in school were reported as a lack of interest from the child, and family financial constraints. Illness represented the most reported reason for school dropout, followed by a lack of interest from the child and financial constraints.
- Financial reasons are among the key determinants of school participation, with households spending an average of FCFA 66,580 (US\$ 106) on education in 2022/23 (in constant 2021/2022 FCFA). School supplies (books, notebooks), canteens and tuition fees are the main cost items.

Programme operational performance

- Beneficiaries had a clear understanding of the programme's eligibility criteria and most of them also assessed the selection process as fair. However, only 46 per cent of respondents in the treatment group reported being aware of the programme.
- About 70 per cent of eligible households cashed out the transfer, based on administrative data.
- Eligible households were notified by SMS about the availability of the Cash Education money. However, in some cases SMS inboxes were full, so the messages could not be delivered. This, together with poor connectivity, contributed to limiting the take-up rate of Cash Education.
- Further, the implementation of the programme deviated from the original design and schedule:
 - Only one of the planned cash transfers was delivered in the study period, and delivery occurred with a three-month delay. This was mostly due to contracting of the mobile service provider taking longer than expected.
 - The conditionality was also removed, due to delays in establishing the necessary official agreements for it to be operationalized (the second transfer was delivered as an unconditional payment during May–June 2024, and it is not captured in this evaluation).
- Beneficiary households received an average of FCFA 23,000 (about US\$ 38), which is equivalent to the amount they spent for the education of one child during the year 2022/23. Transfers were mostly used to pay for schooling costs, including tuition fees, school supplies and uniforms.

Impacts of Cash Education

Impacts are first estimated for the full sample of children aged 6–18 years (at endline), then disaggregated by gender-age groups (younger girls and boys aged 6–14 years, and older girls and boys aged 15–18 years). The analysis uses an Intention-to-Treat (ITT) approach.

- **Enrolment** in the 2023/2024 school year was not significantly impacted by the programme. This may be due school enrolment being already high before the programme (at about 80 per cent). Moreover, the monetary transfer was delivered in early 2023 and households may have spent it already by the time of the start of the school year, 9 to 11 months later.
- **School attendance** was positively impacted by the programme, with a statistically significant *effect of 2.5 percentage points (pp) for the full sample of children aged 6–18 years*. School attendance increased for all separate gender-age groups, except for younger boys. *Impacts are stronger for children aged 15–18 years, at 4.5pp among girls and 4.1 pp among boys*.
- **Transition to the next year** was mostly unaffected by Cash Education, except for younger girls, among whom a negative and *statistically significant coefficient of -3.8 pp is found*. This is possibly related to the fact that the programme allowed for school retention of vulnerable girls, who would have otherwise dropped out. As these girls are relatively less likely to progress across grades, the average transition rate declines in the programme group.
- **Dropout** was significantly reduced, with a statistically significant *impact of -0.7 pp for the full sample of children aged 6–18 years*. This corresponds to a 37 per cent reduction in dropout, compared to the 1.9 per cent dropout rate in the control group at endline.
- Results on secondary outcomes show that Cash Education did not affect children's and adults' time. Impacts on household welfare (expenditure, food security, transfer receipt and assets) are mostly not statistically significant except for the reductions in the amount of amount of food transfers received by relatives and friends. This suggests that households may be using the Cash Education to pay for schooling costs, rather than relying on help from family and friends.

Key lessons learned

Overall, the Cash Education programme partially achieved its objectives. While the evaluation found evidence of an increase in school attendance and a reduction in dropout, transition and enrolment did not change as expected. These impacts are largely similar for boys and girls. However, there was a reduction in the transition of younger girls. The following key lessons can be drawn:

Maintaining fidelity of implementation is key. Only one Cash Education transfer was delivered, instead of two as originally planned. Moreover, the payment was delivered about three months after the planned timeline. These aspects contribute to explain why the programme only partially achieved its objectives, signalling the importance of implementation fidelity.

It is important to consider operational challenges at the implementation planning stage.

Programme implementation deviated from the planned design mostly due to the operational challenges in introducing a digital method of payment. So, at the implementation planning stage it is important to put in place specific actions to support the readiness of the payment infrastructure to accommodate digital payments.

Communication and programme monitoring are essential to ensure take-up. Cash Education take-up was limited due to operational challenges for SMS delivery and connectivity issues. Intense direct communication about the programme with eligible households and frequent monitoring of cash receipt are important to identify and address operational barriers.

Providing cash-top up in support of education can be an effective strategy to school participation.

Despite challenges the programme had positive impacts and allowed households to overcome (at least partly) the financial constraints to education. This speaks to the importance of supporting this type of interventions in other disadvantaged context in Senegal and other countries.

Contextual aspects play a key role as mediators of programme impacts. As the programme reduced dropout, results suggest that those children that remained in school showed limited progression. This is possibly due to the limited capacity of the schooling system to support learning for the most disadvantaged children due to school supply constraints. These elements allow better interpretation of the findings and suggest the need to consider supply elements in programme design.

Recommendations

Recommendations were drawn for future implementation of similar programmes. These are provided for DGPSN and UNICEF as pertains Senegal but can hold for other similar contexts.

Improve the timeliness of Education payments, ensuring that the programme is implemented according to the planned design and schedule of payment.

Strengthen the digitization of the payment infrastructure. Measures to support the readiness of the PNBSF payment infrastructure to accommodate regular or one-off digital payments could include, for example, updating of Single National Register (RNU) data, putting in place long-standing contracts with mobile and financial service providers, and ensuring that the PNBSF payment module allows for digital transfers and reconciliation.

Improve communication about the programme and strengthen monitoring of payments, specifically with regards to the innovative digital method of payment. Overall, there is margin to increase programme take-up to maximize its impact. More intense communication on the programme could have improved awareness and take-up. Further, despite the efforts in monitoring and follow-up on bottlenecks, additional efforts to ensure the accuracy of phone numbers of beneficiaries and support cashing out could have further increased programme take-up and impact.

Expand the programme to other vulnerable households. If implemented as intended and not just as a COVID-19 response, but as a general education-related top-up to the PNBSF, the programme has the potential to generate significant improvements in the schooling outcomes of other disadvantaged children. It is also important to assess gaps in coverage of the underlying PNBSF and keep those as well in consideration when deciding on expansion of Cash Education.

Strengthen learning support for vulnerable children. Those children that remained in school thanks to the programme did not progress well to their next grade. The Cash Education program can be more effective if implemented in conjunction with broader efforts to strengthen learning support for vulnerable children. This could involve coordinating with schools to provide targeted tutoring or remedial classes for students who are at risk of falling behind.

Strengthen household and community awareness on the importance of education. One of the main reported reasons for children being out of school was lack of interest from the child. Providing information on the benefits of schooling to caregivers and children and enhancing their awareness of children's rights can contribute to improving school participation and learning (World Bank, 2020). Engaging teachers and the broader community can further improve programme effectiveness.

Conduct research on the role of implementation and contextual factors, and long-term impacts :

- *Qualitative research on enablers and challenges of implementation.* This research should explore questions such as: What were the main obstacles encountered in setting up the mobile money payment system? How did beneficiaries experience the process of receiving and using the transfers? What were the unintended consequences of the implementation delays? This analysis could provide valuable lessons for programme scale up.
- *Qualitative research on the role of contextual factors, such as social norms.* A lack of interest from the child was commonly reported as a reason for children being out of school. As the data reflect caregivers' perceptions, this finding calls for enquiring on the perceptions of children themselves. Analysis of individual contextual barriers to schooling by gender and age can support in further assessing appropriate transfer amounts for boys and girls.
- *Long-term evaluation.* The impacts captured in this report refer to the short term (less than one year after the transfer was delivered). Long-term follow-ups would allow for tracking children's progress in schooling and their transition to work, providing relevant information on the sustainability of impacts and long-term effectiveness of the programme.

1. Background

The education system in Senegal faces several challenges, which were already apparent before the COVID-19 crisis. For example, the 2019 gross enrolment rate in primary school was estimated at 85 per cent (about 92 per cent for females and 78 per cent for boys). Of those enrolled in primary school, only 56 per cent of boys and 69 per cent of girls completed their primary education. Enrolment in lower secondary and upper secondary were also low with just around 46 per cent of males and 54 per cent of females enrolling in lower secondary and 32 per cent of males and 35 per cent of females enrolling in upper secondary schools (MEN, 2022). Schooling indicators vary significantly across regions. For instance, as of 2022 the gross enrolment rate in lower primary school ranges between 24 per cent in Kaffrine and 94 per cent in Ziguinchor (MEN, 2022).

In Senegal, like in many other countries in West Africa and worldwide, children's schooling was negatively affected by the consequences of COVID-19, mostly in terms of learning losses and school dropout related to school closures, combined with difficulties in paying for schooling costs due to household economic losses (see, for instance, Ndejjo, R., et al., 2023). Inflation and the cost-of-living crises further increased the challenges for children in accessing school and completing their education cycle. While the primary reasons for low enrolment and low transition rates are household financial constraints and inadequate quality of school supply, cultural factors such as early marriage also play a role (Ndiaye, 2021).

Against this backdrop, the Ministry of Education has developed a COVID-19 response plan, which includes the Cash Education programme together with the General Delegation for Social Protection and National Solidarity (*Délégation générale à la protection sociale et à la solidarité nationale*, DGPSN). The initiative supports achievement of Sustainable Development Goal 4, on ensuring equitable quality education and promoting lifelong learning. It relates to targets 4.1 ("ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes") and 4.5 ("eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations").

The Cash Education programme provides an additional cash top-up to poor and vulnerable households that are already receiving the National Family Security Grant Programme (*Programme national de bourse de sécurité familiale*, PNBSF). The Cash Education programme is implemented by DGPSN, with support from UNICEF and funding from the government of Canada.³ The cash transfer is carried out via Sonatel's mobile money platform (Senegal's leading telephone company). Beneficiaries receive notification of the deposit and are given a code to retrieve their money on presentation of their national identity card. Sonatel has made its platform accessible to UNICEF and the DGPSN to monitor withdrawals and adjust communications in areas where the rate of cash transfer withdrawals is weak.

³ The initiative is implemented within the framework of the broader government programmatic response to COVID-19, that is the Multisectoral Support Programme for the Inclusive Recovery of Basic Social Services (programme 'Relance').

The Cash Education programme covers six poor and vulnerable regions of Senegal, namely Kaffrine, Tambacounda, Kédougou, Kolda, Sédhiou and Matam, all of which are characterized by relatively high dropout rates and low rates of transition from the primary to the secondary level. It has the specific objectives to improve school enrolment, attendance and transition, as well as reduce school dropout, with a focus on children in primary and lower secondary schooling. The programme had a focus on children with disability, as all PNBSF households including children with disabilities were eligible to receive the Cash Education top-up. Selection of beneficiaries for Cash Education further relied on a proxy means test (PMT) score and considered a specific PMT cut-off identifying the poorest tercile of PNBSF households (households with a PMT score below the threshold are eligible for the cash top-up). The programme further aims at reaching at least 60 per cent of girls in the poorest households.

This report provides results from an impact evaluation of Cash Education, based on two rounds of data collection implemented in November–December 2022 (baseline) and at the same time in 2023 (endline). Impacts were estimated by considering households with a PMT score in the vicinity of the PMT eligibility cut-off (one standard deviation above and below), with households below the threshold representing the treatment group and households above the threshold representing the control group. Baseline and endline data were used in a Difference-in-Differences (DiD) strategy to estimate programme impacts. These represent the effect of receiving the Cash Education top-up, versus receiving PNBSF only.

Beyond impacts on key schooling indicators, the report includes analysis of the operational aspects of the Cash Education programme, including beneficiary awareness, programme take-up, and other implementation aspects, such as timeliness and amounts received.

Further, the impacts of Cash Education on a set of secondary outcomes are also presented, including children's and adults' time use, as well as household expenditure, food security, receipt of transfers from family and friends, savings, debt, and assets.

The evaluation was conducted by UNICEF Innocenti, in collaboration with UNICEF Senegal and *Société de Développement International (SDI)*, as part of the Transfer Project, which is a broader research collaborative by UNICEF, the Food and Agriculture Organization of the United Nations (FAO) and the University of North Carolina at Chapel Hill.⁴ The results contribute to the evidence on the educational impacts of cash transfers and are especially relevant to UNICEF and the government of Senegal. Results can also broadly inform the design or scale up of similar programmes in analogous contexts.

The report is structured as follows. Section 2 provides a detailed description of the programme, including objectives, eligibility criteria, payment terms and amounts, as well as theory of change. Section 3 describes the evaluation purpose and objectives. Section 4 reports the methodology, including information on study design, data collection, balance and sample, and estimation method. Section 5 describes the main evaluation findings, including analysis of barriers to schooling, operational aspects of the programme, and impacts on school participation and transition. Section 6

⁴ See <https://transfer.cpc.unc.edu/>

complements the impact analysis considering secondary outcomes, while sections 7 and 8 conclude with lessons learned and recommendations.

2. Programme description and theory of change

2.1 Programme objectives and eligibility criteria

The overall goal of Cash Education is to support the poorest households in meeting the direct and indirect costs of schooling, specifically for children in the primary and lower secondary cycles. The programme focuses on six poor and vulnerable regions of Senegal, namely Kaffrine, Tambacounda, Kédougou, Kolda, Sédhiou and Matam, which are characterized by relatively high dropout rates and low rates of transition from the primary to the secondary level.

The specific objectives of the programme include increasing school enrolment, attendance, and transition, as well as reducing school dropout. The programme also has a focus on girls and children with disability.

To reach these objectives, a cash top-up is provided to households that are already beneficiaries of the social protection PNBSF, provided by the government to poor households. The RNU database that includes PNBSF beneficiaries is used to select the households that are eligible to receive the Cash Education top-up. This database contains the most up-to-date and informative household data (including a disability indicator) in the study area.

Beneficiaries of Cash Education are selected among households included in the RNU database that have at least one child enrolled in (elementary or lower secondary) school during the 2021–2022 school year or a child who has reached the age of compulsory schooling (6 years).

Within RNU households with school-age or in-school children, Cash Education beneficiaries are selected based on the following order of prioritization. First, priority is given to children with disabilities, so all households with a school-age child with a disability are beneficiaries for the education cash top-up. Second, children from the poorest RNU households are considered, with the poorest households identified based on a PMT score, calculated by the DGPSN as part of the PNBSF beneficiary targeting (poorest households are those RNU households belonging to the first tercile of the PMT score). Third, attention is paid to ensure at least 60 per cent of selected children within the priority households were girls.

Based on the programme administrative target, an overall list of 60,000 children from approximately 20,000 households potentially benefiting from Cash Education was drawn up. A verification survey at household level of each identified beneficiary was carried out, providing the vital opportunity of updating mobile phone numbers to facilitate the digital Cash Education transfer.

2.2 Payment terms

To meet the twin goals of both getting students back in the classroom and keeping them in school, Cash Education transfers were planned to be disbursed in two phases:

In the first phase, 50 per cent of the allowance was to be paid, two months after the start of the 2022/2023 school year (October 2022). The first transfer is not conditional on the pupil's enrolment or effective entry into the school, so as to allow households to cover the costs of school entry.

In the second phase, the remaining 50 per cent of the amount was to be transferred at the end of the first three months of the school year (January 2023). This second transfer is conditional on the pupil's actual school attendance during the first three months of the school year. Pupils benefiting from the first instalment who have not been to school or who have dropped out will not be able to benefit from this second transfer. The monitoring and evaluation to confirm school attendance of beneficiary students during the first term was designed to be carried out by the existing decentralized workforce of the Ministry of Education, notably the Academic Inspection (*Inspection d'Académie*, IA) and the Education and Training Inspection (*Inspection de l'Éducation et de la Formation*, IEF).

The recipient of Cash Education is the mother of the family in household, the same recipient of the PNBSF. The planned payment mechanism introduces a digital method to complement the payment system of the main PNBSF programme, which is administered by the government, namely the DGPSN, and which generally uses a cash-in-hand mechanism.

The Cash Education initiative uses the system set up for the PNBSF for the targeting of beneficiaries and for any non-fiduciary aspects (e.g., social operators engaged in awareness-raising sessions on education before the start of the school year for all households benefiting from the PNBSF). As mentioned above, the process of beneficiary selection includes a verification survey to confirm or update beneficiaries' mobile phone numbers for the digital transfer of Cash Education.

For the fiduciary aspect, an agreement with mobile and financial service provider Orange/Sonatel is established by the DGPSN to specifically facilitate the Cash Education payments. Beneficiaries of Cash Education receive two SMS messages: one message to notify them of the upcoming cash transfer, and one message with a personalized code. With this code, a beneficiary goes to an Orange cash point, and identifies themselves with their national ID card, after which the cash transfer is handed over and reconciled. The SMS code is valid for two weeks, during which the beneficiary can retrieve the cash transfer. Three rounds of codes are sent, to ensure that beneficiaries who passed the first deadline of two weeks have two more chances (lasting two weeks each) to retrieve the cash transfer. If a household does not cash out with the first-round code (which expired after two weeks), they are sent a new code in the second round, and if again the transfer is not collected, a final code in the third round. In between the rounds, the local social workforce tries to locate and sensitize the households to the cash out procedure.

2.3 Payment amounts

The amount of the individual allowance varies based on the situation of the considered child, as follows:

- 14,000 FCFA (i.e., two tranches of 7,000 FCFA) for children to be enrolled in elementary school.
- 18,000 FCFA (i.e., two tranches of 9,000 FCFA) for boys to be schooled in the lower secondary school.

- 22,000 FCFA (i.e., two tranches of 11,000 FCFA) for girls to be enrolled in lower secondary school.
- 25,000 FCFA (i.e., two tranches of 12,500 FCFA) for disabled students, not cumulative with the previous amounts.

Amounts are summarized in Table 1.

Table 1: Transfer amounts by school level, gender and disability status of the child

Primary school	Lower secondary school		Children with disability
FCFA 14,000 per child	Boys	Girls	FCFA 25,000 per child
	FCFA 18,000 per child	FCFA 22,000 per child	

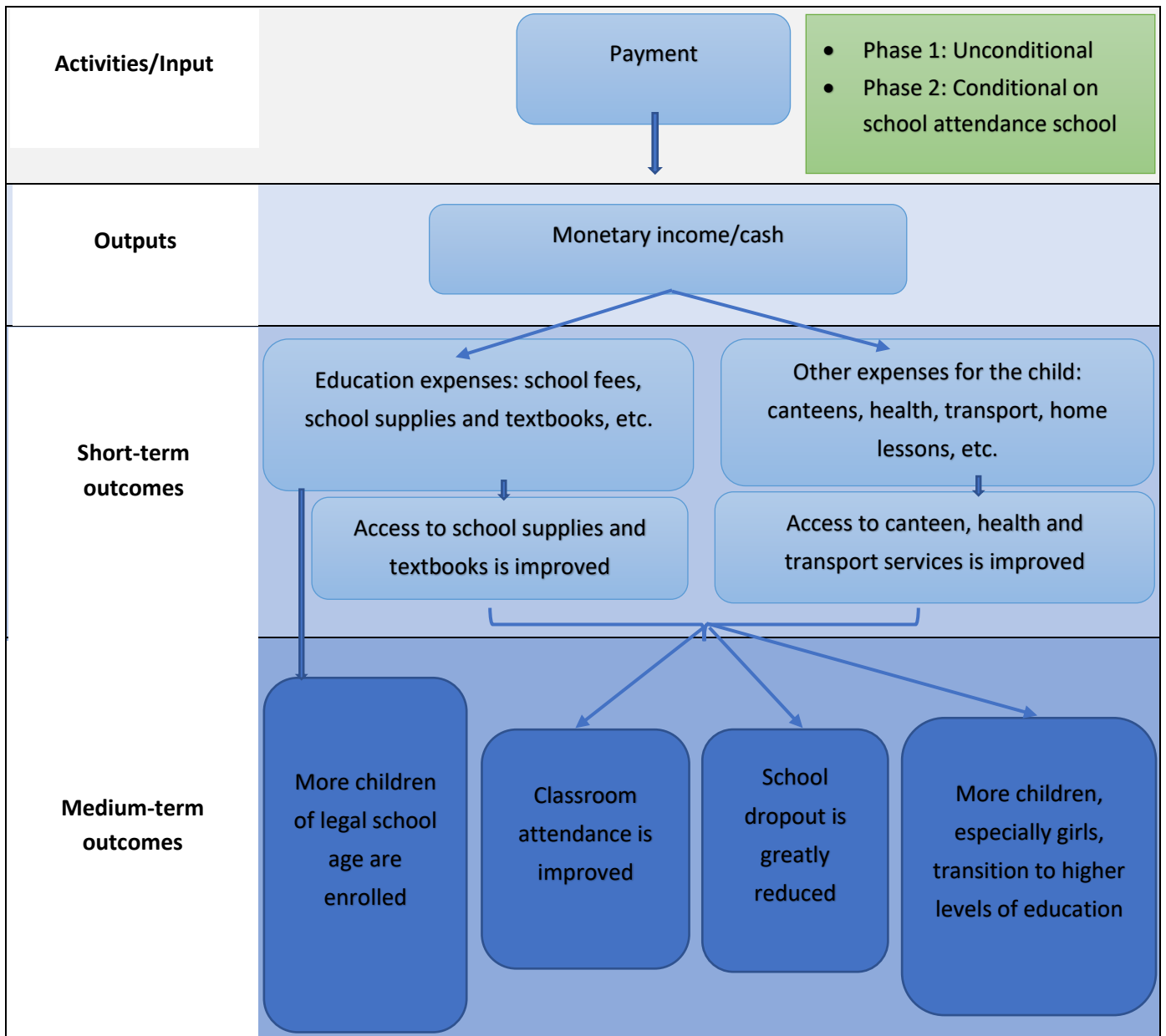
2.4. Theory of change

Figure 1 shows the programme theory of change, from inputs to expected impacts. Following cash payments, the immediate programme output is the provision of higher monetary income to poor and vulnerable households with children in school or of school age.

In the short term, this additional income is expected to support households in paying for the direct costs of education (including school fees, school supplies and textbooks) and other expenditures on children (such as canteen costs, transport, or health costs). This will improve children’s access to school supplies and textbooks, as well as canteen food, health and transport services.

Following these changes, in the medium term, four key schooling outcomes are expected to improve, including enrolment, attendance, dropout and transition to higher levels of schooling.

Figure 1: Theory of Change of Cash Education



Source: UNICEF, Concept note of the impact evaluation of the *Cash Education* initiative in Senegal, 2022.

3. Evaluation purpose, objectives and scope

The evaluation had the purpose to provide evidence on the impacts of Cash Education on school participation and transition, in the context of the COVID-19 response. The results especially relevant to UNICEF and the government of Senegal, primarily the MEN and DGPSN. They contribute to the evidence on the educational impacts of cash transfers and inform the design or scale up of similar programmes in analogous contexts. Overall, the impact evaluation supports achievement of SDG 4, on ensuring inclusive and equitable quality education for all.

The main objective of the evaluation was to identify the impact of Cash Education on those indicators that are expected to be primarily impacted by the programme based on the theory of change described above. These indicators include school enrolment, attendance, transition to the next year, and dropout. Aligned with the eligibility criteria of Cash Education, which include a focus on girls, the evaluation aims to examine the impact of the cash top-ups on girls' educational outcomes in particular.

Of primary interest was also an examination of the programme's operational performance and beneficiary views in terms of adequacy, payment modality and conditionality, as this analysis enriches the findings, helps with the understanding of programme impacts, and provides lessons for programme implementation for future scale up or introduction of similar programmes in analogous contexts.

