



Food and Agriculture Organization  
of the United Nations

# **Productive Impact of Ethiopia's Social Cash Transfer Pilot Programme**

A From Protection to Production (PtoP)  
report

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Food and Agriculture Organization of the United Nations (FAO)

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**The From Protection to Production (PtoP) programme, jointly with the United Nations Children's Fund (UNICEF), is exploring the linkages and strengthening coordination between social protection, agriculture and rural development. The PtoP is funded principally by the United Kingdom Department for International Development (DFID), the Food and Agriculture Organization of the United Nations (FAO) and the European Union.**

**The programme is also part of the Transfer Project, a larger effort together with UNICEF, Save the Children and the University of North Carolina, to support the implementation of impact evaluations of cash transfer programmes in sub-Saharan Africa.**

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## Abstract

This report uses data from a two-year impact evaluation to analyse the impact of the Ethiopia Social Cash Transfer Pilot Programme (SCTPP) on household behaviour and decision-making, including agricultural production and other income-generating activities, labour supply, the accumulation of productive assets, access to credit and food security. The general framework for empirical analysis is based on a comparison of programme beneficiaries with a group of controls interviewed in 2012 and again two years later, using difference-in-difference (or double difference) estimators combined with propensity score matching methods. The findings show that the programme significantly increased household food security and decreased the number of hours children spend on household chores and activities. The programme is also associated with increases in social capital, and subjective well-being. However, the effects of the SCTPP on the accumulation of productive assets and on agricultural production are mixed. The analysis reveals important heterogeneity in programme impacts, with estimated magnitudes varying over geographical area and over gender of the household head.

## Acronyms

Birr	Ethiopian currency
BoLSA	Bureau of Labour and Social Affairs
CCC	Community Care Coalition
DAP	diammonium phosphate
DD	double difference
DDS	Dietary Diversity Score
DSP	Direct Support Programme
ERHS	Ethiopian Rural Household Survey
FAO	Food and Agriculture Organization of the United Nations
FHH	Female-headed household
ha	hectare
HH	household
IFPRI	International Food Policy Research Institute
IPW	inverse probability weighting
Kg	kilogrammes
LEAP	Livelihood Empowerment Against Poverty
LEWIE	Local Economy Wide Impact Evaluation
MHH	Male-headed household
MoA	Ministry of Agriculture
MoLSA	Ministry of Labour and Social Affairs
NFE	non-farm enterprises
OVC	orphans and other vulnerable children
pp	percentage points
PSM	propensity score matching
PSNP	Productive Safety Net Programme
PtoP	From Protection to Production
SCTPP	Social Cash Transfer Pilot Programme

SP	Social Protection
TLU	Tropical Livestock Units
UNICEF	United Nations Children's Fund
USD	United States dollars

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## Executive Summary

The Ethiopia Social Cash Transfer Pilot Programme (SCTPP) is the Tigray regional government's pilot for a social cash transfer. At the time of the baseline household survey for this study in 2012, beneficiary households received 155 birr (equivalent to around USD 8.50) plus additional amounts for children, disabled members, and dependent elderly persons over 60 years of age.

This research report uses data collected from a two-year impact evaluation (2012 and 2014) to analyse the impact of the Ethiopia SCTPP on productive activities and investment, agricultural production, labour allocation, food consumption, and subjective well-being, among other topics. This study complements the main report from the impact evaluation, led by the International Food Policy Research Institute (IFPRI), which covers a broader set of outcomes. Although the programme is designed to care for and improve access to social services for vulnerable children, the elderly and people with disabilities, there are good reasons to expect some impact on the economic and social choices of beneficiaries, who are primarily agricultural producers. Given the interest in particular groups of households, analysis was also conducted on households by geographic area (Hintalo-Wajirat (excluding Bahr Tseba), Abi Adi, and Bahr Tseba)) as well as by the gender of the head of household.

First, we find robust evidence that the programme leads to improvements in food security; beneficiary households were 4 percentage points significantly less likely to consume seed stock in the seven days prior to the survey, and were 8 percentage points less likely to suffer shortages of food in the last rainy season. Adults and children eat significantly more meals a day in the last week as compared with those in control households. The SCTPP also decreases the number of months (in the last 12 months) in which there are problems satisfying food needs.

Second, the programme leads to a reduction in the number of hours per day during which children engage in household activities. In particular, children aged 6-12 in beneficiary households work fewer hours per day on the family farm and across several other activities in the overall sample, compared with control households. However, of the three areas examined, in Hintalo Wajirat the SCTPP led to a reduction in hours per day spent on child labour activities

Third, we also find evidence of increases in social capital and subjective beliefs regarding individuals' quality of life and control. Treated households are more likely to agree with there being more support to poor people and fewer problems with neighbours in the community. Overall, treated households are more likely to agree with people residing in their community being basically honest and trustworthy. Other opinions about life satisfaction and ability to achieve success are also higher among male-headed beneficiary households compared with control households.

Fourth, the effects of the SCTPP on agricultural production and the accumulation of productive assets are mixed. While the SCTPP increased the area dedicated to, and crop yield from, sorghum, the SCTPP led to a reduction in the area and crop yield of barley. The likelihood of owning many agricultural implements increased, while the number of agricultural implements decreased. However, we find an increase in the total value of production in the overall sample by around 18 percentage points and for Hintalo-Wajirat by about 17 percentage points.



Finally, in terms of labour supply and non-farm enterprises, the SCTPP has a variety of impacts. Female-headed households are less likely to engage with non-farm enterprises, and we observe either decreases in impacts or no impacts on likelihood of engagement, depending on the kind of non-farm enterprise (trading, food processing or crafts). Adult males and adult females are found to work fewer days per month in household non-farm enterprises. Adult females in beneficiary households work more person-days and are more likely to work in wage labour compared with those in control households. Meanwhile, boys aged 13-17 work fewer person-days in wage labour in the overall sample.

Overall, the study has provided direct evidence that the SCTPP influences the livelihood strategies of the poor in a differentiated fashion across both gender of household head and geographic area. The programme has helped families by increasing food security and bringing children out of working household activities, which fit with the objectives of the programme.

## 1. Introduction

The Tigray social cash transfer pilot programme (SCTPP) originated out of the existing Ethiopian Productive Safety Net Programme (PSNP). The Ministry of Agriculture (MoA) normally coordinates the PSNP, which has two major components – a labour-intensive public work component and the Direct Support Programme (DSP). The labour-intensive public work component guarantees work for the six months of the year when agricultural activities are minimal in exchange for either food or cash, whereas DSP provides cash or food without the obligation of work to vulnerable households (i.e. those without able-bodied adults, or with pregnant and lactating women). The PSNP programme delivery system, which covers much of the country, was built on the capacities developed since the 1984 famine to deliver targeted emergency humanitarian relief. The MoA has managed committees at lower administrative levels that run the targeting process, deciding which households will be enrolled, and determining a system to agree on which public works will take place, as well as a delivery mechanism for food and cash. There have been discussions at senior levels of government on the issue of responsibility for PSNP direct support beneficiaries over the medium to long term, and there was a suggestion that the Ministry of Labour and Social Affairs (MoLSA) take on the coordination work for the direct support beneficiaries. However the question raised by MoA revolved around the local level sub-*woreda* (district) capacity of the MoLSA to take on the direct support beneficiaries.

As a partner of the Bureau of Labour and Social Affairs (BoLSA) in the Tigray region, the United Nations Children's Fund (UNICEF) country office in Ethiopia, jointly with other development partners, undertook to support the Tigray regional government in a pilot of the social cash transfer programme, whereby direct support beneficiaries would be switched from MoA to the regional BoLSA<sup>1</sup>. This SCTPP initiated by the Tigray regional state aims to improve the quality of lives of orphans and other vulnerable children (OVC), the elderly and persons with disabilities, as well as to enhance their access to essential social welfare services such as health care and education via access to schools in two selected *woredas*. About 80 percent of Tigray's population of 4.3 million live in rural areas, and are predominantly dependent on rainfed subsistence agriculture for their livelihood. The two operational *woredas* for the SCTPP are split between one urban (Abi Adi town<sup>2</sup>) and one rural (Hintalo-Wajirat *woreda*) area, respectively. The programme was targeted through local Community Care Coalitions (CCCs), which are community-led multi-disciplinary groups at the *tabia* (i.e. *kebele*, or ward) level, supported by Social Workers and which act as an entry point and support mechanism for especially vulnerable households in the community.

As part of its support to the implementation of the SCTPP, the UNICEF country office commissioned a rigorous impact evaluation of the pilot, including both quantitative and qualitative methods. The objective of the impact evaluation is to provide evidence regarding the viability of expanding the programme to other regions of the country by tracking the impact of the programme on a range of household welfare indicators including child health and schooling and economic productivity. The evaluation was contracted to the International Food Policy Research Institute (IFPRI). The From Protection to Production (PtoP) project of FAO contributed financial and technical support, including carrying out qualitative fieldwork (OPM,

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<sup>1</sup> It's important however to note the direct support beneficiaries in PSNP used to receive only 6 months of transfer per year while in this pilot it was 12 months transfer.

<sup>2</sup> Abi Adi is technically a *woreda* that is called Abi Adi town due to its location.

2014) and construction of the Local Economy Wide Impact Evaluation model (LEWIE) to calculate the income multiplier associated with the SCTPP (Kagin *et al.*, 2014).

This report complements the overall Tigray SCTPP evaluation report prepared by IFPRI (Berhane *et al.*, 2015). Along with information on the conceptual framework and design of the impact evaluation, the IFPRI evaluation report analyses the impact of the programme along different dimensions of household welfare, including anthropometrics, education and health status, as well as the operational and targeting effectiveness of the programme. In this report we focus primarily on documenting in detail the impact of the programme on agricultural input use, overall crop production levels and composition, sales from crop production, ownership of small tools and other assets including livestock, changes in the labour supply of household members, social capital, access to credit, food consumption, subjective wellbeing and food security.

Building on the existing literature, we analyse the impact of the Ethiopia SCTPP on the accumulation of productive assets, agricultural production, food security, resource allocation among productive activities and changes in the labour supply of household members. Our hypothesis is that cash transfers, when made regular and predictable, can have impacts on household decision-making, including labour supply, the accumulation of productive assets and productive activities, as well as on the outcomes affected by those decisions. Most beneficiaries of cash transfer programmes live in rural areas, depend on subsistence agriculture and live in places where markets for financial services (such as credit and insurance), labour, goods and inputs are lacking or do not function well. Cash transfers often represent a significant share of household income, and when provided in a regular and predictable fashion, may help households to overcome the obstacles that block their access to credit or cash. The impact evaluation strategy was based on a longitudinal design, and the framework for empirical analysis is based on a comparison of programme beneficiaries with a group of non-beneficiaries serving as controls.

Until recently, most evaluations of such programmes have focused on poverty alleviation impacts, access to social services and human capital development. There is robust evidence from numerous countries (especially in Latin America and increasingly in sub-Saharan Africa) that cash transfers have leveraged sizeable gains in access to health and education services, as measured by increases in school enrolment (particularly for girls) and use of health services (particularly preventive health and health monitoring for children and pregnant women) (e.g. Fiszbein and Schady, 2009; Davis *et al.*, 2012). Recent evidence in sub-Saharan Africa also shows that social cash transfer programmes can have impacts on household decision-making, including labour supply, accumulation of productive assets and productive activities (e.g. Todd *et al.*, 2010; Gertler *et al.*, 2012; Davis *et al.*, 2010; Asfaw *et al.*, 2014; Covarrubias *et al.*, 2012; Gilligan *et al.*, 2009; Daidone *et al.*, 2014a and 2014b ).

The rest of the paper is organized as follows. Section 2 provides the programme evaluation design, data collection methods and descriptive statistics. Section 3 describes the analytical methods, with emphasis on empirical models. Section 4 presents and discusses the analytical results, and brief conclusions follow in Section 5.

## 2. Programme evaluation design and data

### 2.1 Impact evaluation design and links to the targeting procedure

The impact evaluation follows a longitudinal design, with a baseline household survey (and related community survey) conducted in mid-2012, followed by separate monitoring surveys, and finally a 24-month follow-up in 2014. The monitoring surveys use limited questionnaires focusing on selected topics.

The design of the impact evaluation followed the programme's targeting process, which involved three stages. In the first stage, the Tigray Social Protection (SP) steering committee decided to implement the SCTPP in both urban and rural areas. Criteria used by the steering committee to select the implementation sites included: high prevalence of extreme poverty and food insecurity; high prevalence of adverse living circumstances (OVC, female-headed households, the elderly); little overlap of targeted households with existing major SP interventions by other donors or programmes; commitment of local administrative bodies; and that the two areas were located in disparate (i.e. non-adjacent) zones. Based on these criteria, the steering committee selected the town of Abi-Adi and Hintalo-Wajirat *woreda* (Berhane *et al.*, 2012). The Tigray BoLSA estimates that 45 percent of residents in Hintalo-Wajirat live below the dollar per day per person poverty line, and that female-headed households suffer the severest economic deprivation. Of the 153 505 residents, 59 percent are either under the age of 18 or over 60 years old. Abi Adi, located west of the capital city of the region (Mekelle), contains 16 115 residents, 43 percent of whom are under the age of 18 and about 5 percent of whom are over the age of 60 (Berhane *et al.*, 2012).

In the second stage, *tabias*<sup>3</sup> were selected. In Hintalo-Wajirat, initially only 7 of the 22 *tabias* were covered by the programme, and these *tabias* were selected non-randomly for ease of programme implementation and reduction of administration costs. As additional funds became available, the programme subsequently expanded to one additional *tabia* (Bahr Tseba), for a total of 8 *tabias* in Hintalo-Wajirat *woreda* (Figure 1). In Abi Adi, households of all three *tabias* that fulfil the ultra-poor and labour-constrained selection criteria were eligible for inclusion in the programme (Berhane *et al.*, 2012). Overall, a total of about 18 percent of households in the targeted *tabias* of the two *woredas* benefited from this programme. By June of 2012, about 14 percent of households in Abi Adi and 20 percent of households in targeted *tabias* of Hintalo-Wajirat *woreda* were covered by the programme (Table 1).

In the third stage, targeting of households was carried out in the intervention locations according to standard programme operation guidelines. In order to qualify for the SCTPP households have to meet two criteria: (i) they are in extreme poverty, which means that they are the poorest of the poor, unable to meet their most urgent basic needs (they have only one or no meal per day, they are unable to purchase essential non-food items like soap, clothing, and school utensils, they live on begging or informal work and they have no valuable assets nor regular support from relatives); and (ii) they are labour-constrained, which means there is no able-bodied household member or the household has a dependency ratio of more than 3. This criterion is used in order to focus on those households that are not able to access or to benefit sufficiently from labour-based interventions such as public works. A person is not fit for work when he/she

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<sup>3</sup> Each *tabia* comprises three or four smaller administrative regions, known as *ketenes* in Abi Adi and *kushets* in Hintalo-Wajirat.

is, over a long period of time, too weak to engage or participate in income-generating activities, agricultural production or public works programmes (Operational Manual, 2011).

Following these criteria, the CCCs at *tabia* level list, visit and interview all households that seem to meet the targeting criteria. They then rank, according to neediness level, all households that have no fit adults or have a dependency ratio of more than 3. The CCCs present the list of households selected in a meeting in order to ensure that no households meeting the criteria are left out, that households not meeting the eligibility criteria are deleted from the list, and that a consensus on the appropriate selection of beneficiaries is achieved. The objective of the *tabia* meeting is to ensure that the SCTPP and the targeting process are as transparent as possible. In order to verify the information gathered by the CCC, the *woreda* BoLSA monitors and the *woreda* network of civil society visit each household selected by the CCC and report their findings to the *woreda* sub-social cash transfer secretariat. The *tabia* meeting and verification process by the monitors are aimed at reducing inclusion and exclusion errors. Finally the *woreda* BoLSA monitors and the *woreda* network of civil society check whether the targeting process has been fair and transparent and if the results are correct (Operational Manual, 2011). The relatively successful targeting performance of the programme is reported in detail in Berhane *et al.* (2012). The size of the transfer to each household depends on the number of household members and their characteristics. For households of one or two adults, beneficiaries received 155 birr (approx. USD 8.50) plus additional amounts for children, disabled members and dependent elderly members (Table 2).

## 2.2 Evaluation sample and data

The evaluation sample includes three groups of households: treatment beneficiaries, control households and ineligible households. The last group was included in order to assess the targeting effectiveness of the programme and also to assess the local economy impact of the programme (Kagin *et al.*, 2014), but these households were not considered for the analysis here.

Table 3 reports the baseline sample size for eligible treated and control households, as well as the ineligible households, disaggregated by location. As reported earlier, beneficiary households were selected in a multi-stage process in which the development of ranking lists of eligible households is a vital component. These lists were then used to form *kushet/ketene*-level rankings of all households that appeared to meet the targeting criteria. Beneficiary households selected for inclusion in the programme represent the population from which the “treatment” sample is drawn. Households that appeared on these initial lists but who were ultimately not selected for the SCTPP (i.e. in ranking they did not emerge as poor) constitute the population from which the “control” sample has been drawn (see Brehane *et al.*, 2012 for details). As described in Table 3, the quantitative survey sample comprises 3 664 households, of which 1 629 were beneficiaries and 1 589 were control households that did not receive the transfer. In addition, 446 sample households were randomly selected from households who were non-eligible to receive support from the programme either because they were less poor and/or because of the presence of able-bodied members. Attrition between baseline (May–August 2012) and endline (2014) was 8.7 percent, or 4.36 percent per year, which is higher compared with the Ethiopian Rural Household Survey (ERHS) and the PSNP evaluation surveys (2.5 percent per year) (Berhane *et al.*, 2011; Berhane *et al.*, 2015).

The IFPRI evaluation team has also looked at selected baseline characteristics for households in both survey rounds for treatment and control households. This helps us understand the degree of non-random attrition, as well as the comparability of households in the two waves. Results show that the differences observed between the different waves are essentially the same across treatment and control households. In other words, there is no significant change across many characteristics over time, which supports the idea that attrition is random and not systematic across the survey rounds. For more details on the sample and a discussion of attrition, see Berhane *et al.* (2015).

