The Livelihood Transfer Component of the Productive Safety Net Programme IV - ImpactEvaluation Report

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March 2022

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ACRONYMS

BCC	Behavioral Change Communication
CCC	Community Care Coalition
CFSTF	Community Food Security Task Force
DA	Development Agent
DCT	Donor Coordination Team
DS	Direct Support
FSTF	Food Security Task Force
HEW	health extension worker
HH	household head
KAC	Kebele Appeals Committee
KFSTF	Kebele Food Security Task Force
LICU	Livelihoods Implementation Coordination Unit
LT	Livelihoods Transfer
MFI	microfinance institution
PASS	Payroll and Attendance Sheet System
PDS	permanent direct support
PIM	Project Implementation Manual
PSNP	Productive Safety Net Programme
PW	Public Works
RFSTF	Regional Food Security Task Force
RUSACCO	rural savings and credit cooperative
SNNP	Southern Nations, Nationalities, and People (region)
TLU	Tropical Livestock Unit
VSLA	village savings and lending association
WFSTF	Woreda Food Security Task Force
WOFED	Woreda Office of Finance and Economic Development
WOLSA	Woreda Office of Labor and Social Affairs

EXECUTIVE SUMMARY

This report documents the impact of the Livelihoods Transfer (LT) program of the Productive Safety Nets Programme IV (PSNP4) during 2018-2021. It presents the end-line assessments of program impact and addresses the evaluation questions stated in the terms of reference for this study. This Executive Summary provides a synopsis of the answers to these questions as reported in the chapters below.

The LT program is designed as such a program with the following features:

- focus on the ultra-poor – target the bottom 10 percent of PSNP PWs participants[1] from each beneficiary community (Kebele) by wealth ranking.
- grant – provide a grant equivalent to US$200 for the selected beneficiaries to finance investment in income-generating activities.
- transfer – consumption support in the form of transfers through PWs projects.
- training and technical support – offer training for financial literacy and business plan development, support in livelihood pathway selection and business plan development, and follow-up during plan implementation.

For the impact evaluation study, two interventions were added to this basic design – screening of Digital Green-type videos to provide additional training on selected livelihood pathways and aspiration videos to address some of the 'internal' constraints likely faced by the rural poor.

The LT grant, training in financial literacy and business plan development, and DA-supplied technical support, combined with PWs transfers, encourage and enable very poor risk-averse households to make livelihood-enhancing investments in income-generating activities. Enhancing access to credit from formal sources, including microfinance institutions and RUSACCOs, is part of the portfolio of support. Productive asset accumulation and livelihoods diversification are thus the first step. Productivity and incomes grow as a consequence. Ultimately, welfare improvements follow in the form of higher food security and lower poverty. Accordingly, impacts of the program are assessed by tracking indicators of assets accumulation, improved agricultural production, enhanced aspirations, and higher food security (falling food gap, better diet diversity, and rising consumption expenditure), and lower poverty. In short, the theory of change underlying the LT program is that its portfolio of interventions jointly enables beneficiary households to break out of the poverty trap.

In 2017 the government of Ethiopia (GoE) and development partners agreed to test different modalities including intensity of capacity building support to clients, a robust monitoring element and rigorously assess impact of the livelihood transfers program and thereby justify viability of the investment three years down the line. As part of this effort an extended pilot was developed and implemented in 12 selected Woredas in Tigray, Amhara, Oromiya and SNNP regions. The evaluation

[1] PSNP4 Permanent Direct Support beneficiaries can be considered for the LT program on a case-by-case basis.

study adopted a cluster randomized control trial with one control arm and four treatment arms capturing the nature and objectives of the livelihoods transfer program and the corresponding research questions briefly described earlier. These arms were selected after considerable discussion with the DCT, the WB, and the MoA. The treatment arms are:

Control group (C) – are households who are eligible for the livelihoods transfer but are assigned to receive only pre-LT support in the form of group formation and financial literacy training and savings promotion.

Treatment group 1 (T1) - are households who are eligible for the livelihoods transfer and are assigned to benefit from three types of assistance. First, they are offered the support given to the Control group (group formation and financial literacy training and savings promotion). Second, they receive the livelihoods transfer of US$200. Third, they obtain information on livelihood options that help them select a livelihood pathway and a specific livelihood in the selected pathway. DAs are expected to outline the nature of business plans and the steps involved in developing such plans to these households as well as facilitate the process through which the households receive the livelihood grant. Nevertheless, *DAs do not involve in the actual development of business plans for/by these households or provide follow-up support.*

Treatment group 2 (T2) - are households who are eligible for the livelihoods transfer and are assigned to receive the full (or 'standard') livelihoods transfer package. The package includes:

i. support in the form of group formation, financial literacy training and participation in savings;

ii. DA consultation for livelihood selection, which involves the provision of detailed information on livelihood options, help in selecting a specific livelihood option, and assistance in developing a livelihood checklist;

iii. training that fits the specific livelihood option the households have chosen covering technical and business/marketing skills;

iv. assistance in business plan preparation; and

v. follow-up support which includes facilitation of access to inputs and linkages to markets as needed, and coaching and mentoring of clients. This support should continue on an intensive basis through to the end of the second year.

Treatment group 3i (T3i) - are households who are eligible for the livelihoods transfer and are assigned to receive all the support given to T2 households ((i)-(v) above). In addition, all these households participate in a screening session of specifically prepared Digital Green-type videos relevant to livelihood option they have chosen and led by the DA.

Treatment group 3ii (T3ii) – are households who are chosen to watch role model (aspiration) videos in addition to all the benefits offered to T3i households. Exposure to this videos is intended as

motivational complement to the LT interventions. This is the arm that uses the videos prepared for the aspiration randomized field experiment described in Bernard et al. (2017).

I. Has the Livelihoods Transfer program been implemented as planned? What were the implementation challenges, and what was delivered effectively?

Overall, the results suggest that the LT program was not fully implemented as designed and a number of implementational challenges were responsible for that outturn.

i. There is a clear belief and understanding that poor members of the community should be the prime beneficiary of the LT program.

ii. *Size:* The initial plan to cover all the households deemed eligible as per the conditions of the LT program did not occur. The impact survey selected all its household sample from among the bottom 10 percent of the wealth distribution according to a wealth ranking as prescribed by the program. Nevertheless, only a fraction of those households assigned to benefit from different LT packages actually received them. For example, households reporting receipt of the LT grant account for 26 percent (end-line survey) and 63 percent (monitoring survey) of the respective samples. While there is non-compliance with treatment assignment, it is mostly from lower delivery in treatment groups rather than unplanned delivery in the control group (0 percent in the monitoring survey and 5 percent in the end-line survey). Households in treatment groups were most likely to receive transfers. They also received training and mentoring, but at a lower level of incidence.

iii. *DA support*: The support DAs supplied diverged from what was envisaged in the LT design. The problem has a number of facets.

- Many DAs did not have the skills required to assist program beneficiaries as planned. For instance, only about half of DAs interviewed feel that they have enough experience and/or expertise to provide households guidance on off-farm livelihoods.

- The time that DAs were able to dedicate to this support was also limited. According to the monitoring survey, 63 percent of households report receiving the LT grant, while 43 percent acknowledge getting LT-related training. In fact, only a third of those who received such training did so at least once a month. The training received by the rest was much less frequent, ranging from once every three months to only once (the majority). Overstretched DAs have been a major cause of limited time allocated to LT support.

- A related key constraint officials mentioned is lack of a budget earmarked for the administration of the LT program. As a result, it was not possible to hire/assign

staff that can dedicate the bulk of their working hours to supporting/administering the program.

- One apparent manifestation of inadequate DA support is limited choice in business plans. The similarity of decisions suggest that they were mostly based on boilerplate options rather than deliberate discussions on different business options, and almost all plans focused on livestock.

iv. *Livelihoods component*: The LT program is designed to work with the broader Livelihoods Component of PSNP4. It can be surmised that if the Livelihoods Componenthas not been implemented effectively, that would create problems for the LT.

- The preparatory steps such as livelihoods group formation and initial financial training and livelihoods options discussions are part of the Livelihoods component. So is the facilitation of access to formal credit. The LT implementation would be challenging if these activities are not completed as designed. In this regard, the main PSNP4 process evaluation found limited uptake/implementation of the Livelihoods Component (Berhane et al. (2021)).

- Manifold challenges were reported as responsible including: lack of experience on the part of beneficiaries, insufficient training of DAs, inadequate support given to business plan development, and lack of technical support, follow-up, and coaching, particularly for off-farm and employment pathways. High turnover of field-level staff, particularly DAs and budgetary constraints compound the problem. So did negative external shocks such as COVID-19.

v. *External circumstances:* Negative shocks complicated the implementation of the program. These include drought, heightened insecurity, locust invasion, inflation, and the COVID-19 pandemic.

II. What is the impact of the LT program on: intermediate outcomes (asset accumulation, improvements in agricultural input use, and livelihoods diversification), final outcomes (food security and poverty), and aspirations (simultaneously an intermediate and final outcome).

1. Impact – Intermediate outcomes

Expanding productive asset ownership through investments by beneficiary households is the key intermediate objective of the LT program. Such asset accumulation is expected to trigger greater livelihood diversification, increased productivity, and higher incomes. These positive changes will subsequently lead to improvements in well-being. The question in this section: has the LT program led to asset accumulation, improvements in agricultural input use, and livelihoods diversification by beneficiary households as planned?

i. *Asset accumulation*: The dominant economic activity in the program areas is agriculture. Accordingly, two asset types are considered – livestock holdings and stock of productive assets. Livestock holdings are measured in terms of Tropical Livestock Units (TLU) and market value – both are aggregated over the stock of livestock owned by the household. The value of livestock holdings is estimated by using baseline (2018) woreda-level livestock prices. Given their diversity and the challenge of obtaining appropriate market prices, non-livestock productive assets (such as farm implements) are aggregated into an index using principal component analysis (PCA).

- We find that the LT program increased livestock assets owned by beneficiary households. Their stock rose in physical size as measured by TLU as well as in value (in constant prices). These increases are both large relative to the average holdings of control households and statistically significant (at 5 percent or lower). Each of the interventions generated a statistically significant effect as well.
- Interestingly, the results suggest that the effect grows in magnitude as the intensity of the intervention rises. The most intensive intervention is Treatment arm 3ii (T3ii) which combines the LT grant with DA monitoring/mentoring, screening of a Digital Green video on the livelihood pathway chosen, and exposure to role models via an aspirational video. This bundle of interventions led to the highest observed effect on the average size of livestock assets, both in TLU and value terms. The less intensive treatments appear to produce successively lower impact.
- The impact of the LT interventions on livestock holdings raises the question whether the effects extend to modifying the composition of these holdings. It is in particular interesting to check whether the program encouraged households to favour one type of livestock over others. In this regard, there is some evidence indicating to a declining trend in the share of poultry in the stock of livestock kept by sample households. Nevertheless, this trend cannot be attributed to the LT program. No statistically significant impact was detected on the share of different types of livestock owned by these households.

ii. *Agricultural Input Use:* Raising productivity by encouraging household investment on expanding modern input use and raise productivity is one of the important objectives of the LT program. Has the program achieved this objective?