Furthermore, given that cash is fungible, the evaluation also had the objective to examine how the cash top-up affected other household welfare indicators, including expenditure and food security, and other individual-level outcomes such as time use. The study also explored the contextual factors that moderated the relationship between the cash top-up and school participation.

This evaluation contributes to the literature that documents the effectiveness of various types of cash transfer programmes on schooling outcomes, with a focus on school participation indicators, such as enrolment, attendance and dropout. The evaluation also examines whether the impacts vary by gender and age. Returns to investing in education can vary by gender which could influence how households spend the cash transfers on boys and girls (Evans et al., 2023; Psacharopoulos & Patrinos, 2018).

The evidence shows that cash transfers improved school participation in most contexts (see, for instance, Bastagli et al., 2019; Evans and Mendez Acosta, 2021; Handa et al., 2018; Snilstveit et al., 2016). The systematic review by Bastagli et al. (2019) found that the majority of the studies that examined school attendance found positive impacts and a smaller group of studies also found reductions in school absenteeism. A global review by Baird et al. (2014) found that both conditional and unconditional cash transfers improved school enrollment and attendance in developing countries. In Sub-Saharan Africa, evidence from the Transfer Project showed that unconditional cash transfers consistently improved enrolment for children of secondary-school age. A multi-country study of eight evaluations found consistent positive impacts on secondary school enrolment across six out of eight considered impact evaluations (Handa et al., 2018). The six evaluations focused on cash transfer programmes in Ghana, Kenya, Lesotho, Malawi, and Zambia. The authors of

the study concluded that impacts from these countries are in line and often above than those found from conditional programmes in Latin America. In Tanzania, a conditional cash transfer programme had no impact on school attendance or primary school completion, but it increased the likelihood of ever having attended school, which was driven by increased timely enrollment among younger children (Evans et al., 2023).

Evaluations of conditional cash transfer programmes in Latin American countries had indeed shown consistent positive results. For example, Skoufias et al., (2001) found that Mexico's PROGRESA increases boys' and girls' school enrolment and attendance; Glewwe and Kassouf (2012) found that Brazil's Bolsa Familia increases children's school enrolment, decreases dropout rates, and increases grade transition; Attanasio et al., (2021) documented the long-term effects of Colombia's urban *Familias en Accion*, showing that the programme increased college enrolment and reduced dropout rates. Overall, both conditional and unconditional cash transfers are found to have significant impacts on a range of schooling outcomes (Baird et al. 2014).

Evidence on the effects of cash transfer programmes further showed that impacts tend to be heterogeneous across gender-age groups. For example, Baird et al., (2011) found that conditional cash transfers increased educational outcomes among female adolescents in Malawi and Hoddinott et al., (2009) found that conditional cash transfers increase boys' and older girls' schooling outcomes while reducing schooling outcomes of younger females. Another study by Sessou et al., (2024) also documented heterogeneous impacts of a cash transfer programme in Mali, where younger and older girls reaped educational gains, while boys did not. Further, an evaluation of an unconditional transfer in Zambia by Handa et al., (2016) found no overall effect on school enrolment: however, further disaggregation showed a positive effect on 11–14 year olds who were more likely to drop out of school. Evans et al., (2023) found similar positive impacts on having ever attended school for boys and girls in Tanzania.

This impact evaluation primarily adds to the literature that examines the effectiveness of cash transfer programmes in improving schooling outcomes in the African context, with a focus on school participation. The design of the transfer under investigation involves providing cash grants to eligible households on two installments based on the school calendar. The first installment was to be transferred right after the start of school and is not conditioned on school enrollment, making it an unconditional transfer. The second installment was to be made at the end of the first quarter of the school year and is only transferred to households that have their children regularly attending school, making it a conditional transfer.

4. Evaluation design and methodology

4.1 Evaluation questions

In line with the objectives, the evaluation was designed to answer the following questions:

1. What was the programme's operational performance and what are the views of the recipients of the cash top-up regarding payment adequacy, modality and conditionality? Sub-questions include:
 - a. Was the programme implemented as intended?
 - b. Have beneficiaries received complete payments on time?
 - c. What were the main challenges and enablers of implementation?
2. To what extent did the Cash Education programme achieve its objectives?
3. What are the programme's gender and age-specific impacts on school enrollment, attendance, transition and dropout?
4. What is the impact of the cash top-up on secondary outcomes of interest?
 - a. Does the cash top have any impacts on other household welfare indicators such as expenditure and food security?
 - b. Does the cash top have any impacts on other individual-level indicators such as time use?
5. What are some of the contextual factors (distance to school and household head characteristics) that moderate the relationship between the programme and children's school participation?

The first question has a focus on *efficiency* of programme implementation, as defined by the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) Criteria. The second question has a focus on programme *effectiveness*, while the remaining questions address programme *impact*. The evaluation matrix in Annex I summarises the research questions, data sources and analysis approach, according to these three criteria. The next sections provide details on the study design, sampling, data collection and estimation method.

4.2 Evaluation design

Identifying a causal impact requires a counterfactual, i.e. measuring what would have happened to beneficiaries if they had not received any Cash Education monetary transfers. One commonly used way to build a counterfactual is to select a given population and randomly assign half of the individuals to an intervention group where they benefit from the programme, while the other half does not get additional support (comparison group). In such a set-up, the comparison group makes up a good counterfactual, as it is made of similar individuals as those who received the programme because of the random nature of programme assignment.

In the case of Cash Education, as described in section 2, cash transfers were allocated based on households' PMT score (households with a PMT equal or below 12.4065 were eligible to receiving the intervention). Since the PMT score captures poverty, households with different poverty scores are characterized by different levels of poverty, which means they are not directly comparable. Indeed, richer households can allocate more resources to their children's education, which is likely to translate into better education outcomes on average compared to less affluent households.

To address this comparability challenge, we identified households in the vicinity of the PMT cut-off. Households within one standard deviation below and above the PMT threshold were selected as sampling frame for the study treatment and control group, respectively. This approach relies on the assumption that households with a PMT score close to the eligibility threshold are similar and that for such households, the programme allocation is as random (e.g., a household with a PMT equal to 12.406 is similar to one with a PMT equal to 12.407 and they only differ on the fact that the latter is eligible for the programme and not the former).

Based on power calculations, a sample of 4,252 households was selected at baseline.⁵ An endline survey was planned one year after baseline, with baseline and endline data to be used in a DiD methodology.

Given the use of a PMT threshold to identify treatment and control groups, the study design has certain elements of a regression discontinuity design (RDD). However, the current design also has significant differences with respect to a classic RDD study. First, in our case both baseline and endline data were collected, while typically RDD do not include baseline data collected before the programme implementation. Second, RDD typically samples units along the full distribution of the score variable, rather than systematically sampling units close to the cut-off. Given the specific sampling in the vicinity of the PMT cut-off and the availability of both baseline and endline data, a DiD estimation approach was deemed more appropriate (compared to using and RD estimator).⁶

The advantages of DiD in the case of Cash Education are twofold: (i) it does not require perfect balance in characteristics between the control and intervention groups at baseline, as it fully controls for pre-programme differences in indicators between treatment and control group, and (ii) it is robust in relation to external shocks affecting both groups in the same way (e.g. extreme weather events affecting agricultural yields, or inflation). Given that control and intervention households come from the same communes, it is unlikely that specific shocks could only affect one group, except if a different intervention relying on the exact same PMT score threshold was introduced at the same time as Cash Education, which was not the case to the best of our knowledge⁷.

Our regression models also control for a set of household-level covariates measured at baseline, which further addresses potential confounding factors, improving the precision of our estimates. Two sets of robustness checks are also conducted, by including additional covariates as controls, and using entropy balancing (EB) weights (see section 4.4).

⁵ See the study baseline report for details on power calculations.

⁶ A similar study design is applied by the Ghana LEAP 1000 Evaluation Team (2018 and 2024).

⁷ Between May and December 2022 – right before the Cash Education transfer that was disbursed from January to March 2023 – DGPSN carried out a complementary one-off payment of CFA 80,000 for COVID-19 response to all PNBSF beneficiary households, with support from the World Bank. This payment was received by all PNBSF beneficiaries, irrespectively of their eligibility for Cash Education. Therefore, this could be interpreted as a common shock affecting both the intervention and control groups similarly, which does not violate the assumptions of the DiD model. That being said, this additional cash transfer from DGPSN reduced the relative provision of the Cash Education transfer in the total amount received by households for their children's education.

Further, our balance and attrition analysis concluded that treatment and control group were well balanced at baseline and follow up. Hence, our sample construction and estimation method well addressed possible threats to validity (see section 4.5).

4.3 Sampling and data collection

The evaluation was carried out in six regions of Senegal where the Cash Education programme is implemented, namely: Kaffrine, Kédougou, Kolda, Matam, Sédhiou and Tambacounda. Those regions were selected because they are characterized by a relatively high poverty rate, translating into lower education performance compared to the rest of the country (Senegal Cash Education Evaluation Team, forthcoming).

In total, the baseline data collection managed to survey 4,277 households (2,146 in the treatment group and 2,131 in the control group). After one year, 4,120 households were re-interviewed for the endline survey, after cash transfer delivery.

The data collection was conducted by the SDI using Computer Assisted Personal Interviewing (CAPI). For endline, data collectors received one week of training before being dispatched to the field to administer the survey. The endline data collection started on 20 November and ended on 29 December 2023. Respondents were located using information provided at baseline.

The fieldwork was rigorously monitored through on-site visitations and controls by team leaders, and the administration of backchecks to control the quality and accuracy of collected data. In-office quality checks were also conducted and additional callbacks to respondents made if relevant. Once data were uploaded on the server, additional quality and consistency checks were run in parallel to data cleaning and data management, which prepared the data for use in analysis.

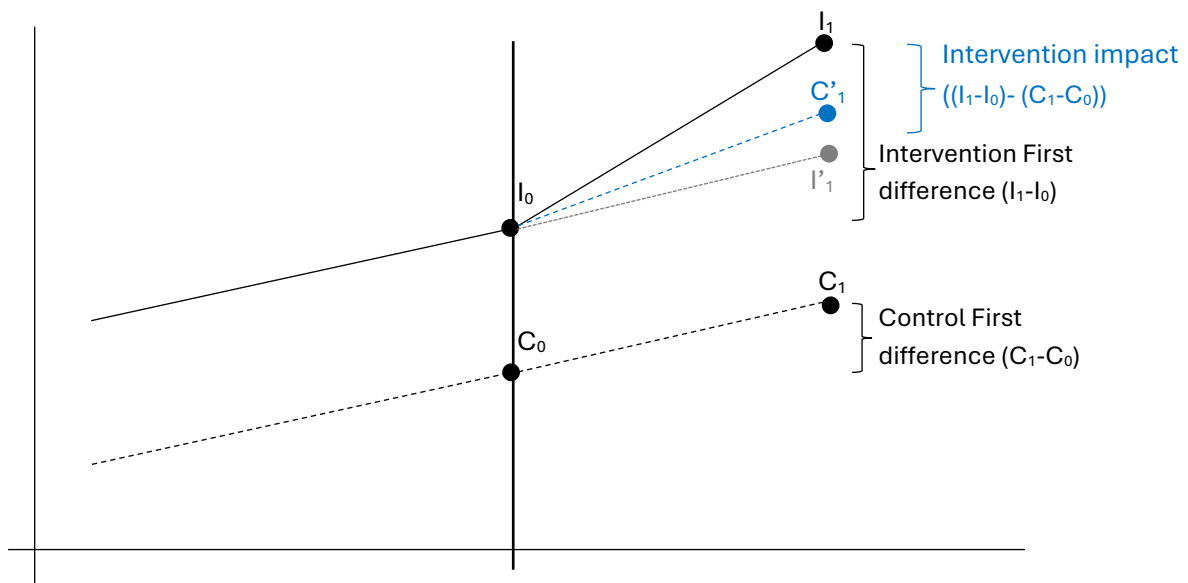
4.4 Estimation method

A DiD approach was used to estimate programme impacts. The approach is depicted in Figure 2 and consists in first measuring the before-after intervention change in an outcome of interest for the control and intervention groups separately (first difference), and then comparing the size of the before-after change in the intervention group with that of the control group (second difference).

The main assumption DiD is grounded on is the parallel trend assumption, which posits that the intervention group would have followed the same trend as that of the control group post-intervention should there have been no intervention ($I_0-I'_1$ segment in Figure 2). Although this assumption cannot be directly tested, it is usually assessed by observing whether the intervention and control group do follow parallel trends before the introduction of the programme. Such assessment requires several pre-intervention measures of the outcomes of interest for both groups, which were not available for Cash Education, as a single baseline observation was collected. However, two aspects of the design of the intervention support the credibility of the parallel trend assumption. First, although intervention and control households are characterized by different poverty levels, their actual level of poverty is relatively similar, given that the trial only included households with a PMT lying within one standard deviation from the eligibility threshold. This similarity between households on both sides of the threshold emerges from the balance analysis

(see section 4.4). Second, all study participants come from the same communes, go to the same schools (for the children), and are exposed to the same shocks, which speaks in favour of indicators following parallel trends in both groups.

Figure 2: Difference-in-Difference diagramme



The impact of Cash Education is obtained estimating the following DiD model using Ordinary Least Squares (OLS):

$$y_{ihrt} = \beta_0 + \beta_1 CE_h + \beta_2 T_t + \beta_3 CE_h \times T_t + \beta_4 X_h + \rho_r + \varepsilon_{ihrt} \quad (1)$$

Where y_{ihrt} is the outcome of individual i in household h in region r at time t , CE_h is a Cash Education binary indicator equal to one if household h was eligible to receiving the monetary transfer, T_t is a binary time indicator equal to one at endline (and zero at baseline), X_h is a set of household-level covariates measured at baseline, ρ_r is a region fixed-effect, and ε_{ihrt} is the error term. The causal impact of the programme is captured by the parameter β_3 on the interaction between the intervention and time indicators. The estimate of β_3 ($\hat{\beta}_3$) indicates the change in outcome between the baseline and the endline that can be attributed to Cash Education. Note that equation 1 is designed to produce intention-to-treat (ITT) estimates, which reflect the effect of the programme on the full population of eligible individuals, irrespective of whether they actually received the monetary transfer.

The inclusion of additional covariates in the X_h vector aims to increase the statistical power of the analysis by explaining an additional share of the total variance, and it also controls for potential imbalances between the intervention and control groups. The X_h vector includes the following variables: whether the household head is a female, age of the household head, a set of household head education dummies, the total number of household members the number of children under 5 years old, the number of children aged 5–17 years, and the PMT. Equation 1 is estimated on data from the panel of individuals included in both the baseline and endline surveys. Standard errors were adjusted for clustering at the commune level and sampling weights were applied. In section 6, equation 2 is adapted to estimate the programme impact on household-level outcomes.

Two sets of robustness checks are conducted. First, we tested the robustness of the results to the inclusion of covariates that were identified as imbalanced at baseline according to the baseline balance analysis described in section 4.5. Those additional covariates are: per adult equivalent (AE) household education expenditure, per AE household transport expenditure, per AE non-food expenditure, per AE hygiene expenditure, per AE household income, and food transfers from NGOs received by the household in the last 12 months. Note that imbalanced indicators with low levels of correlation with the outcomes of interest ('Other (no-correlation) indicators' in Table A23) are not including in this specification.

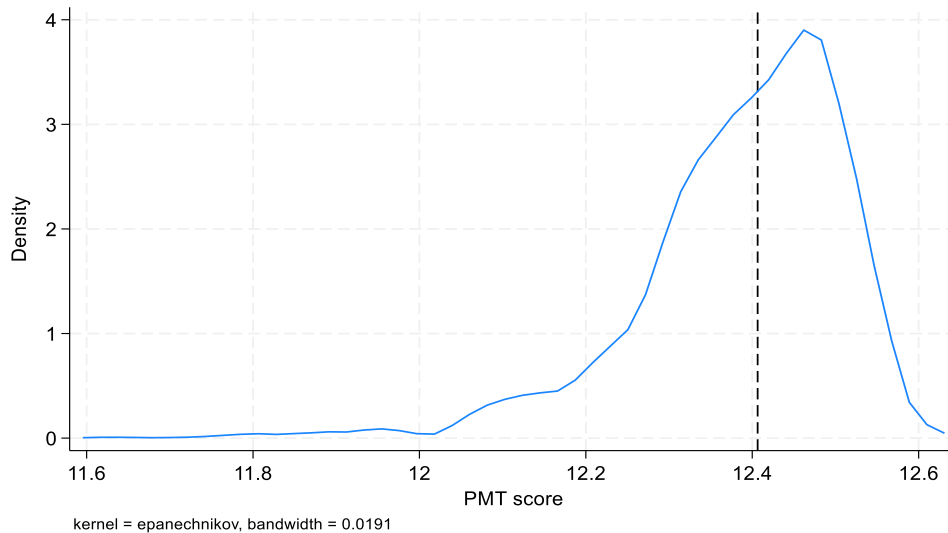
The second robustness test uses entropy balancing (EB) weights popularised by Hainmueller (2012) to address imbalances in baseline covariates between the intervention and control groups. One advantage of EB over inverse propensity score weighting (IPW) is that it leads to perfect balance in the variables of interest between both groups (conditional on the common support assumption being met).

4.5 Analytical sample and balance

Figure 3 presents the distribution of PMT in the evaluation sample, showing that there are few households with a PMT below a value of about 12.1, which are likely relatively less similar to the rest

of households in the sample. Therefore, we restricted our analysis to those sample households with a PMT score above 12.1 (N=135), also dropping those households with missing PMT values (N=83). This implied excluding 218 households (about 5 per cent of the original baseline sample of 4,277 households).

Figure 3: Distribution of the PMT score



The main analysis sample also excludes households with children with disabilities. These households are eligible for the programme regardless of their PMT, which implies that less poor households (with PMT above the threshold) can receive the programme if they have a child with disability. As such, households with at least a disabled child may not be comparable (in terms of wealth) to other households in the evaluation sample. So, a further 554 households with at least one disabled child at baseline (13 per cent of the original baseline sample) were not considered for the main impact analysis⁸.

Finally, the main analysis sample retained individuals (and households by construction) who could be tracked in both survey rounds (baseline and endline). After applying those subsequent restrictions, the final analysis sample included 3,203 households (1,716 in the control group and 1,487 in the intervention group), with complete information after attrition (see Annex II for more details on attrition).

Balance tests to assess the similarity of baseline characteristics within this final analysis sample (3,203 households) were conducted by estimating the following equation using Ordinary Least Squares (OLS):

$$y_{hr} = \alpha + \beta CE_h + \gamma PMT_h + \mu_r + \varepsilon_{hr} \quad (2)$$

⁸ Table A25 in Annex II shows the balance in the key education outcomes between the intervention and control groups amongst children from households with at least one disabled child at baseline end endline following the model described in equation 2.

Where y_{hr} is the baseline value of indicator y for household h living in region r , CE_h is a binary treatment indicator (equal to 1 if the PMT of household h is below or equal the threshold), μ_r represents region fixed effects, and ε_{hr} is the error term. Standard errors were adjusted for clustering at the commune level and sampling weights were applied. The estimated coefficient β indicates whether there remain statistically significant differences in baseline characteristics between treatment and control, after restricting the sample as well as controlling for PMT and region.

Table A23 and A24 report the estimated coefficients and statistical significance from the regression of various household- and individual-level indicators. Out of 135 household-level regressions, the coefficient on the treatment indicator is statistically significant at the 5 per cent level for 9 indicators (about 7 per cent), and the mean difference between the control and intervention groups is small, suggesting low levels of disparities. Similarly, only the mean difference in baseline attendance is statistically significant at the 5 per cent level amongst all individual-level education outcomes, with a discrepancy of 2 percentage points (pp), which remains marginal.

Therefore, the baseline balance analysis reveals that, after having applied the aforementioned restrictions, the main analysis sample is well balanced with no major differences between intervention and control households and individuals, which validates the use of the DiD approach as the estimation model.

4.6 Study limitations

This impact evaluation has two main limitations. On the empirical front, the original analysis sample as restricted to households with a PMT lying within one standard-deviation from the eligibility threshold. This has implications for the external validity of the findings, as the observed findings may not reflect the impact of the programme on poorer households (i.e., those whose PMT is more than one standard-deviation below the threshold). On the outcomes side, the study focusses on schooling outcomes such as enrolment and attendance but not on actual learning outcomes. This is related to the specific objectives of the programme and also due to the logistics of conducting large surveys with measures of learning outcomes. Future evaluations could design a more focused survey, such that time and resources can be directed from other survey components towards measuring learning outcomes. Programmatic implications are briefly discussed in the conclusions and recommendations.

4.7 Ethical considerations

Careful attention was given to ethical considerations, according to UNEG Norms and Standards for Evaluation (UNEG, 2016) and the UNICEF Procedure on Ethical Standards in Research, Evaluation, Data Collection and Analysis (UNICEF, 2021).

The impact evaluation research protocols were assessed through a research ethics review by the Institutional Review Board (IRB) of Health Media Lab (HML)⁹, for baseline and endline surveys.¹⁰

The following sections describe how (a) consent was obtained, (b) privacy and confidentiality were maintained, (c) any adverse events were managed and reported during data collection, (d) COVID-19 mitigation plans were implemented, (e) dignity, fair representation and diversity were respected, and e) how data security was maintained throughout the research process.

Informed consent. Informed consent was obtained before the beginning of interviews. Before administering any questionnaire, the enumerators provided participants with appropriate information about the purpose and nature of the study and the approximate length of the questionnaire, for them to make an informed choice. Respondents were made aware at the outset that they were free to terminate the interview at any point and to skip any questions that they did not wish to respond to. All potential participants were made aware that their participation was voluntary. Only participants who provided verbal consent (documented) were included in the evaluation process. The consent was read out loud to minimize physical contact as a way to mitigate COVID-19 risk, and participants were encouraged to ask questions to the field teams. Respondents were compensated for participation, which is reflected in the informed consent form. Participants were offered printed cards with the contact information of the evaluation team when seeking informed consent. If participants had grievances pertaining to the data collection process, they are free to contact the evaluation team.

Privacy and confidentiality. Interviews took place in a space that guaranteed the security, privacy, and comfort of the respondents. An effort was made to ensure confidentiality, however, if respondent agreed for a knowledgeable family member or another informant to be present, this was deemed acceptable. The evaluation team also endeavoured to minimize disruption to respondents' activities by providing advance notification and thus further respecting respondents' right to privacy. Before starting data collection, enumerators were asked to sign a Confidentiality Agreement Form whereby they committed not to disclose any information they collected to other actors as part of their enumerator role. They were informed that participants' names and personal information were not to be shared with anyone beyond the research team before, during or after the data collection, or used for any purpose without prior consent from participants. Participants remained anonymous throughout the publication and dissemination processes of the research findings. Research data were de-identified and sensitive information omitted before conducting any data analysis and producing research outputs: names, phone numbers and GSP coordinates were removed after data validation and prior to analysis. No names or personally identifiable information that can be traced back to specific respondents were included in the datasets.

Addressing discomfort of a participant during data collection. Enumerators reminded respondents that they had the right to interrupt the interview at any point and that they were free to not answer

⁹ HML IRB is authorized by the United States Department of Health and Human Services, Office of Human Research Protections (see www.hmlirb.com).

¹⁰ Ethics review approval was received on 4 October 2022 and 7 November 2023, for baseline and endline surveys, respectively (HML IRB Review #628SENE22).

specific questions or discontinue the interview if they so wish. The enumerators were instructed to report such incidents to the team leader, ensuring that concerns and signs of distress are detected in a timely manner and are addressed during the data collection. Potential responses included interrupting the interview momentarily or definitively to protect the best interest of the respondent and refrain from causing any harm.