For this report, we do not consider intermediate monitoring surveys but rely exclusively on data collected at baseline and endline. Both surveys collected detailed information on agricultural and non-agricultural topics. To measure the investment impacts of the programme, data were collected on livestock, agricultural assets, non-agricultural assets, and durable goods ownership. Respondents also provided information on land ownership and acquisition. Crop-level information in the crop production module included input use, harvests and sales. A livestock production module captured animal stocks and revenues from sales of animals, as well as of animal by-products. Additional detailed information on changes in the labour allocation of household members to off-farm and on-farm activities was also collected. The survey also included a small module on non-agricultural businesses operated by the household.

A number of variables are used in the analysis in order to set the context and establish the validity of the counterfactual for assessing impact. Two sets of variables are used: (i) those linked to programme eligibility criteria; and (ii) general variables that provide information on basic characteristics of the household and adults in the household. Table 4 shows baseline summary statistics for these variables. Statistical tests of difference are performed comparing baseline control and treatment groups to determine whether the evaluation design used to create the treatment and control groups created a valid counterfactual and, if not, to help determine what characteristics are of concern. Table 4 indicates that there are significant differences in baseline characteristics across the treatment and control groups for a number of variables related to household demographic structure and individual characteristics; treatment household heads are about seven years older than heads of control households, are more likely to be female and have less education.

Control households have a more active labour force in the household relative to treatment households and are relatively better off in terms of key productive assets such as livestock ownership and housing structure. Treatment households also seem to have good political and social connections in the community compared with the control households. These differences are not surprising, given the way controls were chosen – from the non-selected households in treatment communities – and in fact they represent the success of the targeting process. So it is important to point out the basic contradiction that, while the targeting exercise for this programme is very successful, success in terms of identifying a true counterfactual is limited. Of course, these differences suggest a need to make adjustments to data to ensure unbiased estimates of impact and these adjustments are discussed in the methods section (Section 3) below.

## 2.3 Limitations of the evaluation design and programme implementation

There are two major limitations to the programme evaluation design and implementation of the impact evaluation. First, the evaluation design was not experimental, which raises a number of questions as to the validity of the counterfactual. Both treated and control households were also selected from the same community, raising the possibility of contamination. As reported in the earlier section, the evaluation design was not successful in creating a credible counterfactual at baseline and there were significant differences between the treated and control households on many targeting indicators. To address this major limitation, we employ difference in difference (DD) combined with propensity score matching (PSM) procedure in our estimation. Second, payments to beneficiary households started after the baseline survey was completed in Bahr Tseba only; payments occurred in other *tabias* ten months before the baseline survey took place. The lack of coordination between baseline fieldwork and programme operation contaminates the baseline indicators as they already (at least partially) capture some of the programme impacts, leading to an attenuation effect on the estimates featured in this report. Another point of consideration is that payments in Bahr Tseba were backdated to February 2012, so that beneficiaries received a lump sum payment in June 2012. For these reasons, results for Bahr Tseba are presented separately from the other *tabias* in Hintalo-Wajirat. These caveats should be kept in mind when interpreting results contained in this report.

## 2.4 Summary statistics

Overall, sample households exhibit relatively low use of inputs and technology in both crop and livestock production (Table 5). About 68 percent of eligible households in the two *woredas* are engaged in crop production with an average of about one operated plot and a farm size of 0.35 hectares. Control households have significantly more land (in terms of number of plots and area) and produce more (as aggregated by value) than treatment households. The vast majority of the sample households (95 percent) produce grains, whereas legumes are produced by only 6 percent of the households. About 29 percent of the households have practised soil and water conservation on their land while only 1 percent use irrigation for crop production. Urea and diammonium phosphate (DAP) fertilizers are used by about 11 percent and 18 percent of the sample households, respectively. Pesticides, on the other hand, are only used by 2 percent of the households. Overall, control households have a significantly higher use of agricultural inputs for crop production.

Most of the sample households own some sort of agricultural implement used primarily for agricultural activities. About 22 percent of the households in the sample own plough sets (*masrie*) and ploughs (*maresha*), whereas about 26 percent and 18 percent of households own imported and local sickles, respectively. Pickaxes (*doma*) and axes (*metrebia*) are owned by about 16 percent and 19 percent of sample households, respectively. The total number of agricultural implements owned is very limited – over the whole sample, the average number for ownership of each of the implements is less than one, with the exception of plough sets, which is about 1.22. Control households are two to three times more likely to own each of these assets compared with treatment households.

Livestock production is an important economic activity for the majority of households in Ethiopia. However, households in the baseline sample have a relatively low level of livestock assets. Livestock ownership is an important indicator of wealth, and thus the low level of

ownership is consistent with the targeting criteria. About 14 percent own oxen, which are a critical asset for agricultural production (especially for ploughing land) in Ethiopia. Overall, the average livestock ownership, measured in Tropical Livestock Units (TLU), is about 0.3. Again, control households are two to three times more likely to own livestock at baseline, as compared with treatment households.

At baseline about 29 percent of household members in the sample household participate in off-farm self-enterprise activities such as trading, food processing, and handcrafts. In terms of labour supply, about 8 percent of sample household members engage in unskilled wage labour outside their farm, and the difference between treated and control groups is also statistically significant. On average, the total number of days worked in off-farm wage labour is about 2 per month and a total of 10 for the five months reported. Control households have significantly higher levels of participation in off-farm activities.



### 3. Analytical methods

In this paper we seek to answer the question: “How would cash transfer beneficiaries have fared in the absence of the programme?” As it is impossible to observe a household both participating in the programme and not participating, the goal is to compare participants with non-participants who are as similar as possible except for the fact that they are not beneficiaries. Creating a valid counterfactual is crucial for producing reliable estimates of programme effects. By comparing outcomes between these two groups, the average impacts of the cash transfer programme can be estimated.

For all outcome variables with adequate baseline and endline data, a difference-in-difference, or double difference (DD) estimator can be specified as follows:

$$\begin{aligned} ATT &= E[(\tau_t - \tau_{t-1}) | D = 1] = E[(Y(1)_t - Y(0)_t) - (Y(1)_{t-1} - Y(0)_{t-1}) | D = 1], \\ &= E(Y(1)_t - Y(1)_{t-1} | D = 1) - E(Y(0)_t - Y(0)_{t-1} | D = 1) \end{aligned} \quad (1)$$

where  $t-1$  and  $t$  represent time periods before and after the introduction of the cash transfer programme, and the binary indicator  $D$  refers to programme assignment at the baseline. The panel nature of the data provides the option of using a before-after comparison of control and treatment because it compares the difference between control and treatment as well as before and after.

By taking the difference in outcomes for the treatment group before and after receiving the cash transfer, and subtracting the difference in outcomes for the control group before and after the cash transfer was disbursed, DD is able to control for pre-treatment differences between the two groups, and in particular the time invariant, unobservable factors that cannot be accounted for otherwise (Wooldridge, 2002). The key assumption is that differences between treated and control households remain constant throughout the duration of the project. If prior outcomes incorporate transitory shocks that differ for treatment and comparison households, DD estimation interprets such shocks as representing a stable difference, and estimates will contain a transitory component that does not represent the true programme effect.

When differences between treatment and control groups at the baseline exist, as they do in our dataset, the DD estimator with conditioning variables has the advantage of minimizing the standard errors, as long as the effects are unrelated to the treatment and are constant over time (Wooldridge, 2002). Control variables are most easily introduced by turning to a regression framework which is convenient for the DD, or by combining DD with propensity score matching (DD-PSM) or DD with inverse probability weighting (DD-IPW). For this paper we used DD-PSM, in which differences are taken between endline and baseline measures, and then matched with *psmatch2*.

Any method that uses the propensity score requires that all relevant confounders are included in the model and that this model is specified correctly to validate the conditional exchangeability assumption. As with all observational studies, inference is only valid under the strong assumption of there being no unmeasured confounders. This is crucial to allowing the causal interpretation placed on the parameters but it is, unfortunately, untestable. Ensuring that a region of common support exists is necessary in the PSM approach to avoid observations with extremely large weights, which can yield estimates with high variance and undue influence on

results (Imbens and Wooldridge, 2009). We calculate clustered standard errors at the *kushet/ketene* level for household level outcomes.

We estimate different sets of propensity scores, one overall for the full sample, one each for the three locations (i.e. Hintalo-Wajirat, Abi Adi and Bahr Tseba), and one each for female-headed and male-headed households. The baseline data provide a rich set of variables to help identify programme participation. In the baseline survey implemented in 2012, the criteria used to target programme beneficiaries are documented. This enables us to identify the targeting component of the participation decision by including the specific eligibility criteria as control variables in the participation regression, which is estimated using a logit model (Table 6 presents the control variables and their associated coefficients and p-values for the full sample). At the household level the set of observable variables includes: household characteristics such as age, gender, education of the household head, household size, dependency ratio, sex ratio, number of disabled household members; poverty indicators such as household assets, dwelling, land and livestock holding; political connection and social capital indicators such as holding a position in the community, participation in *iddir* or *equub* or *mahber*; whether the household members were receiving payment for PSNP public work or through a DSP; and finally, *tabia* fixed effects.

Given that the analysis does not condition on all covariates but on the propensity score, there is a need to check whether the procedure is able to balance the distribution of the variables used in the construction of the propensity score. After some experimentation we have settled on a preferred specification of the participation model for which we cannot reject the null of mean equality of baseline characteristics between treatment and control households. Testing for differences in these means across the treatment and control groups in the full sample after controlling for propensity score reveals no significant differences. We confirm that the matching exercise has worked, since the vast majority of baseline indicators are not statistically different, with 2 exceptions out of about 50 (Table 7). As shown in Figure 2, the distribution of the propensity score in the full sample of the control groups is similar to the distribution of the treatment group in all of the location cases, which is an indication of the success of creating a valid counterfactual. The fact that the propensity scores can balance the baseline characteristics across the two groups provides motivations for their use, and for this reason the results presented in this paper are based on DD combined with PSM.

It is important to note that there are some differences with the IFPRI report in the construction of the propensity score. We used more control variables in our first stage logit estimation which resulted in a better distribution of propensity scores between the treated and control groups. Furthermore, we consistently employed a DD estimator for all outcome variables, while in several instances the IFPRI report used single differences. It is important to bear these caveats in mind when comparing some of our results with results from the IFPRI report.

## 4. Results and discussion

In this section we discuss the average treatment effects of the Ethiopia SCTPP on the treated households over several groups of outcome variables. These outcome groups include areas such as land and input use, crop and livestock production, productive assets, non-agricultural business activities and labour supply. We also examine impacts on private transfers, credit, social capital, subjective well-being, food consumption and food security.

### 4.1 Impact on land and input use

The impacts suggest that the SCTPP encouraged beneficiaries to engage more in land-related production activities (Table 7, Table 8). Participation in the programme increased land use for production by beneficiary households, and reduced the likelihood of leaving land fallow (although not always in the same sub-sample). For example, beneficiary households overall were 3.9 percentage points (pp) more likely to use land for production (up from 22.0 percent at baseline) compared with control households at the 1 percent level. The share of households using land for production increased 5.5 pp in Hintalo-Wajirat and 6.2 pp among male-headed households, both with relatively large baseline means at 35.1 percent and 45.5 percent, respectively. Hintalo-Wajirat and female-headed households were 1.8 pp less likely to leave land fallow. Beneficiary female-headed households and Abi Adi households sharecropped land out more often compared with control households, with the latter representing an increase of one-third of the baseline share of households. Meanwhile, beneficiary households overall and households in Hintalo-Wajirat sharecropped land in less often compared with control households.<sup>4</sup> Female-headed beneficiary households were also 4 pp more likely to practise a soil and water conservation technique on their land, a noticeable increase from their baseline mean of 13.7 percent.

While land-related production activities increased among SCTPP beneficiaries, the SCTPP had contradictory impacts on input use. The programme increased the likelihood of using chemical fertilizer (5.8 pp over a baseline of 15.6 percent), while reducing the likelihood of using improved seed, both overall (4.7 pp over a baseline of 3.2 percent) and in Hintalo-Wajirat (8.1 pp over a baseline of 3.3 percent). The increase in the likelihood of use of chemical fertilizer was also found among male-headed households, while the reduction in use of improved seed was evident for female-headed households and in Abi Adi. Female-headed households were 3 pp more likely to hire labour for farm work, from a low baseline mean of 4.5 percent. Households in Abi Adi were less likely to hire labour for farm work, which may result from the fact that Abi Adi saw an increase in land sharecropped out as a result of the programme. Among land practices and input use, no significant impacts were recorded in Bahr Tseba.

### 4.2 Impact on crop production and productivity

We examined the seven most produced crops within the overall sample, focusing on crop area, crop production and crop yield. We also explored crop quantity sold in order to measure the level of crop commercialization. Finally, we investigated overall value of crop production and crop productivity.

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<sup>4</sup> Meanwhile, IFPRI evaluation results found no impact from the SCTPP on the *share* of household land being sharecropped out compared with other uses.

Beneficiary households overall and in Hintalo-Wajirat significantly increased the total value of their crop production and overall crop productivity compared with control households, which is in line with results from IFPRI (Table 10). Treated households in Bahr Tseba and male-headed households also had higher crop productivity compared with control households. As seen from Table 9 and Table 10, beneficiary households devoted less land to and reaped smaller amounts of barley compared with control households, while the opposite was true for sorghum. Specifically, reductions on crop area devoted to barley were observed among households overall, in Hintalo-Wajirat and in male-headed households. For crop yields, this pattern extended to include decreases in barley and increases in sorghum, which is in turn consistent with the pattern in crop quantity sold. As shown in Table 9, the impacts do not seem to be related to changes in the share of households producing those two crops, as there were almost no impacts from the SCTPP on the proportion of households producing barley or sorghum, aside from a decrease in Abi Adi.

### 4.3 Impact on livestock and livestock-related activities

We looked at various dimensions of livestock production and ownership, a key livelihood strategy for many households in Ethiopia, especially those in rural areas. For baseline measurements, we used the number of (and proportion of households owning) livestock reported 12 months before the baseline survey was conducted. As many households had received the transfer prior to the baseline survey, asking about livestock owned 12 months prior to that survey provided a more accurate baseline estimate. In the case of follow-up we used livestock ownership indicators measured at survey period. Aside from looking at information on individual livestock types, we also looked at overall livestock holdings (in TLU).

Out of all three areas, the impact on livestock ownership was most pronounced and only positive in Bahr Tseba, where the programme increased ownership of calves, heifers, young bulls and young heifers, cows and sheep (Table 11). Increases in shares owning livestock, when significant, were all larger than their respective baseline means for each kind of livestock in Bahr Tseba, although baseline means started mostly below 5 percent for those animals. This increase in livestock ownership may be because beneficiary households in Bahr Tseba received lump sum back payments. In Ghana's experience with the Livelihood Empowerment Against Poverty (LEAP) programme, lump sum payments were found to promote non-consumption spending over consumption spending. In contrast, in the other *woredas* and in the overall sample, participation in the programme led to a reduction in the number and ownership of some types of livestock (sheep, goats and mules), except for an increase in Hintalo-Wajirat in the number of chickens owned (Table 12). The latter result was expected, as chickens are cheaper and easier to raise than other livestock. Female-headed beneficiary households were more likely to own bulls as a result of the programme (but have smaller livestock holdings as measured by TLU) and owned more oxen compared with control households. Male-headed beneficiary households were 5 pp less likely to own mules compared with control households, and in terms of numbers, beneficiary male-headed households owned fewer mules. IFPRI's evaluation report used baseline values from the time of the baseline survey, which may explain why IFPRI found an increase in the likelihood of owning chickens in Hintalo-Wajirat, compared to our finding of no impact on ownership of chickens.

There were no impacts observed for vaccines and veterinary services (Table 13). With regard to spending on animal feed, the SCTPP led to reductions among households overall, Abi Adi households and male-headed households. However, as data were not collected on the use of

own production for feed, we do not know whether there may be substitution occurring between feed from own production and spending on feed, as has been found in other countries in the region.

Households were also asked whether they earned money from selling animal by-products. As seen in Table 13, households in Bahr Tseba were about 9.1 pp more likely to sell any livestock product and also 5.4 and 3.6 pp more likely to sell butter and honey, respectively, over baseline means of around 1 percent each. IFPRI found an increased likelihood of households selling any livestock by-products in Abi Adi. However, we did not find a significant increase, which might result from the different estimation procedure employed. The SCTPP led to a reduction in selling hides or skins in the overall sample and in Hintalo-Wajirat, which is in line with the fact that we also did not observe an increase in livestock ownership.

#### **4.4. Impact on agricultural implements**

Like IFPRI, we built a composite farm tool ownership index using principal components. The results are presented at the bottom of Table 14. Overall, the SCTPP led to a significant increase in farm tool ownership. This was also true in Hintalo-Wajirat and among female-headed households, while the SCTPP led to a decrease in the farm tool ownership index in Abi Adi. These results coincide partially with the IFPRI study, which found a positive impact for Hintalo-Wajirat.

We also looked at the impact on ownership for each of the more common agricultural implements. There are mixed impacts throughout the sample households across different agricultural implements, whether in terms of the likelihood of households owning agricultural implements (Table 14) or the number of agricultural implements owned (Table 15). In terms of ownership, beneficiary households in Hintalo-Wajirat are 6 pp and 7 pp more likely to own ploughs and imported sickles, respectively (over baseline shares of 36.7 and 40.6 percent). In contrast, beneficiary households in Abi Adi are less likely to own those agricultural implements, as well as plough sets (the latter showing a 3.8 pp decrease over a baseline of 2.5 percent). These results may be attributable to the dominance of farming in Hintalo-Wajirat, while Abi Adi, on the other hand, is a town environment with different incentives for non-farm activities. This was also corroborated by the very low baseline shares of plough sets, ploughs and imported sickle ownership in Abi Adi. In terms of number of agricultural implements, Hintalo-Wajirat households increased their number of imported sickles as a result of the programme; meanwhile there were decreases in the number of axes, leather straps and traditional beehives. Beneficiary female-headed households seemed to invest more compared with male-headed households, irrespective of the indicator used, which is notable given that at baseline female-headed households typically owned less, and were less likely to own, agricultural implements compared with male-headed households. IFPRI also investigated the impact of the SCTPP on the number of productive assets in Hintalo-Wajirat. While both studies found no significant impact on the number of ploughs and hoes, we observed the increase in number of imported sickles to be significant.