Four indicators of modern input use are considered in assessing the extent to which the program achieved this objective, namely improved seeds, chemical fertilizers, irrigation, and pesticides. According to the results reported, the LT interventions have yet to lead to statistically significantly increasing the likelihood modern inputs application by beneficiaries. The result holds for all treatments jointly as well as separately. A negative

result linking Treatment arm 2 (T2) and chemical fertilizer adoption is the only exception. That exception itself disappears once adjustments to account for multiple hypothesis testing are made.

iii. *Off-farm employment:* Another important aim of the LT program is to broaden the income-generating opportunities of beneficiary households.

- Expanding employment opportunities is one avenue to achieve this objective. The program did not produce a significant impact along these lines up to the end of the current evaluation period. This outcome with respect to alternative employment is not surprising in that the employment pathway – encouraging and supporting beneficiaries to seek off-farm employment – was not an explicit focus of the LT program during the years that the impact evaluation covers.
- Similarly, the likelihood of household-level engagement in income-generating activities other than farming and wage employment (such as trading, transport, handicrafts, and food processing) have not been impacted by the LT interventions.

2. Impact – Final outcomes

The ultimate aim of the LT program is to improve the welfare of beneficiary households by encouraging and supporting asset accumulation, livelihood diversification, and income growth. Two main well-being outcomes were targeted through the LT program – raising food security lowering the incidence of poverty.

i. *Food security:* Three indicators of food security are considered – food gap, dietary diversity, and real per capita food consumption expenditures. No significant impact can be detected on household food gap and food expenditure per adult equivalent. Marginally statistically significant reduction in the likelihood of households suffering food shortages in the rainy season was found. This is potentially an interesting impact since the months of the major rains are deemed the hungry or lean season.

ii. *Poverty:* Two groups of poverty indicators are considered. The two that make up the first group are based on consumption expenditure – a household is deemed poor because its total consumption expenditure is below the national poverty line both expressed in per adult equivalent terms. The second group consists of the remaining twoobtained from the wealth self-ranking of households themselves. It is not possible to reject the hypotheses that, so far, the LT program interventions have not generated an impact on the poverty status of treatment households as measured by these indicators.The finding holds for the interventions individually as well as jointly. The results do not change with adjustment for multiple hypotheses testing.

3. Aspirations

Aspirations of individuals are both a measure of well-being as well as an ingredient in the decision-making process. There is some evidence that low aspirations may constrain the economic choices that the poor make. There is also some evidence suggesting the possibility of modifying these aspirations and encourage stronger forward-looking behaviour on the part of rural households (Bernard et al. (2017)). With this premise, one of the objectives of the IE study is to check if combining aspirational interventions with opportunity-enhancing ones (the LT grant and training) will lead to a stronger combined impact on targeted outcome indicators. An intermediary or simultaneous step in the process is the revision of aspirations by treatment households. Five measures of aspirations are covered - overall aspirations index, overall expectations index, income aspirations (birr), asset aspirations (birr), social status aspirations, and child schooling aspirations. On the whole, the results imply that, up to the time of the study, the interventions have not produced discernible impact on the aspirations and expectations of beneficiary households. First, the effect of the interventions on are jointly non-significant Second, in the first instance, all the statistically significant impact estimates are counter to what was anticipated – negative rather than positive. Third, non-significant or significant but negative effects are also found with respect to individual domains of aspirations. The negative effects may indicate some form of disappoint or frustration triggered by exposure to the role model videos. Nevertheless, this line of reasoning has to be tempered by the finding that all the statistically significant effects disappear once corrections formultiple testing are made.

III. Observations

i. The findings reported above imply that the LT interventions have achieved one of their key intermediate objectives – encouraging and supporting accumulation of assets in the livelihood pathway selected by beneficiaries. The size of livestock holdings, both in TLU as well as market value terms, grew due to the program. All other impacts are statistically not significant once adjustments for multiple hypothesis testing are made. This may not be surprising in that almost all LT study woredas chose livestock-related activities as the livelihood pathway to invest their grant in. At least that is what can be surmised from the dialogue on and subsequent choices of topics for the Digital Green videos. In this regard, the following provide descriptive evidence that suggest the grant was converted to livestock holdings:

   - The fraction of sample households reporting ownership of at least one type of livestock rose from 62 percent at baseline to 76 percent at end-line.

- Livestock ownership grew at a much faster rate for treatment households relative to control households – the ratio of growth ranging between 2.7-fold (for T1) and 3.7-fold (for T3ii);
- Defining investment in livestock as the end-line value of livestock holdings *less* the baseline value (both in 2018 prices), it is possible to compare it with the LT grant. The mean and median of this investment for treated households was Birr4415 and Birr4439, respectively. The investment was thus on average about the same as the mean grant value of ***Birr4500***. For control households, this investment was only Birr1332 (mean) and Birr1376 (median).

These suggest that people receiving transfers accumulated assets in the form of livestock holdings, but the realization of income streams from this accumulation has not yet happened. Little impact flowed onto other wellbeing indicators (food security and poverty), as a consequence.

ii. Why the accumulation has not yet produced an income stream for investing households. Several hypotheses may be forwarded for further exploration:

- It may be rather early for these income streams to appear. For example, the animals bought are still too young to produce milk or are not ready to be sold with profit. To explore this a bit further, we considered the impact on real net income from the sales of livestock products. Only 415 households report such sales. No impact from the LT interventions on this outcome can be detected. These two findings, which are likely to be related, are consistent with the argument that it was still early for the livestock assets to generate incomes.
- Another possible explanation relates to the rising incidence of economic and non-economic shocks including COVID-19, inflation and higher price volatility, conflict, locust invasion, and political change. Actual and perceived risk and uncertainty are likely to increase as a consequence. One response available for households under these circumstances is to hold onto their assets and use them in less risky way. Indeed, they may keep them as a buffer against expected larger negative shocks. Brune et al. (2022) forward the same argument as one explanation for the paper's finding in Yemen that households retain their assets even when they face highly distressing situations to have some means of coping with even worse conditions.
- The manner in which the program was implemented may have restricted the realization of incomes from the assets. One often-sighted complaint is that the grant of US$200 is not enough to make the investments required to significantly improve the income generating capacity of households. Another is the concentration of all grant application and use on livestock. This may complicate

the realization of income through excess supply of livestock products in the local market – a scenario anticipated in the LT manuals with emphasis on market assessment at the business plan development stage to overcome the challenge. The negative demand shocks outlined above make this outturn more likely.

IV. Some Recommendations

The findings of the impact evaluation suggest that, given the various challenges to the implementation of the LT program, the outcomes recorded are perhaps what can be expected. Better outcomes would require improvements in several areas. Some recommendations that can be part of the way forward are stated below, not necessarily in an order of importance.

i. Earmark a budget for the administration of the LT program. Perhaps assigning one of the DAs fulltime to the program will pay dividends.

ii. Provide better training and incentives to DAs. Equally important is lowering their workload and making it more fit to their core purpose. These efforts need to be aligned with the skills and magnitude of support required for the LT program.

iii. Initiate a matching loan scheme. A common complaint is that the LT grant is small relative to most investment needs. However, adjusting the size of the LT grant upward is likely to be problematic given tight budgets. One avenue to consider is to establish a loan matching scheme with MFIs or RUSACCOs. The scheme will involve the financial institutions to provide a loan to the selected beneficiary that matches the LT grant. For such a scheme to work stricter processes of training, business plan development, and follow-up are indispensable.

iv. Integrate the LT program with Woreda/Region development plans and interventions more effectively.

All these are easier said than done. Further exploration and refinements are the next step.

CHAPTER 1: INTRODUCTION[2]

1.1. Background[3]

The Productive Safety Net Program (PSNP) is a social assistance program of the Government of Ethiopia, launched in 2005. It aims at increasing access to safety net; improve disaster risk management systems; and provide complimentary livelihoods services and nutrition support for food insecure households in rural Ethiopia. It currently benefits about 8 million people in the rural areas of Afar, Amhara, Dire Dawa, Harari, Oromia, SNNP, Somali and Tigray regions. It provides conditional food or cash transfers in exchange for public works across food insecure households with an able bodies. Food insecure households who cannot work receive unconditional transfers.

PSNP IV has also a livelihoods support component which is designed to facilitate livelihoods opportunities for clients' through three pathways: on-farm (crop and livestock), off-farm income generation (self-employment) and wage employment. The livelihoods program has two sub-components:

Subcomponent 1 – In appreciation that poor and vulnerable households are often rationally credit averse, the program seeks to enhance the potential of very vulnerable households to benefit from livelihoods promotion activities and minimize their exposure to risk. This is done througha combination of coaching/mentoring, promotion and gradual build-up of savings, combined with the provision of a lump sum livelihood transfers (USD 200) to these households, enabling them to meet the 'lumpy' costs of investments in productive assets, inputs or job search.

Subcomponent 2 – Individuals who have enterprise experience and a better coping strategy receive financial literacy training, business development skills and savings promotion. These groups access financial services through the mainstream system – MFIs and RuSACCOs – with the program providing a capacity development support and facilitate credit access to clients.

The two subcomponents have different histories in the life of the program. Subcomponent 2 is the longest running and widely implemented in all regions except Somali and Afar since 2010. Success rate varies from region to region. The common challenges of this sub-component were: target set in the log-frame were very ambitious therefore performance rates were often less satisfactory; some regions were unable to fully avail loanable funds for the program as a result of which some of the business plans remain unfunded; the capacity to provide quality mentoring and coaching to households was a challenge due to skill and time limitation of the DAs; efforts made to measure the

[2] Unless otherwise specified the Gregorian Calendar is used in this Report.

[3] The bulk of this section is extracted from the draft terms of reference for the Livelihood Transfer Evaluation Framework Study.

effectiveness and efficiency of this component (through an IFPRI impact evaluation and regular monitoring) found it less satisfactory.

Since July 2015 the livelihoods transfer component was introduced and has been piloted in four regions (Amhara, Tigray, Oromia, SNPP). A total of 8 Woredas (two per region) implemented the pilot covering over 8,300 PSNP clients. Initially the government aimed to provide livelihoods transfer to the bottom 30 percent of the PSNP 4 public works households. However, the 2015-16 Elniño/La niña drought crisis response led to a financing gap. To respond to the financing gap that theprogram encountered during the mid-term review (MTR) both the government and development partners agreed and reduced coverage to the bottom 10 percent. Though there was no rigorous assessment carried out to generate concrete evidence, different field monitoring missions' findingsand a survey-based study indicated that the pilot resulted in positive changes in terms of asset creation (see for example Tadesse and Zewdie (2019)). Considering this field monitoring finding the government decided to expand the livelihoods transfer program to twenty-four Woredas[4] and cover about 28,612[5,6] clients in EFY 2010 which was expected to bring the total number of the livelihoodstransfer Woredas to 32, or about 10% of the total PSNP Woredas and 2% of the PSNP households.