COVID-19 spread prevention. Data collection took place under strict adherence to COVID-19 prevention protocols, to the extent these were established by the World Health Organization, the national government of Senegal and local guidance. At baseline, enumerators were tested for COVID-19 prior to deploying for data collection. All fieldwork team members – enumerators, team leaders, supervisors, and logistics personnel – were provided personal protection equipment such as, face masks covering mouth and nose and hand sanitizers. Cotton balls and sanitizers were used to regularly disinfect the tablets and other study equipment. Physical distance of at least 1.5 meters was observed between the enumerator and the respondent.

At follow-up, COVID-19 no longer represented a risk in Senegal, so the following milder measures were undertaken. All fieldwork team members were provided hand sanitizers. Cotton balls and sanitizers were used to regularly disinfect the tablets and other study equipment. Physical distance of at least 1.5 meters was observed between the enumerator and the respondent. Social distancing guidelines were maintained by conducting interviews in open spaces (avoid close spaces), and the consent form was modified to include only verbal/digital consent.

Respect for dignity, fair representation and diversity. As mentioned above, respondents were free to terminate the interview at any point and to skip any questions that they did not wish to answer. As part of the dissemination process, it is anticipated that the evaluation findings will be shared with participants through routine monitoring and accountability processes of UNICEF country offices. The evaluation team was trained on all above research ethics aspects, including to avoid discrimination against individuals on the basis of sex, race, religion, ethnicity, culture, or other social and human categories. Quantitative data were collected via a random sample developed before the baseline survey. This minimized selection bias and ensured fair representation of the target population. The data collection process respected the diversity of study participants. Data collection tools were designed as culturally appropriate and not to create distress for respondents or discomfort for the enumerators. The fieldwork staff and overall evaluation team was trained to respect differences in culture, local customs, religious beliefs and practices, personal interaction, gender roles, disability, age and ethnicity, and to be mindful of the potential implications of these differences during data collection and reporting.

Data security. Access to the data was limited to the investigators named in this study protocol, with access controlled strictly by the investigators. The tablets prepared for enumerators were encrypted and protected with passwords and anti-virus. During the field work, data were sent to the server on a daily basis. Transfers of all data from device to central server were done using a secure internet connection. All data were removed from devices upon completion of survey or transferral of data. Electronic data were kept in secure digital storage and only accessed by specifically-defined members of the research team. All name identifiers were removed before analysis to ensure

anonymity and mitigate any risk related to disclosure of sensitive information. All survey data sets produced from the evaluation are stored on secured servers.

SDI was to retain electronic copies of the data for twelve months after the completion of the research and then destroy them. UNICEF Senegal and UNICEF Innocenti will retain electronic copies of the data for three years after the completion of the research. Any data published will be anonymized.

5. Main evaluation findings

This section starts with describing the main barriers to schooling, as identified in the evaluation sample. It follows with a description of the programme operational performance and impacts on primary indicators, including school enrolment, attendance, transition to the next level and dropout.

5.1 Barriers to schooling

Senegal follows the French education system, which is divided into primary, secondary, and tertiary levels. The primary level covers six years and aims to equip pupils aged 6 to 11 years with basic numeracy and literacy skills. The secondary level includes four years of lower secondary (for children aged 12 to 15 years) and three years of upper secondary (for children aged 16 to 18 years). The tertiary level includes university and technical and vocational training.

Endline data from the evaluation sample (control group) show an overall enrolment rate of about 80 per cent for the sample of children aged 5–17 years at baseline (6–18 years at endline). The enrolment rate is highest among younger children aged 5 to 13 years at baseline (6–14 years at endline), at about 84 per cent among boys and 86 per cent among girls. The enrolment rate is lowest among older children aged 14–17 years at baseline (15–18 at endline), at about 63 per cent among boys and about 69 per cent among girls.¹¹

Figure 4 shows that children in treatment and control households face similar challenges in accessing school. The most commonly reported factors hindering school enrolment are a lack of interest (28 per cent in control and 34 per cent in treatment groups) and lack of finances (26 per cent in control and 30 per cent in treatment groups), and lack of school infrastructure, such as lack of school in their localities, school being too far from their homes, and lack of space in the nearby school (24 per cent in comparison and 23 per cent in treatment groups). The fourth most important factor is engagement in work, reported by about 17 per cent in control and 11 per cent in treatment groups as the reason for never attending school. Other reasons, mentioned by less than 1 per cent of

¹¹ Official statistics for 2022 show an enrolment rate in primary school of about 76 per cent among boys and 91 per cent among girls. The lower-secondary enrolment rate is 47 per cent among boys and 57 per cent among girls (MEN, 2022). Hence, enrolment rates in our evaluation sample are higher than those from official statistics (except for younger girls). In the evaluation, the age range for the group of younger children (6–14 at endline) goes beyond the primary-school age range; similarly, the age range for the group of older children (15 to 18 at endline) goes beyond the lower secondary-school age range. This could explain the fact that the enrolment rates in our sample are mostly higher than those from official statistics. The evaluation sample was purposely selected with larger age ranges compared to the official schooling age to capture late entrants.

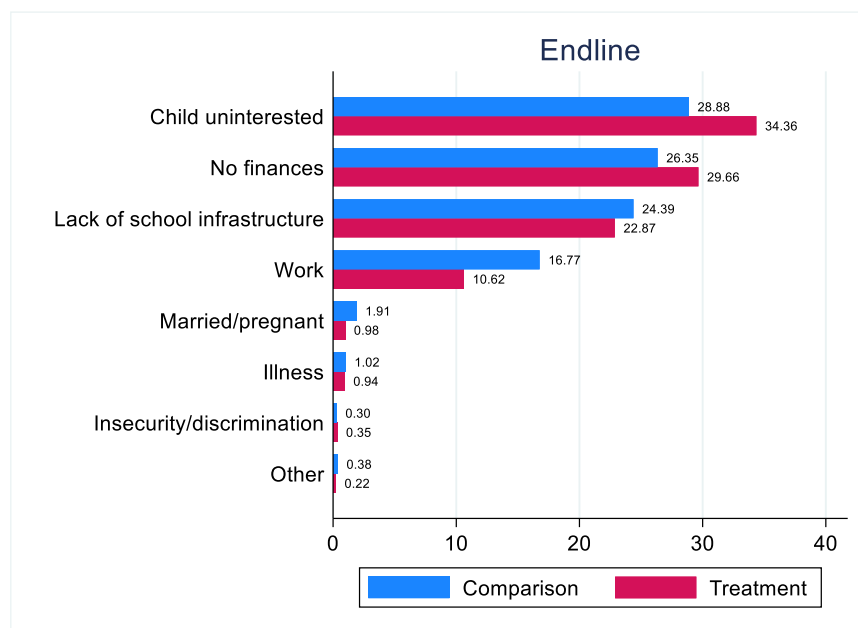
respondents, include illness, being married or pregnant, facing insecurity or discrimination and other (COVID-19 and related school closures, lack of teachers and dismissal).

At baseline, the top three reasons were the same, though the ranking was slightly different. A lack of interest from the child was followed by lack of school infrastructure and lack of finances (see Annex III).

None of the differences between control and treatment are statistically significant, except for Lack of school infrastructure at endline, where the difference is significant at the 10 per cent level.¹²

¹² Differences between treatment and control were assessed using linear regressions of the form $y_{ihr} = \alpha + \beta CE_h + \gamma PMT_h + \mu_r + \varepsilon_{ihr}$. Separate equations were estimated for baseline and endline (using survey weights and clustering standard errors at the commune level).

Figure 4: Reasons for never enrolling in school by treatment status (endline data, control group)



The prevalence of school dropout is low in the evaluation sample, at about 2 per cent of children aged 6–18 in the control group at endline. The highest level of school dropout is recorded for older boys, at 5 per cent.¹³

Figure 5 shows that the main reasons for dropout are illness (27 per cent in control and 19 per cent in treatment), lack of interest by children (about 41 per cent in comparison and 3 per cent in treatment groups), lack of finances (16 per cent in control and 22 per cent in treatment groups), work or chores (about 12 per cent in control and 26 per cent in treatment groups), study too difficult (none in control and 26 per cent in treatment groups), and being expelled (6 per cent in the treatment group and none in control).

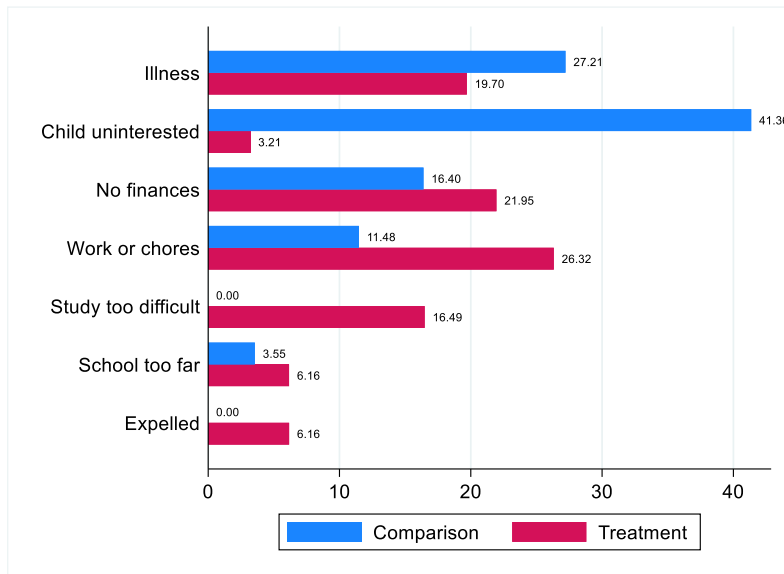
At baseline, the top three reasons were the same, though the ranking was slightly different. Lack of finances was reported first, followed by illness and a lack of interest from the child (see Annex III).

None of the differences between control and treatment are statistically significant, except for Study too difficult at endline, where the difference is significant at the 5 per cent level.¹⁴

¹³ For older boys, the most reported reasons for dropout are financial constraints, work, and a lack of interest, with these three factors being equally common.

¹⁴ Differences between treatment and control were assessed using linear regressions of the form $y_{ihr} = \alpha + \beta CE_h + \gamma PMT_h + \mu_r + \varepsilon_{ihr}$. Separate equations were estimated for baseline and endline (using survey weights and clustering standard errors at the commune level).

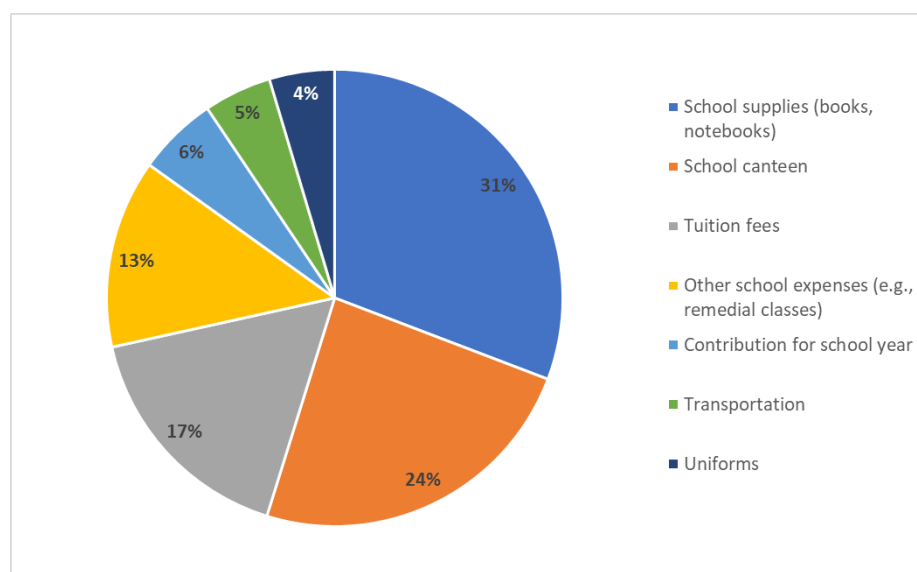
Figure 5: Reasons for school dropout by treatment status (endline data, control group)



From the above analysis, it emerges that financial constraints are among the primary reasons for children never enrolling in school and for dropping out. Endline survey data show that the average education expenditure for households in 2022/2023 was about FCFA 66,580 (about US\$ 106), corresponding to about FCFA 22,456 (US\$ 35) per child, considering an average of about three in-school children per household (expenditure expressed in constant 2021/2022 FCFA).

Figure 6 shows the distribution of education expenditure by items. The biggest share of schooling costs goes to pay for school supplies, such as books and notebooks (31 per cent of overall schooling costs), followed by school canteen (24 per cent), tuition fees (17 per cent) and other school expenses, such as remedial classes (13 per cent). Expenditures related to contribution for the school year, transportation and uniforms account for about 15 per cent of the overall schooling costs.

Figure 6: Distribution of annual household education expenditure, by item



Note: The figure was obtained based on endline survey data on total household educational expenditure (constant 2021/2022 FCFA). A similar distribution is obtained considering education expenditure per child.

Even though the focus of the Cash Education programme is to relax household financial constraints, factors other than financial resources appear relevant to address gaps in school participation. For instance, lack of interest from children and engagement in work are also widely cited for both never enrolling and dropping out of school. Illness represents a major driver of school dropout at endline.

Distance from school was not cited as a main barrier to school. Indeed, endline survey data also show that most children (97 per cent) walk to school, while a small portion of them uses motorbikes, bikes, or buses. The average transport time to school is about 16 minutes (13 minutes for children in primary school and 20 minutes for children in secondary school).

However, this average value hides strong disparities, with the time to school ranging from 0 to about 150 minutes, as it was also highlighted in the baseline report (Senegal Cash Education Evaluation Team, forthcoming). In our analysis, we will assess the role of distance as moderator of the impact of Cash Education (see section 5.3.2).

5.2 Programme operational performance

This section presents the results on the operational performance of the Cash Education programme. It includes analysis of beneficiary perceptions of the selection process, awareness of the programme, prevalence of cash transfer receipt, payment communication, timeliness and amount. The reported use of cash transfers is also analysed, to allow for a better interpretation of the estimated impacts. Results in this section mostly come from analysis of the endline survey data. Regarding programme receipt, information from survey data is complemented with information from the Cash Education administrative data.

5.2.1 Beneficiary perception on the selection process

Figure 7 presents respondents' perceptions of the clarity of the beneficiary selection process for the Cash Education programme in control and treatment households. Most respondents found the process "very clear" (36 per cent of respondents in the comparison and 40 per cent in the treatment group) or "fairly clear" (about 34 per cent in the comparison and 40 per cent in the treatment group). A lower proportion of respondents found the selection process "not so clear" (about 29 per cent in comparison and 20 per cent in treatment group), or "not clear at all" (less than one per cent in treatment and control groups).

Figure 7: Respondents' perception of the clarity of Cash Education's beneficiary selection process, by treatment status

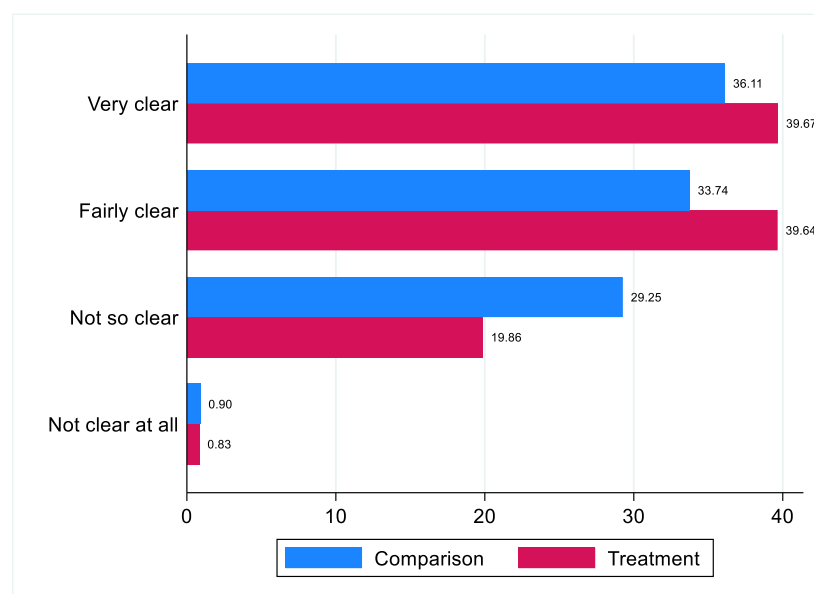


Table 2 presents respondents' opinions on who is eligible for Cash Education. Less than half respondents appear to have an accurate understanding of who is eligible in both comparison and treatment households. While 44 per cent of respondents from treatment households believe that poor families are the ones eligible for the programme, 38 per cent from control households believe the same. The second most common belief is that those that belong to a particular community are eligible for the programme (about 3 per cent in control and 4 per cent in treatment households); and the third popular belief is that residence in a particular village (under one per cent in control and 1.5 per cent in treatment).

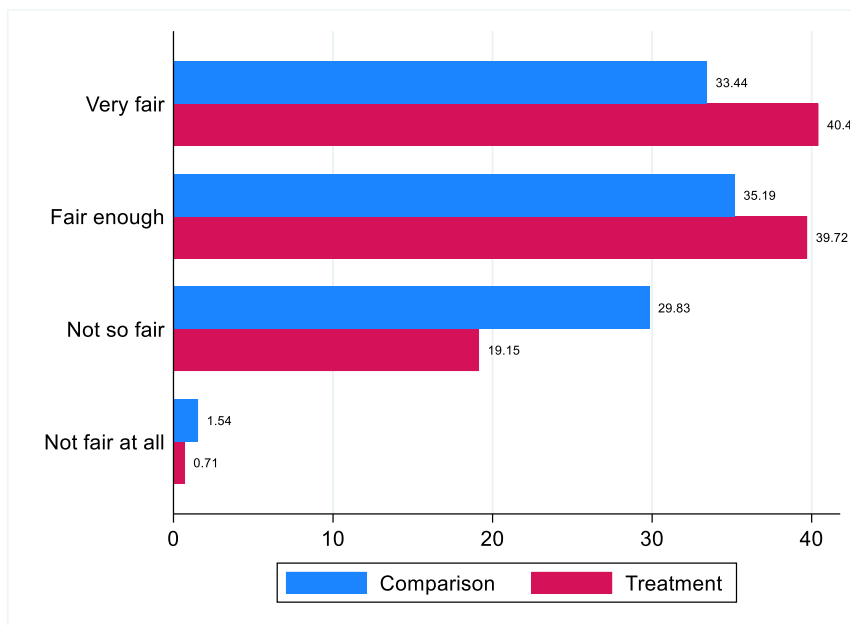
Table 2: Respondents' opinion on who is eligible to Cash Education, by treatment status (percentage of households)

	Control (%)	Treatment (%)
Eligible: poor families	38.25	44.26
Eligible: belong to a particular community	2.60	3.80
Eligible: reside in a particular village	0.83	1.49
Eligible: reside in a particular department	0.44	0.43
Eligible: other	0.34	0.29

Note: Percentages are calculated over the total number of households (2,039 in the control group and 2,081 in the treatment group).

Figure 8 presents respondents' perception of the fairness of the beneficiary selection process. Again, most respondents perceived the allocation as "very fair" or "fair enough." As expected, these perceptions are more prevalent in the treatment household than in the comparison, whereas the perception of the allocation process being "not so fair" is more prevalent in comparison households. About 33 per cent in the comparison perceived the process as "very fair" and 35 per cent perceived it as "fair enough", about 40 per cent in treatment perceived it as "very fair" and a similar percentage perceived it as "fair enough". On the other hand, 30 per cent in comparison and 19 per cent in the treatment areas perceived the process as "not so fair" and under 2 per cent in both groups perceived it as "not fair at all".

Figure 8: Respondents' perception of the fairness of Cash Education's beneficiary selection process, by treatment status



5.2.2 Awareness of Cash Education and payment receipt

This section presents the extent of awareness about the programme and the percentage of households who received payments in the comparison and treatment groups. Analysis of survey data is presented first, followed by analysis of administrative data.

It is worth noting that, although the Cash Education transfers were initially supposed to be paid in two instalments (see section 2.2) only the first payment was made, thus beneficiaries only received half of the planned amount by the time of the endline data collection, whilst preparations for the second distribution were ongoing.

Table 3 shows that the share of respondents that are aware of Cash Education is about 39 per cent in comparison and 46 per cent in treatment households. Surprisingly, the share of households that reported having received at least one payment from the programme is only 18 per cent in the treatment group and about 3 per cent in control group (similar prevalences are obtained when considering those who are aware of the programme and received payments).

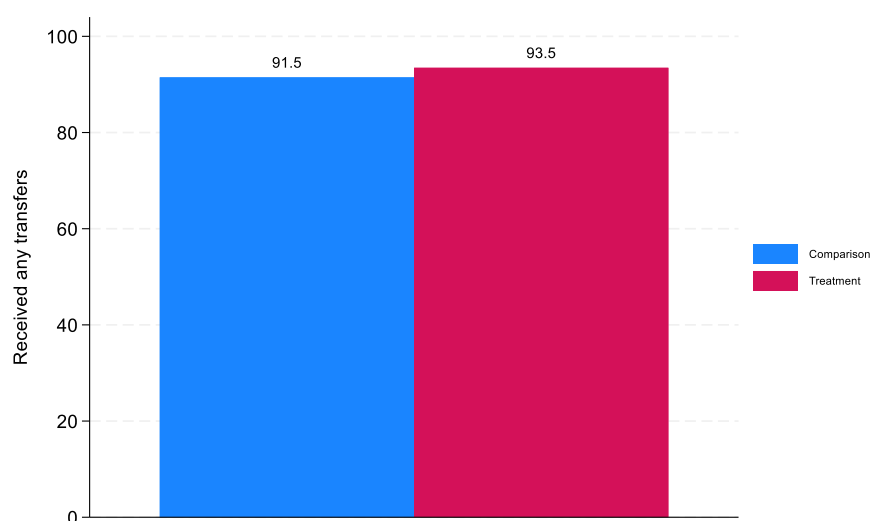
Table 3: Awareness and receipt of Cash Education transfers

	Control (%)	Treatment (%)
Aware of Cash Education	39.23	45.89
Received Cash Education payment	2.75	18.21
Aware and received payment	2.63	17.66

Note: Percentages are calculated over the total number of households (2,039 in the control group and 2,081 in the treatment group).

The above finding could be due to confusion by respondents about the specific programme, as they are all beneficiaries of the PNBSF programme. Indeed, about 91 per cent in comparison and 93 per cent in treatment households reported that they have some form of cash or in-kind transfers coming from governmental and non-governmental organizations (see Figure 9).

Figure 9: Share of households who have received any form of transfer



The administrative data for Cash Education indicate that about 70 per cent of eligible households received at least one Cash Education payment.

Challenges with the uptake rate were mostly related to the innovative digital method. For instance, out of the over 20,000 households, at least 700 households were unable to provide a valid telephone number during the verification survey.¹⁵ Further, the contract between DGPSN and Orange/Sonatel stipulated that Orange would set up mobile payment points for beneficiaries located in areas without Orange payment points, which did not happen.

Considering survey and administrative data jointly, it becomes clear that there are households that responded that they were unaware of the programme in the survey but were found to have cashed out the transfer in the administrative data. Figure 10 shows that 40 per cent of households that reported being aware of the programme and 31 per cent of those who reported being unaware in the survey have cashed out their transfers based on administrative data. This discrepancy between survey and administrative data highlights the challenges in accurately measuring program awareness and receipt through surveys when beneficiaries receive multiple transfers.