#### **4.5 Impact on non-farm enterprises**

Like IFPRI, we did not find impacts on the likelihood of households to participate in non-farm enterprises in the overall sample, in Hintalo-Wajirat or in Abi Adi (

Table 16). We did find, however, that the SCTPP led to a reduction in the share of female-headed households engaged in non-farm enterprises (4.6 pp over a baseline of 12.5 percent). We also looked at specific non-farm enterprises and found consistent decreases in the likelihood of households to engage in non-farm trading enterprises in the overall sample, Abi Adi and female-headed households, as a result of the SCTPP. There were also decreases in the operation of food-processing non-farm enterprises in Bahr Tseba (5.2 pp over a baseline of 0.0 percent) and among female-headed households (2.6 pp over a baseline of 1.7 percent), although the baselines were notably small. These trends were confirmed in terms of household labour, where the SCTPP led to a reduction in the number of days per month allocated to non-farm enterprises for both males and females.

## **4.6 Impact on wage labour**

We also looked at wage labour at the household level in terms of the likelihood that a household member was engaged in any – or a particular – occupation, and in terms of demographic structure. We looked specifically at wage labour in March, April and May for comparability between baseline and endline. The SCTPP led to decreases in the likelihood of a household member to participate in any wage labour (3 pp over a baseline of 13 percent), in professional wage labour and in unskilled construction wage labour, although the baseline values for the latter two categories were basically zero (

Table 17). While the IFPRI evaluation report found that the SCTPP reduced beneficiary household engagement in wage employment only in Abi Adi, we instead found reductions in Hintalo-Wajirat and in the overall sample; the reduction in Abi Adi was not found to be significant. The difference is perhaps attributed to the months considered for the analysis.

Table 18 contains information on wage labour supply (both in proportion and in total person-days) by demographic structure. A few differences emerged in impact by gender. Adult females in beneficiary male-headed households and Bahr Tseba households were more likely to participate in wage labour as a result of the SCTPP, and adult females in beneficiary households in Bahr Tseba worked 2.36 more person-days per month compared with their control equivalents (over a baseline of 0.76 days). Male teenagers in households in the overall sample and female-headed households worked fewer person-days. Adult males in Hintalo-Wajirat households were less likely to participate in wage labour, but this was not the case in other categories or in the overall sample.

The results for wage labour generally should be balanced with the earlier findings on land practices that suggest greater engagement with land. Not all reduction in labour supply is undesirable; the decrease among male teenagers, for example, could be viewed positively if their engagement in wage labour was a measure of last resort. Unfortunately, data regarding on-farm family work – which could help to better gauge hypotheses about shifts from wage labour to family agricultural or non-agricultural activities – do not exist in the baseline or endline surveys.

#### **4.7 Impact on child labour**

The impact of the cash transfer may not only affect activities performed by household members in non-farm enterprises or in the labour market but also other forms of household activities, particularly for children. These activities include not only fetching water and firewood, cleaning, cooking and child care, but also working on the family farm, cattle herding and working in a non-farm outside family business. In order to be consistent with other definitions of children used in this report, we focused on households with children aged 6-12. We also looked at households with teenagers aged 13-17, as older children face different pressures to work and react differently to a cash transfer compared with younger children. Finally, we split these two groupings by sex, as females may face different pressures than males when provided with a cash transfer.

The SCTPP led to significant reductions in time spent by children in work activities, particularly for younger children (Table 19). As a result of the programme, children aged 6-12 reduced time spent in household work activities (farm and family chores) by over an hour a day, from a baseline of 4.5 hours per day. The impact was even larger in Hintalo-Wajirat and among male-headed households. These impacts among the very young came from decreases among girls aged 6-12. Meanwhile, boys experienced no such effects on all household responsibilities considered together. The impact was spread over individual categories; the SCTPP led to significant reductions in work by younger children on the family farm and cleaning in the overall sample, with decreases in the former category occurring among boys aged 6-12. In the Hintalo-Wajirat sample, the SCTPP led to significant reductions in time spent by younger children on the family farm, fetching water and firewood and cooking. Among male-headed households, the programme led to reductions in time spent on the family farm, the family business, fetching water and firewood and cleaning. For teenagers (aged 13-17), the programme



led to a reduction in time spent cattle herding (about one half hour a day, from a baseline of one hour) in Hintalo-Wajirat and among male-headed households.

We note particular trends found within the data on child labour. The first is that impacts largely occurred within male-headed households compared with female-headed households. The second trend is the lack of impacts found within Bahr Tseba for the age-sex groups considered. Instead, significant effects occurred only in Hintalo Wajirat and Abi Adi, with impacts on all household responsibilities considered together only appearing in the former. The third trend is within the category of children aged 6-12; girls only ever experienced significant decreases, while boys spent *more* hours per day cleaning as a result of the SCTPP. This trend helps to explain why girls worked fewer hours per day on all responsibilities considered together, while boys experienced no impact. The differing results between girls and boys aged 6-12 may be explained by the finding in the IFPRI report on schooling. IFPRI report shows that the SCTPP had a large impact on the likelihood on school enrolment of girl's aged 6-11 in Hintalo Wajirat, increasing this by 13.3 pp compared to nonsignificant increases for boys aged 6-11 in the same district. Finally, boys aged 13-17 only experienced a decrease in hours worked per day in male-headed households. In contrast, girls aged 13-17 spent *more* time both fetching water and firewood (in male-headed households) and caring for children (in Abi Adi and female-headed households). The SCTPP thus appears to have affected genders differently depending on the age and activity.

#### **4.8 Impact on private transfers**

Qualitative fieldwork (OPM, 2014) found that the SCTPP facilitated reengagement of beneficiaries with the communities in which they live, in terms of reciprocal exchanges. As many households received cash transfers prior to the baseline survey, we focused on those private transfers in the second quarter of the year before the baseline survey, which balanced the need to better capture impact but not go so far as to invite recall bias.

Table 20 reports the impact on receipt or giving of income such as remittances, gifts, payment for health or education, or any other transfer from or to children, relatives, friends or neighbours who live outside the household. Aside from a reduction of 15.4 Birr in giving over the three-month time period found in Hintalo-Wajirat, we observed no effects on either receipt or giving.

#### **4.9 Impact on credit**

The qualitative study (OPM, 2014) reported that households were better able to smooth consumption between payments due to increased credit from local shopkeepers, who expressed confidence in supplying goods on credit, given their increased trust in timely repayment. Beneficiaries said they were “feeling safer” and were more easily able to obtain food and other items when needed. Indeed, we found that the programme led to a 5 pp increase (over a baseline of 16 percent) in the share of households borrowing in kind or in cash (Table 21). Among beneficiaries in Hintalo-Wajirat the impact was 9.6 pp (over a baseline of 17 percent) and among female-headed households it was 5.9 pp (over a baseline of 14 percent). On the other hand, the SCTPP led to a reduction in the total amount borrowed.

#### **4.10 Impact on social capital**

The OPM report also found that the SCTPP increased beneficiary social connectedness and risk-sharing, which is important within the context of reliance on community-based networks



as the first line of mutual aid and economic collaboration. Re-entering social relations promoted reciprocity, heightening confidence and self-esteem and hope for the future.

The household survey asked whether respondents had household members in an *iddir*, *equub* or *mahber*,<sup>5</sup> as well as questions concerning the ability of a household to retrieve money in case of an emergency. Opinion scales were used to determine beliefs regarding whether there was more support given to the poor within the *kushet*, whether there were more problems with neighbours in the *kushet*, and whether the community was divided. To maintain the positive direction as being indicative of social capital building, the latter two opinion scales were inverted in the impact measurement, so that we instead measured beliefs regarding whether there were fewer problems with neighbours and greater community cohesion.

The SCTPP had a positive impact on the opinion scales concerning more support given to people in the *kushet*, as well as the extent to which there were fewer problems with neighbours (Table 22), which was also reflected in the qualitative fieldwork. The programme had less of an impact on joining an *iddir*, *equub* or *mahber*—only among the Abi Adi households did the programme have a positive impact on joining an *iddir*, while in Bahr Tseba the programme led to increase in joining an *equub*, and decrease in joining a *mahber*. The qualitative study found that, in fact, beneficiaries had a difficult time joining an *iddir*, because of relatively high fees.

#### 4.11 Impact on subjective well-being

Table 23 shows the results of the SCTPP on opinion scales and the proportion of households answering questions concerning household trust, confidence and opinions of success. In order to gauge trust, respondents were asked if most people were basically honest, if most people could be trusted, and if the respondent felt that neighbours could be trusted to look after the respondent's house if the respondent were away. Two opinion scales concerning confidence asked respondents if they felt that they had control over their lives and “how well things have been going.” Finally, households were asked whether they agreed with statements about the determinants of success as being either outside of one's control or under one's control.

The SCTPP had a significant and positive impact on the opinion scales concerning trust, particularly in the overall sample, in Bahr Tseba and among female-headed households. Only beneficiary households in Bahr Tseba reported “how things have been going” at a significantly higher (more positive) score compared to control households. Among male-headed households the SCTPP led to an increase in the share of households that believed that success depended on personal responsibility and on working very hard.

Households with elderly or disabled heads or adults were asked an additional set of questions about their relationships with extended family, young people and neighbours. The SCTPP led to increases on two opinion scale scores in Bahr Tseba (extended family being attentive to needs, extended family and friends being friendly with the head), while the SCTPP led to decreases among female-headed households in two opinion scales (everyone getting along well in extended family, extended family and neighbours being friendly with head). For Hintalo-Wajirat and Abi Adi, these results are similar to those in the IFPRI evaluation report, which found no significant impact on an index created from scores on the four questions concerning elderly or disabled heads of households in those two areas.

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<sup>5</sup> *Iddir* is an informal burial association, while *equub* is an informal saving and credit association, used for social and economic reasons. *Mahber* is an informal association for religious purposes.

#### 4.12 Impact on food consumption

In order to measure dietary diversity, we gathered foods from the baseline and endline surveys into several food groups according to FAO's *Guidelines for Measuring Household and Individual Diversity* (FAO 2011). We also created a count measure out of the 11 developed food groups, called a household dietary diversity score, to measure how many food groups out of those 11 food groups the household consumed in the last seven days.<sup>6</sup>

In terms of consumption of specific food groups, the SCTPP had scattered results (Table 24). Overall the programme led to a reduction in the share of households consuming fruits over the past seven days, and increases in consumption of sweets and spices and condiments. Among the different sub-samples, the programme had mixed impacts—for example, a reduction in the share of Hintalo-Wajirat households consuming meat and vegetables, but increases in consumption of legumes, and a reduction in the share of female-headed households consuming fruits, but increases in consumption of eggs, oils and fats, and sweets. IFPRI did not find evidence of SCTPP impact on a wide range of consumption-related indicators, including total consumption and food and non-food expenditures, citing a lack of statistical power. The dietary diversity score at the end of Table 24 reveals no impact as a result of the SCTPP. However, IFPRI's evaluation report found increases resulting from the SCTPP, given its dietary diversity score based on 42 food items, as well as on caloric intake. Consequently, the divergence in the findings might be attributed to the construction of the dietary diversity score in this report.

#### 4.13 Impact on food insecurity

We also looked at different measures of food insecurity for the household. First, we observed the number of months in which the household had problems satisfying its food needs. We included the number of months that the household ran out of home-grown food and therefore had to ask for gifts or eat less. We looked at the number of times a day that children in the household eat and the number of times a day that adults in the household eat. We captured the proportion of households suffering a shortage of food to eat during the last rainy season. Finally, we considered three measures of food insecurity as captured by a propensity to engage in measures of last resort in the last week. These measures of last resort are consuming “less preferred foods,” consuming wild foods and consuming seed stock.

While the SCTPP had limited impact on dietary consumption and the consumption of specific groups of foods, the programme did have a range of significant and positive impacts on reducing food insecurity (Table 25). The SCTPP led to a reduction in the number of months in which there were problems in satisfying food needs in the overall sample and in Hintalo-Wajirat, Bahr Tseba and among male-headed households. For example, as a result of the SCTPP, beneficiary households suffered about 0.24 fewer months (around a week) in which there were problems satisfying food needs compared to control households. The programme did not affect the number of months in the last 12 months that the household ran out of home-grown food, but it did lead to an increase in the number of times a day that both children and adults ate. The effect was particularly strong in Bahr Tseba, where children ate 0.6 additional meals a day (over a baseline of 3.0). Beneficiary households were also less likely to have suffered a shortage of

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<sup>6</sup> The household dietary diversity score discussed in *Guidelines for Measuring Household and Individual Diversity* uses 12 food groups, but we used 11 food groups because fish and other seafood were not included among the foods in the food consumption module.

food to eat during the last rainy season as a result of the SCTPP, and were also less likely to have consumed seed stock over the past week.

## 5. Conclusions

This report uses data collected between 2012 and 2014 in order to assess whether the SCTPP affected household decision-making about agricultural production and livelihood options, as well as food security. The SCTPP was implemented in Abi Adi and the Hintalo-Wajirat *woreda* of the Tigray region state of Ethiopia, areas with high prevalence of extreme poverty and food insecurity, adverse living conditions and a lack of overlap with other major SP interventions. In order to qualify for the programme, SCTPP households had to be in extreme poverty and be labour-constrained.

Overall, and drawing from the qualitative study as well, the SCTPP seemed to play a protective role in the Tigray region. On the subject of food insecurity, beneficiary households were less likely to have suffered shortages of food to eat during the last rainy season or to have consumed seed stock during the last week, both of which are measures of last resort. Beneficiary households experienced a decrease in the number of months in the last 12 months in which there were problems satisfying food needs. The SCTPP also increased the number of times a day (measured over the last week) that children and adults in the household ate, compared with control households. Across a variety of children's activities, there were reductions in the number of hours per day worked by children. Households were more likely to agree that there was more support to poor people and that there were fewer problems with neighbours in the *kushet*. Households overall were more likely to agree that people were basically honest and trustworthy, and other opinions of life and success were also higher among certain groups of households. The programme had strong impacts on reducing child labour, both in productive activities and family chores. But there are also agricultural productive elements to this story; households were more likely to utilize land for their own production and were less likely to leave land fallow. Households devoted more land and reaped more from sorghum, although the opposite was true for barley. The overall value of crop production and crop productivity also increased for beneficiary households.

These results parallel those of the Tigray SCTPP qualitative study, which found that the cash transfer acted as a safety net mechanism, and improved beneficiaries' confidence, feelings of self-esteem and involvement in social networks. That study also found increased creditworthiness among beneficiaries, which aligns with the increased borrowing noted in this report. An impact evaluation of Ghana's LEAP programme found increases in self-reported happiness and food security, despite a lack of impact on food consumption. Finally, the increase in the value of production also mirrors the increase in the value of all crops harvested found in an analysis of Zambia's Child Grant Programme.

Other effects are more mixed. Households were more likely to use fertilizer (over a non-negligible baseline level), but were less likely to use improved seed (over a very low baseline level). There were also increases in the likelihood of ownership of agricultural implements for beneficiary households. Some effects were particularly noticeable for different groups as well. Impacts were found in Bahr Tseba, particularly in livestock ownership, number of livestock owned and livestock by-products, wage labour, subjective beliefs for elderly and disabled household heads or adults, and food consumption for households and children in households. These impacts are notable, given that: i) Bahr Tseba is a rural area where we would expect impacts on agricultural production; and ii) Bahr Tseba's introduction to the study after cash transfers were given out makes its measurements more reliable. The SCTPP has increased food security and child activities in Hintalo-Wajirat, although the impacts in Hintalo-Wajirat on

agricultural implements and livestock are more mixed. Comparing effects of the SCTPP by gender of the household head, female-headed households saw increases in household food consumption and ownership of agricultural implements, while increases in subjective well-being and number of hours on child activities were found among male-headed households.

We also made note of decreases found in labour supply, varying by gender of the household head and by geographic area. Only female-headed households were less likely to engage with non-farm enterprises and we observed either decreases or no significant impact, depending on the kind of non-farm enterprise. Adult males and adult females were found to be working fewer days per month in household non-farm enterprises. Households were less likely to have a household member engaged in wage labour. Looking within households, adult females were more likely to work wage jobs in Bahr Tseba and among male-headed households, and to work more person-days in Bahr Tseba households. Male teenagers worked fewer person-days in the overall sample. We were unfortunately constrained by the lack of on-farm activity data that could add to the understanding of the labour supply picture.

Compared to other sample groups participating in cash transfer studies in the region, the households involved in the Tigray SCTPP consist particularly of either the elderly or youth. This means that households receiving transfers are severely labour-constrained, and it would make sense that households may not see increases in labour supply or other dimensions of agricultural production. The amount that households received through the Tigray SCTPP as a percentage of per capita income is also not as high compared with cash transfer programmes in other countries that have caused widespread impacts. Another point of consideration is that many of the consistent impacts in Bahr Tseba may be the result of beneficiary households in that area having received four months of payments. These households may have been induced to spend money on larger assets such as livestock, for which we noted an increase as a result of the programme. In this light, we must keep in mind the importance of targeting, programme design and the amount distributed in influencing livelihood strategies.