1.2. Theory of change – an outline

At the heart of the livelihood component of PSNP IV is the premise that the poor face multiple barriers that prevent them from breaking out of poverty. This is particularly true for the ultra-poor (or the poorest of the poor). In other words, it is recognized that "ultra-poor households often depend on insecure livelihoods and face a variety of impediments to sustainably transition out of poverty" (J-PAL (2016)). Research in many countries show that these include thin goods and factors markets, absent credit/insurance markets, limited access to education and health systems, difficult natural environment, constraining social norms, and inappropriate government policies. They also face particularly strong psychological or 'internal' constraints such as restricted aspirations which reflect their experiences and constrained circumstances. The consequence is a self-sustaining state of extreme poverty that is sometimes referred to as a poverty trap or resilience trap (see, among others, Barrett, Carter, and Chavas (2017) and Ghatak (2015)).[7]

Barrett, Carter, and Chavas (2017, 5) identify four possible channels that may lead to poverty traps:

[4] The number of Woredas will depend on the number of livelihoods transfer clients per Woreda.
[5] The figure is calculated based on the approved budget for the new RPSNP project to reach 150,000 households by the end of the project period.
[6] Note that more Woredas were actually included in the programme.
[7] It is important to note that the existence of poverty traps is not necessary for the theory of change. It is sufficient that multiple constraints jointly operate to produce a trap-like outcome. Kraay and McKenzie (2014) present mixed evidence regarding the existence of poverty traps. However, they recommend caution in interpreting the evidence and conclude "it is plausible that many trap-like forces might be simultaneously at play, at both the individual and the country level. If there are important interactions across different mechanisms, then these trap-like mechanisms might jointly impede development, even if in isolation they do not appear to matter all that much." (Kraay and McKenzie (2014, 145)).

- "Multiple financial market failures that impede both investment in and savings for asset accumulation as well as insurance against asset loss.
- Psychological feedback loops in which poverty undercuts human cognitive and pro-social capabilities and performance, in turn entrenching one's poverty;
- Deteriorations in or premature cessation of investments in health and human capital brought on by uninsured shocks and poverty; and,
- Bio-physical feedback loops in which environmental shocks and poverty undercut the productive capacity of natural resource systems."

If some – or all of these channels – are at work together, a self-sustaining state of poverty may result. Consequently, a development program that focuses exclusively on any one of them may failto produce the desired outcome of poverty alleviation. Evidence specific to transfer programs substantiating this is increasingly available. For instance, after studying the long-term impact of a cash transfer program in Ecuador, Araujo, Bosch and Schady (2016, 1) conclude that 'any effect of cash transfers on the inter-generational transmission of poverty in Ecuador is likely to be modest.'

In part in response to disappointing results, the incidence of multi-pronged programs has been increasing in recent years. Most of these programs attempt to replicate the integrated approach pioneered by BRAC. Banerjee et al. (2015, 1) summarize the key features of the approach as follows:[8]

> "… (the) program provides a holistic set of services, including the grant of a productive asset, to the poorest households in a village (referred to by BRAC as the "ultra-poor"). The beneficiaries are identified through a participatory process in a village meeting, followed by a verification visit by the organization's staff. Selected beneficiaries are then given a productive asset that they choose from a list, training and support for the asset they have chosen, as well as general life skills coaching, weekly consumption support for some fixed period, and typically access to savings accounts and health information or services. These different activities (plus regular interactions with the households over the course of a year) are designed to complement each other in helping households to start a productive self-employment activity. The idea is to provide a "big push," over a limited period of time, with the hope of unlocking a poverty trap.

In short, the underlying 'theory of change is that the combination of these activities is necessary and sufficient to obtain a persistent impact' (Banerjee et al. (2015)).

The impact of such programs has been rigorously studied in recent years.[9] The results are consistent. Bandiera et al. (2016) find that a one-off intervention enabled poor Bangladeshi women achieve a

[8] Banerjee et al. (2015) study this type of programmes implemented in six countries - Ethiopia, Ghana, Honduras, India, Pakistan, and Peru.

[9] Buera, Kaboski, and Shin (2017) review the results of these studies and compare them with the impact of programmes that involve what they characterize as 'asset grants to microentrepreneurs'. Sulaiman et al. (2016) provide some comparative evidence on the cost effectiveness of this type of programmes and others.

sustained exist out of poverty. A similar program in Afghanistan evaluated by Bedoya et al. (2020) generated significantly large improvements in consumption, asset holdings, and psychological well-being. A multi-country study on Banerjee et al. (2015) also concludes that the graduation program implemented in these countries resulted in significantly increased consumption for the very poor beneficiaries. Strengthening these findings further, Karlan et al. (2020) show that it is the combination of interventions that make graduation programs that produce the significant impacts rather than the individual components individually. Even more encouragingly, a long-term significant increase in beneficiary households' consumption attributable to such a program in West Bengal is reported by Banerjee et al. (2016). Banerjee, Duflo, and Sharma (2020) find these effects to persist for 10 years. In contrast, Blattman, Fiala, and Martinez (2018) report a smaller long-term impact on investment and employment in a Uganda program.

Thus, there is now a considerable amount of evidence that multi-faceted programs targeting the very poor can generate significant, relatively large, and persistent effects on their livelihoods. The studies which uncovered the evidence also highlighted a number of outstanding questions going forward. Mechanisms and cost effectiveness are at the centre of these questions. Banerjee et al. (2015) identify the following: is it better to deliver physical assets and support, rather than pure cash transfers? how important are the training and coaching as a component in the full intervention? how long will the positive effects persist? what are the potential (positive or negative) externalities or general equilibrium effects and how large are they likely to be? Barrett, Carter, and Chavas (2017) note that "… research has yet to unpack exactly what these coaching interventions change in the psychological realm (aspirations, self-efficacy or mental health?)" Banerjee et al. (2016) also ask "(w)hat is the exact mechanism that seems to have been set in motion by the program?" These questions and related ones informed the discussion on and the final content of the livelihoods transfer impact evaluation design.

1.2.1. The PSNP experience

Beginning in 2005, the Government of Ethiopia and a consortium of donors implemented a new response to chronic food insecurity in rural Ethiopia. Rather than annual appeals for assistance and ad hoc distributions, the Productive Safety Nets Programme (PSNP) was established.

The PSNP provides cash/food transfers to chronically food insecure communities with the aim of protecting household assets and creating community assets. Unlike annual emergency appeals, it was conceived as a multi-year program so as to provide recipients with predictable and reliable transfers. The PSNP uses a mix of geographic and community-based targeting to identify beneficiaries. Approximately 80 percent of participants receive six months of employment on labour intensive public works projects. These emphasize reversing environmental degradation, improving water control and improving road access. The remainder, largely households whose primary income earners are elderly or disabled, receive unconditional transfers. Payments are made in both food and cash.

IFPRI has been involved in the evaluation of the PSNP since 2006 – a total of five rounds of evaluation until 2015. Regular evaluation dimensions included implementation process (implementation structures and capacities, targeting, and aspects and attributes of transfer payments), impact on food insecurity (food gap, food expenditure) and asset accumulation (TLU, house quality). Other evaluation dimensions were covered less regularly and include nutrition (child anthropometry, household diet diversity), vulnerability and resilience, and local economy effects (productivity, growth).

Focusing on the impact in the four 'highland' regions across the years up to 2014, the evaluation ascertained that PSNP transfers lead to statistically significant reduction in the food gap, increase in household-level dietary diversity, increase in monthly per capita food and total consumption (see Berhane et al. (2015) for further details).

PSNP transfers improve vulnerability and resilience of beneficiaries relative to non-beneficiaries in terms of reducing the expected food gap that a drought would have caused and increasing the speed of recovery to pre-drought levels of food gap after a drought (Knippenberg and Hoddinott (2017)).

The transfers from the PSNP mainly originate from its Public Works (PW) component. Community assets are constructed via this component and include roads, soil and water conservation structures, and irrigation structures. Filipski et al. (2016a) ask whether the transfers and the community assets generate economy-wide (local and national) effects and, if so, how much. They find that these effects occur and are not trivial (see Filipski et al. (2016b) for a synopsis). After reviewing the various assessments of the PSNP, Hoddinott and Taffesse (2018) concluded:

> One consistent finding, across a range of studies, interventions, and time periods, is that social safety net programs in Ethiopia improve food security in the Highlands as measured by the food gap. There is evidence of a dose-response relationship here, with larger transfers associated with larger impacts. A second consistent finding is the absence of evidence of disincentive effects. Safety net participation does not reduce labour supply, nor does it appear to crowd out private transfers. The evidence on livelihoods and asset creation is more mixed. Some studies find positive effects but others do not, or do not find these consistently. On an economy-wide basis, the benefits of PSNP significantly exceed the cost of PSNP transfers. New income created by PSNP benefits households that do not receive cash transfers; these non-beneficiaries benefit as markets transmit PSNP impacts to them through local and national markets. Taken collectively, these results point to both the positive effects of the PSNP on Ethiopia's economic growth and to the wellbeing of Ethiopians and the need to continue to strengthen these programs, in particular to complement them with interventions which will lead to more rapid accumulation of physical and human capital.

Thus, despite PSNP's achievements outlined above, significant vulnerabilities remain. The precarious nature of livelihoods in the localities covered means that a social protection intervention like the PSNP is still required. Moreover, going beyond consumption smoothing towards speeding

up the transition out of poverty would require additional efforts to integrate the program with nutrition and agricultural extension services as well as broader developmental processes. Strong awareness of these on the part of the Ethiopian government and its development partners led to the design and adoption of PSNP IV. The Livelihoods Component and its Livelihoods Transfer sub-component are clearly intended to provide support to the very poor in this spirit. As can be inferred from the following quote, they are also in part modelled after the 'Graduation Programmes' pioneered by BRAC.

> "Some PSNP households are so poor that they are understandably risk averse, lacking confidence to take a loan, even if in areas where credit access is not a constraint, for fear of being unable to repay. For these households, one boost (in the form of a free transfer) can enable them to make real livelihoods progress and transition to risk-takingbehavior, as experienced by practical evidence within Ethiopia and internationally. Thuslivelihood transfer enables very poor households to build productive assets and develop their livelihoods. Eventually, they will transition to microfinance and/or RUSACCO credit,which will accelerate the process by which households build their assets and move towards food security." (MoANR (2015a))

Thus, the theory of change outlined above is consistent with the thinking behind these PSNP IV components. So are the corresponding key questions raised. Both inform the design adopted for this evaluation.

1.2.2. Aspirations and locus of control[10]

It has been observed that poor people make investment decisions that may perpetuate poverty: borrowing too much, saving too little, underinvesting in health and education, and not taking up opportunities to diversify their sources of income or increase the revenue of their farms and businesses (Banerjee and Duflo, 2011, 191). For example, in Ghana farmers do not diversify into high-return crops like pineapples, despite the potential to nearly double their income (Goldstein and Udry, 1999, 2008). Farmers in Kenya do not use fertiliser, although doing so would yield average returns (net of fertiliser costs) of fifteen per cent per year (Duflo, Kremer, and Robinson, 2008, 2011).