Figure 10: Share of households that cashed out Cash Education payments (based on administrative data), by awareness status (as reported in the survey)

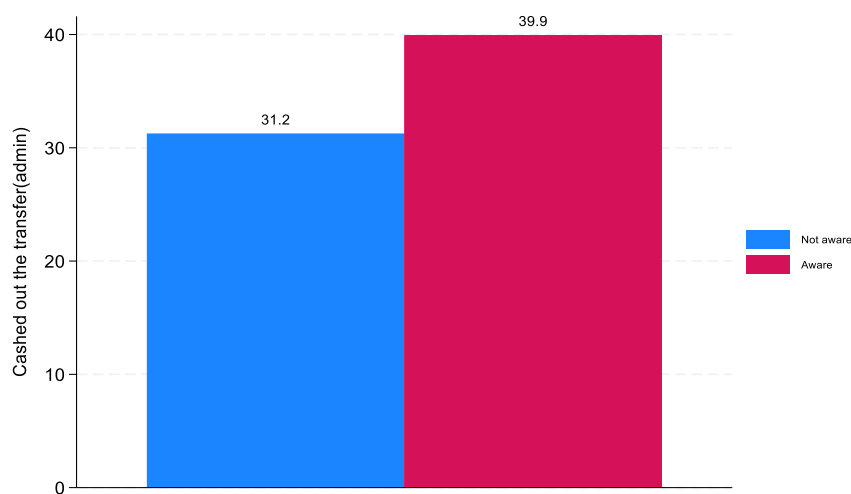
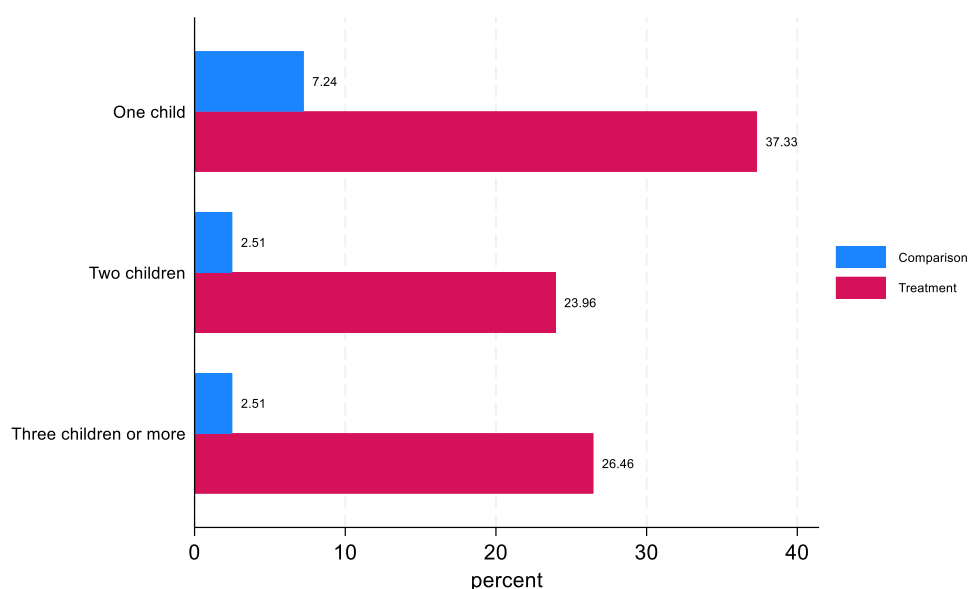


Figure 11 shows the number of children covered by the Cash Education programme in the treatment and comparison groups. About 37 per cent of households in treatment and 7 per cent in comparison areas reported that they have one child benefiting from the programme. One possible explanation of the relatively high receipt rate reported in the comparison group could be that households conflated the Cash Education transfer with other similar transfers that followed a similar payment

¹⁵ These households were replaced by other eligible households with valid phone numbers.

modality (using mobile money along with SMS notifications).¹⁶ About 24 per cent in treatment and 2 per cent in comparison said two children benefited; 26 per cent in treatment and 3 per cent in comparison said three or more children benefited.

Figure 11: Number of children covered by Cash Education, by treatment status



Note: The figure was obtained based on information from households that reported receiving any Cash Education payments.

5.2.3 Payment communication, timeliness and amount

Payment notifications are important tools to inform beneficiaries that payments are available. The majority (82 per cent) of respondents in the treatment group and 11 per cent in the comparison group who have received Cash Education payments reported that they were notified through a text message (SMS) when the payment was placed. Those who did not receive the SMS were informed primarily by other members of the household or other beneficiaries of Cash Education.

One of the challenges encountered during this phase of the implementation of the Cash Education is that the SMS inbox of some beneficiaries was already full, hence new messages, such as the notification that a cash transfer was upcoming, and the SMS with the personalized code to retrieve the cash transfer, bounced back and were not received by the beneficiary. In other cases, the messages were not received due to poor network coverage in remote areas. These aspects contributed to limiting the overall uptake of the Cash Education programme.

Regarding the timeline of payments, most survey respondents reported receiving the first payment between April to December 2023. Administrative data show that the transfers were made between

¹⁶ The above-mentioned cash transfer implemented from May to December 2022 with support from the World Bank was delivered through the same modality as the Cash Education (an SMS with notification and a personalized code). Like Cash Education, this other transfer was part of the government response to COVID-19.

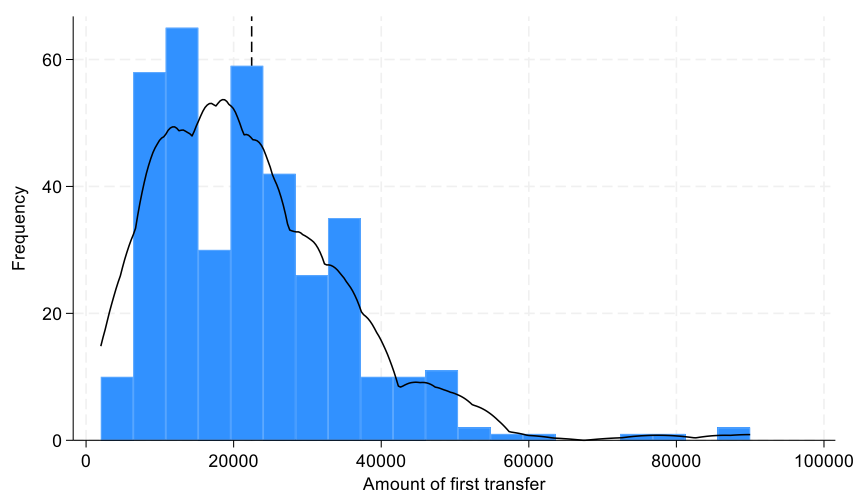
January and March 2023, reflecting about three months of delay from the planned dates due to unforeseen challenges. As the digital payment method was innovative, no existing contracts with mobile and financial service providers were in place to facilitate the Cash Education digital payments. The planned timeline of the payments could not be followed as the contracting process of the mobile and financial service provider by the government took much longer than expected.

The discrepancies on the reported payment timeline between administrative and survey data could be due to overlaps with other similar transfer programmes, which could have led to households' inability to recall the correct dates for the Cash Education receipt.

As mentioned above, only one of the two planned instalments was provided before the endline data collection, so this amount refers to one tranche (half) of the programme. The second tranche was paid between May and June 2024, but is not covered in this evaluation. Difficulties in the planning of the monitoring aspects related to conditionality contributed to changes in timelines. Conditionality of the second payment was reliant on the verification of school attendance by the decentral level of the Ministry of Education, the IA and IEF, which required an official collaboration between different government entities (DGPSN, IA and IEF). The establishment of the details of this collaboration took longer than expected and did not come to fruition during the planned timeline. In order to not delay the second payments any longer, the conditionality was removed from the design and the second payments were finally made from May to June 2024, 16 months after the first payment.

Figure 12 shows the distribution of the total amount of transfers received by those that reported receiving any Cash Education payments. Recall that the total amount the household receives varies based on the number of eligible children in the household. The average reported transfer amount received was FCFA 23,000 (US\$ 38). It is interesting to note that this amount aligns with the annual cost of education for one child, as shown in section 5.1.

Figure 12: Distribution of the amount of Cash Education transfers received by households



5.2.4 Other operational aspects

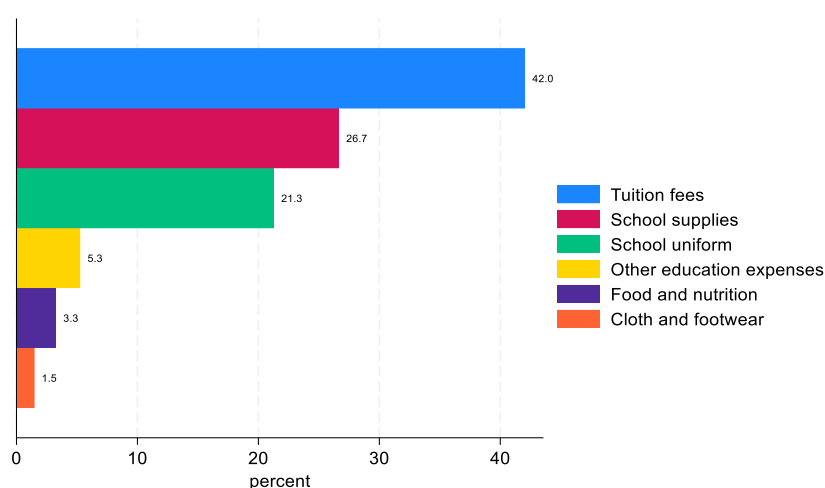
The operational module of the survey questionnaire also asked whether beneficiaries were required to provide payments or provided voluntary payments in order to receive Cash Education. About 19 per cent of those who received Cash Education payments in the comparison group reported making payments to someone in order to receive the payment, whereas the rate in the treatment areas was about 9 per cent. In the comparison groups, most payments were reportedly made to other beneficiaries of cash education, followed by community leaders. Other beneficiaries of Cash Education were the most commonly reported category also in the treatment group, followed by service providers.

These results may reflect households' conflating the Cash Education with other programmes. We say this because Cash Education beneficiaries were identified from the RNU, a centralized database including names and phone numbers of potential beneficiaries. A verification survey for the phone numbers was then carried out by service providers from the DGPSN. After that, digital transfers were made for which a beneficiary had to receive a text through SMS and go to a payment point with their national ID to collect the payment. Given these strict rules for the selection and identification of beneficiaries, those who reported to have paid other entities to receive the transfer might be conflating Cash Education with other similar programmes.

5.2.5 Use of cash transfers

This section concludes by presenting the use of the Cash Education transfers. Figure 13 shows that the transfers are mostly used for education-related expenses, which is in line with the programme objectives. The most prevalent expense category is tuition fees (42 per cent), followed by school supplies (about 27 per cent), school uniforms (21 per cent), and other educational expenses (5 per cent). Moreover, about 3 per cent reported spending the transfer on food and nutrition and about 2 per cent on clothes and footwear.

Figure 2: Main uses of Cash Education



5.3 Impacts of Cash Education on school participation and transition

5.3.1 Primary analysis

This section presents the impacts of Cash Education on school enrolment, attendance, transition to the next year, and dropout. Impacts are first estimated on the full sample of children aged 5–17 years at baseline (6–18 at endline), and then separately by gender-age groups: girls and boys of primary school age (5–13 years at baseline, 6–14 at endline); girls and boys of lower secondary school age (14–17 years at baseline, 15–18 at endline).

The findings of the full sample are reported in Clustered at the commune level. No impact is found on the probability of a child to be enrolled in school in the 2023/2024 school year, although the coefficient is positive. It is noteworthy that the enrolment rate at baseline was already relatively high (81.2 per cent in the intervention group and 79.2 per cent in the control group), which left little room for improvement. Moreover, since the monetary transfer was made between January and March 2023, and no additional transfer had been done by the start of the 2023/2024 school year (October 2023), it is likely that households had already spent the transfer by then, mostly on other education-related expenses, as shown in figure 13, which would explain the lack of impact on enrolment.

On the other hand, a statistically significant effect is found on the attendance rate, with the programme contributing to a 2.5 pp increase. Comparing the average attendance rates at baseline and endline reveals that the intervention allowed programme beneficiaries' attendance to catch up with that of control pupils. Indeed, while the baseline attendance rate of intervention pupils amounted to 95.1 per cent against 97.5 per cent for control pupils (-2.4 percentage points for children in the treatment group), this difference disappeared at endline (97.7 per cent for both intervention and control pupils). So, the programme seemed to have helped address most of the barriers to school attendance for pupils in the intervention group.

Table 4: Impacts of Cash Education on key schooling outcomes (5–17 years)

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Currently enrolled	0.001 (.019)	22,682	0.812	0.792	0.822	0.8
Attendance rate	0.025** (.009)	15,180	0.951	0.975	0.977	0.977
Moved to the next year	-0.013 (.019)	8,866	0.917	0.923	0.925	0.944
Dropped out	-0.007* (.004)	13,958	0.009	0.007	0.014	0.019

Note: Linear probability models. All specifications include age and gender in addition to the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The transition to the next year variable was constructed by comparing the grade in which a pupil was enrolled in the year before the survey to the grade that they were enrolled in during the survey year. Considering baseline data, if a pupil was reported to be in grade 1 in the year before the baseline survey (2021/2022 school year) and in grade 2 at the time of the baseline survey (2022/2023 school year), then the transition to next year indicator at baseline takes the value one. The variable was constructed in a similar way using endline data. Baseline and endline values of the indicator were then used to estimate the DiD model (equation 2). Note that this indicator only applies to pupils who were systematically enrolled in schools around the whole period of interest (2021/2022 to 2023/2024). The corresponding estimate is not statistically significant, suggesting that the programme did not affect transition to the next grade for the sample of children who were consistently enrolled in school during the considered period.

The dropout indicator characterizes pupils who were enrolled in school in the year before the survey but out of school at the time of the survey. Consistent with the high enrolment rates, dropout rates remained particularly low (below 2 per cent). Results indicate that the intervention caused a reduction in the dropout rate by 0.7 pp, which corresponds to a 37 per cent difference compared to the rate observed for the control group at endline.

The findings presented in table 5 show programme impacts for separate age-gender groups. Results are first described for younger girls and boys aged 5 to 13 years, and then for older girls and boys aged 14 to 17 years.

Cash Education had a significant impact on school attendance for girls aged 5–13, with 2.1 pp increase ($p < 0.05$), indicating that the programme helped school participation in this group. In addition, there was a 3.8 pp reduction in the transition to the next year for girls in this age group. This negative sign could be due to low-achieving pupils, who may have been more likely to drop out but stayed in education because of the transfer. As these pupils had a lower chance of progressing to the next year, the average transition rate in the intervention group declined compared to that in the control group.

For boys aged 5–13 years, the impact on school attendance was negligible and statistically insignificant, suggesting little to no effect. No major gender disparities were observed among younger children in terms of key schooling outcomes.

For older children (14 to 17 years old), although there was a slight reduction in the dropout rate for both boys and girls, it was not statistically significant. In contrast there were statistically significant impacts on attendance, which increased by 4.5 and 4.1 pp for older girls and boys, respectively. Unlike with younger children, the enrolment rate of females is notably higher than that of males in this age group with a 12.1 and 4.7 pp difference in the intervention and control groups, respectively.

All findings reported in this section are robust to the alternative specifications (additional covariates and entropy balancing) described in section 4.5 (see Annex IV).

Table 5: Impact of Cash Education on key education outcomes, by gender-age groups

	Girls						Boys					
	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
5–13 years old												
Goes to school	0.013 (.018)	8,172	0.862	0.862	0.882	0.87	-0.002 (.024)	8,058	0.819	0.813	0.843	0.84
Attendance rate	0.021** (.01)	6,122	0.951	0.974	0.974	0.976	0.017 (.01)	5,528	0.956	0.972	0.974	0.974
Moved to the next year	-0.038* (.018)	3,510	0.928	0.925	0.921	0.956	0.004 (.028)	3,058	0.912	0.924	0.943	0.95
Dropped out	-0.007 (.005)	5,440	0.007	0.003	0.01	0.013	-0.001 (.005)	4,906	0.004	0.008	0.01	0.015
14–17 years old												
Goes to school	0.01 (.023)	3,300	0.79	0.712	0.772	0.684	-0.035 (.035)	3,152	0.682	0.633	0.651	0.637
Attendance rate	0.045** (.016)	1,962	0.943	0.986	0.986	0.983	0.041*** (.012)	1,568	0.943	0.981	0.988	0.985
Moved to the next year	0.036 (.031)	1,262	0.903	0.927	0.914	0.903	-0.035 (.021)	1,036	0.913	0.906	0.899	0.927
Dropped out	-0.008 (.011)	2,010	0.016	0.009	0.02	0.02	-0.021 (.016)	1,602	0.018	0.014	0.035	0.051

Note: Linear probability models. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.3.2 The role of contextual factors as moderators of impacts

It is possible that the impacts of Cash Education are moderated by contextual factors. This section explores if and how impacts on education outcomes are moderated by three indicators: (i) distance to school; (ii) household head's gender; and (iii) household head's level of education.

To simplify the interpretation of the results, all moderators were defined as binary indicators. Distance to school indicates whether the distance between a child's house and their school is higher than the sample median,¹⁷ and the moderator on the education of the household head compares household heads with no education to those with some formal education. All moderators were measured at baseline. The heterogeneous intervention effect across the different values of the three moderators is estimated by including an interaction term between the intervention indicator and the moderator in equation 1. The full econometric specification is shown in Annex V (equation 3).

The results of the subgroup analysis for the main sample are reported in Table A35 in Annex V. The intervention effect on school attendance is found to be higher amongst pupils who live far from their school (home-school distance higher than the median), with an increase in attendance for this subgroup amounting to 1.4 percentage points (compared to the effect for children who live closer to school). This finding indicates that the additional resources provided by the Cash Education may be partly used to address the distance barrier, possibly by allowing pupils to use a bus or a motorbike to go to school when needed. Disaggregating this effect at the gender level (Tables A36 and A37) reveals a negative effect on school transition for older girls who live far from school. This could signal that for older girls who live far away from schools it is more challenging to attend classes and thus progress to the next grade.

Having a female household head does not appear to moderate the impact of the programme, while when the household head has no education the positive impact on attendance for younger girls is lower compared to when the household head has some education. This is consistent with the hypothesis that heads with less education may forecast lower return to education for their children. The findings also show that when the head has no education, older boys are less likely to be enrolled in school. This suggests that the schooling of younger children is favoured over that of older children in households where the head has no education.

5.3.3 Impact on households with disabled children

The estimation of the programme impact on households with disabled children and disabled children is reported in Tables A38 to A40 in Annex VI.

6. Programme impacts on secondary outcomes

This section reports impacts of Cash Education on individual and household level outcomes that are not primary objectives of the programme but could be indirectly influenced by it. These include individual participation and time spent in household chores or economic activities, and household-

¹⁷ The median was computed based on the analysis sample.

level outcomes including expenditure, food security, receipt of other transfers, savings and debt, livestock and durable assets.

6.1 Impacts on children’s time use

The evaluation questionnaire included a module on the participation and amount of time allocated by household members to various activities. For children, activities are classified in three groups: (i) household chores, including: collecting water; collecting firewood and other fuel material; caring for children, cooking or cleaning; and taking care of household members who are sick, elderly or disabled; (ii) economic activities, including: gathering fruits or other consumption items for sale; household livestock and non-livestock agricultural activities; household business activities; and work outside the household (paid or unpaid); and (iii) studying. In the analysis that follows, all household chores and economic activities items were combined into two single indicators, indicating participation in (or time spent on) any chores and any economic activities, respectively.

Table 6 reports the impacts of Cash Education on participation in and time spent on the above activities for all children aged 5–17 years. The results indicate that no coefficient is statistically significant, suggesting that the programme did not significantly influence whether children engaged in different activities and the overall amount of time they spend on those activities. As previously mentioned, it is possible that some effects of the cash transfer on children’s time use are not captured by the endline data due to the time that elapsed between the disbursement of the transfer to families and the endline data collection (about 9 to 11 months).

Table 6: Participation and time spent in household chores and economic activities by children (age 5–17 at baseline)

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Participated in household chores	0.034 (.06)	23,394	0.414	0.427	0.548	0.526
Participated in economic activities	-0.018 (.044)	23,394	0.187	0.145	0.223	0.2
Participated in studying at home	0.045 (.047)	15,510	0.782	0.823	0.93	0.926
Time spent on chores	-0.025 (.248)	23,394	1.243	1.105	1.57	1.457
Time spent on economic activities	0.169 (.685)	23,394	2.056	1.816	1.522	1.113
Time spent studying	0.008 (.219)	15,510	1.798	1.73	2.184	2.107

Note: Linear probability models. All specifications include age and gender in addition to the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7 disaggregates the impact across gender-age groups. No impact is found on analysis by subsample. The estimated coefficient of time spent in chores by older girls is negative, signalling that

they tend to reduce time spent in chores, but there is no statistically significant impact. The same holds for time spent in economic activities by older boys.

All results in Tables 6 and 7 are robust to the inclusion of additional controls and the application of EB weights (Annex IV) and remain unchanged when switching from unconditional to conditional participation (i.e. positive time use both at baseline and endline – Annex VII).

Table 7: Participation and time spent in household chores and economic activities across gender-age groups

	Girls						Boys					
	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Children (5–13 years old)												
Participated in chores	0.045 (.059)	8,398	0.475	0.475	0.59	0.545	0.055 (.065)	8,310	0.269	0.301	0.449	0.426
Participated in economic activities	-0.031 (.041)	8,398	0.137	0.094	0.163	0.151	-0.009 (.055)	8,310	0.21	0.166	0.249	0.213
Participated in studying at home	0.052 (.052)	6,246	0.762	0.817	0.922	0.925	0.032 (.055)	5,656	0.771	0.797	0.924	0.918
Time spent on chores	0.057 (.307)	8,398	1.404	1.244	1.733	1.516	0.027 (.2)	8,310	0.687	0.649	1.08	1.015
Time spent on economic activities	0.169 (.595)	8,398	1.008	0.895	0.924	0.642	0.33 (.713)	8,310	1.997	1.759	1.493	0.926
Time spent studying	0.048 (.235)	6,246	1.712	1.668	2.142	2.05	-0.023 (.251)	5,656	1.749	1.69	2.046	2.01
Children (14–17 years old)												
Participated in chores	-0.073 (.056)	3,428	0.703	0.668	0.716	0.753	0.068 (.086)	3,258	0.328	0.378	0.518	0.5
Participated in economic activities	-0.03 (.045)	3,428	0.164	0.133	0.205	0.204	0.001 (.05)	3,258	0.284	0.238	0.335	0.287
Participated in studying at home	0.049 (.045)	2,006	0.841	0.882	0.952	0.944	0.063 (.053)	1,602	0.816	0.871	0.947	0.939
Time spent on chores	-0.37 (.316)	3,428	2.467	2.106	2.615	2.624	-0.014 (.316)	3,258	0.966	0.898	1.312	1.258
Time spent on economic activities	0.713 (.888)	3,428	1.622	2.129	1.285	1.08	-0.874 (.888)	3,258	5.565	4.008	3.496	2.813
Time spent studying	-0.043 (.15)	2,006	2.034	1.884	2.483	2.376	0.02 (.258)	1,602	1.985	1.941	2.442	2.379

Note: Linear probability models. All specifications include age in addition to the covariates included in X_{it} . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

6.2 Impacts on adults' time use

The impacts of Cash Education on adults' participation and time spent on chores and economic activities are presented in Table 8. Analogously to what was observed on 14–17-year-old girls in Table 7, the programme tends to decrease the number of hours females allocate to chores, but the estimated coefficient is not statistically significant.