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## Appendix 1: Tables

**Table 1** Total number of targeted households

Target <i>woreda</i> and <i>tabias</i>	Total population	Total households (HHs)	Total targeted HHs in June 2012	% HHs targeted in June 2012
<i>Abi Adi woreda</i>				
1	4249	1359	392	29
2	7832	2372	229	10
3	6510	1587	128	8
Subtotal	18 591	5318	749	14
<i>Hintalo-Wajirat woreda</i>				
Arasegeda	12 538	2624	514	20
Mynebri	6346	2429	312	13
Sebebera	3366	1107	256	23
Gonka	4943	910	234	26
Senaele	9540	3781	465	12
Adikeyih	7263	1659	424	26
Tsehafti	7040	1796	413	23
Bahr Tseba	N/A	769	400	52
Subtotal	51 036	15 075	3018	20
Total	69 627	20 393	3767	18

**Table 2** Volume of transfers within beneficiary households (1USD=18Birr)

Household grant	Amount in Birr
<i>Basic grant</i>	
Basic household grant	155
<i>Additional dependence grant</i>	
Child under age of 16	25
<i>If the child goes to school</i>	35
Disabled child under age of 18	40
<i>If the disabled child goes to school</i>	50
Disabled adult	50
Elderly dependent	60

Source: Berhane *et al.* (2015)



**Table 3    Sample size by location and treatment status**

Sample size	Location			Total	Attrition (%)
	Hintalo-Wajirat (excluding Bahr Tseba)	Abi Adi	Bahr Tseba		
Beneficiary (treatment sample)	826	599	204	1629	10.0
Control (eligible, not selected)	826	548	215	1589	6.8
Ineligible	266	132	48	446	9.5
All	1918	1279	467	3664	8.7

Note that, because Bahr Tseba was added to the SCTPP nearly a year after the programme started, we report results for Bahr Tseba separately.

**Table 4** Baseline characteristics of sample households

	Treatment	Control	Total	Diff (%)	P-value	Bias (%)
Religion (1=orthodox)	0.95	0.96	0.96	-1.05	0.21	-5.90
Household size in adult equivalent	2.13	2.98	2.55	-39.91	<b>0.00</b>	-53.30
Head is married	0.21	0.39	0.30	-85.71	<b>0.00</b>	-26.70
Head is single	0.08	0.07	0.07	12.50	0.39	4.60
Head is widowed	0.41	0.24	0.33	41.46	<b>0.00</b>	35.70
Head is divorced	0.28	0.27	0.27	3.57	0.74	1.40
Head is female	0.73	0.56	0.65	23.29	<b>0.00</b>	37.70
Head is child	0.00	0.01	0.01	0.00	<b>0.06</b>	-5.20
Head is elderly	0.60	0.44	0.52	26.67	<b>0.00</b>	31.40
Sex ratio in HH (males/females)	0.65	0.93	0.79	-43.08	<b>0.00</b>	-32.00
Age of the head (years)	61.27	54.66	58.00	10.79	<b>0.00</b>	37.30
# of members aged 0-14	0.81	1.30	1.05	-60.49	<b>0.00</b>	-40.40
# of members aged 15-19	0.34	0.51	0.42	-50.00	<b>0.00</b>	-27.00
# of members aged 20-34	0.31	0.55	0.43	-77.42	<b>0.00</b>	-38.80
# of members aged 35-59	0.42	0.61	0.52	-45.24	<b>0.00</b>	-33.00
# of members aged >=60	0.69	0.57	0.63	17.39	<b>0.00</b>	19.40
# of adults with no education in HH	1.16	1.28	1.22	-10.34	<b>0.01</b>	-14.20
# of adults with education 1-8 in HH	0.43	0.71	0.57	-65.12	<b>0.00</b>	-35.30
# of adults with education 9-10 in HH	0.15	0.23	0.19	-53.33	<b>0.00</b>	-18.70
# of adults with education 11-12 in HH	0.04	0.05	0.04	-25.00	0.18	-5.20
# of adults with education >=13 in HH	0.02	0.02	0.02	0.00	0.66	-1.80
# of disabled children <=5 yrs old	0.00	0.00	0.00	0.00	0.72	-1.30
# of disabled children 6-14 yrs old	0.01	0.01	0.01	0.00	0.74	-1.50
# of disabled members 15-19 yrs old	0.01	0.02	0.01	-100.00	0.94	-0.30
# of disabled members 20-34 yrs old	0.05	0.05	0.05	0.00	0.73	1.40
# of disabled members 35-59 yrs old	0.10	0.07	0.09	30.00	<b>0.01</b>	10.20
# of disabled members >=60 yrs old	0.23	0.12	0.18	47.83	<b>0.00</b>	27.60
Unemployment ratio	0.27	0.30	0.29	-11.11	<b>0.04</b>	-9.20
# of plots operated by the household	1.02	1.14	1.08	-11.76	<b>0.00</b>	-13.00
Total plot area operated by the household (ha)	0.31	0.40	0.35	-29.03	<b>0.00</b>	-18.00
Household wealth quintile== 1.0000	0.32	0.13	0.23	59.38	<b>0.00</b>	-31.00
Household wealth quintile== 2.0000	0.22	0.19	0.20	13.64	<b>0.03</b>	9.10
Household wealth quintile== 3.0000	0.17	0.24	0.20	-41.18	<b>0.00</b>	-16.30
Household wealth quintile== 4.0000	0.16	0.23	0.19	-43.75	<b>0.01</b>	-15.70
Household wealth quintile== 5.0000	0.12	0.22	0.17	-83.33	<b>0.00</b>	-26.70
Dwelling has corrugated metal roof	0.48	0.55	0.52	-14.58	<b>0.00</b>	-12.50
Dwelling has mud/sand/stone roof	0.14	0.12	0.13	14.29	0.26	5.80
Dwelling has plastic sheeting roof	0.01	0.01	0.01	0.00	<b>0.05</b>	5.90
Dwelling has cow dung floor	0.14	0.17	0.15	-21.43	<b>0.04</b>	-8.10
Dwelling has concrete/stone/cement floor	0.07	0.07	0.07	0.00	0.28	2.50
# of rooms	1.22	1.38	1.30	-13.11	<b>0.00</b>	-23.90

Livestock owned in tropical livestock units (TLU)	0.16	0.45	0.30	-181.25	<b>0.00</b>	-40.20
HH head holding an official position in a <i>kebele/woreda</i>	0.03	0.05	0.04	-66.67	<b>0.00</b>	-12.60
HH head spouse holding an official position in a <i>kebele/woreda</i>	0.01	0.02	0.02	-100.00	<b>0.04</b>	-7.90
HH head parents holding an official position in a <i>kebele/woreda</i>	0.03	0.02	0.02	33.33	<b>0.04</b>	8.40
HH head close associates holding an official position	0.10	0.13	0.12	-30.00	<b>0.02</b>	-8.60
HH members belonging to an <i>iddir</i> (burial society)	0.09	0.16	0.13	-77.78	<b>0.00</b>	-22.60
HH members belonging to an <i>equub</i> (saving association)	0.06	0.10	0.08	-66.67	<b>0.00</b>	-14.50
HH members belonging to a <i>mahber</i> (celebration society)	0.28	0.38	0.33	-35.71	<b>0.00</b>	-20.20
Household members receiving payments for PSNP public work	0.04	0.23	0.13	-475.00	<b>0.00</b>	-55.00
Household members receiving direct payments from the PSNP	0.16	0.23	0.19	-43.75	<b>0.02</b>	-18.50

Note: P-value bold if <0.10. The standard errors are clustered at *kushet/ketene* level.

**Table 5 Descriptive summary of baseline household outcomes**

	Treated	Control	Total	P-value	N
<b><u>Input use</u></b>					
<b><i>Of all households</i></b>					
# of plots operated by the household	1.02	1.14	1.08	<b>0.00</b>	3218
Total plot area operated by the household (ha)	0.31	0.40	0.35	<b>0.00</b>	3218
# of registered plots	0.94	1.06	1.00	<b>0.00</b>	3218
Total value of crop produced (Birr)	1418.28	1933.75	1672.81	<b>0.00</b>	3218
Dummy for grain produced	0.63	0.65	0.64	0.21	3218
Dummy for legume produced	0.04	0.04	0.04	0.68	3218
Dummy for vegetable and fruits produced	0.002	0.001	0.002	0.59	3218
Total quantity sold of crops between January and December (Kg)	19.33	26.46	22.85	0.42	3218
Dummy for practising any soil conservation measures on land	0.16	0.24	0.20	<b>0.00</b>	3218
Dummy for irrigation applied on crops	0.01	0.01	0.01	0.14	3218
Dummy for urea fertilizer used on any crops	0.05	0.09	0.07	<b>0.00</b>	3218
Dummy for DAP fertilizer used on any crops	0.09	0.15	0.12	<b>0.00</b>	3218
Dummy for pesticides used on any crops	0.01	0.02	0.01	0.38	3218
Dummy for fertilizer (DAP and urea) used on any crops	0.11	0.20	0.15	<b>0.00</b>	3218
Quantity of urea fertilizer used on crops	8.38	10.12	9.24	0.77	3218
Quantity of DAP fertilizer used on crops	3.82	16.39	10.03	<b>0.01</b>	3218
Quantity of pesticides used on crops	0.25	0.07	0.16	0.25	3218
Expenditure on DAP fertilizer (Birr)	35.23	159.94	96.81	<b>0.05</b>	3218
Expenditure on urea fertilizer (Birr)	92.87	59.78	76.53	0.57	3218
Expenditure on pesticides (Birr)	40.35	24.36	32.46	0.23	3218
Expenditure on fertilizer (urea+DAP) (Birr)	128.11	219.72	173.34	0.36	3218
Total value of food crop produced and consumed (Birr)	442.02	736.96	587.65	<b>0.00</b>	3218
<b><i>Of households producing crops</i></b>					
Total value of crop produced (Birr)	2077.68	2829.40	2449.09	<b>0.00</b>	2198
Dummy for grain produced	0.93	0.95	0.94	<b>0.00</b>	2198
Dummy for legume produced	0.06	0.06	0.06	0.69	2198
Dummy for vegetable and fruits produced	0.003	0.002	0.002	0.59	2198
Dummy for practising any soil conservation measures on land	0.23	0.35	0.29	<b>0.00</b>	2198
Dummy for irrigation applied on crops	0.01	0.02	0.01	0.15	2198
Dummy for urea fertilizer used on any crops	0.08	0.13	0.11	<b>0.00</b>	2198
Dummy for DAP fertilizer used on any crops	0.13	0.22	0.18	<b>0.00</b>	2198
Dummy for pesticides used on any crops	0.02	0.02	0.02	0.40	2198
Dummy for fertilizer (DAP and urea) used on any crops	0.15	0.29	0.22	<b>0.00</b>	2198
Quantity of urea fertilizer used on crops	12.28	14.80	13.53	0.77	2198
Quantity of DAP fertilizer used on crops	5.60	23.99	14.69	<b>0.01</b>	2198
Quantity of pesticides used on crops	0.36	0.10	0.23	0.25	2198
<b><u>Agricultural asset ownership (prop)</u></b>					
<b><i>Of all households</i></b>					
HH owns plough sets ( <i>masrie</i> )	0.12	0.31	0.22	<b>0.00</b>	3218
HH owns plough ( <i>maresha</i> )	0.12	0.31	0.22	<b>0.00</b>	3218

HH owns sickle ( <i>maetsid</i> )-imported ( <i>alben</i> )	0.17	0.36	0.26	<b>0.00</b>	3218
HH owns sickle ( <i>maetsid</i> )-local ( <i>bahilawi</i> )	0.12	0.25	0.18	<b>0.00</b>	3218
HH owns pickaxe ( <i>doma</i> )	0.10	0.22	0.16	<b>0.00</b>	3218
HH owns axe ( <i>metrebia</i> )	0.12	0.27	0.19	<b>0.00</b>	3218
HH owns pruning/cutting shears ( <i>megrezia</i> )	0.02	0.06	0.04	<b>0.00</b>	3218
HH owns <i>malakino</i>	0.01	0.04	0.02	<b>0.00</b>	3218
HH owns hoe ( <i>mekotkocha</i> ) ( <i>Chikuarro/Afkuta</i> )	0.12	0.23	0.17	<b>0.00</b>	3218
HH owns spade or shovel ( <i>megafia</i> )	0.11	0.25	0.18	<b>0.00</b>	3218
HH owns leather strap ( <i>miran/metsian</i> )	0.12	0.24	0.18	<b>0.00</b>	3218
HH owns traditional beehive ( <i>kefo</i> )	0.02	0.05	0.04	<b>0.00</b>	3218

### **Livestock ownership (prop)**

#### ***Of all households***

Oxen	0.07	0.21	0.14	<b>0.00</b>	3218
Calves	0.04	0.09	0.06	<b>0.00</b>	3218
Cows	0.06	0.13	0.09	<b>0.00</b>	3218
Sheep	0.03	0.04	0.03	0.26	3218
Goats	0.03	0.05	0.04	<b>0.00</b>	3218
Mules/Donkeys	0.05	0.15	0.10	<b>0.00</b>	3218
Chickens	0.14	0.26	0.20	<b>0.00</b>	3218
Beehives	0.01	0.03	0.02	<b>0.00</b>	3218
Cattle	0.11	0.27	0.19	<b>0.00</b>	3218
Ruminants	0.05	0.09	0.07	<b>0.01</b>	3218
Pack animals	0.05	0.15	0.10	<b>0.00</b>	3218
Total livestock owned (TLU)	0.21	0.38	0.29	<b>0.00</b>	3218

### **Off-farm and wage labour participation**

#### ***Of all households***

HH members participating in off-farm activities	0.24	0.34	0.29	<b>0.00</b>	3218
HH members engaged in trading	0.04	0.07	0.05	<b>0.00</b>	3218
HH members engaged in food processing	0.04	0.07	0.05	<b>0.00</b>	3218
HH members engaged in crafts	0.05	0.06	0.06	0.83	3218
HH members working in other activities	0.12	0.17	0.14	<b>0.01</b>	3218
Participation in unskilled wage labour	0.06	0.10	0.08	<b>0.00</b>	3218
# days worked off-farm during <i>tikimit</i>	1.63	2.24	1.93	<b>0.06</b>	3218
# days worked off-farm during <i>hidar</i>	1.71	2.29	2.00	<b>0.13</b>	3218
# days worked off-farm during <i>tahisas</i>	1.61	2.28	1.94	<b>0.09</b>	3218
# days worked off-farm during <i>tir</i>	1.61	2.38	1.99	<b>0.05</b>	3218
# days worked off-farm during <i>yekatit</i>	1.52	2.31	1.91	<b>0.05</b>	3218
Total # days worked during the last 5 months	8.08	11.51	9.78	<b>0.07</b>	3218

Note: P-value bold if <0.10. The standard errors are clustered at *kushet/ketene* level.

**Table 6 Estimation of the propensity score – overall**

	Coef.	P-value
Religion (1=orthodox)	-0.246	0.264
Household size in adult equivalent	0.303	0.189
Head is single	0.387*	0.064
Head is widowed	0.070	0.658
Head is divorced	0.023	0.880
Head is female	0.710***	0.000
Head is child	-0.260	0.663
Head is elderly	0.123	0.601
Sex ratio in HH (males/females)	-0.009	0.883
Age of the head	-0.001	0.958
Age square	0.000	0.100
# of members aged 0-14	-0.243	0.178
# of members aged 15-19	-0.129	0.657
# of members aged 20-34	-0.226	0.417
# of members aged 35-59	-0.085	0.778
# of members aged >=60	-0.227	0.439
# of adults with no education in HH	-0.160	0.454
# of adults educated 1-8 in HH	-0.233	0.310
# of adults educated 9-10 in HH	-0.234	0.336
# of adults educated 11-12 in HH	-0.204	0.496
# of adults educated >=13 in HH	-0.062	0.853
# of disabled children <=5 yrs old	0.773	0.335
# of disabled children 6-14 yrs old	-0.022	0.959
# of disabled members 15-19 yrs old	-0.181	0.599
# of disabled members 20-34 yrs old	0.581***	0.004
# of disabled members 35-59 yrs old	0.796***	0.000
# of disabled members >=60 yrs old	0.396***	0.001
Unemployment ratio	0.031	0.819
# of plots operated by the household	0.049	0.528
Total plot area operated by the household (ha)	-0.131	0.443
Household wealth quintile== 2.0000	-0.351***	0.009
Household wealth quintile== 3.0000	-0.693***	0.000
Household wealth quintile== 4.0000	-0.736***	0.000
Household wealth quintile== 5.0000	-1.062***	0.000
Dwelling has corrugated metal roof	-0.023	0.832
Dwelling has mud/sand/stone roof	0.063	0.702
Dwelling has plastic sheeting roof	0.119	0.802
Dwelling has cow dung floor	-0.115	0.359
Dwelling has concrete/stone/cement floor	0.214	0.190
# of rooms	-0.172***	0.010
Livestock owned in TLU	-0.477***	0.000
HH head holding an official position in a <i>kebele/woreda</i> organization	0.034	0.878

HH head spouse holding an official position in a <i>kebele/woreda</i> organization	-0.235	0.530
HH head parents holding an official position in a <i>kebele/woreda</i> organization	0.902***	0.003
HH head close associates (friends, relative) holding an official position in a <i>kebele/woreda</i> organization	-0.164	0.233
HH members belonging to an <i>iddir</i> (burial society)	-0.459***	0.001
HH members belonging to an <i>equub</i> (saving association)	0.244	0.124
HH members belonging to a <i>mahber</i> (celebration society)	-0.033	0.756
Household members receiving payments for PSNP public work	-2.218***	0.000
Household members receiving direct support payments from the PSNP	-1.494***	0.000
<i>tabia==tsehafti</i>	0.897***	0.000
<i>tabia==seberbera</i>	-0.037	0.886
<i>tabia==gonka</i>	0.282	0.313
<i>tabia==senale</i>	-0.092	0.719
<i>tabia==may nebri</i>	0.458*	0.068
<i>tabia==ara-alemsigeda</i>	0.036	0.885
<i>tabia==adi keyih</i>	0.923***	0.000
<i>tabia==bahir tseba</i>	0.447*	0.051
<i>tabia==kebele 1</i>	-0.029	0.867
<i>tabia==kebele 2</i>	-0.396**	0.042
Constant	0.183	0.738
<hr/>		
Number of observations	3,218	
Pseudo R2	0.212	
Log-likelihood	-1,757.85	
<hr/>		
Note: *** P<0.01, ** P<0.05, * P<0.1		

