The Social Cash Transfer Pilot Programme in the Tigray Region (SCTPP) transfers cash to households with vulnerable children, elderly members, and persons with disabilities. It was introduced in 2011 in two woredas (Hintalo Wajirat and Abi Adi) by the regional government of Tigray with the support of the United Nations Children’s Fund (UNICEF), Irish Aid and HelpAge International. Studies have analysed some of the SCTPP’s impacts on beneficiaries (households “treated” with SCTPP transfers) as well as on households that were not eligible to participate in the program (Asfaw et al. 2015; Oxford Policy Management 2014; Berhane et al. 2015; Kagin et al. 2012). These studies reveal that the SCTPP had positive impacts on a wide range of outcomes in beneficiary households. For example, it raised household income by 10 per cent and food consumption expenditure by 17 per cent, and it positively affected livestock holdings and school attendance while reducing child labor for girls. A local economy-wide impact evaluation, utilizing baseline survey data, provided evidence that SCTPP transfers also created positive income spillovers for non-beneficiaries within the local economy (Kagin et al., 2014; Winters et al., 2016).

This study builds upon past evaluations to estimate the total economic benefits of the SCTPP and compare these to program costs. The economic benefits include direct impacts on income in beneficiary households, as well as indirect impacts through the creation of social capital and income spillovers from beneficiaries to non-beneficiaries within local economies. Spillovers result as beneficiaries spend their SCTPP transfers, increasing the local demand for goods and services supplied by other households, including households that are ineligible for the SCTPP.

The SCTPP has an immediate impact on income in beneficiary households; beneficiaries’ income increases initially by the amount of the transfer. A key goal of the Tigray region SCTPP is to increase social capital in the beneficiary households. Our econometric analysis shows that the SCTPP significantly increased the social capital of beneficiary households. Social capital, in turn, has a significant and positive impact on beneficiaries’...
income in addition to the amount of cash received.
Households’ spending patterns also change after the
SCTPP is implemented.

Our local-economy simulations reveal that the direct-
plus-social-capital impact of the SCTPP on poor
households’ income generates significant positive
income spillovers in both Hintalo Wajirat and Abi Adi,
including income gains for non-beneficiary households.
An additional birr transferred to poor households, or an
additional birr of income created by new social capital,
increases total real income by 1.91 birr in the relatively
remote woreda of Hintalo Wajirat and by 1.27 birr in the
more urban woreda of Abi Adi. The multiplier is lower
in Abi Adi mainly because this woreda is integrated
with outside markets, which transmit impacts out of
the local economy and sends them to other parts of
Ethiopia.

In Hintalo Wajirat, we find that the discounted future
stream of benefits from the SCTPP significantly exceed
the program’s costs. Over 10 years the total discounted
benefits in Hintalo Wajirat, including social capital
impacts and local income spillovers, are 71.5 to 91.5
million birr, depending on the discount rate used,
while the total costs are 37.1 to 47.5 million birr. There
is nearly a 2 to 1 return on SCTPP investments over 10
years in Hintalo Wajirat. The economic return to SCTPP
transfers is lower in Abi Adi, but it is still positive. In
Abi Adi, the total discounted benefits are 13.8 to 17.7
million, and the economic return per birr invested in
the SCTPP is 1.3 to 1. Thus, the SCTPP easily passes the
economic cost-benefit test at both project sites. Both
cost-benefit ratios are credible when compared to
the limited existing evidence on rates of return from
transfer programs (White et al., 2013).

The methods we used to test for impacts of the SCTPP
on social capital and income in the treated households,
simulate local income multipliers, and carry out our
SCTPP cost-benefit analysis are detailed in the Final
Report. We briefly summarize each of these methods
below.

Social Capital

To identify impacts of the SCTPP on social capital
we followed the propensity score matching (PSM)
technique used by the original FAO evaluation (Asfaw
et al., 2015). PSM seeks to find pairs of beneficiary and
non-beneficiary households that are similar except

2 These multipliers differ slightly from the real income multipliers presented in Kagin et al. (2014), because they account for changes in households’ expenditure patterns before and after the SCTPP. See “Methods,” below.