Table 8: Participation and time spent in household chores and economic activities by adults

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Women						
Participated in chores	-0.029 (.033)	13,804	0.843	0.801	0.829	0.817
Participated in economic activities	-0.012 (.054)	13,804	0.352	0.315	0.375	0.351
Time spent on chores	-0.589 (.412)	13,804	4.554	3.869	4.123	4.028
Time spent on economic activities	1.44 (1.814)	13,804	6.488	6.713	5.355	4.14
Men						
Participated in chores	0.03 (.078)	11,062	0.378	0.4	0.454	0.446
Participated in economic activities	-0.027 (.065)	11,062	0.512	0.454	0.533	0.501
Time spent on chores	-0.166 (.282)	11,062	1.214	1.132	1.248	1.332
Time spent on economic activities	1.805 (.315)	11,062	13.588	13.559	10.56	8.727

Note: Linear probability models. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

6.3 Impacts on household expenditures and food security

From results in Table 9, there is no evidence that the programme affected household total expenditure, nor expenditures on the separate categories of food, non-food items, or education. Impacts on the single items of schooling expenditure were also estimated, and these were similarly not statistically significant (see Table A44 in Annex VII). These results are surprising, especially because the descriptive analysis showed that about 95 per cent of the households reported that they used the transfers on education-related expenses, such as tuition and uniforms (see section 5.2).¹⁸

Table 9: Impact on household expenditures

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Total expenditure (real, per adult equivalent per month)	0.306 (2.564)	6,406	10.64	9.14	17.26	15.45
Food expenditure (real, per adult equivalent per month)	-0.134 (.281)	6,404	3.12	2.89	3.69	3.6
Non-food expenditure (real, per adult equivalent per month)	-0.507 (.699)	6,404	9.69	8.68	9.48	8.98
Education expenditure (real, annual)	-4.943 (8.942)	6,406	58.16	48.55	67.33	62.67
Education expenditure (real, annual per child)	-3.112 (3.384)	6,406	17.79	14.39	20.32	20.04

Note: Expenditure values are expressed in thousands of constant 2021/2022 FCFA. Total expenditure includes food, non-food, education, communication, hygiene, transportation, clothing, durable goods, social events, tobacco, alcohol, and energy. All specifications control for the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11 presents impacts on multiple food security indicators, namely the reduced coping strategies index (rCSI), the food consumption score (FCS), and the household dietary diversity score (HDDS).

The rCSI captures the prevalence of detrimental household coping strategies, such as consuming less expensive food, borrowing or relying on help from friends and family, limiting portion size, limiting the frequency of food consumption and restricting adults' food consumption so that children can eat. Each category is weighted by a predefined severity weight to obtain the household rCSI, where higher scores indicate higher levels of food insecurity (Maxwell & Caldwell, 2008).

The FCS is obtained by considering dietary diversity, consumption frequency and nutritional values over a seven-day time span. Data is collected on the frequency of consumption of eight food groups

¹⁸ The education expenditure in this table come from the individual module. However, the results remain statistically insignificant when we use the expenditure from the aggregate module.

(cereals, pulses/legumes, meat and eggs, vegetables, fruits, oils/fats and sugar) and a ninth category of condiments. Higher values of FCS indicate better food security levels (WFP, 2019).

The HDDS is the average number of food groups (among those considered in the FCS) consumed by household members in the day preceding the survey and captures the household's ability to access food (Swindale and Bilinsky, 2006). Higher values indicate better food security status.

The results presented in table 10 show no statistically significant effects of Cash Education on the above-described food security indexes.¹⁹

Table 1: Impacts on household food security

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
rCSI	1.892 (2.494)	6,405	14.287	15.121	7.614	6.556
FCS	2.484 (3.222)	6,405	51.901	52.176	62.963	60.755
HDDS	0.085 (.33)	6,405	6.381	6.417	7.16	7.112

Note: All specifications control for the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

6.4 Impacts on additional selected household outcomes

This section presents the estimated effects of Cash Education on other household outcomes that could be affected by the programme. These include household income, savings, debt, food transfers from family and friends, livestock ownership and durable assets.

Based on the results presented in table 11, we find no statistically significant effects on the programme on real income, likelihood of having savings, likelihood of having debt and the amount of debt. Notably, we find a negative impact on the amount of savings and the amount of food transfers from family and friends (both impacts are robust to the inclusion of additional covariates and entropy balancing). The reduction in the amount of savings could be arising from declines in income from other sources, such as the reduction in transfers received from family and friends in the form of food.

Table 2: Impacts on income, savings and debt

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Total income (annual)	1.533	6,406	3.885	4.842	3.765	3.189

¹⁹ There were also no statistically significant impacts on the specific components of the rCSI (see Appendix).

	(1.288)					
Has any savings	-0.040	6,406	0.131	0.086	0.189	0.183
	(.045)					
Savings amount	-4.709	6,404	9.836	3.673	21.728	20.267
	(3.419)					
Has any debt	0.013	6,406	0.472	0.447	0.37	0.332
	(.055)					
Debt amount	17.150	6,404	66.366	70.467	48.812	35.754
	(9.848)					
Amount of food transfers from family and friends	-0.156***	6,404	0.17	0.087	0.049	0.123
	(.03)					

Note: Income, savings, debt, and transfer amounts are expressed in thousands of FCFA (per adult equivalent and constant 2021/2022 FCFA). All specifications control for the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 12 presents the estimated impacts on livestock and durable assets. Again, there is no evidence of programme effects on either the likelihood of owning livestock and poultry, the number of livestock and poultry owned, or durable assets.

Table 3: Impacts on livestock and durable assets

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Has any livestock	0.014 (.033)	6,406	0.685	0.668	0.75	0.718
Has any poultry	0.005 (.035)	6,406	0.531	0.526	0.587	0.577
Number of cattle (cows, goats, sheep, donkeys, etc.)	2.515 (6.282)	6,406	34.687	32.507	46.906	42.21
Number of poultry (chicken, guinea fowl, duck, etc.)	0.628 (6.06)	6,406	39.289	35.467	54.493	50.042
Asset index	-0.010 (.013)	6,406	0.278	0.275	0.32	0.326

Note: All specifications control for the covariates included in X_h . Sampling weights applied. Standard errors clustered at the commune level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Overall, results suggest that the total amount spent by households on schooling does not change because of the Cash Education programme. Rather, what may change is the source of this cash spent on education. Results on children's time use show that children spend less time on economic activities thanks to the programme. At the same time, households reduce reliance on help from family and friends, as well as their savings. So, households may be using the Cash Education (and partly their savings) to pay for schooling costs, rather than relying on help from family and friends, or on the earnings from children's work.

7. Conclusions and lessons learned

This report described impacts of the Cash Education programme, a digital cash transfer top-up supporting children in poor households receiving the social protection PNBSF, with a focus on girls and children living with a disability. The programme is implemented in six regions in Senegal, which are at a disadvantage in terms of schooling outcomes (Kaffrine, Tambacounda, Kédougou, Kolda, Sédhiou and Matam).

Two rounds of data were collected for the evaluation, in autumn 2022 (baseline) and autumn 2023 (endline). These data were used in a DiD model to estimate programme impacts on key performance indicators, including school enrolment, attendance, transition to the next level and dropout. Impacts were also estimated on a set of secondary outcomes which could indirectly be affected by the programme, such as children's and adults' time use, household expenditure, food security, livestock and durable asset ownership.

Endline evaluation data for the control group indicate that about 80 per cent of children aged 6 to 18 years are enrolled school. School enrolment is relatively higher among younger children (aged 6 to 14), at 84 per cent for boys and 85 per cent for girls. The enrolment rate is lowest among older children (aged 15 to 18), at 63 per cent for boys and 69 per cent for girls. The most reported reasons for children never enrolling in school are lack of interest from the child and lack of financial resources.

The prevalence of school dropout is relatively low in the evaluation sample, at about 2 per cent of children aged 6–18 in the control group at endline. The highest rate of school dropout is recorded for older boys, at 5 per cent, while dropout rates are lower for the other gender-age groups. The most reported reasons for school dropout are illness of the child, lack of interest from the child, and financial constraints.

These findings confirmed that financial constraints represent a major barrier to school participation. Indeed, households reported an annual education expenditure of about FCFA 22,456 (US\$ 38) per in-school child.

Against this backdrop, the Cash Education programme aims at supporting children's school participation (increasing enrolment and attendance and reducing dropout) as well as school progression (transition to the next level) in vulnerable households. The programme was designed with a variable amount based on the child's schooling level, gender and disability status. Amounts were to be transferred in two separate equal tranches (50 per cent of the overall planned amount each), with the first tranche being unconditional and transferred soon after the start of the school year, and the second tranche being conditional on school attendance, and to be delivered after the first three months of the school year.

Operational performance data indicated that the implementation of Cash Education deviated from plans, due to several encountered challenges to do mostly with the introduction of the digital payment modality as an innovation. Only one tranche was disbursed during the evaluation period. Moreover, this was disbursed about three months after the start of the school year, from January to

early March 2023 instead of October 2022 as planned. These aspects likely limited the extent to which the initiative could impact schooling outcomes, such as enrolment and transition to the next level.

Overall, about 46 per cent of respondents in the treatment group reported being aware of the programme. Of those who were aware, most had a good understanding of the eligibility criteria of the programme, and perceived that the selection process of beneficiaries was clear and fair.

Regarding transfer take-up, administrative data show that about 70 per cent of treatment households cashed out the top-up payment, a significantly different result from the household survey data, which reported that about 18 per cent of households in the treatment group received the programme. The discrepancy in take-up between survey and administrative data could be due to under-reporting from the survey respondents, and/or misunderstanding by them about which specific transfer they were asked about.

On average, households reported receiving about FCFA 23,000. Consistent with the objectives of Cash Education, recipients reported mostly using the cash for schooling costs, such as tuition, school supplies and school uniforms.

Accordingly, estimated impacts on key outcomes showed that the programme significantly increased school attendance, with impacts being stronger for older children aged 15 to 18 years. These impacts were largely similar among boys and girls. Cash Education also reduced school dropout for the full sample of children aged 6 to 18. No impacts were found on school enrolment, which is possibly related to the fact that enrolment at baseline was already high (about 80 per cent), so there was little margin for improvement. Moreover, the cash transfer was made in early 2023, so likely households had already spent the transfer by the beginning of the new school year (October 2023), mostly on education-related aspects as per the reported expenditure in the survey. In terms of school transition, the analysis showed a reduction for younger girls. This can be explained by considering that the programme allowed relatively more vulnerable pupils (who would have dropped out in the absence of the programme) to remain in school. These students are less likely to progress to the next year, which drives down the average transition rate in the treatment group.

Impacts on children's time use show a negative coefficient for time spent working by older children, with girls reducing the time spent on household chores and boys reducing the time spent on economic activities. However, there are no statistically significant impacts on time use. The same holds for the sample of adults.

Total household expenditure, income and assets were not affected by the programme. In particular, there is no evidence that treatment households spent more on education compared to control households. Instead, there is evidence that treatment households rely less on help from family and friends compared to control households. So, overall, while the total education expenditure did not vary due to the programme, the source of the funds spent on education may have changed, with Cash Education being used to pay for schooling costs, rather than relying on help from family and friends, or on earnings from children's work.

Overall, the Cash Education programme partially achieved its main objectives. While school attendance increased, and school dropout declined due to the programme, other key performance indicators – transition and enrolment – did not progress as expected. Both programme operations and contextual aspects concur in explaining these findings.

Regarding contextual factors, it is relevant to reiterate that school enrolment was already relatively high in the sample, therefore there was relatively little margin for improvement. Furthermore, school supply constraints may limit the effectiveness of the programme on transition. While the programme reduced school dropout, results suggest that those children that remained in school due to the programme did not progress well to the next grade. This is possibly due to the limited capacity of the schooling system to support learning of the most disadvantaged children. Strengthening of the supply side of schooling is thus needed to ensure that those children that remain in school are adequately supported to progress in their educational trajectory.

Overall, the Cash Education programme partially achieved its objectives. While the evaluation found evidence of an increase in school attendance and a reduction in dropout, transition and enrolment did not change as expected. The following key lessons can be drawn:

Maintaining fidelity of implementation is key. Only one Cash Education transfer was delivered, instead of two as originally planned. Moreover, the payment was delivered about three months after the planned timeline. These aspects contribute to explain why the programme only partially achieved its objectives, signalling the importance of implementation fidelity.

It is important to consider operational challenges at the implementation planning stage. Programme implementation deviated from the planned design mostly due to the operational challenges in introducing a digital method of payment. So, at the implementation planning stage it is important to put in place specific actions to support the readiness of the payment infrastructure to accommodate digital payments.

Communication and programme monitoring are essential to ensure take-up. Cash Education take-up was limited due to operational challenges for SMS delivery and connectivity issues. Intense direct communication about the programme with eligible households and frequent monitoring of cash receipt are important to identify and address operational barriers.

Contextual aspects play a key role as mediators of programme impacts. As the programme reduced dropout, results suggest that those children that remained in school showed limited progression. This is possibly due to the limited capacity of the schooling system to support learning for the most disadvantaged children due to school supply constraints. These elements allow better interpretation of the findings and suggest the need to consider supply elements in programme design.

Providing cash-top up in support of education can be an effective strategy to school participation. Despite challenges the programme had positive impacts and allowed households to overcome (at least partly) the financial constraints to education. This speaks to the importance of supporting this type of interventions in other disadvantaged context in Senegal and other countries.

8. Recommendations

Based on the above findings and lessons learned, programmatic recommendations are proposed both in reference to the programme evaluated and to other related aspects of the education system. These recommendations are relevant for implementation of similar programmes in the future. They are provided for DGPSN and UNICEF as pertains Senegal but can hold for similar other contexts.

8.1 Recommendations specific to Cash Education

Improve the timeliness of Cash Education payments, ensuring that the programme is implemented according to the planned design and schedule of payment, including two payments, the first at the start of the school year (to support enrolment), and the second after the first school term (to support retention).

Strengthen the digitization of the payment infrastructure. Measures to support the readiness of the PNBSF payment infrastructure to accommodate regular or one-off digital payments could include, for example, updating of RNU data, putting in place long-standing contracts with mobile and financial service providers and ensuring the PNBSF payment module allows for digital transfers and reconciliation. These improvements will address the challenges encountered during implementation and increase program take-up.

Improve communication about the programme and strengthen monitoring of programme payments, specifically with regards to the innovative digital method of payment. Administrative data showed a take-up rate of about 70 per cent, while survey data indicated much lower rates of take up. Overall, there is margin to increase programme take-up to maximize its impact across eligible households. More intense communication on the programme could have improved awareness and take-up. Despite regular monitoring and follow-up of bottlenecks, increasing the efforts to ensure the accuracy of phone numbers of beneficiaries and support the cashing out by the beneficiaries, could have further increased programme take up and impact.

Expand the programme to other vulnerable households. Despite the operational challenges, the programme proved to be beneficial to improving school participation. Therefore, if implemented as intended and not just as a COVID-19 response, but as a general education-related top-up to the PNBSF, the programme has the potential to generate significant improvements in the schooling outcomes of other disadvantaged children. In relation to expanding coverage of the programme, it is important to assess gaps in the coverage of the underlying PNBSF and keep those as well in consideration when deciding on expansion of the Cash Education programme.

8.2 Other recommendations for the broader education system

Strengthen learning support for more vulnerable children. The results showed that those children that remained in school thanks to the programme (and who would have otherwise dropped out in the absence of it) did not progress well to their next grade. This finding, which holds especially for younger girls aged 6 to 14 years, highlights the need to support learning for the most disadvantaged children that are retained in school by the Cash Education programme.

Strengthen household and community awareness on the importance of education. One of the main reported reasons for children being out of school was lack of interest from the child. Giving information on the benefits of schooling to both caregivers and children and enhancing their awareness on the children's rights to education can thus contribute further to improving school participation, with benefits on learning levels as well (World Bank, 2020). Engaging teachers and the broader community with sensitization on the relevance of education can further improve programme effectiveness.

8.3 Research recommendations

Qualitative research to better understand the role of design and implementation aspects. The implementation of Cash Education faced significant challenges. In depth-analysis of barriers and enablers of implementation could provide valuable lessons for future programme scale up.

Qualitative research to better understand the role of contextual factors, such as social norms. Lack of interest in education from the child was commonly reported as a reason for children being out of school. As the data reflect caregivers' perceptions, this finding calls for more detailed analysis to better understand the perception of children themselves. In-depth analysis of individual barriers to schooling by gender and age can support in further assessing appropriate transfer amounts.

Long-term evaluation. The impacts captured in this report refer to the short term (less than one year after the transfer was delivered). Long term follow ups would allow for tracking children's progress in schooling and their transition to work, providing relevant information on the sustainability of impacts and long-term effectiveness of the programme.

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Annexes

Annex I. Evaluation matrix

All research questions were developed in collaboration between UNICEF Innocenti and UNICEF Senegal.

Evaluation questions and sub-questions	Indicators/Measures	Data Sources	Data Analysis
EFFICIENCY			
<p>Question 1. What was the programme’s operational performance and what are the views of the recipients of the cash top-up regarding payment adequacy, modality and conditionality? Sub-questions include:</p> <ul style="list-style-type: none"> Was the programme implemented as intended? Have beneficiaries received complete payments on time? What were the main challenges and enablers of implementation? 	<ul style="list-style-type: none"> Percentage of respondents who perceived the clarity of the selection process for Cash Education as very clear/fairly clear/not so clear/not clear at all Respondents’ opinion on who is eligible for Cash Education (categories: poor families, belonging to a particular community, residing in a particular village, residing in a particular department, other) Respondents’ perception of the fairness of Cash Education’s beneficiary selection process (very fair/fair enough/not so fair/not fair at all) Percentage of eligible respondents who were aware of Cash Education Percentage of eligible respondents who received Cash Education Number of children in the (eligible) household covered by Cash Education Number of Cash Education payments received Amount of Cash Education payment received Use of Cash Education transfers 	<ul style="list-style-type: none"> Household survey collected as part of the impact evaluation (baseline and endline) Administrative data on Cash Education payments were also analyzed, to triangulate them with survey data. UNICEF staff provided further information on programme implementation and related challenges/enablers. 	<ul style="list-style-type: none"> Household survey data were analyzed through descriptive statistics, obtained for the control and treatment groups. Where relevant, differences between the two groups were tested for statistical significance. Administrative data on payments were analyzed through descriptive statistics (treatment group only).
EFFECTIVENESS			
<p>Question 2. To what extent did the Cash Education programme achieve its objectives?</p>	<ul style="list-style-type: none"> Enrolment Attendance Transition to the next grade Dropout 	<ul style="list-style-type: none"> Household survey (baseline and endline) 	<ul style="list-style-type: none"> Difference-in-Differences specification, for children in households in the vicinity of the PMT eligibility cutoff. Households were selected 1 standard deviation below (treatment) and above (control) the cutoff.
IMPACT			
<p>Question 3. What are the programme’s gender and age-specific impacts on school enrollment, attendance, transition and dropout?</p>	<ul style="list-style-type: none"> Enrolment Attendance Transition to the next grade Dropout 	<ul style="list-style-type: none"> Household survey (baseline and endline) 	<ul style="list-style-type: none"> Difference-in-Differences specification (as above described) Separate estimates were obtained for younger girls and boys (age 5-13 at baseline, 6-14 at endline), and for older girls and boys

Evaluation questions and sub-questions	Indicators/Measures	Data Sources	Data Analysis
			(age 14-17 at baseline, 15-18 at endline)
<p>Question 4. What is the impact of the cash top-up on secondary outcomes of interest?</p> <ul style="list-style-type: none"> Does the cash top have any impacts on other household welfare indicators such as expenditure and food security? Does the cash top have any impacts on other individual-level indicators such as time use? 	<p><u>Household welfare:</u></p> <ul style="list-style-type: none"> Total expenditure (real, per adult equivalent per month) Food expenditure (real, per adult equivalent per month) Non-food expenditure (real, per adult equivalent per month) Education expenditure (real, annual) Education expenditure (real, annual per child) Reduced coping strategies index (rCSI) Food Consumption Score (FCS) Household dietary diversity score (HDDS) Total income Has any savings Savings amount Has any debt Debt amount Amount of food transfers from family and friends Has any livestock Has any poultry Number of cattle (cows, goats, sheep, donkeys, etc.) Number of poultry (chicken, guinea fowl, duck, etc.) Asset index <p><u>Time use:</u></p> <ul style="list-style-type: none"> Participation in household chores Participation in economic activities Participation in studying at home Time spent on household chores Time spent on economic activities Time spent studying at home 	<ul style="list-style-type: none"> Household survey (baseline and endline) 	<ul style="list-style-type: none"> Difference-in-Differences specification (as above described) Separate estimates were obtained for younger girls and boys (age 5-13 at baseline, 6-14 at endline), and for older girls and boys (age 14-17 at baseline, 15-18 at endline) Estimates on time use were also obtained for adults, separately for men and women.
<p>Question 5. What are some of the contextual factors (distance to school and household head characteristics) that moderate the relationship between the programme and children's school participation?</p>		<ul style="list-style-type: none"> Household survey (baseline and endline) 	<ul style="list-style-type: none"> Difference-in-Differences specification (as above described)

Annex II. Attrition and balance

Household-level attrition is defined as the share of households who were surveyed at baseline but not at endline. At endline, a total of 4,120 households were interviewed against an original sample of 4,277 households at baseline, which implies a 3.7 per cent attrition rate (see Table A1).²⁰ Most attriters consist of households who migrated outside the study regions.

Table A1: Households surveyed at baseline, endline, and attrition

Group		Baseline	Endline	Retained in Panel (%)	Attrition rate (%)
Treatment		2,146	2,081	97.0	3.0
Control		2,131	2,039	95.7	4.3
Total		4,277	4,120	96.3	3.7
Regions	Group				
TAMBACOUNDA	Treatment	513	464	90.4	9.6
	Control	536	471	87.9	12.1
KOLDA	Treatment	561	555	98.9	1.1
	Control	600	594	99	1
MATAM	Treatment	265	260	98.1	1.9
	Control	176	172	97.7	2.3
KAFFRINE	Treatment	317	315	99.4	0.6
	Control	435	421	96.8	3.2
KEDOUGOU	Treatment	47	47	100	0
	Control	170	168	98.8	1.2
SEDHIOU	Treatment	443	440	99.3	0.7
	Control	214	213	99.5	0.5

Attrition is analysed by comparing baseline characteristics between households who remained in the sample at endline (panel) and those who dropped out (attriters).²¹ Out of 137 indicators, the difference in mean between attriters and households who participated in both survey rounds is statistically significant at the 10 per cent level in 20 cases (14.6 per cent), as shown in Tables A3 to A10 (down to 11 cases, 8%, if considering only coefficients significant at the 5% level). These results indicate minor levels of selective attrition in the analysis sample.

Differential attrition arises when the characteristics of households who exit the sample are different in the control and intervention group, which threatens the balance between both groups, thus the internal validity of findings. Differential attrition is assessed by investigating the balance in selected household characteristics between control and intervention households who remained in the panel. Only 19 (13.9 per cent) mean differences are statistically significant at the 10 per cent level, which

²⁰ The attrition rate is similar in sample 2, amounting to 4.1 per cent, with 2,369 households retained in the panel (1,239 control and 1,130 treated) and 101 attriters (57 control and 44 treated).

²¹ Comparison between attriters and non-attriters follows the same approach used to assess balance in household characteristics between Cash Education beneficiaries and the comparison group.

indicates that attrition only marginally affected the balance in the panel sample (see Tables A11 to A18).