**Table 7** Differences in baseline characteristics after matching

		Treated	Control	% reduction bias	t-value	p>t
P-score	Unmatched	0.63	0.37		33.36	0.00
	Matched	0.63	0.63	98.8	0.42	0.68
Religion (1=orthodox)	Unmatched	0.95	0.96		-1.79	0.07
	Matched	0.95	0.95	89.9	-0.17	0.87
Household size in adult equivalent	Unmatched	2.15	2.97		-14.58	0.00
	Matched	2.15	2.13	97.30	0.43	0.67
Head is single	Unmatched	0.08	0.07		1.36	0.17
	Matched	0.08	0.10	-34.7	-1.69	<b>0.09</b>
Head is widowed	Unmatched	0.40	0.24		9.58	0.00
	Matched	0.40	0.41	92.8	-0.65	0.52
Head is divorced	Unmatched	0.28	0.27		0.57	0.57
	Matched	0.28	0.26	-96.7	1.14	0.26
Head is female	Unmatched	0.73	0.56		10.29	0.00
	Matched	0.73	0.71	91.5	0.92	0.36
Head is child	Unmatched	0.00	0.01		-1.44	0.15
	Matched	0.00	0.00	96.9	0.06	0.96
Head is elderly	Unmatched	0.59	0.44		8.47	0.00
	Matched	0.59	0.59	99.7	0.02	0.98
Sex ratio in HH (males/females)	Unmatched	0.66	0.93		-8.65	0.00
	Matched	0.66	0.71	82.7	-1.59	0.11
Age of the head (years)	Unmatched	60.16	53.64		9.99	0.00
	Matched	60.16	60.06	98.5	0.15	0.88
# of members aged 0-14	Unmatched	0.82	1.30		-11.03	0.00
	Matched	0.82	0.76	88.6	1.41	0.16
# of members aged 15-19	Unmatched	0.34	0.51		-7.41	0.00
	Matched	0.34	0.35	95.8	-0.34	0.73
# of members aged 20-34	Unmatched	0.31	0.55		-10.69	0.00
	Matched	0.31	0.34	89.9	-1.21	0.23
# of members aged 35-59	Unmatched	0.42	0.61		-8.93	0.00
	Matched	0.42	0.42	96.5	0.33	0.74
# of members aged >=60	Unmatched	0.69	0.57		5.26	0.00
	Matched	0.69	0.68	89.1	0.61	0.54
# of adults with no education in HH	Unmatched	1.16	1.28		-3.95	0.00
	Matched	1.16	1.16	93.7	0.28	0.78
# of adults educated 1-8 in HH	Unmatched	0.44	0.70		-9.64	0.00
	Matched	0.44	0.46	93.9	-0.64	0.52
# of adults educated 9-10 in HH	Unmatched	0.15	0.23		-5.11	0.00
	Matched	0.15	0.14	96.0	0.23	0.82
# of adults educated 11-12 in HH	Unmatched	0.04	0.05		-1.38	0.17
	Matched	0.04	0.05	45.1	-0.79	0.43



# of adults educated >=13 in HH	Unmatched	0.02	0.02		-0.46	0.65
	Matched	0.02	0.02	60.6	0.19	0.85
# of disabled children <=5 yrs old	Unmatched	0.00	0.00		-0.72	0.47
	Matched	0.00	0.00	-55.8	0.40	0.69
# of disabled children 6-14 yrs old	Unmatched	0.01	0.01		-0.39	0.70
	Matched	0.01	0.01	76.8	-0.09	0.93
# of disabled members 15-19 yrs old	Unmatched	0.02	0.02		-0.03	0.98
	Matched	0.02	0.02	-1172.8	-0.36	0.72
# of disabled members 20-34 yrs old	Unmatched	0.05	0.05		0.60	0.55
	Matched	0.05	0.08	-450.6	-2.80	<b>0.01</b>
# of disabled members 35-59 yrs old	Unmatched	0.10	0.07		2.99	0.00
	Matched	0.10	0.10	96.6	0.10	0.92
# of disabled members >=60 yrs old	Unmatched	0.22	0.12		7.27	0.00
	Matched	0.22	0.25	76.4	-1.52	0.13
Unemployment ratio	Unmatched	0.27	0.30		-2.34	0.02
	Matched	0.27	0.29	49.1	-1.15	0.25
# of plots operated by the household	Unmatched	1.02	1.14		-3.58	0.00
	Matched	1.02	1.01	94.9	0.19	0.85
Total plot area operated by the household (ha)	Unmatched	0.32	0.40		-4.98	0.00
	Matched	0.32	0.32	91.5	-0.53	0.60
Household wealth quintile==2.0000	Unmatched	0.22	0.18		2.78	0.01
	Matched	0.22	0.21	74.4	0.70	0.49
Household wealth quintile==3.0000	Unmatched	0.17	0.24		-4.39	0.00
	Matched	0.17	0.18	95.9	-0.19	0.85
Household wealth quintile==4.0000	Unmatched	0.17	0.23		-4.18	0.00
	Matched	0.17	0.16	95.7	0.19	0.85
Household wealth quintile==5.0000	Unmatched	0.12	0.22		-7.29	0.00
	Matched	0.12	0.13	89.0	-0.90	0.37
Dwelling has corrugated metal roof	Unmatched	0.49	0.55		-3.15	0.00
	Matched	0.49	0.50	85.2	-0.47	0.64
Dwelling has mud/sand/stone roof	Unmatched	0.14	0.12		1.69	0.09
	Matched	0.14	0.15	75.0	-0.41	0.68
Dwelling has plastic sheeting roof	Unmatched	0.01	0.01		1.39	0.17
	Matched	0.01	0.01	92.8	0.09	0.93
Dwelling has cow dung floor	Unmatched	0.14	0.17		-2.31	0.02
	Matched	0.14	0.14	81.3	-0.45	0.65
Dwelling has concrete/stone/cement floor	Unmatched	0.07	0.07		0.84	0.40
	Matched	0.07	0.07	19.1	0.67	0.50

# of rooms	Unmatched	1.23	1.38		-6.53	0.00
	Matched	1.23	1.25	87.2	-0.92	0.36
Livestock owned in tropical livestock unit (TLU)	Unmatched	0.16	0.44		-11.29	0.00
	Matched	0.16	0.18	94.1	-0.92	0.36
HH head holding an official position in a <i>kebele/woreda</i>	Unmatched	0.03	0.05		-3.51	0.00
	Matched	0.03	0.03	95.0	-0.21	0.84
HH head spouse holding an official position in a <i>kebele/woreda</i>	Unmatched	0.01	0.02		-2.36	0.02
	Matched	0.01	0.01	91.6	-0.24	0.81
HH head parents holding an official position in a <i>kebele/woreda</i>	Unmatched	0.03	0.02		1.08	0.03
	Matched	0.02	0.02	67.5	0.34	0.74
HH head close associates holding an official position	Unmatched	0.10	0.13		-2.73	0.01
	Matched	0.10	0.11	82.1	-0.51	0.61
HH members belonging to an <i>iddir</i> (burial society)	Unmatched	0.09	0.16		-6.31	0.00
	Matched	0.09	0.09	96.2	-0.28	0.78
HH members belonging to an <i>equub</i> (saving association)	Unmatched	0.06	0.10		-3.92	0.00
	Matched	0.06	0.06	86.5	0.61	0.54
HH members belonging to a <i>mahber</i> (celebration society)	Unmatched	0.28	0.38		-5.73	0.00
	Matched	0.28	0.27	86.4	0.82	0.41
Household members receiving payments for PSNP public work	Unmatched	0.05	0.23		-15.44	0.00
	Matched	0.05	0.05	96.9	-0.73	0.46
Household members receiving direct payments from the PSNP	Unmatched	0.16	0.23		-4.93	0.00
	Matched	0.16	0.17	88.0	-0.63	0.53

Note: P value bold if <0.10

**Table 8 Impact of SCTPP on cropland and input use**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Prop HH</b>												
Land used for production	<b>0.039***</b> (0.013)	0.220	<b>0.055*</b> (0.030)	0.351	-0.015 (0.021)	0.024	0.070 (0.052)	0.252	0.021 (0.020)	0.088	<b>0.062**</b> (0.031)	0.455
Land left fallow	-0.008 (0.005)	0.012	<b>-0.018*</b> (0.010)	0.009	-0.003 (0.010)	0.014	0.007 (0.017)	0.016	<b>-0.018**</b> (0.009)	0.010	0.004 (0.015)	0.016
Land sharecropped out	0.025 (0.019)	0.464	-0.004 (0.031)	0.606	<b>0.071***</b> (0.026)	0.192	0.023 (0.063)	0.663	<b>0.047**</b> (0.021)	0.541	0.034 (0.037)	0.328
Land sharecropped in	<b>-0.026***</b> (0.008)	0.013	<b>-0.044***</b> (0.014)	0.013	-0.006 (0.007)	0.009	-0.027 (0.029)	0.021	-0.006 (0.007)	0.004	-0.033 (0.022)	0.027
Making long-term investment	-0.025 (0.015)	0.102	-0.010 (0.033)	0.155	-0.038 (0.025)	0.034	-0.008 (0.052)	0.082	-0.017 (0.020)	0.052	-0.019 (0.031)	0.191
Using improved seed	<b>-0.047***</b> (0.013)	0.032	<b>-0.081***</b> (0.020)	0.033	<b>-0.040***</b> (0.014)	0.012	0.000 (0.057)	0.087	<b>-0.034***</b> (0.013)	0.022	-0.041 (0.035)	0.050
Using fertilizer	<b>0.058***</b> (0.016)	0.156	<b>0.097***</b> (0.030)	0.214	-0.010 (0.014)	0.068	0.071 (0.045)	0.170	0.021 (0.020)	0.111	<b>0.104***</b> (0.035)	0.234
Practising soil conservation	0.021 (0.019)	0.205	0.051 (0.038)	0.307	-0.022 (0.024)	0.078	-0.031 (0.057)	0.156	<b>0.042*</b> (0.023)	0.137	0.005 (0.039)	0.325
Hiring labour for farm work	0.009 (0.012)	0.065	0.027 (0.017)	0.072	<b>-0.036**</b> (0.014)	0.021	0.061 (0.053)	0.164	<b>0.026*</b> (0.014)	0.045	-0.010 (0.025)	0.100
N	2932		1497		1058		377		1877		1055	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 9    Impact of SCTPP on crop production**

Overall			Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
Impact	Baseline		Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Crop prod (prop HH)</b>												
Teff	<b>-0.054**</b> (0.021)	0.132	<b>-0.07***</b> (0.022)	0.158	0.003 (0.028)	0.084	-0.068 (0.067)	0.150	-0.034 (0.022)	0.119	-0.013 (0.041)	0.154
Barley	-0.026 (0.019)	0.213	-0.045 (0.042)	0.287	-0.007 (0.012)	0.019	0.085 (0.090)	0.406	0.029 (0.025)	0.189	-0.040 (0.047)	0.254
Wheat	0.010 (0.021)	0.218	0.014 (0.029)	0.305	-0.004 (0.014)	0.011	0.042 (0.087)	0.398	0.025 (0.024)	0.176	-0.009 (0.050)	0.291
Maize	0.010 (0.007)	0.012	0.004 (0.007)	0.005	0.014 (0.018)	0.025	0.019 (0.017)	0.014	0.010 (0.007)	0.013	0.009 (0.009)	0.012
Sorghum	0.018 (0.020)	0.350	0.036 (0.038)	0.585	<b>-0.025**</b> (0.012)	0.050	-0.047 (0.044)	0.183	-0.021 (0.026)	0.288	0.039 (0.043)	0.458
Lentils	0.008 (0.008)	0.017	0.016 (0.013)	0.026	-0.004 (0.003)	0.002	-0.020 (0.030)	0.016	0.003 (0.008)	0.013	-0.009 (0.017)	0.023
Cowpeas	-0.000 (0.005)	0.007	-0.009 (0.005)	0.003	-	0.000	0.014 (0.041)	0.041	-0.001 (0.007)	0.006	-0.010 (0.009)	0.010
<b>Crop area (ha)</b>												
Teff	-0.006 (0.007)	0.045	-0.016 (0.013)	0.054	0.018 (0.016)	0.034	-0.013 (0.017)	0.038	0.007 (0.008)	0.037	-0.007 (0.017)	0.059
Barley	<b>-0.035***</b> (0.007)	0.070	<b>-0.056***</b> (0.017)	0.098	-0.005 (0.005)	0.006	0.021 (0.033)	0.123	0.001 (0.009)	0.059	<b>-0.053***</b> (0.017)	0.088
Wheat	0.002 (0.008)	0.073	-0.009 (0.017)	0.106	0.005 (0.008)	0.005	0.008 (0.029)	0.118	0.013 (0.008)	0.057	-0.003 (0.018)	0.102
Maize	0.002 (0.002)	0.004	-0.001 (0.004)	0.001	0.006 (0.005)	0.010	0.004 (0.003)	0.003	<b>0.005**</b> (0.002)	0.005	-0.001 (0.004)	0.004
Sorghum	<b>0.017*</b> (0.010)	0.131	0.018 (0.016)	0.222	<b>-0.016**</b> (0.007)	0.022	-0.008 (0.018)	0.052	0.000 (0.010)	0.093	0.009 (0.019)	0.199
Lentils	0.000 (0.003)	0.004	0.000 (0.004)	0.007	-0.002 (0.001)	0.001	-0.013 (0.009)	0.003	-0.001 (0.003)	0.003	-0.005 (0.005)	0.006

Cowpeas	0.000 (0.002)	0.002	-0.002 (0.002)	0.001	0.001 (0.000)	0.000	0.002 (0.012)	0.010	0.000 (0.002)	0.001	-0.001 (0.003)	0.003
N	2751		1454		926		371		1751		1000	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 10 Impact of SCTPP on crop productivity, quantity sold, and value of production**

Overall			Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
Impact	Baseline		Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
Crop yield (kg per ha)												
Teff	-19.019 (12.376)	60.725	-28.923 (23.338)	74.913	25.536 (18.339)	32.438	-28.869 (34.922)	76.510	-12.214 (14.219)	47.111	0.922 (30.172)	84.552
Barley	<b>-44.020*</b> (24.060)	154.635	<b>-79.571**</b> (37.639)	210.607	-18.703 (14.180)	11.489	79.940 (86.912)	296.738	8.185 (27.182)	121.084	-44.634 (48.380)	213.357
Wheat	-3.445 (19.017)	144.299	-0.344 (33.900)	200.946	-5.898 (5.377)	2.635	84.033 (75.591)	280.000	5.544 (22.343)	109.023	15.534 (44.996)	206.041
Maize	7.675 (5.716)	6.813	3.443 (4.528)	3.303	5.720 (15.014)	12.540	7.455 (5.814)	6.120	5.298 (7.401)	7.698	12.125 (9.122)	5.264
Sorghum	<b>62.546***</b> (20.018)	275.541	<b>117.228***</b> (33.161)	478.564	-8.768 (5.357)	16.934	-24.187 (55.929)	131.603	-1.181 (15.268)	192.448	<b>111.279***</b> (42.500)	420.974
Lentils	2.219 (3.918)	6.279	3.593 (6.210)	9.415	-0.654 (0.472)	0.432	-2.835 (14.176)	8.743	1.504 (4.831)	5.915	-2.818 (6.184)	6.917
Cowpeas	2.460 (2.954)	3.700	-2.033 (2.933)	1.862	-	0.000	8.956 (28.402)	20.284	-0.439 (3.672)	1.579	-1.680 (6.092)	7.412
N	2751		1454		926		371		1751		1000	
Crop quantity sold (kg)												
Teff	-5.085 (4.840)	2.007	-12.803 (9.174)	2.508	2.140 (2.566)	0.562	9.012 (10.972)	3.805	-0.270 (1.871)	1.399	-7.980 (6.643)	3.097
Barley	<b>-7.474*</b> (4.284)	3.370	<b>-15.903**</b> (6.321)	4.308	-0.067 (0.214)	0.135	16.758 (26.996)	8.385	-4.803 (7.189)	2.640	<b>-13.922***</b> (4.068)	4.656
Wheat	-1.936 (5.034)	4.067	1.752 (3.221)	5.631	-0.083 (0.068)	0.027	-13.567 (30.548)	8.632	-1.571 (5.313)	2.541	-8.911 (7.988)	6.743
Maize	-0.051 (0.040)	0.026	-0.012 (0.013)	0.000	-0.101 (1.20)	0.077	-	0.000	-0.004 (0.020)	0.012	-0.139 (0.111)	0.050
Sorghum	<b>5.774**</b> (2.504)	7.659	<b>10.396*</b> (5.512)	13.245	-0.001 (0.001)	0.001	-3.409 (3.575)	5.191	-0.465 (1.288)	2.854	<b>11.064*</b> (6.431)	16.129

Lentils	0.496 (0.717)	0.527	0.971 (1.133)	0.818	-0.106 (0.118)	0.000	-2.274 (1.816)	0.712	0.828 (0.898)	0.616	-0.043 (0.502)	0.371
Cowpeas	0.666 (0.413)	0.483	0.421 (0.293)	0.221	-	0.000	2.761 (4.128)	2.778	0.349 (0.603)	0.357	1.221 (1.010)	0.703
N	2670		1376		925		369		1714		956	
Value of production	<b>256.680**</b> (129.551)	1428.112	<b>371.669**</b> 148.470	2194.692	-24.046 (41.120)	129.473	706.297 (579.821)	1681.686	50.750 (124.760)	955.277	438.085 (266.463)	2253.561
Value of production per hectare	<b>293.853***</b> (103.921)	2456.300	<b>366.178**</b> (159.125)	3581.881	-90.065 (93.326)	256.8203	<b>662.845*</b> (363.525)	3595.664	119.900 (110.797)	2074.312	<b>422.689***</b> (154.671)	3124.875
N	2712		1388		913		337		1715		974	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 11 Impact of SCTPP on livestock ownership (proportion HH)**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Livestock</b>												
Oxen	-0.005 (0.013)	0.132	-0.010 (0.024)	0.227	-0.010 (0.008)	0.010	0.009 (0.056)	0.093	0.026 (0.017)	0.037	-0.053 (0.033)	0.300
Calves	-0.019 (0.014)	0.039	-0.011 (0.023)	0.058	<b>-0.054***</b> (0.013)	0.013	<b>0.078**</b> (0.032)	0.037	0.006 (0.017)	0.019	-0.016 (0.025)	0.076
Young bulls/heifers	-0.003 (0.007)	0.015	-0.014 (0.015)	0.020	-0.007 (0.009)	0.006	<b>0.046**</b> (0.021)	0.019	0.001 (0.007)	0.007	-0.004 (0.022)	0.027
Bulls	-0.004 (0.008)	0.013	-0.003 (0.022)	0.021	0.001 (0.005)	0.002	-0.019 (0.029)	0.011	<b>0.013*</b> (0.007)	0.007	-0.018 (0.022)	0.024
Heifers	0.005 (0.010)	0.019	0.012 (0.018)	0.031	-0.007 (0.008)	0.003	<b>0.050*</b> (0.029)	0.016	0.008 (0.009)	0.010	0.007 (0.027)	0.035
Cows	-0.000 (0.014)	0.090	0.008 (0.022)	0.141	<b>-0.022**</b> (0.011)	0.027	<b>0.094**</b> (0.047)	0.066	0.020 (0.013)	0.048	0.003 (0.029)	0.165
Sheep	<b>-0.033***</b> (0.011)	0.031	<b>-0.062***</b> (0.017)	0.034	-0.011 (0.018)	0.026	<b>0.054*</b> (0.030)	0.029	-0.017 (0.013)	0.020	-0.025 (0.026)	0.050
Goats	<b>-0.023**</b> (0.010)	0.040	-0.017 (0.016)	0.064	-0.022 (0.014)	0.009	0.033 (0.025)	0.032	-0.009 (0.010)	0.017	-0.024 (0.020)	0.082
Mules	<b>-0.029**</b> (0.013)	0.092	-0.021 (0.021)	0.157	<b>-0.019**</b> (0.008)	0.010	-0.038 (0.040)	0.064	0.012 (0.010)	0.029	<b>-0.051*</b> (0.030)	0.204
Chickens	0.013 (0.019)	0.183	0.037 (0.031)	0.275	-0.040 (0.033)	0.080	0.049 (0.060)	0.106	-0.002 (0.024)	0.124	0.039 (0.044)	0.288
Beehives	0.001 (0.007)	0.021	-0.004 (0.012)	0.031	0.002 (0.004)	0.004	0.020 (0.033)	0.032	0.006 (0.006)	0.007	-0.011 (0.020)	0.047
TLU total	<b>-0.174*</b> (0.101)	0.276	<b>-0.393*</b> (0.238)	0.409	0.046 (0.049)	0.118	-0.166 (0.108)	0.191	<b>-0.076**</b> (0.038)	0.168	-0.323 (0.275)	0.467
N	2923		1492		1058		373		1871		1052	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .



**Table 12 Impact of SCTPP on livestock ownership (number)**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Livestock</b>												
Oxen	0.017 (0.020)	0.188	0.030 (0.028)	0.322	-0.009 (0.013)	0.015	0.012 (0.073)	0.142	<b>0.039*</b> (0.022)	0.043	-0.024 (0.047)	0.446
Calves	-0.022 (0.017)	0.044	-0.007 (0.035)	0.066	<b>-0.069***</b> (0.018)	0.019	<b>0.070*</b> (0.038)	0.029	0.007 (0.015)	0.019	-0.020 (0.036)	0.089
Young bulls/heifers	-0.010 (0.008)	0.014	-0.019 (0.018)	0.020	-0.011 (0.009)	0.007	0.034 (0.022)	0.008	-0.002 (0.009)	0.005	-0.014 (0.026)	0.029
Bulls	-0.004 (0.010)	0.013	0.003 (0.019)	0.024	0.003 (0.007)	0.003	-0.049 (0.031)	0.000	0.012 (0.010)	0.006	-0.009 (0.024)	0.027
Heifers	-0.006 (0.013)	0.017	0.002 (0.018)	0.031	-0.007 (0.009)	0.003	0.029 (0.032)	0.005	0.009 (0.011)	0.007	-0.019 (0.027)	0.035
Cows	-0.005 (0.019)	0.108	0.002 (0.026)	0.167	<b>-0.032**</b> (0.015)	0.038	<b>0.102**</b> (0.049)	0.072	0.020 (0.017)	0.053	0.010 (0.036)	0.205
Sheep	-0.081 (0.062)	0.139	<b>-0.176***</b> (0.052)	0.087	0.106 (0.153)	0.219	0.224 (0.164)	0.115	-0.059 (0.053)	0.076	-0.012 (0.115)	0.250
Goats	<b>-0.145**</b> (0.064)	0.206	-0.128 (0.092)	0.300	<b>-0.200*</b> (0.109)	0.073	<b>0.354*</b> (0.201)	0.206	-0.052 (0.067)	0.060	-0.125 (0.142)	0.466
Mules	<b>-0.041**</b> (0.021)	0.115	-0.021 (0.031)	0.192	-0.010 (0.011)	0.017	-0.119 (0.090)	0.080	0.024 (0.018)	0.035	<b>-0.083**</b> (0.038)	0.256
Chickens	0.168 (0.181)	1.191	<b>0.416*</b> (0.221)	1.830	-0.230 (0.216)	0.528	0.471 (0.347)	0.517	0.129 (0.197)	0.828	0.355 (0.358)	1.837
Beehives	-0.003 (0.023)	0.033	-0.008 (0.040)	0.049	-0.005 (0.011)	0.009	0.024 (0.093)	0.038	0.017 (0.012)	0.006	-0.039 (0.063)	0.080
TLU total	0.031 (0.084)	0.354	0.205 (0.208)	0.585	<b>-0.129***</b> (0.049)	0.085	0.129 (0.106)	0.196	0.023 (0.032)	0.102	0.137 (0.218)	0.804
N	2923		1492		1058		373		1871		1052	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 13 Impact of SCTPP on livestock inputs used, by-products sold and services provided (proportion)**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Inputs used</b>												
Vaccines and veterinary services	-0.009 (0.014)	0.110	0.002 (0.025)	0.165	-0.036 (0.024)	0.049	0.048 (0.052)	0.066	0.004 (0.017)	0.054	0.002 (0.042)	0.211
Money on feed	<b>-0.028*</b> (0.016)	0.060	-0.030 (0.022)	0.036	<b>-0.048*</b> (0.025)	0.099	0.028 (0.046)	0.045	-0.019 (0.021)	0.050	<b>-0.062**</b> (0.029)	0.079
<b>Selling by-product</b>												
Any livestock product (butter, milk/cream, eggs or honey)	0.010 (0.015)	0.117	0.006 (0.028)	0.185	-0.000 (0.021)	0.042	<b>0.091*</b> (0.052)	0.059	-0.001 (0.023)	0.071	0.042 (0.034)	0.199
Butter	0.002 (0.008)	0.019	0.002 (0.014)	0.033	<b>-0.012**</b> (0.006)	0.003	<b>0.054**</b> (0.021)	0.008	-0.011 (0.011)	0.007	0.031 (0.020)	0.040
Milk and cream	-0.001 (0.003)	0.003	0.002 (0.004)	0.003	-0.002 (0.004)	0.003	-0.013 (0.010)	0.005	-0.001 (0.002)	0.001	-0.003 (0.005)	0.007
Eggs	0.009 (0.018)	0.102	0.004 (0.024)	0.164	0.012 (0.018)	0.036	0.024 (0.046)	0.043	0.010 (0.021)	0.069	0.018 (0.034)	0.161
Honey	0.004 (0.005)	0.009	0.000 (0.010)	0.013	0.002 (0.001)	0.002	<b>0.036**</b> (0.018)	0.013	0.004 (0.003)	0.001	0.001 (0.011)	0.024
Selling hide or skin	<b>-0.030***</b> (0.011)	0.038	<b>-0.037**</b> (0.017)	0.045	-0.029 (0.020)	0.030	-0.008 (0.033)	0.027	-0.017 (0.014)	0.018	-0.021 (0.024)	0.073
Ploughing field for others renting out oxen or pack animals	-0.003 (0.005)	0.006	0.009 (0.008)	0.007	<b>-0.018*</b> (0.011)	0.005	-0.006 (0.007)	0.003	0.003 (0.006)	0.004	-0.009 (0.012)	0.009
N	2916		1487		1056		373		1869		1047	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 14 Impact of SCTPP on ownership of agricultural implements (proportion)**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Agricultural asset</b>												
Plough sets	0.015 (0.013)	0.226	0.038 (0.025)	0.369	<b>-0.038**</b> (0.015)	0.025	-0.024 (0.056)	0.223	<b>0.024*</b> (0.013)	0.063	-0.005 (0.028)	0.515
Ploughs	0.012 (0.014)	0.226	<b>0.055**</b> (0.021)	0.367	<b>-0.050***</b> (0.012)	0.024	-0.020 (0.042)	0.231	0.019 (0.016)	0.063	0.006 (0.027)	0.515
Sickles – imported	<b>0.029*</b> (0.018)	0.271	<b>0.066**</b> (0.029)	0.406	<b>-0.071**</b> (0.028)	0.065	0.062 (0.073)	0.316	0.023 (0.029)	0.126	-0.006 (0.037)	0.531
Sickles – local	-0.012 (0.019)	0.194	0.009 (0.033)	0.258	-0.033 (0.025)	0.112	-0.053 (0.057)	0.170	0.001 (0.020)	0.093	-0.000 (0.039)	0.373
Pickaxes, spades, and shovels	<b>0.031*</b> (0.019)	0.269	0.050 (0.032)	0.339	-0.032 (0.031)	0.191	0.009 (0.058)	0.212	0.013 (0.019)	0.141	0.038 (0.032)	0.498
Axes	-0.015 (0.019)	0.203	-0.030 (0.028)	0.261	-0.002 (0.002)	0.128	-0.006 (0.068)	0.180	0.015 (0.018)	0.082	-0.011 (0.031)	0.417
<i>Malakino</i>	<b>-0.016*</b> (0.009)	0.026	-0.013 (0.015)	0.026	-0.018 (0.018)	0.029	-0.035 (0.033)	0.016	-0.007 (0.012)	0.010	-0.010 (0.028)	0.054
Hoes	0.009 (0.022)	0.182	0.002 (0.034)	0.194	-0.027 (0.027)	0.175	0.077 (0.066)	0.156	<b>0.045*</b> (0.024)	0.111	-0.028 (0.042)	0.309
Leather straps	<b>-0.035**</b> (0.017)	0.190	-0.020 (0.034)	0.307	-0.014 (0.016)	0.027	<b>-0.113**</b> (0.051)	0.178	-0.003 (0.023)	0.080	<b>-0.068*</b> (0.036)	0.385
Traditional beehives	0.002 (0.010)	0.040	0.006 (0.019)	0.063	-0.005 (0.009)	0.004	0.014 (0.049)	0.045	0.000 (0.011)	0.011	0.040 (0.027)	0.090
Farm tool index	<b>0.057*</b> (0.030)	0.000	<b>0.133**</b> (0.055)	0.302	<b>-0.084**</b> (0.041)	-0.419	-0.010 (0.100)	-0.026	<b>0.059*</b> (0.031)	-0.409	0.054 (0.072)	0.728
N	2932		1497		1058		377		1877		1055	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 15 Impact of SCTPP on ownership of agricultural implements (number)**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Agricultural asset</b>												
Plough sets	<b>-0.043*</b> (0.025)	0.279	-0.029 (0.064)	0.464	<b>-0.075***</b> (0.023)	0.031	-0.027 (0.082)	0.241	0.001 (0.026)	0.074	-0.055 (0.081)	0.645
Ploughs	-0.006 (0.018)	0.260	0.038 (0.033)	0.424	<b>-0.070***</b> (0.016)	0.027	-0.036 (0.065)	0.257	0.028 (0.021)	0.069	-0.028 (0.053)	0.598
Sickles - imported	0.056 (0.035)	0.453	<b>0.133**</b> (0.056)	0.681	<b>-0.130***</b> (0.041)	0.106	0.131 (0.124)	0.525	0.066 (0.047)	0.177	-0.010 (0.081)	0.944
Sickles - local	-0.043 (0.031)	0.283	0.007 (0.051)	0.374	<b>-0.130***</b> (0.046)	0.173	-0.080 (0.100)	0.225	-0.001 (0.026)	0.117	-0.050 (0.073)	0.577
Pickaxes, spades, and shovels	0.040 (0.032)	0.399	0.077 (0.052)	0.486	-0.050 (0.054)	0.314	-0.091 (0.118)	0.292	0.011 (0.028)	0.187	0.090 (0.057)	0.775
Axes	<b>-0.056*</b> (0.030)	0.223	<b>-0.091**</b> (0.037)	0.287	-0.034 (0.040)	0.137	-0.030 (0.102)	0.212	0.009 (0.024)	0.085	-0.078 (0.049)	0.469
<i>Malakino</i>	<b>-0.022**</b> (0.010)	0.025	-0.019 (0.015)	0.023	-0.021 (0.019)	0.031	-0.056 (0.044)	0.011	-0.011 (0.013)	0.009	-0.018 (0.028)	0.052
Hoes	-0.041 (0.029)	0.231	-0.089 (0.059)	0.256	-0.055 (0.036)	0.212	0.120 (0.092)	0.188	<b>0.058*</b> (0.033)	0.129	<b>-0.142**</b> (0.064)	0.412
Leather straps	<b>-0.105***</b> (0.031)	0.257	<b>-0.132***</b> (0.050)	0.402	0.026 (0.045)	0.060	<b>-0.214*</b> (0.128)	0.231	0.022 (0.047)	0.100	<b>-0.249***</b> (0.083)	0.535
Traditional beehives	<b>-0.083**</b> (0.040)	0.068	<b>-0.129**</b> (0.059)	0.108	-0.011 (0.016)	0.010	0.035 (0.126)	0.074	-0.014 (0.035)	0.012	-0.086 (0.102)	0.168
N	2932		1497		1058		377		1877		1055	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 16 Impact of SCTPP on non-farm enterprises**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Proportion</b>												
Engaged in NFE	-0.003 (0.019)	0.132	-0.024 (0.016)	0.032	0.024 (0.053)	0.307	-0.027 (0.047)	0.040	<b>-0.046*</b> (0.027)	0.125	-0.012 (0.034)	0.145
Engaged in NFE - trading	<b>-0.026**</b> (0.011)	0.011	-0.005 (0.009)	0.001	<b>-0.059**</b> (0.026)	0.027	-0.015 (0.025)	0.005	<b>-0.034**</b> (0.017)	0.011	-0.021 (0.023)	0.011
Engaged in NFE - food processing	-0.009 (0.010)	0.012	0.004 (0.010)	0.000	-0.017 (0.019)	0.033	<b>-0.052*</b> (0.028)	0.000	<b>-0.026*</b> (0.015)	0.017	-0.008 (0.012)	0.004
Engaged in NFE - crafts	-0.004 (0.010)	0.007	-0.010 (0.008)	0.000	-0.004 (0.022)	0.020	0.009 (0.020)	0.000	-0.019 (0.017)	0.009	0.013 (0.014)	0.004
Engaged in NFE - other	-0.007 (0.010)	0.006	-0.017 (0.012)	0.001	-0.012 (0.034)	0.016	0.011 (0.024)	0.003	-0.019 (0.014)	0.007	0.001 (0.021)	0.006
N	2922		1490		1057		375		1870		1052	
<b>Days per month</b>												
adult males work in NFE	<b>-0.652*</b> (0.351)	0.065	0.197 (0.227)	0.001	<b>-3.946***</b> (1.157)	0.270	-0.118 (0.405)	0.000	<b>-1.288*</b> (0.725)	0.006	-0.349 (0.471)	0.087
adult females work in NFE	<b>-1.080***</b> (0.343)	0.171	<b>-0.522**</b> (0.239)	0.002	<b>-2.910***</b> (0.940)	0.537	-0.475 (0.617)	0.003	<b>-2.272***</b> (0.531)	0.216	-0.005 (0.474)	0.069
N (adult males)	1239		781		296		162		335		904	
N (adult females)	2441		1341		771		329		1703		738	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ . “Days per month” calculations are conditional on the households having adult males or adult females above the age of 18, depending on the specific calculation.