A number of studies appropriately trace the problem of low investment back to constrained opportunities the poor face – including thin commodity markets, absent credit/insurance markets, limited access to education and health systems, difficult natural environment, limiting land tenure, constraining social norms, and inappropriate government policies. This emphasis is evidently valid. Nonetheless, it is reasonable to postulate that poor peoples' experiences and circumstances not only condition their choices but are also likely to influence how they see the world as well as their place in it and, in part through that, their logic of choice. Indeed, recent advances in behavioural

[10] This summary is extracted, with some modifications, from Bernard et al. (2017) and Taffesse and Tadesse (2017). See these papers for further discussion and references.

economics identify psychological attributes of decision makers such as sense of self, impatience, commitment and loss aversion as critical determinants of choice, particularly for the poor (Akerlof and Kranton, 2000; Bertrand *et al.*, 2004; Mullainathan, 2004; Banerjee *et al*., 2006; DellaVigna, 2009).[11] In other words, it may be the case that there are "internal" constraints that shape behaviour and outcomes. As part of these developments, a rather nascent strand of the literature begun to focus on aspirations and other psychological attributes. Two studies that focus on Ethiopia are relevant, in this regard.

Aspirations

Economists have recently argued that aspirations play an important role in explaining household investment decisions and that individuals largely form aspirations by observing the outcomes of other individuals whose behaviours they can discern and with whom they can identify. Poor people living in poor communities may perceive low returns to investment because people who make successful investments are not, or are no longer, in their reference group (Genicot and Ray, 2017). In Dalton, Ghosal, and Mani (2015), aspirations, effort and wealth are complements: in a behavioural poverty trap, an individual living in a poor context faces a lower return to effort, discouraging investment into costly but high-yield opportunities, lowering wealth and then lowering aspirations.

Bernard et al. (2017) conduct a field experiment in a remote part of rural Ethiopia to examine whether it is possible to alter poor people's perceptions of their opportunities and whether and how they can achieve them. The main intervention took the form of screening short documentariesin which people from similar backgrounds to the audience tell stories about their lives. The documentary subjects improved their socio-economic position from being poor or average to being relatively successful through their efforts in agriculture (for example, saving to purchase an irrigation pump) or in small business (for example, starting a business selling flour). The stories they tell suggest that they achieved this through careful choices, apparently in line with goal setting, with much perseverance and hard work, and not based on help from government or NGOs.

By using these documentaries, and without any further interventions, the study offers a clear link between exposure to potential role models and subsequent outcomes. In this regard, it complements this main intervention with a placebo screening, in the form of an Ethiopian entertainment show of short comedy sketches, to overcome the potential problem that the impact is just based on exposure to TV in a remote area, rather than on the actual content of the documentary. The experimental design also assesses the indirect role of exposure through friends and village networks by comparing individuals in the control group in treated villages to individuals in "pure control" villages surveyed only at end-line, five years after the intervention. Finally, the

[11] The growing literature is already large and broad—see World Bank (2015) for a relevant review.

study considers the effects of changes in aspirations in the long run, by surveying respondents over five years after they receive the intervention.

Six months after the intervention, the study found indeed striking results, in line with this core hypothesis. Watching the documentaries increased parents' aspirations and expectations for children's education, by between 0.32 and 0.47 years of schooling, and increased indices of aspirations and expectations by 0.10 and 0.14 standard deviations respectively. It finds small but significant changes in behaviour among the treatment group compared to the control group. Treated individuals have 71 per cent higher total savings than the control group and have taken out 9 per cent more credit than the control group. The most striking and robust result after 6 months were the strong effects on the number of children in the household of primary school age enrolled in school and in total spending on children's education. The number of children aged 7 to 15 enrolled in school was 0.32 larger in the treatment group compared to the control group (p=0.00). The effect is a 30 per cent increase from the baseline average of 1.06 children enrolled in school across all groups. Treated households also spent 49 per cent more than the control group on children's education. All these results are robust to multiple testing corrections.

There was no prior reason for these effects to be persistent. However, five years after the screening, the study finds persistence in the effects observed six months after the screening, again robust to multiple testing corrections. The design allowed the comparison with control households in the villages in which treated households reside (the 'within-village- households'), but these effects could have been strongly affected by spill-over from either placebo or treatment households. The presence of pure control villages provides scope for a comparison with 'pure control households', allowing statements on the presence of spill-overs and how they may have affected the results. It is found that treated households that watched the documentary have higher aspirations and expectations for their children as compared to placebo and within-village control, by between 0.34 and 1.06 years of schooling, and by between 0.72 and 1.49 as compared to pure control households living in villages where no one received the intervention. The education results are also strongly persistent: we find that, the number of children aged 7 to 15 at end-line enrolled in school is 0.39 larger in treated households relative to pure control households, and 0.13 larger than in placebo households. Focusing on the cohort covered at baseline, we find effects of a similar order of magnitude in the long run to that in the short run, again significant for treated households relative to both control groups and placebo. There are also strong (and surprisingly similar to after 6 months) effects on the amount spent by households on expenditure related to schooling like uniform, books, fees, among others. Treated households spend approximately 45 per cent more than other study households in the treated villages and households in control villages. Again, all these results are robust to multiple testing corrections.

After five years, there are also other effects. For example, total assets are higher in treated households relative to all comparison groups – between 14 to 22 percent more. This is driven by

larger holdings of livestock and of productive assets (such as hoes and ploughs). Treatment households work longer hours, report slightly better food security, and have 19-22 per cent higher total consumption, driven largely by more spending on durables, than all other comparison groups. They spend between 25 and 46 per cent more on the purchase of crop and livestock inputs, driven both by increases in spending on crop inputs like seeds, fertiliser and pesticides and spending on feed and veterinary supplies.

There is also evidence of spill-overs: relative to the pure control villages, those in the placebo and within-village control groups in the treated villages spend more on crop and livestock inputs, there is higher end-line enrolment and education spending in these villages, and at end-line, higher asset levels, despite clear balance in characteristics at baseline between control and treatment villages.

The study also allows some exploration regarding the psychological mechanisms at work. Importantly, tests of changes in time and risk preferences showed that they were not affected by the intervention. Also, households which changed their behaviour largely did not act upon the concrete information included in the documentaries by mimicking the behaviour of the role models in the documentaries.

The empirical evidence uncovered by the study suggests a conclusion closer to that of social learning theory in psychology: self-beliefs about one's own competence and efficacy are powerful direct influences on effort and choices, and they shape people's aspirations, which also influence effort and choices (Bandura, 1994), in ways consistent with some of the recent models in economics by Dalton, Ghosal, and Mani (2015) and Genicot and Ray (2017). Most importantly, they are subjective construals of one's capabilities and can be altered by resonant or emotional experiences or by receiving encouragement or motivation, even if people do not receive any new information about their abilities. The implications for interventions to target policy are far-reaching. On the one hand, contrary internal constraints can generate poverty traps that persist even when external constraints are alleviated. But on the other hand, it appears internal constraints might be alleviated with relatively simple low-cost interventions, and alleviating these and external constraints together might yield larger returns than alleviating either alone.

Locus of control

Promoting the widespread use of chemical fertilisers and improved seeds lies at the centre of the government's effort to raise crop productivity in Ethiopia and beyond. The success of these efforts ultimately depends on the extent to which individual farmers opt to adopt these modern inputs. Taffesse and Tadesse (2017) explore the link between the propensity to adopt improved farm inputs and individual characteristics (gender, age, education); household characteristics (family composition, wealth, farm size, alternative income sources); property rights (land tenure security); biophysical circumstances (rainfall, soil quality); market conditions (access to modern inputs, access to credit, distance to markets); and the prevalent techno- logical space (access to extension). To this

list they add individuals' locus of control as a potential complementary avenue to promote the adoption of such technologies. Using data from several large surveys[12] in rural Ethiopia, Taffesse and Tadesse (2017) first measure locus of control and find evidence of 'external' locus of control among a substantial fraction of rural households. An ordered choice framework is subsequently employed to estimate these households' propensity of technology adoption. The empirical specification extends the standard model by explicitly including locus of control measures. Associations between modern inputs use and factors conventionally deemed important (such as access to extension, household wealth and agro-ecology) are uncovered. Moreover, the results provide strongly suggestive evidence that lower internal and higher 'external' locus of control respectively dampen the propensity to adopt modern farming technology. These new findings indicate that locus of control and related psychological traits may serve as a complementary pathway to influence farmers' choices in production technology and beyond.

Admittedly, these are correlations, not causal links. Nevertheless, they are strongly suggestive, in part due to their recurrence in several large surveys. Indeed, these are only initial steps towards ascertaining the nature and extent of psycho-social characteristics influence on adoption behaviour. As emphasised by World Bank (2015), such influences can provide instruments of policy design and implementation complementary to those involving incentives. For example, considerable external locus of control in a community may constrain collective action when the latter is important to bring about change (a point Ray (2006) makes in relation to low aspirations). More specifically, modern input delivery mechanisms may have to vary across poor and non-poor farmers or male and female farmers in part due to differences across these groups in locus of control attributes. One avenue to consider is bundling the standard (technical) extension services with 'interventions' aimed at boosting locus of control and other psycho-social characteristics such as aspirations (see the previous section).

1.2.3. The Digital Green (DG) approach[13]

Digital Green's program rests on the theory that existing agricultural training (extension) programs can reach more individuals and be more effective when supplemented with locally produced videos and group dissemination sessions. The program has three components:

1. A content production process led by partner extension agencies and community members.
2. Content dissemination by partner extension agents who facilitate discussions using the videos among community groups.
3. A learning model that adapts the program based on data from monitoring individual feedback and adoption rates and then uses impact measurement to confirm effectiveness and further improve the program.

[12] The surveys include the Agricultural Growth Programme (AGP) baseline survey, the Feed the Future Ethiopia baseline survey, and the PSNP4 baseline survey.

[13] Parts of this section are taken from Bernard et al. (2016) and Gugerty et al. (2016). See these references as well as Gandhi et al. (2009) – the original DG paper – for further details.

The intermediate outcomes of this strategy are agricultural extension agencies that operate more efficiently and effectively by providing better training and advising services for rural communities. As a result of the improved services, community members should retain knowledge on newpractices and increase their adoption of the practices, which in turn increases their agricultural production, income, and overall wellbeing.

Since late 2014, the Government of Ethiopia has been working with Digital Green (DG) to introduce a community-centric participatory video approach to extension service provision. The pilot project aims to improve the efficacy of the country's public extension system by broadening its reach through cost-effective information and communications technologies (ICTs). The Digital Green approach is being undertaken in partnership with the Ethiopian Ministry of Agriculture (MoA), the Agricultural Transformation Agency (ATA), the Ethiopian Institute of Agricultural Research (EIAR), and regional bureaus of agriculture, with funding from the Bill and Melinda Gates Foundation and other donors.

The Digital Green approach uses multiple media channels—video, radio, and interactive voice response (IVR)—to reach a broad and diverse audience of farmers with information on key extension topics including improved agronomic practices, nutrition behaviors, and market prices. The approach centers on several target crops and associated technologies.