3 The social capital effects were calculated as the discounted stream of beneficiary households’ income gains from new social capital (600,000 birr in Abi Adi, 2.07 million birr in Hintalo Wajirat), times the income multiplier at each locale (1.27 at Abi Adi, 1.91 at Hintalo Wajirat).
for the receipt of the SCTPP "treatment." Outcomes for the beneficiaries (the "treatment group") can then be compared to outcomes for the matched non-beneficiaries (the synthetic "control group") to determine whether the SCTPP had an impact. In order for this process to succeed, viable matches for the beneficiary households must be found. This means that, when we compare beneficiaries with non-beneficiaries on key baseline variables, we find little or no difference between the two. This is called achieving balance. Our analysis confirms that the FAO’s PSM method usually achieves balance between treatment and control groups with respect to baseline variables that are not likely to be immediately affected by the SCTPP.

**We define three household groups using the PSM strategy:**

a. **Treated households:** Those who received the SCTPP treatment and were identified by the PSM strategy as matches.

b. **Control households:** Those identified by the PSM strategy as matches and weighted accordingly. They are similar to the treated households except for the treatment.

c. **Ineligible households:** Those that do not meet the eligibility criteria for the SCTPP program but are from the same areas as the treated and control households. This is the random sample of 432 ineligible households.

The PSM method creates the potential to identify impacts of the SCTPP treatment by comparing changes in an outcome of interest (say, social capital) between the follow-on and base years for (1) Group “a” households, which received the treatment, and (2) Group “b” matches, which are otherwise similar (based on propensity scores) but did not get the treatment.

We created a social capital index with the following dimensions: Under the broad category of social networks we have (1) Group capital/Mutual support networks, (2) Economic participation, and (3) Financial participation. Under the category of social norms are (4) Trust/Social Cohesion and (5) Educational Norms and (6) Empowering women. Each of the six dimensions is composed of two indicators constructed from variables present in both the baseline and end-line. All of the 12 indicators have an equal weight, and households end up with a score of 0 to 12 depending on their composite social capital index. The social capital index displays balance between treatment and control groups in the Bahr Tseba sample, and a higher value for ineligible households in both samples.

Similar to income, the eligible (treatment and control) households have low levels of social capital at baseline. Most of the social capital indicators are lower for eligible than for ineligible households. The social capital index is not easy to interpret because it depends on several different variables; however, we can compare social capital across household groups by comparing the magnitudes of this index. The index is 4.7 to 4.9 in the eligible households, and just under 6.0 in the ineligible group. Over time the social capital index increases for all groups and by over a point for treatment and control households.
Impacts of Social Capital on Incomes

We used the baseline data to estimate the impact of social capital on household income while controlling for other key income determinants, following household versions of the Mincer earnings model. The model we estimated is of the following form:

\[ y_{it} = \alpha + \Lambda Z_{it} + \gamma X_{it} + u_{it} \]

The variables in this equation are defined as follows:

- \( y_{it} \): Household \( i \)'s income at time \( t \) where \( t \) is either the baseline (2012) or endline (2014)
- \( Z_{it} \): Vector of household \( i \)'s social, human, and physical capital endowments
- \( X_{it} \): Vector of household characteristics for which we control
- \( u_{it} \): is the idiosyncratic error term

The capital variables \( (Z_{it}) \) include three types of capital: social, human, and physical. Social capital is given by our social capital index described above. The human capital variable is the number of adults in the household with secondary (or higher) education. To measure physical capital, we combine the value of productive assets (farm and livestock tools) with the value of consumer durables (cell phones, bicycle, stoves) as well as including area of operated land (in hectares) and livestock owned (in tropical livestock units, or TLUs). This variable is measured in 1000s of birr. The other household controls \( (X_{it}) \) include landholdings and the age of the household head. Ordinary least-squares estimates reveal positive and significant impacts of all three forms of capital on household income at the two study sites.