Individual-level attrition is defined as the share of individuals surveyed at baseline who could not be identified at endline. Hence, in addition to household members from households who did not participate in the endline survey, individual-level attritors also include individuals who left the household or for whom different identification information was provided at baseline and endline in such a way that linking was not possible. The summary of individual-level attrition is presented in Table A2. Overall, 10.9% of household members surveyed at baseline were not found in the endline sample. Looking at overall attrition for individuals aged 5-18, 2 out of 14 (14.3%) mean differences are statistically significant against 3 out of 7 (42.9%) for study participants aged 19 and above (Tables A19 and A20). The differential attrition rate is similar for both populations, amounting to 28.5% (Tables A21 and A22).

Table A2: Individuals identified at baseline, endline, and attrition

	Group	Baseline	Endline	Retained in Panel (%)	Attrition rate (%)
Full sample					
	Treatment	20007	17970	89.8	10.2
	Control	19507	17244	88.4	11.6
	Total	39514	35214	89.1	10.9
By region					
TAMBACOUNDA	Treatment	5415	4501	83.1	16.9
	Control	5305	4359	82.2	17.8
KOLDA	Treatment	4027	3761	93.4	6.6
	Control	4265	4025	94.4	5.6
MATAM	Treatment	3029	2687	88.7	11.3
	Control	2143	1878	87.6	12.4
KAFFRINE	Treatment	3243	2946	90.8	9.2
	Control	4341	3775	87	13
KEDOUGOU	Treatment	373	364	97.6	2.4
	Control	1418	1316	92.8	7.2
SEDHIOU	Treatment	3920	3711	94.7	5.3
	Control	2035	1891	92.9	7.1

Household-level attrition

Table A3: Overall attrition: household characteristics

	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Head age	53.804	2039	54.803	2081	0.999	0.562	0.093
Female household head	0.501	2039	0.523	2081	0.022	0.036	0.553
Literate household head	0.834	2039	0.86	2081	0.026	0.022	0.257
Head's education: None	0.446	2039	0.503	2081	0.057	0.036	0.136
Head's education: Primary	0.149	2039	0.15	2081	0.001	0.014	0.927
Head's education: Secondary	0.065	2039	0.062	2081	-0.004	0.006	0.592
Head's education: Higher education	0.002	2039	0.001	2081	-0.001	0.001	0.321
HH size	8.981	2039	8.769	2081	-0.212	0.263	0.431
HH has at least one member sick for 3 months	0.408	2039	0.469	2081	0.061	0.054	0.274
Adult equivalent (AE)	6.967	2039	6.801	2081	-0.166	0.222	0.465
N of 0-21 male children	2.679	2039	2.649	2081	-0.03	0.115	0.797
N of 0-21 female children	2.719	2039	2.645	2081	-0.074	0.075	0.34
Wolof	0.199	2039	0.213	2081	0.014	0.011	0.227
Pular	0.526	2039	0.531	2081	0.005	0.013	0.707
French	0.004	2039	0.004	2081	0	0.002	0.911
Other languages	0.243	2039	0.233	2081	-0.01	0.01	0.301
Muslim	0.97	2039	0.977	2081	0.006	0.009	0.519
Polygamous marriage	0.254	2039	0.276	2081	0.022	0.021	0.324
Monogamous marriage	0.753	2039	0.739	2081	-0.014	0.024	0.561
Single, divorced, widowed	0.971	2039	0.973	2081	0.003	0.007	0.68
Highest education: None	0.7	2039	0.755	2081	0.055	0.041	0.197
Highest education: Primary	0.79	2039	0.819	2081	0.028	0.014	0.055
Highest education: Secondary	0.621	2039	0.621	2081	-0.001	0.023	0.98
Highest education: Higher education	0.014	2039	0.022	2081	0.008	0.004	0.059
Number of children under 5	0.927	2039	0.823	2081	-0.104	0.076	0.189
Number of children between 5–17	3.574	2039	3.649	2081	0.075	0.103	0.476
Household has handicapped child	0.112	2039	0.157	2081	0.044	0.027	0.118
Number of sick HH members	1.735	2039	1.961	2081	0.227	0.189	0.245

Table A4: Overall attrition: nutrition indicators

	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
 HDDS	6.374	2039	6.5	2081	0.125	0.31	0.691
 FCS	52.309	2039	52.983	2081	0.674	4.183	0.874
 rCSI	15.421	2039	14.241	2081	-1.18	2.328	0.619

Table A5: Overall attrition: monetary and non-monetary transfers

	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
 Has any transfers	0.861	2039	0.863	2081	0.002	0.035	0.956
 Real transfer (in cash) per AE	10954.91	2039	10326.62	2081	-628.29	297.23	0.05
 Real transfer (in kind) per AE	455.042	2039	727.792	2081	272.756	189.77	0.169
 Transfer from remittances	0.146	2039	0.15	2081	0.004	0.012	0.732
 Transfer from NGO	0.138	2039	0.137	2081	-0.001	0.008	0.893
 Transfer from government	0.141	2039	0.143	2081	0.002	0.006	0.742
 Food transfer from family and friends	0.142	2039	0.127	2081	-0.015	0.013	0.265
 Food transfer from NGO	0.15	2039	0.142	2081	-0.008	0.008	0.334
 Transfer of power from the health centre	0.139	2039	0.148	2081	0.008	0.012	0.516
 Food transfer from government	0.144	2039	0.153	2081	0.009	0.008	0.277

Table A6: Overall attrition: income sources

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
 Production/sale of Agricultural products	0.305	2039	0.29	2081	-0.015	0.047	0.761
 Production/sale of gardening products	0.078	2039	0.105	2081	0.027	0.028	0.349
 Production/sale of livestock products	0.022	2039	0.035	2081	0.014	0.013	0.314
 Production/sale of fishery products	0.024	2039	0.034	2081	0.011	0.009	0.242

Production/sale of hunting/gathering products	0.005	2039	0.017	2081	0.012	0.008	0.165
Wholesale of food products	0.015	2039	0.019	2081	0.003	0.007	0.609
Retailer of food products	0.135	2039	0.095	2081	-0.04	0.014	0.012
Wholesale of non-food products	0.006	2039	0.013	2081	0.007	0.004	0.088
Retailer of non-food products	0.113	2039	0.103	2081	-0.01	0.013	0.453
Rent of properties	0	2039	0	2081	0		
Agricultural daily labourer	0.027	2039	0.033	2081	0.005	0.01	0.59
Non-agricultural daily labourer	0.069	2039	0.1	2081	0.032	0.015	0.047
Artist	0.03	2039	0.031	2081	0.002	0.008	0.824
Contractor	0.005	2039	0.005	2081	-0.001	0.003	0.761
Civil servant	0.012	2039	0.008	2081	-0.004	0.004	0.364
Salaried employee	0.043	2039	0.048	2081	0.004	0.007	0.546
Pension	0.014	2039	0.022	2081	0.007	0.003	0.048
Carpenter, plumber, tailor etc	0.104	2039	0.107	2081	0.003	0.018	0.865
Gold panning	0.001	2039	0.001	2081	0	0.001	0.791
Driver	0.049	2039	0.03	2081	-0.019	0.005	0.002
Landlords	0.002	2039	0.002	2081	0	0.002	0.926
Money transfers	0.101	2039	0.102	2081	0.001	0.052	0.987
Social aid (from family and community)	0.033	2039	0.021	2081	-0.012	0.01	0.216
Humanitarian aid (state or NGOs)	0.15	2039	0.137	2081	-0.013	0.042	0.754
Borrowing	0.053	2039	0.083	2081	0.03	0.019	0.138
Total number of income sources	1.398	2039	1.443	2081	0.044	0.067	0.518

Table A7: Overall attrition: household income

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Real income per AE (internal sources)	49.595	2039	43.952	2081	-5.643	3.11	0.087
Real income per AE (external sources)	4836.942	2039	3795.845	2081	-1041.1	998.881	0.312

Table A8: Overall attrition: livestock, savings, and debts

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Number of cattle (cows, goats, sheep, donkeys, etc)	35.674	2039	30.332	2081	-5.342	5.997	0.386
Number of poultry (chicken, guinea fowl, duck, etc)	36.184	2039	36.52	2081	0.337	2.718	0.903
Has any poultry	0.531	2039	0.519	2081	-0.013	0.017	0.452
Has any cattle	0.485	2039	0.492	2081	0.007	0.033	0.836
Has any livestock	0.677	2039	0.673	2081	-0.004	0.017	0.813
Has any debt	0.474	2039	0.459	2081	-0.016	0.047	0.745
Real debt per AE	70538.89	2039	68293.08	2081	-2245.81	10079.88	0.826
Has any savings	0.094	2039	0.117	2081	0.024	0.043	0.587
Real savings per AE	4436.988	2039	8041.485	2081	3604.496	3344.642	0.296

Table A9: Overall attrition: household expenses

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Real non-food expenditure per AE	8.664	2039	10.152	2081	1.488	0.571	0.018
Real food expenditure per AE	2.879	2039	3.202	2081	0.323	0.371	0.396
Real education expenditure per AE	7.255	2039	8.663	2081	1.409	1.147	0.236
Real health expenditure per AE	2.826	2039	3.567	2081	0.741	0.308	0.028
Real total education expenditure	49715.37	2039	58306.62	2081	8591.25	7244.857	0.252
Real per capital education expenditure	9669.947	2039	11849.38	2081	2179.428	1387.754	0.135
Real total health expenditure	23122.56	2039	26172.33	2081	3049.77	3094.74	0.338
Real per AE health expenditure	3486.908	2039	4130.339	2081	643.431	703.459	0.373
Spent on energy	0.296	2039	0.311	2081	0.016	0.027	0.572
Spent on tobacco/alcohol	0.155	2039	0.165	2081	0.009	0.009	0.283
Spent on transport	0.192	2039	0.189	2081	-0.003	0.012	0.787
Spent on hygiene and health	0.152	2039	0.147	2081	-0.004	0.01	0.668
Spent on education	0.049	2039	0.053	2081	0.004	0.006	0.515

	Comparison		Treatment		Diff. (Treatment - Comparison)		
Spent on communication	0.157	2039	0.135	2081	-0.022	0.018	0.235
Spent on house in past 12 months	0.19	2039	0.198	2081	0.008	0.011	0.445
Spent on clothing in past 12 months	0.253	2039	0.229	2081	-0.023	0.013	0.089
Spent on durables in past 12 months	0.252	2039	0.255	2081	0.004	0.012	0.762
Spent on social events in past 12 months	0.154	2039	0.154	2081	0	0.012	0.987
Real expenditure per AE on clothing	1371.898	2039	1547.063	2081	175.166	166.762	0.308
Real expenditure per AE on durables	475.367	2039	713.117	2081	237.75	254.972	0.364
Real expenditure per AE on house	663.39	2039	1009.64	2081	346.251	269.666	0.216
Real expenditure per AE on social events	1472.066	2039	1653.917	2081	181.852	424.507	0.674
Real per AE expenditure on energy	753.89	2039	856.638	2081	102.748	58.995	0.1
Real per AE expenditure on tobacco and alcohol	45.954	2039	42.462	2081	-3.491	8.113	0.672
Real per AE expenditure on transport	576.514	2039	647.975	2081	71.461	157.122	0.655
Real per AE expenditure on hygiene	3450.841	2039	4217.117	2081	766.276	339.361	0.037
Real per AE expenditure on education	3403.074	2039	4044.579	2081	641.505	255.389	0.022
Real per AE expenditure on communication	492.991	2039	598.858	2081	105.867	57.104	0.081

Table A10: Overall attrition: assets

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Total number of mosquito nets	5.161	2039	5.043	2081	-0.118	0.195	0.554
Total number of motorcycles	0.24	2039	0.264	2081	0.025	0.014	0.106
Total number of bicycles	0.206	2039	0.25	2081	0.044	0.022	0.06
Total number of stoves	0.255	2039	0.267	2081	0.012	0.019	0.537
Total number of fireplaces	0.138	2039	0.143	2081	0.004	0.018	0.809
Total number of ventilators	0.373	2039	0.434	2081	0.061	0.034	0.089
Total number of phones	2.514	2039	2.554	2081	0.04	0.135	0.77
Total number of radio	0.353	2039	0.33	2081	-0.024	0.035	0.513
Total number of Televisions	0.45	2039	0.484	2081	0.035	0.028	0.234
Total number of solar	0.161	2039	0.129	2081	-0.032	0.034	0.361
Total number of beds	2.233	2039	2.106	2081	-0.127	0.173	0.475
Total number of mattresses	2.639	2039	2.655	2081	0.016	0.189	0.934
Total number of computers	0.054	2039	0.047	2081	-0.007	0.009	0.418
Has mosquito nets	0.99	2039	0.966	2081	-0.023	0.013	0.084
Has motorcycles	0.197	2039	0.214	2081	0.017	0.017	0.329
Has bicycles	0.176	2039	0.217	2081	0.041	0.011	0.002
Has stoves	0.201	2039	0.219	2081	0.018	0.012	0.163
Has fireplaces	0.117	2039	0.128	2081	0.011	0.016	0.496
Has ventilators	0.208	2039	0.251	2081	0.042	0.016	0.017
Has phones	0.846	2039	0.871	2081	0.025	0.036	0.502
Has radio	0.296	2039	0.286	2081	-0.01	0.034	0.764
Has Televisions	0.403	2039	0.419	2081	0.015	0.023	0.509
Has solar	0.143	2039	0.116	2081	-0.026	0.034	0.45
Has beds	0.744	2039	0.724	2081	-0.021	0.044	0.65
Has mattresses	0.78	2039	0.781	2081	0.001	0.052	0.982
Has computers	0.038	2039	0.043	2081	0.005	0.007	0.529
Asset index	0.278	2039	0.281	2081	0.003	0.009	0.767
Asset index - Q1	0.331	2039	0.329	2081	-0.002	0.031	0.952
Asset index - Q2	0.343	2039	0.33	2081	-0.013	0.026	0.623
Asset index - Q3	0.326	2039	0.341	2081	0.015	0.019	0.442
Household has internet access	0.347	2039	0.41	2081	0.063	0.073	0.402

Table A11: Differential attrition: household characteristics

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Head age	53.804	2039	54.803	2081	0.999	0.562	0.093
Female household head	0.501	2039	0.523	2081	0.022	0.036	0.553
Literate household head	0.834	2039	0.86	2081	0.026	0.022	0.257
Head's education: None	0.446	2039	0.503	2081	0.057	0.036	0.136
Head's education: Primary	0.149	2039	0.15	2081	0.001	0.014	0.927
Head's education: Secondary	0.065	2039	0.062	2081	-0.004	0.006	0.592
Head's education: Higher education	0.002	2039	0.001	2081	-0.001	0.001	0.321
HH size	8.981	2039	8.769	2081	-0.212	0.263	0.431
HH has at least one member sick for 3 months	0.408	2039	0.469	2081	0.061	0.054	0.274
Adult equivalent (AE)	6.967	2039	6.801	2081	-0.166	0.222	0.465
N of 0-21 male children	2.679	2039	2.649	2081	-0.03	0.115	0.797
N of 0-21 female children	2.719	2039	2.645	2081	-0.074	0.075	0.34
Wolof	0.199	2039	0.213	2081	0.014	0.011	0.227
Pular	0.526	2039	0.531	2081	0.005	0.013	0.707
French	0.004	2039	0.004	2081	0	0.002	0.911
Other languages	0.243	2039	0.233	2081	-0.01	0.01	0.301
Muslim	0.97	2039	0.977	2081	0.006	0.009	0.519
Polygamous marriage	0.254	2039	0.276	2081	0.022	0.021	0.324
Monogamous marriage	0.753	2039	0.739	2081	-0.014	0.024	0.561
Single, divorced, widowed	0.971	2039	0.973	2081	0.003	0.007	0.68
Highest education: None	0.7	2039	0.755	2081	0.055	0.041	0.197
Highest education: Primary	0.79	2039	0.819	2081	0.028	0.014	0.055
Highest education: Secondary	0.621	2039	0.621	2081	-0.001	0.023	0.98
Highest education: Higher education	0.014	2039	0.022	2081	0.008	0.004	0.059
Number of children under 5	0.927	2039	0.823	2081	-0.104	0.076	0.189
Number of children between 5-17	3.574	2039	3.649	2081	0.075	0.103	0.476
Household has handicapped child	0.112	2039	0.157	2081	0.044	0.027	0.118
Number of sick HH members	1.735	2039	1.961	2081	0.227	0.189	0.245

Table A12: Differential attrition: nutrition indicators

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
HHDS	6.374	2039	6.5	2081	0.125	0.31	0.691
FCS	52.309	2039	52.983	2081	0.674	4.183	0.874
rCSI	15.421	2039	14.241	2081	-1.18	2.328	0.619

Table A13: Differential attrition: monetary and non-monetary transfers

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Has any transfers	0.861	2039	0.863	2081	0.002	0.035	0.956
Real transfer (in cash) per AE	10954.91	2039	10326.62	2081	-628.29	297.23	0.05
Real transfer (in kind) per AE	455.042	2039	727.792	2081	272.75	189.776	0.169
Transfer from remittances	0.146	2039	0.15	2081	0.004	0.012	0.732
Transfer from NGO	0.138	2039	0.137	2081	-0.001	0.008	0.893
Transfer from government	0.141	2039	0.143	2081	0.002	0.006	0.742
Food transfer from family and friends	0.142	2039	0.127	2081	-0.015	0.013	0.265
Food transfer from NGO	0.15	2039	0.142	2081	-0.008	0.008	0.334
Transfer of power from the health centre	0.139	2039	0.148	2081	0.008	0.012	0.516
Food transfer from government	0.144	2039	0.153	2081	0.009	0.008	0.277

Table A14: Differential attrition: income sources

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Production/sale of Agricultural products	0.305	2039	0.29	2081	-0.015	0.047	0.761
Production/sale of gardening products	0.078	2039	0.105	2081	0.027	0.028	0.349
Production/sale of livestock products	0.022	2039	0.035	2081	0.014	0.013	0.314
Production/sale of fishery products	0.024	2039	0.034	2081	0.011	0.009	0.242

Production/sale of hunting/gathering products	0.005	2039	0.017	2081	0.012	0.008	0.165
Wholesale of food products	0.015	2039	0.019	2081	0.003	0.007	0.609
Retailer of food products	0.135	2039	0.095	2081	-0.04	0.014	0.012
Wholesale of non-food products	0.006	2039	0.013	2081	0.007	0.004	0.088
Retailer of non-food products	0.113	2039	0.103	2081	-0.01	0.013	0.453
Rent of properties	0	2039	0	2081	0		
Agricultural daily labourer	0.027	2039	0.033	2081	0.005	0.01	0.59
Non-agricultural daily labourer	0.069	2039	0.1	2081	0.032	0.015	0.047
Artist	0.03	2039	0.031	2081	0.002	0.008	0.824
Contractor	0.005	2039	0.005	2081	-0.001	0.003	0.761
Civil servant	0.012	2039	0.008	2081	-0.004	0.004	0.364
Salaried employee	0.043	2039	0.048	2081	0.004	0.007	0.546
Pension	0.014	2039	0.022	2081	0.007	0.003	0.048
Carpenter, plumber, tailor etc	0.104	2039	0.107	2081	0.003	0.018	0.865
Gold panning	0.001	2039	0.001	2081	0	0.001	0.791
Driver	0.049	2039	0.03	2081	-0.019	0.005	0.002
Landlords	0.002	2039	0.002	2081	0	0.002	0.926
Money transfers	0.101	2039	0.102	2081	0.001	0.052	0.987
Social aid (from family and community)	0.033	2039	0.021	2081	-0.012	0.01	0.216
Humanitarian aid (state or NGOs)	0.15	2039	0.137	2081	-0.013	0.042	0.754
Borrowing	0.053	2039	0.083	2081	0.03	0.019	0.138
Total number of income sources	1.398	2039	1.443	2081	0.044	0.067	0.518

Table A15: Differential attrition: household income

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Real income per AE (internal sources)	49.595	2039	43.952	2081	-5.643	3.11	0.087
Real income per AE (external sources)	4836.942	2039	3795.845	2081	-1041.1	998.881	0.312

Table A16: Differential attrition: livestock, savings, and debts

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Number of cattle (cows, goats, sheep, donkeys, etc)	35.674	2039	30.332	2081	-5.342	5.997	0.386
Number of poultry (chicken, guinea fowl, duck, etc)	36.184	2039	36.52	2081	0.337	2.718	0.903
Has any poultry	0.531	2039	0.519	2081	-0.013	0.017	0.452
Has any cattle	0.485	2039	0.492	2081	0.007	0.033	0.836
Has any livestock	0.677	2039	0.673	2081	-0.004	0.017	0.813
Has any debt	0.474	2039	0.459	2081	-0.016	0.047	0.745
Real debt per AE	70538.89	2039	68293.08	2081	-2245.81	10079.88	0.826
Has any savings	0.094	2039	0.117	2081	0.024	0.043	0.587
Real savings per AE	4436.988	2039	8041.485	2081	3604.496	3344.642	0.296

Table A17: Differential attrition: household expenses

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Real non-food expenditure per AE	8.664	2039	10.152	2081	1.488	0.571	0.018
Real food expenditure per AE	2.879	2039	3.202	2081	0.323	0.371	0.396
Real education expenditure per AE	7.255	2039	8.663	2081	1.409	1.147	0.236
Real health expenditure per AE	2.826	2039	3.567	2081	0.741	0.308	0.028
Real total education expenditure	49715.37	2039	58306.62	2081	8591.25	7244.857	0.252
Real per capital education expenditure	9669.947	2039	11849.38	2081	2179.428	1387.754	0.135
Real total health expenditure	23122.56	2039	26172.33	2081	3049.77	3094.74	0.338
Real per AE health expenditure	3486.908	2039	4130.339	2081	643.431	703.459	0.373
Spent on energy	0.296	2039	0.311	2081	0.016	0.027	0.572
Spent on tobacco/alcohol	0.155	2039	0.165	2081	0.009	0.009	0.283
Spent on transport	0.192	2039	0.189	2081	-0.003	0.012	0.787
Spent on hygiene and health	0.152	2039	0.147	2081	-0.004	0.01	0.668
Spent on education	0.049	2039	0.053	2081	0.004	0.006	0.515

	Comparison		Treatment		Diff. (Treatment - Comparison)		
Spent on communication	0.157	2039	0.135	2081	-0.022	0.018	0.235
Spent on house in past 12 months	0.19	2039	0.198	2081	0.008	0.011	0.445
Spent on clothing in past 12 months	0.253	2039	0.229	2081	-0.023	0.013	0.089
Spent on durables in past 12 months	0.252	2039	0.255	2081	0.004	0.012	0.762
Spent on social events in past 12 months	0.154	2039	0.154	2081	0	0.012	0.987
Real expenditure per AE on clothing	1371.898	2039	1547.063	2081	175.166	166.762	0.308
Real expenditure per AE on durables	475.367	2039	713.117	2081	237.75	254.972	0.364
Real expenditure per AE on house	663.39	2039	1009.64	2081	346.251	269.666	0.216
Real expenditure per AE on social events	1472.066	2039	1653.917	2081	181.852	424.507	0.674
Real per AE expenditure on energy	753.89	2039	856.638	2081	102.748	58.995	0.1
Real per AE expenditure on tobacco and alcohol	45.954	2039	42.462	2081	-3.491	8.113	0.672
Real per AE expenditure on transport	576.514	2039	647.975	2081	71.461	157.122	0.655
Real per AE expenditure on hygiene	3450.841	2039	4217.117	2081	766.276	339.361	0.037
Real per AE expenditure on education	3403.074	2039	4044.579	2081	641.505	255.389	0.022
Real per AE expenditure on communication	492.991	2039	598.858	2081	105.867	57.104	0.081