The core approach being used in 43 Woredas in Ethiopia is as follows. DAs are armed with rechargeable video projectors and short videos on selected technologies and practices that are produced by local bureaus of agriculture and their development partners using relatively low- cost video equipment. They use these components in screening sessions and facilitate discussions conducted with local development groups or other forums—all at a very local level and with the support of model farmers drawn from within the community. The entire approach is supported by back-end data and analytics, including field-based collection on participation and uptake indicators, and electronic dashboards for monitoring performance and progress.

In this initial four-year project (2014-18), Digital Green aims to reach 144,000 farmers by the end of three years, followed by an additional 76,000 farmers by the end of the fourth year contingent on the development of a joint rapid scaling plan with the Ethiopian extension system. This scaling plan would aim to introduce the participatory video approach to 6.7 million households in rural Ethiopia by June 2021, which is the endpoint of the GTP.[14]

Digital Green's approach has the potential to transform extension in Ethiopia. Its primary impact pathway is fairly simple: by providing the extension system with a cost-effective approach to information dissemination, the video extension approach can increase the adoption rate of productivity-enhancing agricultural technologies and practices by smallholder farmers.

[14] As far as we know, the DG approach is only used in some AGP woredas. Its inclusion in the LG program is the first attempt in PSNP woredas.

IFPRI is evaluating the expanded DG project in Ethiopia. The evaluation aims to rigorously answer the question: is the regular DG approach more effective than the current Ethiopian extension system in promoting adoption of improved agricultural technologies by smallholder farmers, leading to higher agricultural yields and agricultural income? Preliminary and non-causal findings include (Bernard et al. (2016)):

- Localized video content—one of the hallmarks of the Digital Green approach – is important. While the informational content of the video matters to farmers, they also appreciate the opportunity to observe featured farmers in the videos who share certain observable characteristics with them.
- There is opportunity to refine and adapt the Digital Green approach to better target localities and farmers who stand to benefit most from the approach. Although this purposive selection of sites high-potential Woredas and Kebeles is justifiable at the pilot phase of any project, more can be learned about the scaling potential of Digital Green from expanding to lower-potential areas where access to input and commodity markets, poverty, and other factors might be more acute constraints.

1.3. Objectives

In 2017 the government of Ethiopia (GoE) and development partners agreed to test different modalities including intensity of capacity building support to clients, a robust monitoring element and rigorously assess impact of the livelihood transfers and thereby justify viability of the investment three years down the line. As part of this effort a pilot was developed in selected 12 Woredas in Tigray, Amhara, Oromiya and SNNP regions with the aim of answering the following questions:

i. Implementation
    - Has the livelihoods transfer program been implemented as planned?
    - What were the implementation challenges, and what was delivered effectively?
    - How did challenges and effectiveness vary across Woredas and Kebeles?
    - What insights does this provide on practical issues that would need to be addressed to ensure effective scale up?

ii. what is the impact of the livelihoods transfer sub-component on:
    - food security or level of food gap,
    - asset holdings,
    - income or consumption levels,
    - aspirations,

- labor supply, modern input use, productivity

iii. What is the impact of different approaches to delivering the livelihoods transfer program on the outcomes described in question (ii)?

iv. What is the cost-effectiveness of different modalities and what are the implications for scaling these approaches?

v. What are some of the factors / mechanisms that may have led to the impacts observed?

1.4. Research Questions

The original ToR of LT program evaluation outlined the following specific objectives.

i. ***implementation process***: Has the livelihoods transfer program been implemented as planned? What were the implementation challenges, and what was delivered effectively? How did challenges and effectiveness vary across Woredas and Kebeles? What insights does this provide on practical issues that would need to be addressed to ensure effective scale up?

ii. what is the ***impact of the livelihoods transfer sub-component*** on: food security or level of food gap, asset holdings, income or consumption levels, aspirations, labor supply, modern input use, and productivity;

iii. ***modalities of delivery***: What is the impact of different approaches to delivering the livelihoods transfer program on the outcomes described in question (ii)? What is the cost-effectiveness of different modalities and what are the implications for scaling these approaches? What are some of the factors / mechanisms that may have led to the impacts observed?

The first objective is stated as a set of process evaluation questions. Given the design of the LT program, objectives (ii)-(iii) translate into the following specific research questions:

RQ1: What is the impact of the status quo LT program, as currently designed?

RQ2: Can a simplified LT program that does not include the DA follow-up support/mentoring for recipient livelihoods still have an impact?

RQ3: Can the addition of Digital Green-like video-based technical training and aspirational videos increase the likelihood of having an impact on recipient households?

RQ4: What contribution do different sub-components of the LT program have towards program impact?

- Specifically, what is the impact of removing the DA mentoring/post-business plan support from the LT program? and
- what is the *additional* impact of including the digital green screenings and the aspirational videos to the LT program?

RQ5: What are the returns associated with the LT program? The cost-benefit comparisons across arms allows assessments regarding the effectiveness of the modalities of delivering support to the poor beneficiaries. The specific content of these comparisons depends on the data collected by the separate monitoring survey and the end-line survey. It would thus be essential to discuss the details and agree on what is desired and what is possible in the inception phase of the end-line.

RQ6: What mechanisms are linked with the impacts detected? The comparisons across treatment arms can in principle provide some insights about the mechanisms that are at work in bringing about faster/deeper improvements in the lives of the poor.

At the inception phase, it was noted that the depth and detail in the exploration of these questions will vitally depend on the quantity and quality of data gathered by the various surveys conducted. Two observations in this regard. First, it turned out that the information on costs required to answer RQ5 was not available during the preparation of this report. In other words, this report is not able to address that research question. Second, answering RQ6 proved to be tricky given considerable noncompliance and significant program-unrelated shocks (see below).

CHAPTER 2: DATA AND METHODS

Chapter 2 focuses on approaches, data, and techniques. Elements include evaluation design, characteristics of interventions, data sources and survey instruments, sample design, data collection, actual sample and attrition, and balance tests.

2.1. Impact evaluation methodology

The Project Implementation Manual (PIM) of PSNP4 (MoANR (2016)) envisages that the livelihoods transfer program will enable beneficiaries to "(build productive assets, develop their livelihoods, access credit, and, ultimately, become self-sufficient". The program targets the poorest PSNP beneficiaries, selected through wealth ranking process within communities, and deemed "capable of participating in the livelihoods support services (financial literacy, training, saving, livelihoods selection, technical and business skills training and business plan development), (and) capable of managing the livelihoods activities (to be specified in corresponding business plans)."

The same PIM describes the elements of the livelihoods transfer program and the key steps in its implementation. Forming livelihood groups of potential beneficiaries is the first step. These groups serve as point of contact with DAs and platform for corresponding support. This step is followed by the beginnings of financial literacy training and savings promotion. Consultation-based livelihood pathway and specific livelihood selection by beneficiaries follows. DAs provide information on livelihood options to facilitate this process. Subsequently, training customised to suit the selected pathway and livelihood is provided to beneficiaries. The training covers relevant technical and business/marketing skills. Business plan development forms the next step. With the endorsement of the business plan the selected LT beneficiary receive a grant equivalent to US$200. In fact, completion of the earlier steps is a condition for receiving the grant. The final component of the LT program is DA follow-up support with mentoring and coaching of beneficiaries that is expected to continue for up to two years.

Two pathways are the focus of the livelihoods grant program – crop and livestock pathway and off-farm pathway. The wage employment pathway is not offered to households identified to receive the livelihood grant.

Accordingly, the evaluation design should:

- select outcome indicators that are derived from the objectives of the program;
- assess the impact of the transfer and training/support on outcomes selected; and
- incorporate variations in the transfer and training/support package on offer to measure impact and effectiveness across modalities.

The indicators listed in Table 2.1.1 were selected through consultations.

Table 2.1.1: Outcomes

Primary	Food security (food gap, diet diversity, consumption expenditure), poverty
Intermediate	productivity (productive asset holdings, modern input use), off-farm employment, aspirations

Variations in the support package include enhancements in training, both technical and motivational (see below).

2.1.1. Evaluation approach

The central challenge of impact evaluation is to estimate impact by comparing outcomes for beneficiaries to the *counterfactual* – what those outcomes would have been had the beneficiaries not received the program. In a **randomized controlled trial (RCT) design,** the counterfactual is constructed by randomly assigning treatment and control group status between similarly eligible communities or households. When treatment assignment is random, households assigned to the control group are identical, on average, to households in the treatment group at baseline, so these control households provide a strong counterfactual. Impacts of the program can be measured as differences in outcomes (or differences in changes in outcomes over time) between the randomly assigned treatment and control households. The effects thus estimated are unbiased and causal.

The ToR recognizes these attractive features by explicitly stating that an RCT is the preferred approach. Accordingly, a clustered randomized control trial design is adopted. The cluster of choice is the Kebele – the level at which the livelihoods transfer program is implemented.

2.1.2. Treatment arms

Before proceeding further, it is important to note that the implementation of the Livelihoods Component of PSNP4 have begun prior to Livelihoods Transfer program. The specification of the treatment arms was premised on this observation.

Four treatment arms and a control arm capture the nature and objectives of the livelihoods transfer sub-component and the corresponding research questions briefly described earlier. These arms were selected after considerable discussion with the DCT, the WB, and the MoA. The treatment arms are:[15]

Control group (C) – are households who are eligible for the livelihoods transfer but are assigned to receive only pre-LT support in the form of group formation and financial literacy training and savings promotion.

[15] The detailed description of the treatments included below highlights key elements identified in MoANR (2015a,b) and MoANR (2016).

Table 2.1.2: Treatment Arms (or Interventions)

Controls PSNP4 PWs beneficiaries with pre-LT training	
Treatment Arm 1 Same as 'controls' *plus* the Livelihoods Transfer ***ONLY***	Transfer only
Treatment Arm 2 extracted Same as Treatment Arm 1 *plus* training and follow-up support (see chart above) (delivered based on standard protocol by DA)	Transfer plus standard technical support package (training and follow-up support)
Treatment Arm 3i Same as Treatment Arm 2 *plus* Livelihoods transfer with screening Digital Green-type videos relevant to the pathways selected (coordinated by DA, supported by IFPRI-hiredpersonnel)	Transfer *plus* enhanced technical support package
Treatment Arm 3ii Same as Treatment Arm 3i *plus* screening of aspirational videos (coordinated by DA, supported by IFPRI-hired personnel)	Transfer *plus* enhanced technical support package p*lus* motivational 'training'

Treatment group 1 (T1) - are households who are eligible for the livelihoods transfer and are assigned to benefit from three types of assistance. First, they are offered the support given to the Control group (group formation and financial literacy training and savings promotion). Second, they receive the livelihoods transfer of US$200. Third, they obtain information on livelihood options that help them select a livelihood pathway and a specific livelihood in the selected pathway. DAs are expected to outline the nature of business plans and the steps involved in developing such plans to these households as well as facilitate the process through which the households receive the livelihood grant. Nevertheless, *DAs do not involve in the actual development of business plans for/by these households or provide follow-up support.*

Treatment group 2 (T2) - are households who are eligible for the livelihoods transfer and are assigned to receive the full (or 'standard') livelihoods transfer package. The package includes:

vi. support in the form of group formation, financial literacy training and participation in savings;

vii. DA consultation for livelihood selection, which involves the provision of detailed information on livelihood options, help in selecting a specific livelihood option, and assistance in developing a livelihood checklist;

viii. training that fits the specific livelihood option the households have chosen covering technical and business/marketing skills;

ix. assistance in business plan preparation; and

x. follow-up support which includes facilitation of access to inputs and linkages to markets as needed, and coaching and mentoring of clients. This support should continue on an intensive basis through to the end of the second year.