Evaluating the Local Economic Spillovers of the SCTPP

Kagin, et al. (2014) simulated the income spillovers from the SCTPP using a local economy-wide impact evaluation (LEWIE) method. We updated the SCTPP-LEWIE model, using data from both the baseline survey (used to construct the original model) as well as the follow-on survey, which was not available at the time of the original analysis. A comparison of baseline and follow-on survey data allows us to explore whether and to what extent the SCTPP may have caused changes in households' expenditures and other economic behavior, which can shape income spillovers in local economies. We used the updated model to simulate the local-economy impacts of cash transfers, including their indirect impacts through social capital accumulation. Cash transfers can create income spillovers directly, as poor households spend their cash. We have seen that the SCTPP also increased households' social capital, which in turn stimulates income in beneficiary households. This social capital effect increases the multiplier effect of the SCTPP on local incomes—including spillovers to non-beneficiaries.

Local-economy Cost-benefit Analysis of the SCTPP

The revised LEWIE spillover analysis and social capital impacts on beneficiaries' income are inputs into our long-term cost-benefit analysis (CBA) of the SCTPP, following the local economy-wide cost-benefit approach proposed by Taylor and Filipski (2014). Our long-term CBA of the SCTPP is different from most cost-benefit analyses in two ways. First, it includes the indirect benefits of the SCTPP’s social capital impacts. Second, it accounts for not only the benefits of SCTPP transfers to the treated households, but also the benefits and costs to other (control and ineligible) households via local-economy spillovers.
CBA entails summing up the future stream of discounted benefits from a project and comparing it with project costs. The well-known formula for calculating the discounted net benefits of a project, relative to the baseline without the project, is:

\[
NPV = \sum_{t=0}^{T} \frac{Y_t^p - Y_t^{np} - I_t}{(1+r)^t}
\]

Where \(Y_t^p\) (\(Y_t^{np}\)) denote benefits with (without) the project, \(r\) is the discount rate, and \(I\) is the project cost in year \(t\).

The potential benefits of SCTs are complex, encompassing income gains to beneficiary households, income spillovers to non-beneficiary households, as well as other impacts to which it is difficult to assign economic values (e.g., optimism about the future and happiness). The income effects that we are able to identify in this analysis is a subset of all potential benefits, but it is the component that lends itself best to cost-benefit analysis. Actual benefits almost certainly are greater than we can measure with the available data.

SCTs have an immediate impact on income in beneficiary households; beneficiaries’ income increases initially by the amount of the transfer. Our LEWIE analysis reveals that transfers also create significant income spillovers to non-beneficiaries. The SCTPP increases beneficiaries’ social capital, which in turn is associated with higher income. The indirect effect of the SCTPP via social capital adds to the direct impacts of cash transfers on beneficiaries’ income, while creating larger local income spillovers.

Our SCTPP CBA consists of calculating the benefits (total benefits to beneficiaries, including the social capital effect, multiplied by the local income multiplier) each year over a time horizon of 10 years; discounting these benefits using low (5%) and high (12%) discount rates; then adding up the discounted future stream of benefits and comparing it to the discounted stream of project costs.\(^4\) The discounted stream of benefits is the present value (PV) of local-economy benefits from the SCTPP. The discounted stream of program costs over this period (C) is the total amount transferred in the base year continuing on over the 10-year period, plus administrative costs estimated at 5% of the transfers, appropriately discounted. We subtract C from PV to obtain the net present value (\(NPV\)) of the SCTPP. The net benefit ratio (PV / C) gives the economic return per birr invested in the SCTPP.

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\(^4\) CBA of international development projects often assumes a discount rate of 12%. This is considerably higher than the National Bank of Ethiopia’s minimum saving and time deposit interest rates, which currently are set at 5% (http://www.nbe.gov.et/about-us/faq.html). We use both to provide a range of estimates with different discount rates.
Works Cited in this Policy Brief