Table A18: Differential attrition: assets

	Comparison		Treatment		Diff. (Treatment - Comparison)		
Variables	Mean	N1	Mean	N2	Mean	SE	p-value
Total number of mosquito nets	5.161	2039	5.043	2081	-0.118	0.195	0.554
Total number of motorcycles	0.24	2039	0.264	2081	0.025	0.014	0.106
Total number of bicycles	0.206	2039	0.25	2081	0.044	0.022	0.06
Total number of stoves	0.255	2039	0.267	2081	0.012	0.019	0.537
Total number of fireplaces	0.138	2039	0.143	2081	0.004	0.018	0.809
Total number of ventilators	0.373	2039	0.434	2081	0.061	0.034	0.089
Total number of phones	2.514	2039	2.554	2081	0.04	0.135	0.77

Total number of radio	0.353	2039	0.33	2081	-0.024	0.035	0.513
Total number of Televisions	0.45	2039	0.484	2081	0.035	0.028	0.234
Total number of solar	0.161	2039	0.129	2081	-0.032	0.034	0.361
Total number of beds	2.233	2039	2.106	2081	-0.127	0.173	0.475
Total number of mattresses	2.639	2039	2.655	2081	0.016	0.189	0.934
Total number of computers	0.054	2039	0.047	2081	-0.007	0.009	0.418
Has mosquito nets	0.99	2039	0.966	2081	-0.023	0.013	0.084
Has motorcycles	0.197	2039	0.214	2081	0.017	0.017	0.329
Has bicycles	0.176	2039	0.217	2081	0.041	0.011	0.002
Has stoves	0.201	2039	0.219	2081	0.018	0.012	0.163
Has fireplaces	0.117	2039	0.128	2081	0.011	0.016	0.496
Has ventilators	0.208	2039	0.251	2081	0.042	0.016	0.017
Has phones	0.846	2039	0.871	2081	0.025	0.036	0.502
Has radio	0.296	2039	0.286	2081	-0.01	0.034	0.764
Has Televisions	0.403	2039	0.419	2081	0.015	0.023	0.509
Has solar	0.143	2039	0.116	2081	-0.026	0.034	0.45
Has beds	0.744	2039	0.724	2081	-0.021	0.044	0.65
Has mattresses	0.78	2039	0.781	2081	0.001	0.052	0.982
Has computers	0.038	2039	0.043	2081	0.005	0.007	0.529
Asset index	0.278	2039	0.281	2081	0.003	0.009	0.767
Asset index - Q1	0.331	2039	0.329	2081	-0.002	0.031	0.952
Asset index - Q2	0.343	2039	0.33	2081	-0.013	0.026	0.623
Asset index - Q3	0.326	2039	0.341	2081	0.015	0.019	0.442
Household has internet access	0.347	2039	0.41	2081	0.063	0.073	0.402

Individual-level attrition

Table A19: Overall attrition: individuals (5-18 years)

Variables	Attriters		Panel		Diff. (Attriters - Panel)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Female	0.522	1867	0.5	16048	0.022	0.012	0.079
Age	11.653	1867	11.52	16048	0.134	0.107	0.227
Literate	0.679	1867	0.69	16048	-0.011	0.01	0.291
Goes to school	0.851	1574	0.847	14394	0.005	0.008	0.595
School attendance	0.967	1224	0.963	11643	0.004	0.005	0.416
Drop out (never attended school)	0.105	1867	0.085	16048	0.02	0.006	0.004
Moved to the next year	0.905	1099	0.9	10695	0.005	0.012	0.654
Transition to lower sec. school	0.187	97	0.142	961	0.045	0.046	0.346
Transition to upper sec. school	0.138	43	0.159	361	-0.021	0.073	0.779
Completion of pri. school (12-18 years old)	0.799	976	0.775	8230	0.025	0.02	0.229
Completion of lower sec. school (16-18 years old)	0.686	405	0.659	3141	0.027	0.024	0.28
Disabled	0.03	1867	0.035	16048	-0.005	0.008	0.48
Sick or injured in the last 30 days	0.152	1867	0.154	16048	-0.002	0.009	0.822
Continuously sick in the last 3 months	0.275	257	0.261	2412	0.014	0.038	0.724

Table A20: Overall attrition: individuals (19+ years)

Variables	Attriters		Panel		Diff. (Attriters - Panel)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Female	0.547	1961	0.55	16363	-0.004	0.015	0.802
Age	36.982	1961	39.53	16363	-2.548	0.71	0.002
Literate	0.44	1961	0.416	16363	0.024	0.023	0.325
Drop out (never attended school)	0.367	1961	0.373	16363	-0.006	0.02	0.772
Disabled	0.116	1961	0.153	16363	-0.037	0.006	0
Sick or injured in the last 30 days	0.209	1961	0.277	16363	-0.068	0.012	0
Continuously sick in the last 3 months	0.53	390	0.482	4378	0.047	0.043	0.281

Table A21: Differential attrition: individuals (5-18 years)

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Female	0.504	7724	0.495	8324	-0.009	0.009	0.354
Age	11.553	7724	11.479	8324	-0.074	0.125	0.56
Literate	0.67	7724	0.718	8324	0.048	0.019	0.022
Goes to school	0.839	6884	0.858	7510	0.019	0.01	0.084
School attendan	0.973	5506	0.955	6137	-0.019	0.005	0.002
Drop out (never attended school)	0.089	7724	0.077	8324	-0.012	0.01	0.271
Moved to the next year	0.897	4966	0.902	5729	0.005	0.015	0.749
Transition to lower sec. school	0.132	459	0.151	502	0.02	0.073	0.79
Transition to upper sec. school	0.179	168	0.143	193	-0.036	0.093	0.7
Completion of pri. school (12-18 years old)	0.784	3961	0.765	4269	-0.02	0.015	0.194
Completion of lower sec. school (16-18 years old)	0.687	1564	0.627	1577	-0.06	0.019	0.007
Disabled	0.027	7724	0.042	8324	0.015	0.01	0.159
Sick or injured in the last 30 days	0.144	7724	0.165	8324	0.021	0.017	0.235
Continuously sick in the last 3 months	0.254	1058	0.265	1354	0.011	0.028	0.699

Table A22: Differential attrition: individuals (19+ years)

Variables	Comparison		Treatment		Diff. (Treatment - Comparison)		
	Mean	N1	Mean	N2	Mean	SE	p-value
Female	0.549	8091	0.553	8272	0.004	0.009	0.675
Age	39.03	8091	40.114	8272	1.084	0.568	0.073
Literate	0.42	8091	0.415	8272	-0.005	0.027	0.859
Drop out (never attended school)	0.357	8091	0.385	8272	0.028	0.029	0.34
Disabled	0.133	8091	0.171	8272	0.038	0.019	0.062
Sick or injured in the last 30 days	0.255	8091	0.3	8272	0.045	0.027	0.119
Continuously sick in the last 3 months	0.444	1875	0.507	2503	0.063	0.038	0.118

Table A23: Balance in baseline household indicators

	Treated		Mean (Treatment)	Mean (Control)	N
Household demographics					
Female household head	-0.01		0.52	0.49	3,203
Head age	-1.60		54.51	53.49	3,203
Polygamous marriage	-0.03		0.27	0.26	3,203
Monogamous marriage	0.01		0.75	0.76	3,203
Single, divorced, widowed	0.01		0.98	0.97	3,203
HH size	-0.62		8.82	8.87	3,203
Number of children under 5	-0.16		0.68	0.72	3,203
Number of children between 5–17	0.01		3.86	3.76	3,203
Household education					
Literate household head	0.03		0.85	0.83	3,203
Head's education: None	-0.03		0.77	0.80	3,203
Head's education: Primary	0.01		0.16	0.13	3,203
Head's education: Secondary	0.02		0.07	0.06	3,203
Head's education: Higher education	0.00		0.00	0.00	3,203
Highest education: None	0.08	*	0.77	0.70	3,203
Highest education: Primary	0.00		0.83	0.81	3,203
Highest education: Secondary	-0.01		0.62	0.62	3,203
Highest education: Higher education	0.01		0.02	0.02	3,203
Real total education expenditure	10,595.63		58,157.15	48,547.30	3,203
Real per capital education expenditure	3,351.85		17,789.34	14,391.71	3,203
Real per adult equivalent (AE) expenditure on education	835.81	**	3,867.92	3,430.74	3,203
Real education expenditure per AE	2.41	*	8.79	7.21	3,203
Spent on education	-0.01		0.05	0.06	3,203
Household expenditure and income					
Real total health expenditure	-5,067.76		24,412.85	23,335.37	3,203
Real per adult equivalent health expenditure	-480.53		3,802.70	3,510.02	3,203
Real expenditure per AE on clothing	-29.40		1,534.97	1,266.36	3,203
Real expenditure per AE on durables	161.25		627.07	449.26	3,203
Real expenditure per AE on house	417.94		992.39	575.68	3,203
Real expenditure per AE on social events	230.02		1,467.08	1,618.53	3,203

	Treated		Mean (Treatment)	Mean (Control)	N
Real per AE expenditure on energy	174.61	*	827.89	749.71	3,203
Real per AE expenditure on tobacco and alcohol	17.88	*	50.20	34.60	3,203
Real per AE expenditure on transport	242.84	**	584.97	607.71	3,203
Real per AE expenditure on communication	118.74	*	618.02	473.79	3,203
Real income per AE (internal sources)	-6.32	***	44.96	48.25	3,203
Real income per AE (external sources)	-1,370.76		3,840.06	4,794.03	3,203
Real non-food expenditure per AE	2.27	***	9.69	8.68	3,203
Real food expenditure per AE	0.15		3.12	2.89	3,203
Real health expenditure per AE	1.02	*	3.44	2.69	3,203
Real per AE expenditure on hygiene	1,859.33	**	3,916.18	3,347.73	3,203
Spent on energy	-0.06		0.29	0.30	3,203
Spent on tobacco/alcohol	0.06	**	0.16	0.13	3,203
Spent on transport	0.01		0.20	0.21	3,203
Spent on communication	0.02		0.15	0.15	3,203
Spent on house in past 12 months	-0.01		0.18	0.19	3,203
Spent on clothing in past 12 months	0.03		0.27	0.25	3,203
Spent on durables in past 12 months	0.00		0.23	0.24	3,203
Spent on social events in past 12 months	0.01		0.16	0.15	3,203
Spent on hygiene and health	-0.01		0.15	0.15	3,203
<i>Livestock and assets</i>					
Has any cattle	-0.05		0.50	0.48	3,203
Has any livestock	0.00		0.69	0.67	3,203
Number of cattle (cows, goats, sheep, donkeys, etc.)	-5.46		34.69	32.51	3,203
Number of poultry (chicken, guinea fowl, duck, etc.)	3.04		39.29	35.47	3,203
Has any poultry	-0.01		0.53	0.53	3,203
Asset index	-0.01		0.28	0.27	3,203
Asset index - Q1	-0.01		0.34	0.34	3,203
Asset index - Q2	0.01		0.32	0.34	3,203
Asset index - Q3	0.01		0.34	0.32	3,203
<i>Coping strategies</i>					
FCS	-2.81		51.90	52.18	3,203
rCSI	0.32		14.29	15.12	3,203

	Treated		Mean (Treatment)	Mean (Control)	N
Household Dietary Diversity Score (HDDS)	-0.07		6.38	6.42	3,203
<i>Transfers</i>					
Has any transfers	0.00		1.00	1.00	3,203
Transfer from remittances	-0.02		0.13	0.17	3,203
Transfer from NGO	-0.01		0.14	0.14	3,203
Transfer from government	0.02		0.16	0.15	3,203
Food transfer from family and friends	0.02		0.16	0.13	3,203
Food transfer from NGO	-0.01		0.13	0.14	3,203
Transfer of power from the health centre	0.03	*	0.14	0.12	3,203
Food transfer from government	-0.03		0.14	0.14	3,203
Money transfers	-0.02		0.12	0.09	3,203
Social aid (from family and community)	-0.01		0.02	0.03	3,203
Humanitarian aid (state or NGOs)	-0.04		0.12	0.17	3,203
<i>Savings and debt</i>					
Has any savings	0.00		0.13	0.09	3,203
Has any debt	0.04		0.47	0.45	3,203
Borrowing	-0.02		0.09	0.05	3,203
Real debt per AE	11,771.21		66,365.87	70,467.16	3,203
Real savings per AE	-3,192.26		9,836.38	3,673.45	3,203
<i>Other (low-correlation) indicators</i>					
HH has at least one member sick for 3 months	0.04		0.59	0.52	2,436
Adult equivalent	-0.46		6.81	6.87	3,203
N of 0-21 male children	-0.13		2.66	2.64	3,203
N of 0-21 female children	-0.08		2.68	2.69	3,203
Wolof	0.01		0.22	0.16	3,203
Pular	0.02		0.54	0.57	3,203
French	0.00		0.00	0.00	3,203
Other languages	-0.02		0.20	0.25	3,203
Muslim	0.00		0.00	0.00	3,203
Number of sick HH members	0.11		0.77	0.55	3,203
Production/sale of Agricultural products	0.01		0.31	0.30	3,203
Production/sale of gardening products	0.01		0.11	0.08	3,203
Production/sale of livestock products	0.03	**	0.04	0.02	3,203
Production/sale of fishery products	0.02		0.04	0.02	3,203

	Treated		Mean (Treatment)	Mean (Control)	N
Production/sale of hunting/gathering products	0.02	*	0.02	0.01	3,203
Wholesale of food products	0.00		0.02	0.02	3,203
Retailer of food products	-0.04		0.09	0.13	3,203
Wholesale of non-food products	0.01	**	0.01	0.01	3,203
Retailer of non-food products	0.00		0.10	0.11	3,203
Rent of properties	0.00		0.00	0.00	3,203
Agricultural daily labourer	0.00		0.03	0.02	3,203
Non-agricultural daily labourer	0.01		0.10	0.07	3,203
Artist	0.00		0.03	0.03	3,203
Contractor	0.00		0.00	0.01	3,203
Civil servant	0.00		0.01	0.01	3,203
Salaried employee	0.00		0.05	0.04	3,203
Pension	-0.01		0.02	0.01	3,203
Carpenter, plumber, tailor etc	0.01		0.09	0.10	3,203
Gold panning	0.00		0.00	0.00	3,203
Driver	-0.03	**	0.02	0.05	3,203
Landlords	0.00		0.00	0.00	3,203
Total number of income sources	-0.05		1.44	1.40	3,203
Total number of mosquito nets	-0.16		5.10	5.10	3,203
Total number of motorcycles	0.06		0.27	0.25	3,203
Total number of bicycles	0.02		0.25	0.20	3,203
Total number of stoves	-0.05		0.28	0.24	3,203
Total number of fireplaces	0.03		0.14	0.14	3,203
Total number of ventilators	0.01		0.39	0.39	3,203
Total number of phones	-0.13		2.55	2.43	3,203
Total number of radio	0.01		0.35	0.34	3,203
Total number of Televisions	-0.01		0.47	0.45	3,203
Total number of solar	-0.07		0.13	0.16	3,203
Total number of beds	-0.13		2.09	2.23	3,203
Total number of mattresses	-0.04		2.62	2.63	3,203
Total number of computers	0.01		0.05	0.05	3,203
Has mosquito nets	-0.01		0.97	0.99	3,203
Has motorcycles	0.00		0.21	0.21	3,203
Has bicycles	0.02		0.21	0.17	3,203
Has stoves	-0.02		0.22	0.20	3,203
Has fireplaces	0.02	*	0.12	0.11	3,203
Has ventilators	0.01		0.23	0.22	3,203
Has phones	0.03		0.88	0.84	3,203
Has radio	-0.01		0.30	0.29	3,203
Has Televisions	-0.02		0.41	0.40	3,203

	Treated	Mean (Treatment)	Mean (Control)	N
Has solar	-0.05	0.12	0.14	3,203
Has beds	0.02	0.71	0.75	3,203
Has mattresses	0.03	0.78	0.78	3,203
Has computers	0.01	0.04	0.04	3,203
Household has internet access	0.01	0.43	0.33	3,203

Table A24: Balance in baseline children (5–17) indicators

	Treated	Star	Mean (Treatment)	Mean (Control)	N
Female	0.01		0.50	0.50	11,697
Age	0.18		11.00	10.97	11,697
Is literate	0.04		0.71	0.67	11,697
Goes to school	0.02		0.81	0.79	11,697
Attendance rate	-0.02	**	0.95	0.97	8,722
Dropped out	0.01	*	0.01	0.01	8,129
Moved to the next year	-0.01		0.91	0.92	6,405
Completion of pri. school	0.01		0.46	0.48	11,697
Completion of lower sec. school	-0.01		0.25	0.28	11,697
Participation in chores	0.00		0.41	0.43	11,697
Participation in collecting water	0.00		0.27	0.28	11,697
Participation in collecting firewood	0.04		0.15	0.13	11,697
Participation in caring of kids/cleaning/cooking	0.03		0.26	0.25	11,697
Participation in caring of sick/elderly	0.04		0.06	0.04	11,697
Participation in fruit gathering activities	0.03		0.05	0.01	11,697
Participation in non-livestock agricultural activities	0.00		0.16	0.13	11,697
Participation in livestock agricultural activities	0.04		0.04	0.02	11,697
Participation in household business	0.02		0.02	0.02	11,697
Participation in non-household work	0.00		0.02	0.01	11,697
Participation in economic activities	0.01		0.19	0.15	11,697
Time spent studying	0.15		1.77	1.73	8,911
Time spent playing	0.07		1.89	1.74	11,697
Time spent on chores	0.25		1.24	1.11	11,697
Time spent collecting water	0.07		0.36	0.35	11,697

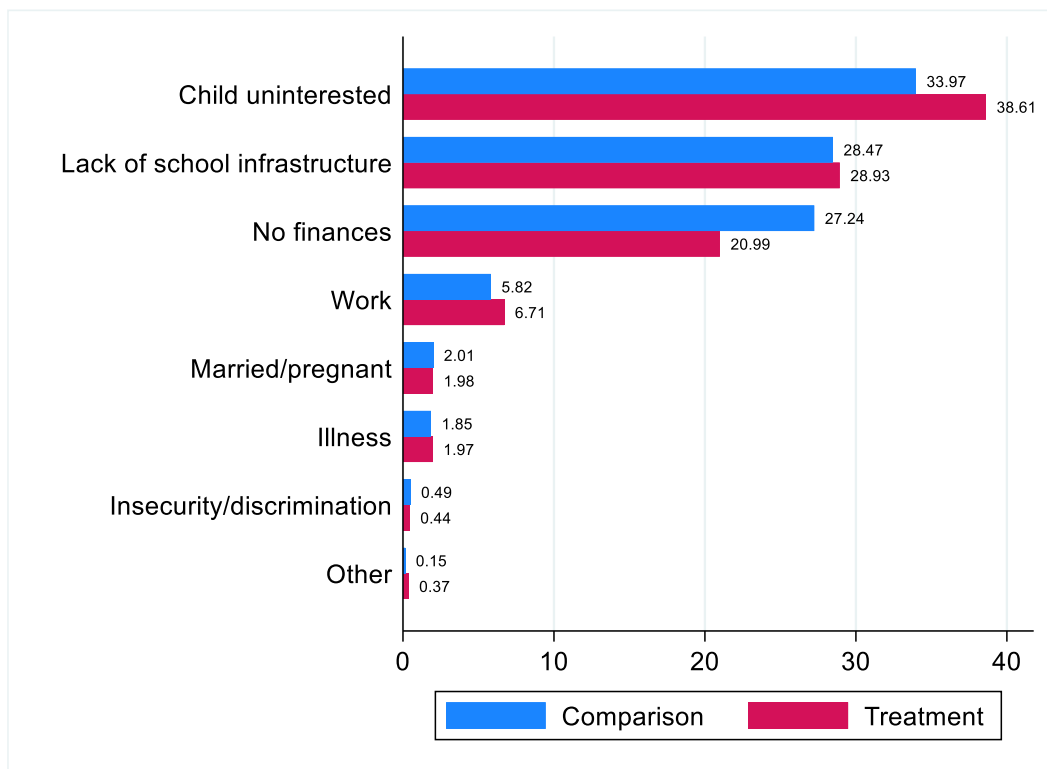
	Treated	Star	Mean (Treatment)	Mean (Control)	N
Time spent collecting firewood	0.04		0.25	0.21	11,697
Time spent caring of kids/cleaning/cooking	0.09		0.54	0.47	11,697
Time spent caring of sick/elderly	0.05		0.09	0.07	11,697
Time spent on fruit gathering activities	-0.01		0.10	0.15	11,697
Time spent on non-livestock agricultural activities	0.03		1.51	1.35	11,697
Time spent on livestock agricultural activities	0.12		0.14	0.08	11,697
Time spent on household business	0.06		0.11	0.14	11,697
Time spent on non-household work	0.14		0.30	0.25	11,697
Time spent on economic activities	0.36		2.06	1.82	11,697
Sick or injured in the last 30 days	0.03	**	0.16	0.13	11,697
Continuously sick in the last 3 months	-0.03		0.23	0.22	1,609

Table A25: Balance in education outcomes (5–17 years) - households with disabled children

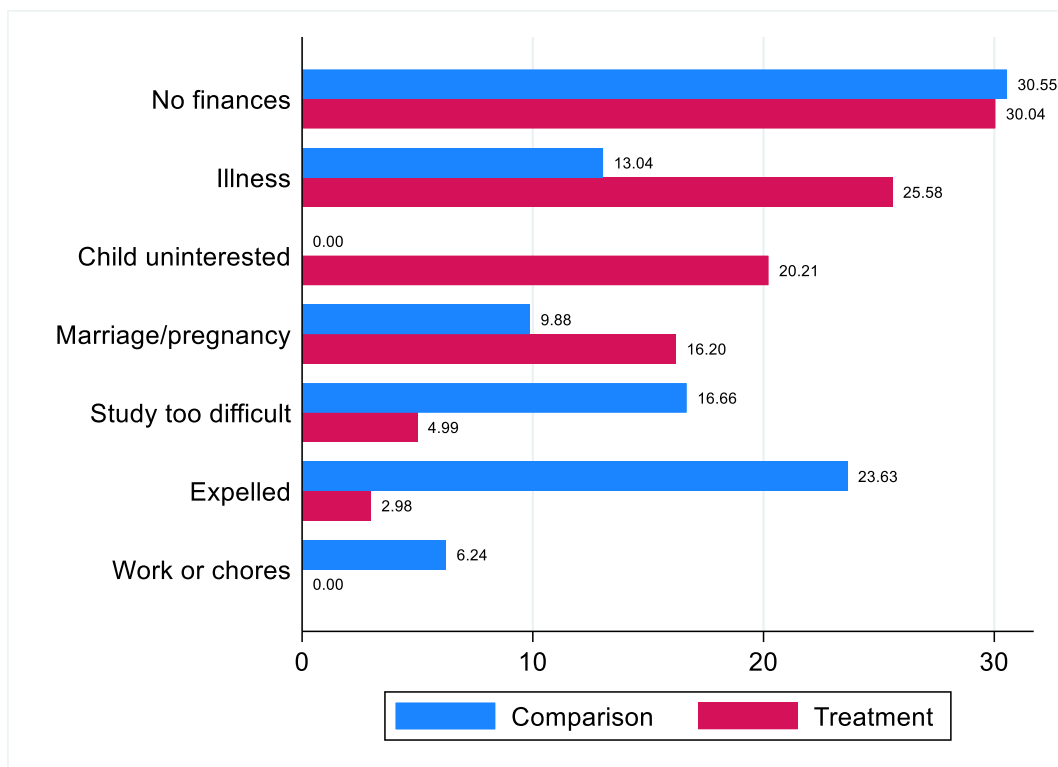
	Treated	Star	N	Control mean	Treatment means
Baseline					
Goes to school	0.02		1738	0.80	0.81
Attendance rate	-0.02		1326	0.97	0.95
Move to the next year	0.00		1008	0.93	0.90
Dropped out	0.03	**	1249	0.00	0.02
Time spent studying	-0.06		1356	1.95	2.18
Endline					
Goes to school	0.04	*	1738	0.80	0.82
Attendance rate	-0.01		1379	0.98	0.98
Move to the next year	0.01		1016	0.95	0.91
Dropped out	-0.01		1298	0.02	0.01
Time spent studying	0.17	*	1380	2.15	2.20