**Table 17 Impact of SCTPP on wage labour disaggregated by occupations**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Prop HH with member working in wage occupation</b>												
All occupations	<b>-0.033**</b> (0.016)	0.132	<b>-0.064***</b> (0.022)	0.032	-0.013 (0.034)	0.307	0.030 (0.046)	0.040	-0.022 (0.021)	0.125	-0.023 (0.029)	0.145
Professional	<b>-0.011*</b> (0.007)	0.006	<b>-0.012**</b> (0.006)	0.001	-0.009 (0.013)	0.013	-0.002 (0.019)	0.003	-0.013 (0.009)	0.007	-0.008 (0.008)	0.004
Unskilled construction worker	<b>-0.043***</b> (0.011)	0.001	<b>-0.035***</b> (0.011)	0.001	<b>-0.049**</b> (0.021)	0.002	-0.022 (0.016)	0.000	<b>-0.039***</b> (0.013)	0.001	<b>-0.033**</b> (0.016)	0.001
Unskilled non-farm worker	0.006 (0.013)	0.039	-0.014 (0.013)	0.009	0.032 (0.030)	0.096	-0.021 (0.020)	0.003	-0.004 (0.017)	0.036	0.024 (0.022)	0.046
Domestic servant	<b>0.013*</b> (0.007)	0.036	-0.001 (0.007)	0.009	0.026 (0.021)	0.083	0.007 (0.011)	0.008	0.013 (0.011)	0.037	0.002 (0.014)	0.034
N	2920		1489		1057		374		1868		1052	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence level.; Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 18 Impact of SCTPP on wage labour disaggregated by demographics**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Prop HH having... working for wage</b>												
Male teenagers (13-17) working for wage	-0.051 (0.035)	0.021	-0.054 (0.044)	0.009	-0.069 (0.083)	0.039	0.059 (0.068)	0.019	-0.093 (0.062)	0.026	-0.048 (0.057)	0.016
Female teenagers (13-17) working for wage	-0.001 (0.019)	0.011	0.033 (0.028)	0.000	-0.012 (0.052)	0.025	-0.037 (0.110)	0.017	-0.016 (0.033)	0.018	0.001 (0.018)	0.000
Adult males (18-59) working for wage	-0.023 (0.031)	0.153	<b>-0.074*</b> (0.041)	0.052	0.075 (0.075)	0.350	-0.050 (0.098)	0.041	-0.002 (0.057)	0.124	-0.034 (0.039)	0.172
Adult females (18-59) working for wage	0.029 (0.019)	0.113	0.009 (0.017)	0.012	0.019 (0.032)	0.249	<b>0.118*</b> (0.070)	0.043	0.027 (0.025)	0.156	<b>0.050**</b> (0.021)	0.038
Elderly males (60+) working for wage	-0.021 (0.022)	0.049	-0.014 (0.022)	0.011	-0.027 (0.086)	0.203	-0.032 (0.023)	0.011	0.055 (0.248)	0.000	-0.022 (0.029)	0.051
Elderly females (60+) working for wage	0.005 (0.008)	0.010	0.010 (0.009)	0.002	0.000 (0.015)	0.029	0.017 (0.026)	0.005	0.005 (0.012)	0.013	0.011 (0.008)	0.000
<b>Number of person-days in HH worked monthly in wage job by...</b>												
male teenagers (13-17)	<b>-0.727*</b> (0.408)	0.293	-1.081 (0.807)	0.169	-0.779 (1.176)	0.531	0.510 (0.636)	0.119	<b>-1.087*</b> (0.653)	0.351	-0.788 (0.755)	0.224
female teenagers (13-17)	0.409 (0.406)	0.142	0.456 (0.283)	0.000	0.896 (1.041)	0.300	-0.804 (1.804)	0.345	0.653 (0.580)	0.245	0.008 (0.220)	0.000
adult males (18-59)	-0.206 (0.707)	2.361	-0.989 (0.631)	0.618	1.379 (1.651)	5.748	-0.555 (1.184)	0.452	0.906 (1.357)	1.609	-1.113 (1.068)	2.830
adult females (18-59)	0.552 (0.385)	1.52	-0.102 (0.244)	0.123	0.758 (0.889)	3.355	<b>2.362*</b> (1.265)	0.756	0.636 (0.541)	2.091	0.449 (0.442)	0.544
elderly males (60+)	-0.477 (0.513)	0.894	0.059 (0.510)	0.189	-0.690 (1.918)	3.682	-0.968 (1.022)	0.326	0.514 (1.330)	0.000	-0.558 (0.467)	0.926

elderly females (60+)	-0.020 (0.099)	0.130	0.128 (0.108)	0.014	-0.366 (0.230)	0.405	0.238 (0.335)	0.021	-0.075 (0.096)	0.166	0.283 (0.190)	0.000
N (male teenagers (13-17))	422		217		152		53		230		192	
N (female teenagers (13-17))	476		259		159		58		276		200	
N (adult males (18-59))	906		497		311		98		348		558	
N (adult females (18-59))	1708		837		707		164		1080		628	
N (elderly males (60+))	677		452		133		92		24		653	
N (elderly females (60+))	1076		566		315		195		840		236	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ . Proportion and number of person-days calculations are conditional on the households having individuals within the defined age categories.



**Table 19 Impact of SCTPP on child labour disaggregated by activities**

Overall			Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
Impact	Baseline		Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
Number of hours per day children in HH work on...												
Family farm												
Children 6-12	-0.163** (0.071)	0.148	-0.243* (0.130)	0.199	0.027 (0.033)	0.023	-0.297 (0.262)	0.351	-0.033 (0.063)	0.071	-0.242* (0.145)	0.248
Boys 6-12	-0.163* (0.092)	0.193	-0.302* (0.175)	0.298	-0.015 (0.013)	0.025	- (0.013)	0.308	-0.181 (0.122)	0.072	-0.284 (0.192)	0.338
Girls 6-12	-0.023 (0.075)	0.046	-0.006 (0.124)	0.032	0.101 (0.076)	0.016	-0.539 (0.630)	0.256	0.079 (0.076)	0.056	-0.077 (0.134)	0.033
Teenagers 13-17	-0.024 (0.167)	0.601	-0.199 (0.216)	0.789	0.072 (0.120)	0.151	0.738 (0.881)	1.059	0.260 (0.202)	0.349	-0.403 (0.335)	0.916
Teen boys 13-17	-0.020 (0.292)	0.810	-0.130 (0.584)	1.158	-0.027 (0.139)	0.102	-0.236 (1.438)	1.500	0.615 (0.521)	0.531	-0.739 (0.521)	1.133
Teen girls 13-17	-0.024 (0.101)	0.198	-0.142 (0.127)	0.167	0.142 (0.192)	0.176	0.595 (0.522)	0.396	0.060 (0.090)	0.145	-0.098 (0.172)	0.269
Cattle herding												
Children 6-12	-0.029 (0.243)	0.698	-0.266 (0.354)	1.111	-0.304 (0.195)	0.099	1.211 (0.951)	0.851	-0.021 (0.263)	0.274	0.048 (0.452)	1.251
Boys 6-12	0.277 (0.311)	0.803	-0.343 (0.705)	1.310	-0.231 (0.241)	0.121	2.149 (2.552)	0.894	0.088 (0.409)	0.286	0.299 (0.670)	1.424
Girls 6-12	-0.158 (0.183)	0.300	-0.413 (0.380)	0.472	-0.077 (0.190)	0.032	0.763 (0.701)	0.442	-0.241 (0.304)	0.150	-0.258 (0.471)	0.486
Teenagers 13-17	-0.284 (0.178)	0.650	-0.495* (0.294)	0.993	-0.267 (0.214)	0.158	0.783 (0.522)	0.539	-0.018 (0.165)	0.279	-0.534* (0.280)	1.114
Teen boys 13-17	-0.188 (0.280)	0.965	-0.600 (0.504)	1.570	-0.362 (0.441)	0.245	-0.145 (1.384)	0.660	0.244 (0.518)	0.484	-0.500 (0.595)	1.522
Teen girls 13-17	-0.071 (0.139)	0.127	-0.198 (0.173)	0.155	-0.129 (0.143)	0.042	0.586 (0.563)	0.226	-0.022 (0.068)	0.069	-0.080 (0.184)	0.204
Family or outside business												

Children 6-12	-0.053 (0.056)	0.064	-0.031 (0.038)	0.050	-0.045 (0.101)	0.096	-0.037 (0.083)	0.010	-0.005 (0.064)	0.071	<b>-0.129**</b> (0.065)	0.055
Boys 6-12	-0.015 (0.037)	0.029	0.059 (0.053)	0.031	-0.022 (0.100)	0.035	-0.095 (0.090)	0.000	-0.060 (0.097)	0.036	-0.026 (0.025)	0.022
Girls 6-12	-0.031 (0.081)	0.054	0.026 (0.045)	0.020	-0.005 (0.148)	0.108	0.152 (0.136)	0.023	0.082 (0.111)	0.071	-0.062 (0.080)	0.033
Teenagers 13-17	-0.048 (0.107)	0.290	-0.034 (0.107)	0.197	-0.185 (0.204)	0.404	0.288 (0.393)	0.373	-0.030 (0.167)	0.353	-0.091 (0.118)	0.210
Teen boys 13-17	0.026 (0.146)	0.239	0.171 (0.188)	0.180	-0.247 (0.419)	0.340	0.200 (0.205)	0.180	-0.111 (0.322)	0.319	0.014 (0.179)	0.147
Teen girls 13-17	-0.061 (0.134)	0.228	-0.124 (0.116)	0.084	0.096 (0.306)	0.352	0.787 (0.613)	0.547	-0.080 (0.230)	0.306	-0.089 (0.119)	0.124
<b><i>Fetching water, firewood</i></b>												
Children 6-12	-0.382 (0.244)	1.563	<b>-0.972***</b> (0.364)	2.000	<b>0.379*</b> (0.205)	0.807	-0.867 (0.817)	2.186	0.074 (0.237)	1.431	<b>-0.992***</b> (0.399)	1.734
Boys 6-12	0.026 (0.204)	0.982	-0.156 (0.378)	1.233	0.210 (0.260)	0.432	-1.678 (1.699)	1.846	0.333 (0.327)	0.910	-0.587 (0.417)	1.069
Girls 6-12	<b>-0.676***</b> (0.241)	1.490	<b>-1.414***</b> (0.383)	1.948	0.458 (0.385)	0.730	-1.434 (1.684)	2.070	-0.142 (0.363)	1.455	<b>-0.975*</b> (0.528)	1.533
Teenagers 13-17	0.147 (0.307)	2.937	0.014 (0.392)	3.378	0.200 (0.345)	2.274	0.306 (0.741)	2.882	0.253 (0.334)	2.751	0.081 (0.386)	3.170
Teen boys 13-17	-0.175 (0.329)	2.368	-0.776 (0.596)	2.880	0.344 (0.400)	1.762	-0.141 (1.658)	2.100	0.240 (0.584)	2.413	-0.762 (0.594)	2.315
Teen girls 13-17	0.381 (0.277)	2.730	0.302 (0.414)	2.979	0.019 (0.451)	2.239	-0.242 (0.918)	2.925	0.261 (0.434)	2.617	<b>0.958**</b> (0.436)	2.882
<b><i>Cleaning</i></b>												
Children 6-12	<b>-0.220*</b> (0.132)	0.982	-0.318 (0.200)	1.036	-0.072 (0.201)	0.858	-0.475 (0.508)	1.165	-0.010 (0.156)	0.927	<b>-0.745***</b> (0.254)	1.052
Boys 6-12	<b>0.238***</b> (0.089)	0.316	0.140 (0.140)	0.217	0.138 (0.143)	0.332	0.440 (0.607)	0.750	<b>0.473**</b> (0.225)	0.338	-0.150 (0.151)	0.290
Girls 6-12	<b>-0.436*</b>	1.219	-0.538	1.397	-0.152	0.941	-0.878	1.372	-0.297	1.165	-0.677	1.285

	(0.247)		(0.392)		(0.335)		(0.935)		(0.333)		(0.566)	
Teenagers 13-17	-0.090	1.770	-0.413	1.655	0.075	1.894	0.392	1.922	0.270	1.740	-0.301	1.806
	(0.208)		(0.290)		(0.399)		(0.738)		(0.254)		(0.324)	
Teen boys 13-17	0.130	0.645	-0.224	0.405	0.335	0.864	-0.033	0.960	0.175	0.817	0.066	0.446
	(0.179)		(0.161)		(0.534)		(1.129)		(0.299)		(0.315)	
Teen girls 13-17	-0.369	2.348	-0.478	2.297	-0.700	2.352	-0.579	2.566	0.090	2.282	-0.676	2.435
	(0.280)		(0.396)		(0.668)		(0.821)		(0.361)		(0.705)	
<i>Cooking</i>												
Children 6-12	-0.155	0.462	<b>-0.238*</b>	0.409	-0.156	0.428	0.196	0.845	-0.146	0.477	-0.249	0.442
	(0.096)		(0.143)		(0.166)		(0.676)		(1.20)		(0.170)	
Boys 6-12	0.056	0.071	0.134	0.058	-0.014	0.045	0.489	0.231	0.173	0.050	-0.055	0.095
	(0.043)		(0.158)		(0.064)		(0.387)		(0.105)		(0.062)	
Girls 6-12	-0.250	0.608	-0.218	0.520	-0.254	0.546	-0.636	1.395	-0.309	0.658	-0.286	0.547
	(0.185)		(0.267)		(0.311)		(1.179)		(0.269)		(0.287)	
Teenagers 13-17	-0.072	1.580	-0.086	1.465	-0.127	1.726	0.321	1.676	0.143	1.598	-0.098	1.559
	(0.168)		(0.235)		(0.285)		(0.632)		(0.289)		(0.322)	
Teen boys 13-17	-0.029	0.237	-0.060	0.075	0.129	0.429	-0.188	0.320	0.048	0.296	-0.214	0.168
	(0.114)		(0.099)		(0.283)		(0.376)		(0.160)		(0.201)	
Teen girls 13-17	-0.233	2.348	-0.209	2.251	-0.282	2.401	-0.426	2.642	0.111	2.375	-0.043	2.312
	(0.258)		(0.510)		(0.554)		(0.714)		(0.425)		(0.493)	
<i>Child care</i>												
Children 6-12	-0.082	0.561	-0.205	0.478	-0.048	0.742	-0.081	0.309	0.031	0.490	-0.236	0.653
	(0.110)		(0.181)		(0.259)		(0.393)		(0.158)		(0.214)	
Boys 6-12	-0.017	0.257	-0.079	0.093	-0.072	0.518	0.198	0.077	-0.112	0.299	-0.023	0.208
	(0.135)		(0.197)		(0.328)		(0.252)		(0.157)		(0.202)	
Girls 6-12	0.099	0.606	-0.117	0.595	0.059	0.643	-0.372	0.512	0.355	0.451	-0.345	0.799
	(0.187)		(0.247)		(0.327)		(1.035)		(0.297)		(0.276)	
Teenagers 13-17	-0.043	0.544	-0.188	0.467	0.115	0.658	0.050	0.559	0.164	0.364	-0.466	0.769
	(0.145)		(0.177)		(0.260)		(0.512)		(0.157)		(0.381)	
Teen boys 13-17	-0.051	0.202	-0.152	0.080	-0.087	0.313	0.100	0.360	-0.035	0.178	-0.345	0.228
	(0.144)		(0.165)		(0.240)		(0.571)		(0.179)		(0.245)	

Teen girls 13-17	0.069 (0.213)	0.735	-0.255 (0.308)	0.703	<b>0.785**</b> (0.356)	0.789	-0.458 (1.026)	0.736	<b>0.546**</b> (0.215)	0.484	-0.360 (0.427)	1.070
<i>All responsibilities</i>												
Children 6-12	<b>-1.085**</b> (0.461)	4.477	<b>-2.272***</b> (0.701)	5.279	-0.219 (0.519)	3.054	1.502 (3.160)	5.716	-0.110 (0.727)	3.741	<b>-2.544***</b> (0.881)	5.434
Boys 6-12	0.403 (0.478)	2.651	-0.545 (0.954)	3.240	-0.006 (0.612)	1.508	1.502 (3.973)	4.106	0.714 (0.864)	1.991	-0.826 (1.170)	3.446
Girls 6-12	<b>-1.476**</b> (0.750)	4.323	<b>-2.679***</b> (0.991)	4.984	0.129 (0.803)	3.016	-2.943 (3.596)	6.070	-0.473 (0.907)	4.008	<b>-2.679*</b> (1.372)	4.715
Teenagers 13-17	-0.415 (0.584)	8.372	-1.401 (1.068)	8.944	-0.117 (1.234)	7.264	-0.442 (4.838)	9.010	1.041 (0.957)	7.434	<b>-1.812*</b> (1.085)	9.544
Teen boys 13-17	-0.307 (0.567)	5.465	-1.771 (1.168)	6.348	0.087 (1.141)	4.054	-0.442 (4.769)	6.080	1.175 (1.658)	5.038	<b>-2.481*</b> (1.372)	5.959
Teen girls 13-17	-0.306 (0.782)	8.714	-1.105 (1.131)	8.636	-0.069 (1.687)	8.352	0.262 (2.721)	10.038	0.965 (1.100)	8.278	-0.389 (1.534)	9.296
N (HH w/ children (6-12))	927		477		353		97		524		403	
N (HH w/ boys (6-12))	509		258		199		52		278		231	
N (HH w/ girls (6-12))	480		252		185		43		266		214	
N (HH w/ teenagers (13-17))	846		452		292		102		470		376	
N (HH w/ teen boys (13-17))	397		200		147		50		213		184	
N (HH w/ teen girls (13-17))	434		239		142		53		248		186	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ . Calculations are conditional on the households having individuals within the defined age categories, depending on the specific calculation.

**Table 20 Impact of SCTPP on private transfers**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Receipt</b>												
Proportion receiving	0.012 (0.020)	0.075	0.020 (0.021)	0.021	-0.000 (0.043)	0.163	0.006 (0.053)	0.040	-0.005 (0.026)	0.087	0.013 (0.031)	0.053
Amount received	-37.012 (43.030)	62.824	-84.725 (56.170)	11.039	-19.187 (96.636)	154.796	7.902 (44.914)	9.936	-46.413 (57.396)	73.864	-32.685 (61.626)	43.184
<b>Giving</b>												
Proportion giving	-0.005 (0.009)	0.008	-0.012 (0.012)	0.005	0.014 (0.016)	0.011	-0.023 (0.028)	0.008	0.002 (0.011)	0.009	-0.014 (0.017)	0.007
Amount given	-2.827 (5.744)	4.007	<b>-15.438*</b> (9.321)	2.220	15.135 (11.415)	7.846	-9.061 (5.952)	0.318	-5.068 (8.726)	5.185	-5.512 (18.207)	1.913
N	2929		1494		1058		377		1875		1054	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ . Private transfers are computed using second quarter of baseline and last quarter of endline.

**Table 21 Impact of SCTPP on access to credit**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
Proportion borrowing in kind or in cash	<b>0.053***</b> (0.019)	0.164	<b>0.096***</b> (0.031)	0.174	0.037 (0.038)	0.173	-0.000 (0.050)	0.101	<b>0.059**</b> (0.029)	0.145	0.018 (0.033)	0.199
Amount of money borrowed	<b>-96.217*</b> (54.857)	54.007	-53.031 (62.658)	26.070	-85.335 (111.520)	106.304	-106.073 (98.767)	17.600	-118.100 (76.616)	55.991	-45.060 (106.473)	50.476
N	2922		1490		1057		375		1871		1051	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $p < .10$ . Private transfers are computed using second quarter of baseline and last quarter of endline.