Treatment group 3i (T3i) - are households who are eligible for the livelihoods transfer and are assigned to receive all the support given to T2 households ((i)-(v) above). In addition, all these households participate in a screening session of specifically prepared Digital Green-type videos relevant to livelihood option they have chosen and led by the DA.

Treatment group 3ii (T3ii) – are households who are chosen to watch role model (aspiration) videos in addition to all the benefits offered to T3i households. Exposure to this videos is intended as a motivational complement to the LT interventions. This is the arm that uses the videos prepared for the aspiration randomized field experiment described in Bernard et al. (2017).[16]

The research questions RQ1-RQ4 identified above can now be linked to comparisons across the treatment arms**:**

RQ1: What is the impact of the status quo LT program, as currently designed (T2 vs. C)?

RQ2: Can a simplified LT program that does not include the DA follow-up support/mentoring for recipient livelihoods still have an impact (T1 vs. C)?

RQ3: Can the addition of digital green training and aspirational videos increase the likelihood of having an impact on recipient households (T3i vs. C; T3ii vs. C)?

RQ4: What contribution do different sub-components of the LT program have towards program impact?

- Specifically, what is the impact of removing the DA mentoring/post-business plan support from the LT program (T2 vs. T1)? and
- what is the *additional* impact of adding the digital green screenings (T3i vs. T2) and the aspirational videos (T3ii vs. T3i) to the LT program?

Note that such comparisons are likely to have lower power than planned due to the noncompliance problem discussed briefly below. Moreover, if no difference is observed between T3ii and T3i, the two can be pooled as "T3" when compared against other treatments and control.

2.2. Selection procedure

The selection procedure has four key elements:[17]

i. Woreda selection:

[16] Also see the section titled 'Aspirations' above for the potential impact of such videos.
[17] Sample size calculations and additional details on selection are presented below.

The Livelihood Transfer program expands to cover 24,731 clients in 43 new Woredas during the EFY2010. The GoE has selected these Woredas. From among these, 12 Woredas are reserved for the impact evaluation study. The evaluation study covers 41 Woredas (out of the 43) and 24,129 beneficiary households located within Tigray, Amhara, Oromiya, and SNNP (Table 2.2.1). Three Woredas from each of these four regions make up the 12 study Woredas.

Table 2.2.1: Distribution of Potential LT Beneficiaries

Region	Number of LT Woredas	Expected Total PW HHs in LT Woredas
Tigray	4	4,191
Amhara	11	7,994
Oromiya	16	7,432
SNNP	10	4,512
Average		
Total	41	24,129

Source: Own computation using data provided by the DCT.
Note: The total beneficiaries number reported here exclude the 602 households to be supported in Harari and Dire Dawa.

ii. Kebele selection:

Each region/Woreda selected which Kebeles in the 12 study Woredas would be covered by the LT program. Oromiya, SNNP, and Tigrai decided that the program operates in all Kebeles of their LT Woredas. In contrast, Amhara restricted coverage to selected Kebeles.

In collaboration with the CSA, the government and development partners, the IFPRI team compiled a complete list of all the Kebeles in the selected livelihoods transfer Woredas focusing on those that are deemed eligible to the program. Subsequently, Kebeles were assigned to treatment arms by a public lottery. *Each Kebele was assigned to a single treatment arm*. Every Woreda has all four treatment arms and controls (potential Woreda effects can thus be controlled for). The procedure is described in Appendix 2.2 at the end of the chapter.

iii. Household selection:

The CSA-IFPRI survey team worked with the Kebele list of beneficiaries selected for the Livelihood Transfer program in each Kebele. Households were randomly selected from that list (see below for more detail).

At baseline, it was agreed that Kebeles provide the same treatment to all beneficiaries in a Kebele as the one assigned to the Kebele by the study whether the households are selected for the evaluation study or not. This applies to the Kebeles selected as controls. It was also agreed that control households should be selected the same way as the beneficiaries of the livelihood transfer. The training of implementers of the scheme emphasized this message to ensure the diligence of Kebele officials and/or communities in applying the selection criteria. Finally, officials committed to

not providing the livelihoods transfer package to control households until the end-line survey in 2020 (which actually happened in 2021).[18]

2.3. Sample size

Sample size determination is based on a number of assumptions and considerations (and related estimates/parameters).

Purpose of the survey: The sample is expected to allow the rigorous monitoring of performance, tracking of outcome indicators, and evalution of impact associated with the livelihoods transfer program as a whole.

Cluster size: Based on data provided by DCT, it is expected that 24,129 PWs households in 41 Woredas are covered by the expanded livelihoods transfer program in Tigray, Amhara, Oromiya, and SNNP (see Table 2.2.1). The average number of potential program beneficiaries per Kebele ranges from 6 to 69 across Woredas, with a median value of 25. Given this variation and the importance of having as many clusters as possible without raising survey costs significantly, our sample size calculations are based on a sample of 10 beneficiaries (or controls, as the case may be) per Kebele.

Primary indicator: The size of the sample is in part determined by indicators being considered primary for the program. As per the ToR, the candidate indicators include the food gap and consumption. Productive asset holdings and aspirations are also mentioned. The one actually used for smaple calculation is selected based on the size of the corresponding intra-cluster correlations (ICCs) (see Table 2.3.1 below).

Significance and power: The sample has to be sufficiently large to minimize the likelihood of detecting an effect that does not exist (statistical significance) and to maximize the likelihood of detecting an effect that does exist (statistical power). Following standard practice, these are set at a target level of significance of 5% (two-tailed) and statistical power of 80%.

Design effect (d): The design effect reflects the extent to which the indicator of choice is correlated across households or individuals within a specified group or cluster, usually defined by geographic location.[19] Intra-cluster correlations (ICCs) and cluster-level sample size are used to measure this extent. Higher ICCs mean that the design effect is stronger and that larger samples are needed.

[18] We took two additional preventive measures to reduce the likelihood of control Kebeles benefiting from similar programs. First, we checked, as far as we can, if there are similar programs operational in the candidate woredas. In fact, we had to drop one woreda exactly for that reason - unfortunately, we discovered the problem only after the baseline was completed (see under 'Data collection' below). Second, we have designed the baseline survey to gather information on other potentially relevant programs on-going in all sample Kebeles. The end-line survey did the same. Such information helps in understanding such programs if they are operational and provide a means of allowing for them at the impact estimation stage.

[19] More formally, the design effect is the ratio between the variance (and thus the required sample size) associated with complex sample design (cluster or multistage sampling) and the variance (or sample size) if the sample had been drawn

Table 2.3.1: EA/Kebele level Intra-cluster correlations

Indicator	ICC
Productive assets	0.081
Food Gap	0.265
Per capita monthly expenditure	0.142
LOC - Internal	0.137
Aspiration index	0.043
Stunting	0.064

Source: Authors' calculations using the PSNP4 Baseline Survey (2016), except for aspirations which is from the Aspirations Study data (see Bernard et al. (2017)).

Note: 'LOC – Internal' stands for Internal Locus of Control (see section titled 'Locus of Control' above.

Given clustering, it is necessary to have a sufficient number of clusters to obtain robust tests. Towards that end, the ICCs of possible outcome indicators were first considered. The conservative compromise is to use the indicator with the highest ICC in the power calculations. It turned that in this case the food gap is that indicator (see Table 2.3.1).

Attrition: It is important to take into account the fact that over time some households will move to other localities, others break-up with members dispersing, still others may chose not to continue to be interviewed or drop/are dropped from the program. Based on our experiences with other longitudinal household surveys in rural Ethiopia, we assume that **ten per cent of the sample will attrit** during the study period.

Minimum detectable effect size: Sample size depends on the minimum level of impact (known as minimum detectable effect size) that is to be detected in the relevant indicator. Smaller effect sizes require larger samples; conversely, larger effect sizes require smaller samples. The indicator with the highest ICC, and thus chosen for sample size calculations, is the food gap in PSNP Woredas in the four regions to be covered by the study. The effect size is also expressed in terms of the food gap. It is postulated that the program will lead to a 0.4 standard deviations reduction in the food gap. This amounts to about a 1 month reduction in food gap (which is about 50% of the mean food gap in the PSNP4 Baseline Survey (2016) sample).

Table 2.3.2: Estimated and selected parameters for sample size determination

Variable	Level
Outcome indicator = Food gap in months (PSNP4 Baseline in 2016)	Mean = 2.24, SD = 2.62
Statistical significance (two-tailed)	5%
Statistical power	80%
Intra-cluster correlation (ICC)	0.26
Cluster sample size (per Enumeration Area (EA))	10
Design effect	3.34

using simple random sampling of the ultimate respondents. It is given by: $d = 1 + ICC(n - 1)$, $ICC = \frac{\sigma^2_{av}}{\sigma^2_{av} + \sigma^2_{wv}}$

where: σ^2 and σ^2 are respectively across- and within-cluster (Kebele) variations of the indicator used.

av wv

Attrition (across two rounds over two years)	10%
Minimum detectable effect size (MDE)	0.4SD= about 1 month (50% of the mean food gap) reduction in food gap

Note: For the purpose of sample size determination, the standard deviation of the outcome indicator is assumed to be the same at baseline and end-line.

Table 2.3.2 summarizes the estimated and selected parameters for sample size determination. Sample size (*n*) per arm is determined using these parameters in the following formula:

$$n = 2\frac{d}{r}\left(\frac{z_{\alpha/2} + z_{1-\beta}}{e}\right)^2$$

where:

n = sample size per main arm;
d = design effect;

r = response rate that allows for attrition;
z = cumulative normal variate;
α = statistical significance of test (two-way);
(1-β) = statistical power of test;
e = minimum detectable effect size given in terms of the common standard deviation;

The number of clusters per arm is calculated as *n* divided by 10 (the number of households in the sample per Kebele). Tables 2.3.3 reports the resulting sample size. The total number of clusters is obtained multiplying the single arm result by 4 (the number of arms or comparisons including controls).

Table 2.3.3: Sample Size

	Number of Kebeles	Number of households
Sample size - per arm	72	720
Sample size – total	288	2880

The total size of the sample is 2880 households across the four regions. The exact distribution of sample across regions depends on the actual number of Kebeles assigned to the LT schemes in each Woreda (see below).