Annex III. Reasons for non-enrolment and dropout (baseline)

Reasons for non-enrolment (baseline)



Reasons for school dropout (baseline)



Annex IV: Robustness checks

Table A26: Robustness checks – education outcomes (5–17)

	Impact -DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N
Goes to school	0.001 (.019)	0.003 (.018)	0.002 (.018)	22,682
Attendance rate	0.025** (.009)	0.024** (.009)	0.024** (.009)	15,180
Moved to the next year	-0.013 (.019)	-0.015 (.019)	-0.015 (.018)	8,866
Dropped out	-0.007* (.004)	-0.007* (.004)	-0.007* (.004)	13,958

Note: Linear probability model. All specifications include gender and age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A27: Robustness checks – education outcomes by gender and age groups (5–13 and 14–17)

	Girls				Boys			
	Impact -DID	Impact -Entropy (mean)	Impact -Entropy (variance)	N	Impact -DID	Impact -Entropy (mean)	Impact -Entropy (variance)	N
5–13 years old								
Goes to school	0.013 (.018)	0.014 (.018)	0.013 (.017)	8,172	-0.002 (.024)	-0.002 (.024)	-0.003 (.023)	8,058
Attendance rate	0.021** (.01)	0.02** (.009)	0.022** (.01)	6,122	0.017 (.01)	0.016 (.01)	0.017 (.011)	5,528
Moved to the next year	-0.038* (.018)	-0.041** (.019)	-0.04** (.018)	3,510	0.004 (.028)	0.002 (.029)	0.001 (.03)	3,058
Dropped out	-0.007 (.005)	-0.009* (.005)	-0.008 (.005)	5,440	-0.001 (.005)	0 (.005)	0.001 (.006)	4,906
14–17 years old								
Goes to school	0.01 (.023)	0.015 (.022)	0.017 (.021)	3,300	-0.035 (.035)	-0.03 (.035)	-0.032 (.036)	3,152
Attendance rate	0.045** (.016)	0.046** (.017)	0.046** (.017)	1,962	0.041*** (.012)	0.04*** (.012)	0.04*** (.012)	1,568
Moved to the next year	0.036 (.031)	0.036 (.029)	0.035 (.028)	1,262	-0.035 (.021)	-0.041* (.022)	-0.036 (.022)	1,036
Dropped out	-0.008 (.011)	-0.008 (.011)	-0.009 (.011)	2,010	-0.021 (.016)	-0.028 (.019)	-0.033* (.018)	1,602

Note: Linear probability model. All specifications include age in addition to the covariates included in X_{it} . Sampling weights applied. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A28: Robustness checks – Children activity participation and time use (5–17)

	Impact -DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N
Participated in chores	0.034 (.06)	0.035 (.059)	0.038 (.059)	23,394
Participated in economic activities	-0.018 (.044)	-0.024 (.042)	-0.019 (.043)	23,394
participated in studying at home	0.045 (.047)	0.049 (.047)	0.048 (.046)	15,510
Time spent on chores	-0.025 (.248)	-0.034 (.241)	-0.022 (.241)	23,394
Time spent on economic activities	0.169 (.685)	0.086 (.627)	0.126 (.637)	23,394
Time spent studying	0.008 (.219)	0.014 (.222)	0.003 (.219)	15,510

Note: Linear probability model. All specifications include gender and age in addition to the covariates included in \mathbf{X}_h . Sampling weights applied. Standard errors are in parentheses.
 *** p<0.01, ** p<0.05, * p<0.1.

Table A29: Robustness checks – Children activity participation and time use by gender and age groups (5–13 and 14–17)

	Girls				Boys			
	Impact -DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N	Impact -DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N
5–13 years old								
Participated in chores	0.045 (.059)	0.047 (.058)	0.055 (.059)	8,398	0.055 (.065)	0.057 (.066)	0.058 (.066)	8,310
Participated in economic activities	-0.031 (.041)	-0.037 (.04)	-0.033 (.039)	8,398	-0.009 (.055)	-0.007 (.056)	-0.001 (.056)	8,310
participated in studying at home	0.052 (.052)	0.059 (.05)	0.058 (.05)	6,246	0.032 (.055)	0.034 (.054)	0.033 (.053)	5,656
Time spent on chores	0.057 (.307)	0.036 (.302)	0.064 (.301)	8,398	0.027 (.2)	0.028 (.198)	0.037 (.197)	8,310
Time spent on economic activities	0.169 (.595)	0.117 (.556)	0.135 (.558)	8,398	0.33 (.713)	0.325 (.683)	0.364 (.689)	8,310
Time spent studying	0.048 (.235)	0.07 (.238)	0.05 (.235)	6,246	-0.023 (.251)	-0.027 (.255)	-0.043 (.25)	5,656
14–17 years old								
Participated in chores	-0.073 (.056)	-0.073 (.054)	-0.072 (.054)	3,428	0.068 (.086)	0.064 (.086)	0.067 (.087)	3,258
Participated in economic activities	-0.03 (.045)	-0.048 (.038)	-0.051 (.038)	3,428	0.001 (.05)	-0.005 (.047)	-0.004 (.049)	3,258
participated in studying at home	0.049 (.045)	0.05 (.048)	0.051 (.049)	2,006	0.063 (.053)	0.067 (.05)	0.059 (.051)	1,602
Time spent on chores	-0.37 (.316)	-0.373 (.286)	-0.367 (.283)	3,428	-0.014 (.316)	-0.019 (.31)	-0.017 (.311)	3,258
Time spent on economic activities	0.713	0.405	0.383	3,428	-0.874	-1.048	-1.025	3,258

	(.888)	(.726)	(.723)		(.888)	(.794)	(.823)	
Time spent studying	-0.043	-0.058	-0.054	2,006	0.02	-0.006	-0.054	1,602
	(.15)	(.176)	(.176)		(.258)	(.239)	(.246)	

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses.
 *** p<0.01, ** p<0.05, * p<0.1.

Table A30: Robustness checks – Adult activity participation and time use by gender

	Females				Males			
	Impact - DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N	Impact - DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N
Participated in chores	-0.029 (.033)	-0.03 (.03)	-0.03 (.03)	13,804	0.03 (.078)	0.025 (.076)	0.026 (.076)	11,062
Participated in economic activities	-0.012 (.054)	-0.016 (.052)	-0.017 (.052)	13,804	-0.027 (.065)	-0.038 (.064)	-0.038 (.064)	11,062
Time spent on chores	-0.589 (.412)	-0.615 (.392)	-0.609 (.39)	13,804	-0.166 (.282)	-0.19 (.271)	-0.183 (.27)	11,062
Time spent on economic activities	1.44 (1.814)	1.324 (1.698)	1.312 (1.681)	13,804	1.805 (2.514)	1.35 (2.427)	1.384 (2.424)	11,062

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses.
 *** p<0.01, ** p<0.05, * p<0.1.

Table A31: 31: Impact of the Cash Education programme on expenditures

Outcome variable	Impact -DID	Impact -Entropy (mean)	Impact -Entropy (variance)	N
Real food expenditure per AE	-0.134 (.281)	-0.150 (.271)	-0.148 (.271)	6,404
Real non-food expenditure per AE	-0.519 (.695)	-0.508 (.689)	-0.520 (.694)	6,404
Real total education expenditure	-5.740 (9.296)	-5.828 (9.315)	-5.740 (9.296)	6,406
Real per capital education expenditure	-3.315 (3.45)	-3.323 (3.45)	-3.315 (3.45)	6,406
Real total expenditure per AE	0.103 (2.21)	0.121 (2.226)	0.103 (2.21)	6,406

Note: the expenditures have been divided by 1000 to improve readability of the coefficients. Real total expenditure per adult equivalent includes, in addition to the expenditures presented in this table, expenditures on communication, hygiene, transportation, clothing, durable goods, social events, tobacco, alcohol, and energy. Standard errors are in parentheses. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A32 32: Impact of Cash Education programme on food security

Outcome variable	Impact - DID	Impact -Entropy (mean)	Impact -Entropy (variance)	N
rCSI	1.792 (2.48)	1.798 (2.436)	1.792 (2.48)	6,405
FCS	2.375 (3.12)	2.633 (3.107)	2.375 (3.12)	6,405
HDDS	0.071 (.331)	0.072 (.331)	0.071 (.331)	6,405

Note: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A33 33: Impact of Cash Education programme on income, savings, and debt

Outcome variable	Impact -DID	Impact -Entropy (mean)	Impact -Entropy (variance)	N
Real income per AE	1.673 (1.311)	1.702 (1.306)	1.673 (1.311)	6,406
Has any savings	-0.040 (.044)	-0.042 (.043)	-0.040 (.044)	6,406
Real savings per AE	-4.308 (3.349)	-4.454 (3.355)	-4.308 (3.349)	6,404
Has any debt	0.006 (.055)	0.006 (.055)	0.006 (.055)	6,406
Real debt per AE	14.805	14.251	14.804	6,404

	(9.411)	(9.387)	(9.411)	
Amount of food transfer from family and friends (real, per AE)	-0.149***	-0.150***	-0.149***	6,404
	(.029)	(.029)	(.029)	

Note: the real income, savings, and debt per AE have been divided by 1,000 to improve readability of the coefficients. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A34 34: Impact of Cash Education programme on livestock and durable assets

Outcome variable	Impact - DID	Impact - Entropy (mean)	Impact - Entropy (variance)	N
Has any livestock	0.010 (.037)	0.010 (.036)	0.010 (.037)	6,406
Has any poultry	0.002 (.038)	0.002 (.038)	0.002 (.038)	6,406
Number of cattle (cows, goats, sheep, donkeys, etc.)	2.218 (6.140)	2.367 (6.158)	2.218 (6.140)	6,406
Number of poultry (chicken, guinea fowl, duck, etc.)	0.124 (5.994)	0.071 (5.96)	0.124 (5.994)	6,406
Asset index	-0.009 (.012)	-0.009 (.012)	-0.009 (.012)	6,406

Note: the real income, savings, and debt per AE have been divided by 1000 to improve readability of the coefficients. Standard errors are in parentheses. ** p<0.01, * p<0.05, * p<0.1.

Annex V: Subgroup analysis on education outcomes

The subgroup analysis relies on the following econometric model:

$$y_{ihrt} = \beta_0 + \beta_1 CE_h + \beta_2 T_t + \beta_3 CE_h \times T_t + \beta_4 M_i + \beta_5 M_i \times CE_h + \beta_6 M_i \times T_t + \beta_7 M_i \times CE_h \times T_t + \beta_8 X_h + \rho_r + \varepsilon_{ihrt} \quad (3)$$

where M_i is a moderator. The heterogeneous effect of the intervention across the different values of M_i is captured by the parameter β_7 .

Table A35: Subgroup analysis (5–17)

	Distance to school > med.			Female head = 1			Head has no educ. = 1		
	Intervention	Intervention × moderator	N	Intervention	Intervention × moderator	N	Intervention	Intervention × moderator	N
Goes to school	0.007 (.02)	-0.033 (.034)	19,636	0 (.029)	0.002 (.027)	22,682	0.038 (.027)	-0.046 (.031)	22,682
Attendance rate	0.023** (.009)	0.014** (.006)	15,180	0.022* (.011)	0.005 (.011)	15,180	0.039** (.017)	-0.018 (.015)	15,180
Moved to the next year	-0.008 (.027)	-0.028 (.049)	8,866	-0.004 (.02)	-0.016 (.03)	8,866	-0.016 (.035)	0.004 (.027)	8,866
Dropped out	-0.004 (.003)	-0.017 (.012)	13,946	-0.006 (.005)	-0.003 (.007)	13,958	-0.01* (.005)	0.004 (.007)	13,958

Note: Linear probability model. All specifications include gender and age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A36: Subgroup analysis by age group - girls

	Distance to school > med.			Female head = 1			Head has no educ. = 1		
	Intervention	Intervention × moderator	N	Intervention	Intervention × moderator	N	Intervention	Intervention × moderator	N
5–13 years old									
Goes to school	0.012 (.018)	0.019 (.068)	7,528	0.025 (.024)	-0.025 (.026)	8,172	0.052* (.028)	-0.047 (.036)	8,172
Attendance rate	0.02** (.01)	0.008 (.011)	6,122	0.025* (.012)	-0.007 (.014)	6,122	0.06** (.026)	-0.049* (.024)	6,122
Moved to the next year	-0.046* (.024)	0.068 (.077)	3,510	-0.041 (.024)	0.006 (.018)	3,510	-0.064 (.043)	0.033 (.041)	3,510
Dropped out	-0.002 (.003)	-0.04* (.021)	5,434	-0.001 (.007)	-0.012 (.01)	5,440	-0.015 (.01)	0.01 (.009)	5,440
14–17 years old									
Goes to school	0.013 (.031)	-0.001 (.06)	2,634	-0.012 (.036)	0.042 (.044)	3,300	0.049 (.041)	-0.048 (.047)	3,300
Attendance rate	0.044** (.016)	0.005 (.016)	1,962	0.04** (.019)	0.009 (.013)	1,962	0.032** (.014)	0.018 (.018)	1,962
Moved to the next year	0.078* (.039)	-0.148** (.066)	1,262	0.079 (.046)	-0.078 (.089)	1,262	0.048 (.073)	-0.016 (.08)	1,262
Dropped out	-0.008 (.007)	0.002 (.036)	2,008	-0.005 (.015)	-0.005 (.014)	2,010	-0.025 (.023)	0.024 (.027)	2,010

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses.
 *** p<0.01, ** p<0.05, * p<0.1.

Table A37: Subgroup analysis by age group - boys

	Distance to school > med.			Female head = 1			Head has no educ. = 1		
	Intervention	Intervention × moderator	N	Intervention	Intervention × moderator	N	Intervention	Intervention × moderator	N
5–13 years old									
Goes to school	0.011 (.027)	-0.097 (.067)	7,182	-0.008 (.034)	0.013 (.034)	8,058	0.007 (.034)	-0.011 (.04)	8,058
Attendance rate	0.014 (.01)	0.024 (.016)	5,528	0.009 (.014)	0.015 (.017)	5,528	0.027 (.021)	-0.014 (.023)	5,528
Moved to the next year	0.008 (.035)	-0.029 (.064)	3,058	0.011 (.024)	-0.015 (.046)	3,058	0.009 (.049)	-0.007 (.037)	3,058
Dropped out	-0.006 (.005)	0.035 (.026)	4,906	0 (.007)	-0.002 (.006)	4,906	0.005 (.009)	-0.008 (.01)	4,906
14–17 years old									
Goes to school	-0.033 (.036)	-0.042 (.084)	2,292	-0.037 (.059)	0.004 (.077)	3,152	0.075 (.047)	-0.146** (.066)	3,152
Attendance rate	0.045** (.018)	-0.015 (.033)	1,568	0.042* (.022)	-0.003 (.023)	1,568	0.022 (.02)	0.026 (.022)	1,568
Moved to the next year	-0.006 (.021)	-0.087 (.068)	1,036	-0.023 (.027)	-0.024 (.042)	1,036	-0.003 (.052)	0.036 (.055)	1,320
Dropped out	0.001 (.009)	-0.064 (.041)	1,598	-0.037 (.023)	0.031 (.028)	1,602	-0.018 (.04)	-0.003 (.054)	1,602

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses.
 *** p<0.01, ** p<0.05, * p<0.1.

Annex VI: Impacts on households with children with disabilities and disabled children

Tables A38 and A39 report the estimation of the programme impact on key education outcomes for all children aged 5–17 from households that were excluded from the main analysis because they include disabled children. As no official data on the disability status of children as recorded by schools was available, disability was inferred from survey data following the definition used in Quinones et al. (2021)²². As a result, children with disabilities are found both in the control and intervention groups. Similarly to the approach followed with the main analysis, only individuals who have been surveyed both at baseline and endline are included in this secondary analysis. Note that only 21% of children in this sample are identified as disabled, the remaining of the sample being made of other children in their households.

Table A38: Impact of the Cash Education programme on education outcomes (5–17) - children from household with at least one disabled 5–17 years old child

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Goes to school	-0.008 (.036)	4,482	0.767	0.748	0.78	0.769
Attendance rate	0.023** (.01)	2,832	0.95	0.97	0.976	0.974
Moved to the next year	-0.026* (.015)	1,724	0.921	0.923	0.911	0.939
Dropped out	-0.018* (.01)	2,612	0.011	0.008	0.01	0.025

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

²² Individuals are identified as disabled if they find it very difficult or impossible to carry out at least one of the following tasks: see, hear, speak, dress up, focus, and walk.

Table A 399: Impact of the Cash Education programme on education outcomes by gender and age group - children from household with at least one disabled 5–17 years old child

	Girls						Boys					
	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
5–13 years old												
Goes to school	0.008 [.031]	1,476	0.843	0.846	0.873	0.868	-0.012 [.056]	1,546	0.76	0.762	0.787	0.801
Attendance rate	0.013 [.012]	1,110	0.957	0.969	0.97	0.969	0.007 [.014]	960	0.954	0.962	0.973	0.974
Moved to the next year	-0.03 [.019]	714	0.942	0.921	0.915	0.924	-0.02 [.062]	512	0.876	0.907	0.911	0.961
Dropped out	-0.009 [.01]	980	0	0.004	0.005	0.018	-0.021* [.011]	832	0.01	0.007	0	0.018
14–17 years old												
Goes to school	-0.037 [.065]	712	0.746	0.682	0.707	0.68	-0.009 [.079]	748	0.643	0.598	0.641	0.605
Attendance rate	0.062*** [.016]	408	0.938	0.991	0.99	0.98	0.051** [.018]	354	0.933	0.975	0.99	0.982
Moved to the next year	-0.006 [.037]	270	0.927	0.977	0.926	0.982	-0.049 [.07]	228	0.945	0.913	0.874	0.891
Dropped out	-0.014 [.029]	430	0.024	0.016	0.02	0.025	-0.039 [.034]	370	0.027	0.014	0.035	0.061

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Table A40 shows the programme effects on education outcomes of disabled children only.

Table A 40: Impact of the Cash Education programme on education outcomes (5–17) – children with disabilities

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Goes to school	-0.044 (.046)	944	0.746	0.693	0.787	0.778
Attendance rate	0.053*** (.018)	586	0.924	0.965	0.984	0.972
Moved to the next year	-0.007 (.045)	346	0.906	0.918	0.903	0.922
Dropped out	-0.008 (.018)	548	0.02	0.016	0.016	0.02

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Annex VII. Additional results

Table A40: Children conditional time use (5–17)

	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Time spent on chores	-0.476 (.3)	5,794	3.156	2.594	3.092	3.006
Time spent on economic activities	-0.444 (1.92)	1,144	11.305	10.239	7.718	7.096
Time spent studying	-0.123 (.187)	11,448	2.313	2.107	2.339	2.255

Note: Linear probability model. All specifications include gender and age in addition to the covariates included in \mathbf{X}_h . Sampling weights applied. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A41: Children conditional time use by gender and age groups (5–13 and 14–17)

	Girls						Boys					
	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Children (5–13 years old)												
Time spent on chores	-0.528 (.35)	2,316	3.124	2.549	3.015	2.968	-0.417 (.474)	1,158	2.517	2.118	2.506	2.525
Time spent on economic activities	0.165 (1.226)	216	7.323	6.325	5.617	4.454	-0.657 (2.426)	472	11.289	8.902	6.303	4.572
Time spent studying	-0.144 (.218)	4,498	2.266	2.05	2.292	2.22	-0.086 (.218)	4,048	2.284	2.123	2.217	2.142
14–17 years old												
Time spent on chores	-0.401 (.327)	1,712	3.663	3.155	3.762	3.655	-0.676 (.591)	608	3.247	2.347	2.759	2.535
Time spent on economic activities	5.865 (3.872)	148	7.565	13.183	7.304	7.057	-3.972 (4.608)	308	16.748	14.129	12.124	13.477
Time spent studying	-0.228* (.129)	1,628	2.409	2.118	2.561	2.499	-0.059 (.195)	1,274	2.441	2.252	2.595	2.465

Note: Linear probability model. All specifications include age in addition to the covariates included in X_h . Sampling weights applied. Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Table A42: Adult conditional time use by gender

	Females						Males					
	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean	Impact	N	Baseline treated mean	Baseline control mean	Endline treated mean	Endline control mean
Time spent on chores	-0.552 (.409)	9,334	5.558	4.937	5.077	5.009	-0.968** (.435)	2,046	3.553	2.874	2.94	3.23
Time spent on economic activities	4.874 (3.596)	1,900	18.799	21.881	16.371	14.578	2.979 (3.508)	3,018	27.872	29.296	21.642	20.087
Time spent studying	-0.373 (.349)	382	2.849	2.222	2.822	2.568	-0.232 (.322)	382	2.502	2.498	2.618	2.847

Note: Linear probability model. All specifications include age in addition to the covariates included in X_{it} . Sampling weights applied. Standard errors are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A44 43: Impact of Cash Education programme on education expenditures, by item

Outcome variable	Impact - DID	N	Baseline T mean	Baseline C mean	Endline T mean	Endline C mean
Real expenditure on tuition	-1.365 (.961)	6,406	12.33	11.15	11.5	11.69
Real expenditure on school contribution	-0.583 (1.252)	6,406	3.68	3.35	3.39	3.65
Real expenditure on supplies	-1.651 (2.99)	6,406	21.2	17.87	22.38	20.7
Real expenditure on uniforms	-0.696 (.568)	6,406	4.15	3.04	3.49	3.07
Real expenditure on transportation	-0.167 (.762)	6,406	1.99	1.36	2.85	2.39
Real expenditure on canteens	1.795 (3.026)	6,406	7.9	7.75	15.18	13.24
Real expenditure on remedial classes	-2.275 (3.34)	6,406	6.91	4.02	8.54	7.92
Real amount of scholarship	0.012 (.336)	6,406	0.47	0.06	1.53	1.11

Table A45 44: Impacts on the individual components of the rCSI

Outcome variable	Impact -DID	N	Baseline T mean	Baseline C mean	Endline T mean	Endline C mean
Use less popular and cheaper food	0.524 (.357)	6405	2.937	3.197	1.989	1.725
Borrow food or ask for help from friends/relatives	0.050 (.298)	6405	1.602	1.573	0.881	0.803
Reduce the number of meals eaten per day	0.519 (.334)	6405	1.567	2.003	0.993	0.91
Reduce portion size of meals at meals time	0.176 (.425)	6405	1.729	1.746	0.769	0.61
Restricted consumption by adults in order for young children to eat	0.223 (.433)	6405	1.393	1.538	0.564	0.486
Send household members to eat elsewhere	-0.010 (.24)	6404	0.425	0.404	0.056	0.044
Go a whole day without eating	-0.025 (.281)	6405	0.418	0.394	0.057	0.058

Note: the individual components take values ranging from zero to seven indicating the number of days the household used the specific strategy. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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