**Table 22 Impact of SCTPP on social capital**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Proportion</b>												
Have HH member in <i>iddir</i>	-0.008 (0.015)	0.132	-0.042 (0.027)	0.081	<b>0.037*</b> (0.021)	0.175	-0.006 (0.044)	0.214	0.010 (0.019)	0.118	-0.012 (0.030)	0.158
Have HH member in <i>equub</i>	0.019 (0.013)	0.087	0.018 (0.015)	0.060	0.006 (0.024)	0.139	<b>0.061*</b> (0.033)	0.049	0.027 (0.018)	0.077	0.016 (0.027)	0.105
Have HH member in <i>mahber</i>	0.001 (0.019)	0.348	0.032 (0.030)	0.505	-0.011 (0.029)	0.152	<b>-0.118*</b> (0.068)	0.279	-0.019 (0.023)	0.300	0.021 (0.032)	0.434
Able to obtain 200 birr in a week	0.034 (0.023)	0.297	0.014 (0.035)	0.294	0.016 (0.044)	0.329	<b>0.116*</b> (0.060)	0.222	0.028 (0.029)	0.250	0.027 (0.051)	0.381
Able to obtain 1000 birr in a week	-0.003 (0.018)	0.081	0.024 (0.024)	0.091	-0.044 (0.030)	0.078	0.047 (0.061)	0.051	-0.009 (0.019)	0.054	0.019 (0.033)	0.129
<b>Opinion [1=strong disagree, 5=strong agree]</b>												
More support to poor people in <i>kushet</i>	<b>0.203***</b> (0.050)	3.261	0.137 (0.086)	3.126	<b>0.307***</b> (0.083)	3.468	0.288 (0.199)	3.217	<b>0.165**</b> (0.071)	3.296	<b>0.218**</b> (0.094)	3.198
Fewer problems with neighbours in <i>kushet</i>	<b>0.161**</b> (0.063)	3.607	<b>0.273***</b> (0.087)	3.705	0.034 (0.092)	3.569	-0.039 (0.200)	3.305	0.051 (0.089)	3.574	<b>0.221***</b> (0.083)	3.664
Community cohesion	0.056 (0.065)	3.724	0.067 (0.088)	3.847	0.089 (0.100)	3.591	-0.108 (0.180)	3.607	0.071 (0.063)	3.696	0.078 (0.102)	3.773
N	2926		1492		1058		376		1874		1052	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

**Table 23 Impact of SCTPP on subjective well-being**

Overall			Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
Impact	Baseline		Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Opinion of... [1=strongly disagree, 7=strongly agree]</b>												
people being basically honest	<b>0.227***</b> (0.080)	4.930	0.209 (0.147)	5.020	<b>0.212**</b> (0.101)	4.784	0.382 (0.288)	4.987	<b>0.321***</b> (0.092)	4.904	0.200 (0.159)	4.975
people as able to be trusted	<b>0.154*</b> (0.087)	5.088	0.107 (0.129)	5.235	0.131 (0.131)	4.802	<b>0.646***</b> (0.211)	5.317	<b>0.234*</b> (0.133)	5.074	0.065 (0.166)	5.113
trusting neighbours to look after house	0.123 (0.083)	5.509	0.107 (0.129)	5.612	0.110 (0.140)	5.381	<b>0.485**</b> (0.246)	5.465	0.088 (0.089)	5.508	<b>0.305**</b> (0.153)	5.512
<b>Opinion of... [1=strongly disagree, 9=strongly agree]</b>												
having control over own life	-0.009 (0.108)	4.138	-0.039 (0.187)	4.161	-0.101 (0.216)	4.237	0.174 (0.415)	3.765	-0.240 (0.154)	3.906	0.114 (0.219)	4.551
<b>Opinion of... [1=poorly in every way, 7=very well in every way]</b>												
how things have been going	0.029 (0.059)	3.893	0.055 (0.110)	3.915	-0.164 (0.119)	3.841	<b>0.416*</b> (0.238)	3.954	0.020 (0.099)	3.821	0.007 (0.124)	4.021
<b>Proportion</b>												
Success depends on personal responsibility	0.018 (0.026)	0.720	-0.024 (0.035)	0.707	0.038 (0.047)	0.767	0.068 (0.074)	0.634	-0.009 (0.039)	0.702	<b>0.068*</b> (0.039)	0.750
Success depends on working very hard	0.009 (0.026)	0.673	-0.012 (0.036)	0.628	0.014 (0.036)	0.763	0.105 (0.086)	0.594	-0.045 (0.036)	0.658	<b>0.112**</b> (0.046)	0.700
N	2908		1478		1058		372		1862		1046	
<b>Opinion of... (asked of elderly or disabled heads or adults) [1=strongly disagree, 7=strongly agree]</b>												
everyone getting along well in extended family	-0.075 (0.151)	4.869	-0.041 (0.170)	4.927	-0.068 (0.262)	4.767	0.207 (0.394)	4.834	<b>-0.291*</b> (0.171)	4.800	-0.027 (0.176)	4.960
extended family being attentive to needs	-0.052 (0.146)	5.116	-0.123 (0.176)	5.254	-0.207 (0.263)	4.767	<b>0.670*</b> (0.349)	5.217	-0.249 (0.199)	5.049	0.056 (0.225)	5.203

young people in extended family and in village treating head with respect	-0.018 (0.115)	5.362	-0.066 (0.155)	5.377	-0.018 (0.214)	5.287	0.357 (0.274)	5.438	-0.175 (0.193)	5.345	0.176 (0.158)	5.383
extended family and neighbours being friendly with head	-0.050 (0.104)	5.580	-0.087 (0.105)	5.569	-0.103 (0.187)	5.540	<b>0.375*</b> (0.217)	5.694	<b>-0.363***</b> (0.123)	5.555	0.152 (0.139)	5.614
N	1537		887		415		235		869		668	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ . Calculations asking the opinion of elderly or disabled heads depend on the presence of an elderly or disabled head or adult in the household.



**Table 24 Impact of SCTPP on food consumption (proportion)**

	Overall		Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Consuming in last seven days...</b>												
Cereals	-0.001 (0.005)	0.986	-0.001 (0.008)	0.989	0.004 (0.009)	0.980	<b>-0.034*</b> (0.019)	0.987	0.001 (0.008)	0.991	0.012 (0.009)	0.976
White tubers, roots	-0.004 (0.020)	0.192	-0.026 (0.022)	0.079	0.017 (0.047)	0.399	<b>0.120**</b> (0.049)	0.054	-0.010 (0.030)	0.207	0.021 (0.031)	0.166
Vegetables	-0.028 (0.020)	0.496	<b>-0.060*</b> (0.032)	0.316	-0.032 (0.026)	0.805	0.118 (0.074)	0.332	-0.011 (0.030)	0.512	-0.045 (0.039)	0.467
Fruits	<b>-0.049**</b> (0.019)	0.019	-0.002 (0.015)	0.007	<b>-0.097**</b> (0.038)	0.041	-0.064 (0.060)	0.005	<b>-0.047**</b> (0.022)	0.019	-0.032 (0.031)	0.019
Meat	-0.020 (0.017)	0.087	<b>-0.032*</b> (0.018)	0.057	-0.019 (0.039)	0.133	0.024 (0.017)	0.074	0.018 (0.016)	0.080	<b>-0.071***</b> (0.025)	0.099
Eggs	0.016 (0.014)	0.085	0.018 (0.021)	0.084	0.007 (0.036)	0.099	(0.040) 0.009	0.049	<b>0.031*</b> (0.018)	0.086	-0.004 (0.026)	0.084
Legumes, nuts, seeds	0.025 (0.019)	0.830	<b>0.046**</b> (0.020)	0.888	0.003 (0.026)	0.753	-0.043 (0.061)	0.820	0.019 (0.019)	0.813	0.015 (0.033)	0.861
Milk, milk products	0.000 (0.013)	0.043	-0.015 (0.022)	0.058	-0.012 (0.016)	0.028	0.053 (0.039)	0.027	0.006 (0.015)	0.028	-0.005 (0.028)	0.069
Oils and fats	0.033 (0.024)	0.587	-0.002 (0.032)	0.462	0.028 (0.024)	0.849	<b>0.116*</b> (0.070)	0.335	<b>0.059*</b> (0.031)	0.590	-0.008 (0.034)	0.583
Sweets	<b>0.039*</b> (0.022)	0.467	0.011 (0.032)	0.339	<b>0.061*</b> (0.035)	0.697	0.013 (0.081)	0.319	<b>0.056*</b> (0.030)	0.481	0.000 (0.046)	0.441
Spices/condiments/beverages	<b>0.022*</b> (0.011)	0.909	<b>0.039***</b> (0.015)	0.915	0.004 (0.019)	0.918	0.009 (0.044)	0.861	0.010 (0.012)	0.897	0.023 (0.020)	0.930
DDS	0.026 (0.073)	4.682	-0.034 (0.099)	4.178	-0.032 (0.111)	5.691	0.301 (0.228)	3.825	0.136 (0.084)	4.694	-0.122 (0.137)	4.661
N	2932		1497		1058		377		1877		1055	

Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

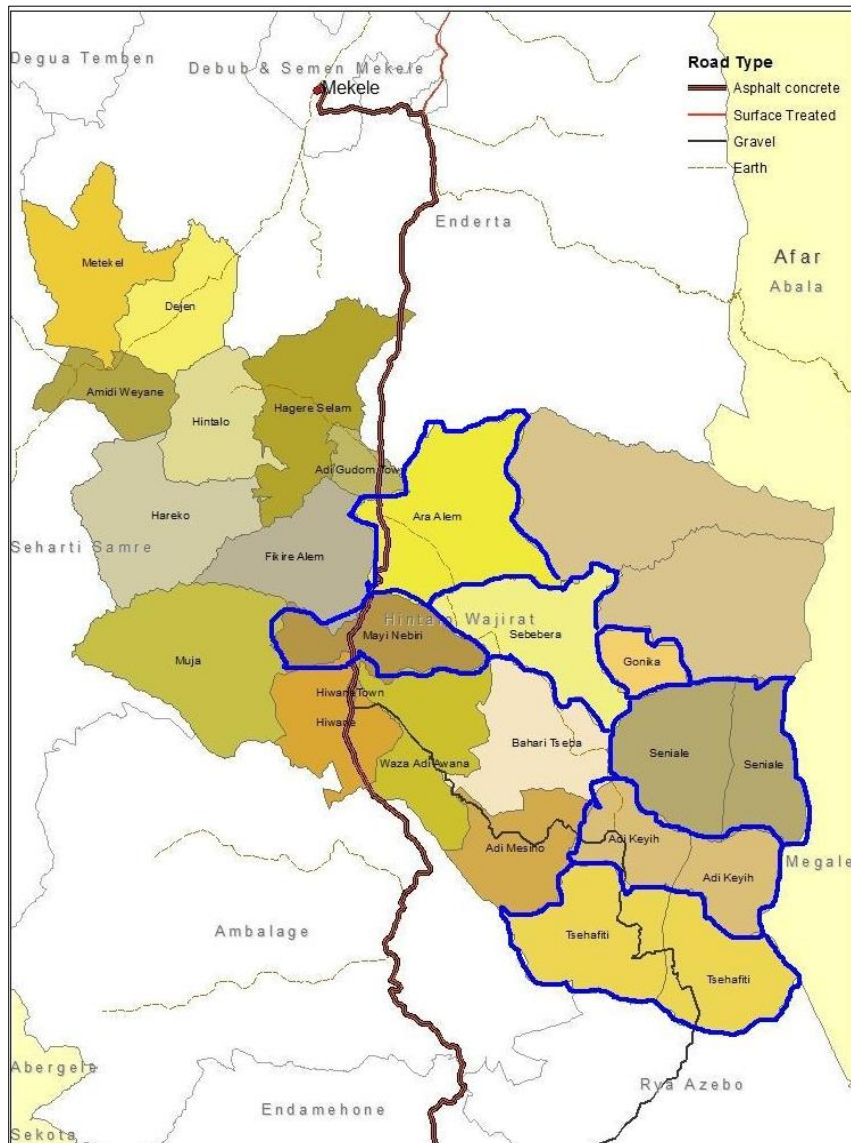
**Table 25 Impact of SCTPP on household food insecurity**

Overall			Hintalo-Wajirat		Abi Adi		Bahr Tseba		FHH		MHH	
Impact	Baseline		Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline
<b>Number</b>												
months in last 12 months with problems satisfying food needs	<b>-0.242*</b>	2.396	<b>-0.389**</b>	2.658	0.018	1.725	<b>-0.824**</b>	3.263	-0.027	2.505	<b>-0.485**</b>	2.203
	(0.147)		(0.190)		(0.206)		(0.407)		(0.183)		(0.242)	
months in last 12 months HH ran out of home-grown food	-0.156	1.351	-0.114	1.219	-0.261	1.239	0.361	2.191	-0.096	1.439	-0.105	1.194
	(0.136)		(0.219)		(0.188)		(0.646)		(0.194)		(0.285)	
times a day children ate in HH	<b>0.133*</b>	2.963	0.073	2.874	0.125	3.056	<b>0.611*</b>	3.023	<b>0.148*</b>	2.944	0.30	2.990
	(0.075)		(0.102)		(0.142)		(0.344)		(0.086)		(0.156)	
times a day adults ate in HH	<b>0.11***</b>	2.363	<b>0.131**</b>	2.279	0.061	2.541	0.107	2.191	<b>0.077*</b>	2.367	<b>0.151**</b>	2.357
	(0.034)		(0.056)		(0.049)		(0.116)		(0.042)		(0.065)	
<b>Proportion</b>												
suffered food shortage, last rainy season	<b>-0.08***</b>	0.590	<b>-0.081**</b>	0.655	-0.033	0.438	-0.128	0.767	-0.013	0.610	<b>-0.173***</b>	0.555
	(0.024)		(0.032)		(0.040)		(0.079)		(0.032)		(0.042)	
consumed less preferred foods, last week	-0.005	0.382	-0.006	0.352	0.019	0.405	-0.080	0.431	0.014	0.407	-0.007	0.337
	(0.019)		(0.030)		(0.044)		(0.081)		(0.032)		(0.048)	
consumed wild foods, last week	0.009	0.064	0.009	0.072	-0.005	0.040	0.009	0.097	-0.001	0.060	0.018	0.070
	(0.011)		(0.016)		(0.012)		(0.040)		(0.013)		(0.021)	
consumed seed stock, last week	<b>-0.042**</b>	0.121	<b>-0.067*</b>	0.157	<b>-0.024*</b>	0.045	0.073	0.161	-0.017	0.113	-0.032	0.134
	(0.016)		(0.035)		(0.014)		(0.051)		(0.019)		(0.034)	
N	2907		1478		1057		372		1860		1047	

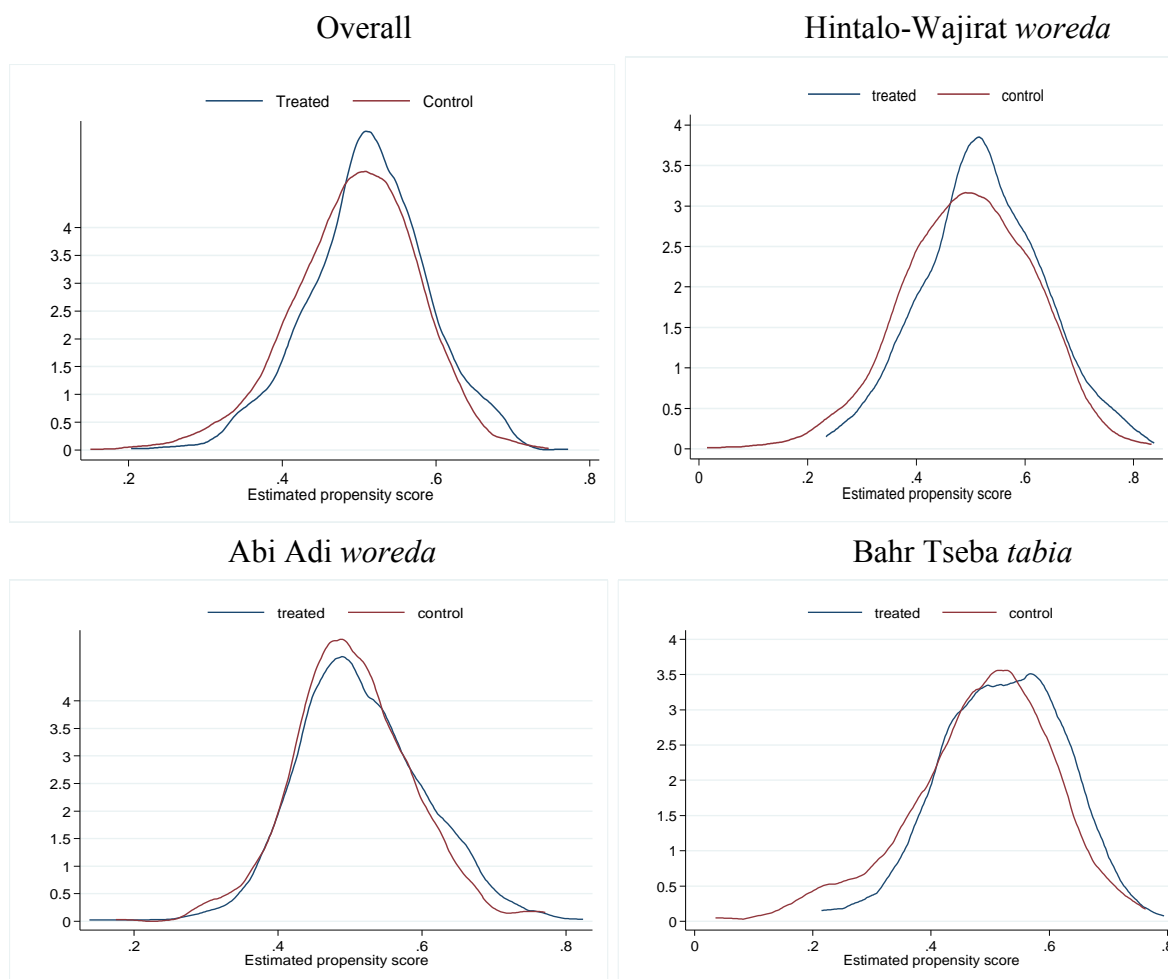
Note: Statistical significance at the 99% (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. Robust standard errors presented in parentheses. Bold indicates that they are significant at  $P < .10$ .

## Appendix 2: Figures

**Figure 1**      **Location of SCTPP *tabias* within Hintalo-Wajirat**



**Figure 2** Distribution of propensity scores



## **Food and Agriculture Organization of the United Nations (FAO)**

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The From Protection to Production (PtoP) programme, jointly implemented by FAO and UNICEF, is contributing to the generation of solid evidence on the impact of cash transfer programmes in Sub-Saharan Africa. PtoP seeks to understand the potential effects of such programmes on food security, nutrition, as well as their contribution to rural livelihoods and economic growth at household and community levels in Ethiopia, Ghana, Kenya, Malawi, Lesotho, Zambia and Zimbabwe.