The following specific steps are used in the selection process.

i. Ten beneficiary households are randomly selected in each Kebele from among the list of eligible households identified on the basis of a wealth ranking exercise. If only 10 such households exit in a Kebele, all of them are included in the sample.

ii. As noted above, in Kebeles with more than 10 beneficiaries, it is necessary that the same treatment is offered to all LT beneficiaries (both selected for the RCT and those excluded) as the one to which the Kebele is assigned (including controls). This scheme avoids the possible complication that may arise from the existence of multiple interventions in a Kebele and the unpredictable impact which may arise.

2.4. The End-line Surveys

The LT evaluation end-line survey, initially planned for 2020, was conducted in 2021. The postponement was primarily due to the onset of the COVID-19 pandemic. Data were collected between April and May 2021. The timing is close to that of the 2018 baseline survey which was in June-July. The timing of the 2021 surveys was dictated by the need to ensure that data collection was completed well in advance of national elections scheduled for June 2021.

2.4.1. Quantitative data

Sample

Sample size and distribution were determined on the basis of detailed power calculations described in the previous section. Nevertheless, circumstances on the ground led to modifications in the sample. First, the discovery that Mekit Woreda is covered by another similar study meant the sample that can be used for the impact study fell to 2720 households across 272 Kebeles (with 68 Kebeles treatment per arm) (Table 2.4.1). Also, 8 households from the sample, four each in Oromiya and SNNP, could not be interviewed during the baseline. That leaves a baseline sample of 2712 households.[20]

Two additional considerations led to further adjustments to this sample for the end-line survey. First, circumstances did not allow the end-line survey to take place in Tigray. As a consequence, the sample size fell by 650 (Table 2.4.1). Second, as described in the LT Baseline Report, significant noncompliance occurred during the implementation of the program in the form of treatment households not receiving the program, rather than control households erroneously getting it (see below). Data from Livelihood Monitoring Survey of Households (2020) confirmed this phenomenon. The two together amount to a reduction in the treatment sample size with implications to power.

[20] See section I.3 of the Livelihoods Transfer Baseline Report (Berhane et al. (2020)).

Table 2.4.1 – Number of Kebeles assigned to treatment arms by Woreda

Region	*Zone*	*Woreda*	*Number of Kebeles*	*Number of Households*
Amhara	Oromiya	Bati	16	160
	South Wollo	Mekdela	15	150
Oromiya	West Hararge	Habro	30	300
	West Hararge	Doba	40	400
	East Hararge	Bedeno	25	250
SNNP	Wolayita	Sodo Zuriya	29	290
	Konso Special	Konso Special	31	310
	Gurage	Meskan	21	210
Tigray	Eastern Tigray	Ganta Afeshum	20	200
	South Tigray	Hintalo Wajirat	23	230
	Central Tigray	Nader Adet	22	220
All (without Mekit)			***272***	***2720***

Source: Authors' computation.

In order to address these reductions, it was agreed to increase the sample in the remaining study Kebeles. After looking at different options and budget limitations, the decision was made to add four more households in each Kebele. Since there are Kebeles with less than 14 eligible households, the sample rose to 2606 households – close to the baseline sample size albeit in fewer clusters (207 rather than 272 Kebeles) (Table 3.4.2). The additional four households are selected from the same household listing and following the sequence of selection as that at the baseline. The aim in this regard is to avoid the potential impact of differences in selection procedures.

Table 2.4.2 End-line Sample by Woreda and Treatment Arms

Woreda	**Number of Kebeles**	**Number of sample households**					
		Control	**T1**	**T2**	**T3i**	**T3ii**	**Total**
Mekdela	15	52	43	39	19	10	163
Bati	16	55	55	54	26	28	218
Doba	40	127	137	133	65	66	528
Habro	30	91	93	90	58	51	383
Bedeno	25	58	58	59	30	40	245
Meskan	21	62	70	68	39	40	279
Sodo Zuriya	29	94	94	89	55	51	383
Konso Special	31	101	109	102	53	42	407
Total	**207**	**640**	**659**	**634**	**345**	**328**	**2606**

Source: Authors' computation.

Surveys

The main source of quantitative information are the quantitative surveys implemented by the Central Statistics Authority (CSA) with support from IFPRI. Four surveys make up the LT end-line: a quantitative household survey (one each for men and women adult members); a quantitative community (Kebele) survey; a *Woreda* process survey; and a DA survey (justified by their prominent role in the program). The final version of all the instruments corresponding to these surveys are the outcome of a dialogue between all stakeholders. Note also that, given the panel nature of the surveys, the corresponding instruments should be and are very similar to the baseline versions. The following briefly describes the structure of the survey instruments.

A household quantitative questionnaire has the basic structure outlined in the Table 2.4.3.

Table 2.4.3: Household Questionnaires

Module	Title
1	Basic household characteristics
2	Land, crop and forestry production and disposition
3	Household assets
4	Non-agricultural income, transfers, and saving and credit
5	Access to the PSNP
6	Access to the Livelihood transfer
7	Consumption and food security
8	Shocks
9	Aspirations, locus of control, poverty perceptions
10	Intra-household decision-making

The community questionnaire[21] covers, broadly speaking, local infrastructure (water, electricity, roads, communications, agricultural services); prices (food, livestock, wages); and implementation of the Livelihood component (including the corresponding transfers), and the PWs program (Table 2.4.4). The *Woreda* process survey in turn focuses on the pattern of program implementation by Woredas implemented and their respective capacity to do so. Finally, the DA questionnaire covers the role, capacity, motivation, workload, and perceptions of DAs. The details of these questionnaires are designed with the aim of generating as much information as possible regarding the implementation of the Livelihoods Transfer program at the Kebele and Woreda levels. These data undergird the process evaluation part of the study.[22]

[21] For the quantitative community survey, the community is defined as a Kebele. At least five people who are knowledgeable about the community are interviewed together, with COVID-19 related protocol strictly observed. The group must include at least one member of the Kebele Food Security Task Force, at least one member of the Kebele Council, at least one Development Agent, at least one Health Extension Worker and at least one woman.

[22] All the questionnaires are separately delivered with this report.

Table 2.4.4: Broad Outlines of Community, Woreda, and DA Questionnaires

Modules – Community	*Modules - Woreda*	*Modules – DA*
1. Basic characteristics (agro-ecology, distance to markets, population centers (GIS-	1. Basic characteristics (agro-ecology, distance to markets, population centers (GIS-	1. Background Information
2. Health and Extension services	2. PSNP4	2. Duties specified in job
3. Support for livelihoods, agricultural production and	i. General Information about PSNP4	i. Membership - taskforces and committees
4. PSNP4 implementation	ii. Staff and infrastructure	ii. Tasks related to the livelihoods transfer
5. Livelihoods component	iii. Payments/transfers	iii. Other PSNP-related assignments
6. Livelihoods transfers	iv. Livelihoods component	iv. Workload
7. Other forms of assistance	3. Livelihoods transfers	3. Contact with experts/workers – other DAs, health extension
8. Wages and food Prices in the last	4. Other Forms of Assistance	4. Support and supervision
9. Physical access and basic services	5. COVID 19	5. Job-related motivation and satisfaction;
10.Health and Extension services		
11. COVID 19		

2.4.2. Qualitative data

Site Selection

Eleven *Woredas* are selected for in-depth qualitative work in the highlands. These were allocated across four regions as follows: Amhara (3), Oromiya (4), SNNPR (3), Sidama (1). The Woredas were chosen based in the following criteria:

- Representation of livelihood zones;
- Coincidence with quantitative household survey work;
- Woredas that have the e-payment pilot;
- Woredas that have implemented the livelihood transfer;
- Representation of Woredas from the previous sample frame;
- Woredas with HFA caseload;
- Woredas with displaced populations;

From among the 11 Woredas, two – Mekedla (Amhara) and Sodo Zuriya (SNNP) – are part of the LT program evaluation sample. Two more Woredas – Fadis (Oromiya) and Loko Abaya (Sidama) – also has the LT program though they are not in the evaluation sample. The following interviews/discussions were conducted (Table 2.4.4).

Table 2.4.5: Key Informant Interviews (KII) and Discussions

Level	Number of KIIs/Discussions	Key Informants
Regional	2-3	• one interview with the chair and/or members of the Food Security Task force (if not available then leads of Technical Committees Chairs on Systems Development (BoA, FS-DRM, BOLSA), Public Works (Natural Resources) and Livelihoods (Ag. Extension/Livestock/Food Security)); • one interview with a member/technical lead on the Transfers and Resource Management Technical Committee; and • one interview with the chair and/or members of the LICU Livelihood Unit
Woreda	4-5	• one or two interviews with the chair and/or members of the Woreda Food Security Task force (WFSTF); • one interview with members/technical leads on Livelihoods and Public Works; • one interview with a member/technical lead on the Transfers and Resource Management Technical Committee; and • one interview with an MFI and/or cooperative promotion agency.
Kebele	3	• one discussion with members of the Kebele Food Security Task Force (KFSTF); and • one or two discussions with Development Agents (DAs).

Questions

In all cases, and as part of the broader interview/discussion protocol, the following LT-specific questions are discussed:

i. Is the Livelihoods Transfer program operational in this region/Woreda/Kebele?
ii. How are PSNP clients targeted to receive a livelihood transfer? Is this fair and transparent?
iii. What kind of support does the Livelihood Transfer program offer to beneficiaries?
iv. Have there been challenges during implementation of the Livelihood Transfer program?
v. Do you think that the Livelihood Transfer program has been a success? Explain

2.4.3. The Monitoring Survey

A separate and more specialized monitoring survey was conducted to track the implementation of the LT program in the survey Woredas. This survey interviewed one DA and four baseline sample households in each Kebele covered by the baseline survey. It was conducted during January-February, 2020.

Table 2.5.1 summarizes the sample covered by the monitoring survey. In each Kebele, four households were randomly selected from among the baseline survey households (using the baseline list) from each Kebele. In addition, one DA per Kebele, identified based on who was most

prominently responsible for livelihoods activities, was interviewed. As noted before, the exclusion of the Tigray sub-sample at end-line leaves 207 Kebeles for that round. Note that the survey was unable to interview a DA in three Kebeles.

Table 2.4.6: End-line Monitoring Survey Sample

	Control	T1	T2	T3i	T3ii	Total
DAs						
Kebeles (number)	51	49	50	28	26	204
Development Agents (number)	100	95	100	55	52	402
Households						
Kebeles (number)	51	51	51	28	26	207
Households (number)	204	204	204	112	104	828

Source: Authors' computation using data from the Livelihood Transfer Second Monitoring Survey DAs and Households data (February 2020).
Note: 'Control', 'T1', 'T2', 'T3i', and 'T3ii' stand for the Control group, Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, and Treatment Arm 3ii, respectively.

2.5. The issue of noncompliance

A significant fraction of households assigned to Treatment 3i and 3ii failed to attend the screening of the videos (see Appendix A2.1.3). The discovery of this outturn triggered a deeper look at compliance in the LT program implementation in the study Woredas. The subsequent investigation centered on two questions: What are the reasons that forced Treatment 3i and 3ii households to miss the screening of the videos? Do all sample households receive the treatment assigned to them during the implementation phase of the LT program?

The survey team was able to ask 89 percent of Treatment 3i and 3ii households invited to attend the video screening why they did not attend the respective sessions. Table A2.1.3 reports on their responses. Nearly 90 percent state their reason to be removal from the LT beneficiaries list.

This finding highlighted the need to check whether sample households receive the treatment assigned to them during the implementation phase of the LT program. As a first step towards that end, the list of baseline sample households was matched with the list of LT beneficiary households at the time of implementation. Recall that sample households were randomly drawn from the list of households deemed eligible to receive the LT package at baseline. The result of the comparison is reported in Table 2.5.1.[23] When aggregated across Woredas, all treatment arms (other than the control group) were affected similarly with about 43 percent of sample households not receiving the treatment they were assigned to. In this regard, one good news is that, as agreed, the LT program was not launched in all control Kebeles except those in one Woreda.

[23] Note that the Tigray sub-sample is not included in the Table. The compliance rate falls by 5-9 percentage points across treatment arms with the inclusion of that sub-sample.

Table 2.5.1: Noncompliance

Woreda Name	Baseline sample households in the revised beneficiary list (%)				
	Control	Treatment 1	Treatment 2	Treatment 3i	Treatment 3ii
Bati	100.0	90.0	80.0	85.0	85.0
Bedeno	100.0	88.3	88.3	76.7	92.5
Doba	100.0	59.8	39.0	12.0	28.6
Habro	100.0	4.3	8.6	20.0	7.5
Konso Special	100.0	48.8	55.6	79.5	53.3
Mekdela	100.0	100.0	87.5	95.0	100.0
Meskan	4.0	20.0	18.0	10.0	40.0
Sodo Zuriya	100.0	94.3	95.5	97.5	85.0
Total	90.6	60.2	55.6	53.0	55.2

Source: Authors' calculations using data from LT Baseline Survey, treatment assignment data, and data from Woreda and Kebele officials .

As a further check, the subset of the baseline sample households covered by the separate Livelihood Monitoring Survey of Households (see above) were asked about their participation in the LT program. A total of 828 such households were interviewed (Table 2.4.6 above). The responses reveal the same phenomenon (Table 2.5.2). Again, households in control Kebeles experienced no or very little engagement with the LT program. In contrast, a majority of treatment households received most elements of the LT package. The exceptions are mentoring and development of business plan with around 40 percent incidence rate.

Table 2.5.2: Selection into the LT Program

	Control	All Treatment	T1	T2	T3i	T3ii
Households:						
Selected for any livelihoods benefit (%)	14	67	71	66	65	67
Participated in any Livelihood activity (%)	4	63	64	62	63	63
Received any Livelihood related training (%)	5	52	42	53	61	61
Developed a business plan (%)	0	42	29	49	47	46
Received mentoring (%)	0	41	27	48	47	46
Attended technical-video-screening session (%)	0		3	2	54	50
Received grant money (%)	0	63	65	64	61	60

Source: Authors' computation using data from the Livelihood Transfer Second Monitoring Survey - Household Survey (2020)

A question of power

In short, considerable noncompliance occurred in the form of treatment households not receiving the program, rather than control households erroneously getting it. This amounts to a reduction in the treatment sample size with implications to power. Also potentially important is the variation in cluster size the non-compliance resulted. A further complication has been introduced by the exclusion of the Tigray sample forced by circumstances. Interestingly, this exclusion lowers sample size but raise the average compliance rate from about 50 percent to 65 percent (the Tigray sample

featured the lowest compliance rate of 24.4 percent, that is, only about a quarter of the baseline sample assigned to obtain the treatments were in the revised beneficiary list). On the other hand, the end-line sample size has also been increased in the rest of the Kebeles covered by the study.

2.6. Methods

2.6.1. Treatment assignment

Based on the nature of the LT program and the objectives of its evaluation, the following treatment arms are designed (Table 2.1.2 from above is reproduced as Table 2.6.1 for ease of reference).

Table 2.6.1: Treatment Arms

Controls (**C**) PSNP4 PWs beneficiaries with pre-LT training	
Treatment Arm 1 (T1) Same as 'controls' *plus* the Livelihoods Transfer ***ONLY***	Transfer only (US$200)
Treatment Arm 2 (T2) Same as Treatment Arm 1 *plus* training and follow-up support (see chart above) (delivered based on standard protocol by DA)	Transfer *plus* standard technical support package (training and follow-up support)
Treatment Arm 3.i (T3i) Same as Treatment Arm 2 *plus* Livelihoods transfer with screening Digital Green-type videos relevant to the pathways selected (coordinated by DA, supported by IFPRI-hired personnel)	Transfer *plus* enhanced technical support package
Treatment Arm 3.ii (T3ii) Same as Treatment Arm 3(i) *plus* with screening of aspirational videos (coordinated by DA, supported by IFPRI-hired personnel)	Transfer *plus* enhanced technical support package p*lus* motivational 'training'

As described in the baseline report (Berhane et al.(2020)) in detail, the original 272 Kebeles were divided among the treatment arms using a public lottery (see also Appendix 2.3 below). Given the adjustment noted above, the distribution by treatment status at end-line is summarized in Table 2.6.2.

Table 2.6.2: Number of Kebeles assigned to treatment arms by Woreda

Region	***Zone***	***Woreda***	***Number of Kebeles***	***Control***	***T1***	***T2***	***T3i***	***T3ii***
Amhara	Oromiya	Bati	16	4	4	4	2	2
	South Wollo	Mekdela	15	4	4	4	2	1
Oromiya	West Hararge	Habro	30	7	7	7	5	4
	West Hararge	Doba	40	10	10	10	5	5
	East Hararge	Bedeno	25	6	6	6	3	4
SNNP	Wolayita	Sodo Zuriya	29	7	7	7	4	4
	Konso Special	Konso Special	31	8	8	8	4	3
	Gurage	Meskan	21	5	5	5	3	3
All			***207***	***51***	***51***	***51***	***28***	***26***

Source: Author's calculations using data from the Livelihoods Transfer Evaluation Baseline Survey (2018).

2.6.2 Balance

Balance tests help ascertain the absence of systematic differences in indicators of interest across treatment groups. Specifically, these tests check whether there are statistically significant differences in the means of relevant indicators across treatment arms before the implementation of the Livelihood Transfer program (or at baseline). The comparison applies to the end-line sample – the sample of households surveyed at both baseline and end-line.

Table 2.7.1 summarizes the balance test results for the key outcome indicators – food security, asset ownership, off-farm employment, aspirations, and poverty. The results indicate there is little systematic difference among households in the control and treatment groups in terms of measured outcome variables before the introduction of the LT interventions. From among 140 pairwise comparisons, only 7 detected statistically significant differences (2 at 5 percent and 5 at 10 percent). Overall, the tests imply the randomization procedure worked and the sample was balanced across key outcome dimensions at baseline.

Table 2.7.1: Baseline balance of outcome variables by Treatment Arms – End-line Sample

Variable	Control Mean[SE]	T1 Mean[SE]	T2 Mean[SE]	T3i Mean[SE]	T3ii Mean[SE]
Ownership of productive equipment, PCA	-0.284	-0.092	-0.214	0.011	0.283
	[0.195]	[0.210]	[0.196]	[0.336]	[0.253]
Food gap, number	2.792	2.919	3.233	3.086	3.054
	[0.159]	[0.205]	[0.200]	[0.229]	[0.154]
=1 if HH faced food shortage during rainy season	0.594	0.606	0.644	0.639	0.683
	[0.028]	[0.033]	[0.029]	[0.038]	[0.039]
Diet-diversity-score, 16 food groups	2.922	2.675	2.711	3.007	2.911
	[0.166]	[0.144]	[0.144]	[0.221]	[0.178]
Livestock ownership, TLU units	0.584	0.649	0.541	0.690	0.820
	[0.058]	[0.059]	[0.061]	[0.091]	[0.117]
=1 if head/members engaged in casual or irregular wage work	0.165	0.164	0.184	0.193	0.166
	[0.023]	[0.024]	[0.026]	[0.028]	[0.040]
=1 if head/members engaged in regular wage work for an employer	0.029	0.020	0.010	0.029	0.027
	[0.008]	[0.007]	[0.004]	[0.011]	[0.010]
=1 if head/members carried out or managed an earning activity	0.041	0.041	0.038	0.050	0.039
	[0.010]	[0.012]	[0.010]	[0.015]	[0.013]
=1 if household received any other income such as remittances	0.075	0.055	0.091	0.096	0.066
	[0.013]	[0.012]	[0.016]	[0.024]	[0.018]
=1 if HH engaged in casual work/wage employment/earning activities	0.206	0.205	0.213	0.239	0.201
	[0.025]	[0.027]	[0.026]	[0.035]	[0.040]
Overall aspiration index (income, assets, social status, children's education)	0.003	0.010	0.003	-0.010	0.000
	[0.009]	[0.009]	[0.010]	[0.014]	[0.014]
Total consumption expenditure per adult equivalent per month (Birr)	291.683	251.443	247.319	274.209	236.502
	[23.723]	[16.895]	[17.187]	[25.068]	[17.151]
Food expenditure per adult equivalent per month (Birr)	154.382	137.637	137.122	160.961	132.786
	[19.092]	[13.947]	[13.813]	[20.411]	[14.774]
=1 if households perceived themselves as poor relative to others in the village	0.912	0.897	0.927	0.896	0.873
	[0.017]	[0.015]	[0.016]	[0.020]	[0.029]
=1 if households perceived themselves as poor based on own circumstances	0.965	0.937	0.960	0.954	0.954
	[0.009]	[0.012]	[0.011]	[0.012]	[0.019]
Number of Observations	510	507	506	280	259
Number of Clusters (Kebeles)	51	51	51	28	26

Table 2.7.1: Baseline balance of outcome variables by Treatment Arms – End-line Sample (cont'd)

Variable	t-test MD C-T1	t-test MD C-T2	t-test MD C-T3i	t-test MD C-T3ii	t-test MD T1-T2	t-test MD T1-T3i	t-test MD T1-T3ii	t-test MD T2-T3i	t-test MD T2-T3ii	t-test MD T3i-T3ii
Ownership of productive equipment, PCA	-0.192	-0.070	-0.295	-0.567*	0.121	-0.104	-0.375	-0.225	-0.496	-0.271
Months of food shortage	-0.127	-0.441*	-0.294	-0.262	-0.314	-0.167	-0.135	0.147	0.179	0.032
=1 if HH faced food shortage during rainy season	-0.011	-0.050	-0.045	-0.089*	-0.039	-0.034	-0.078	0.005	-0.039	-0.044
Diet-diversity-score, 16 food groups	0.247	0.210	-0.086	0.010	-0.037	-0.333	-0.237	-0.296	-0.200	0.096
Livestock ownership, TLU units	-0.066	0.043	-0.106	-0.236*	0.109	-0.040	-0.170	-0.149	-0.279**	-0.130
=1 if head/members engaged in casual or irregular wage work	0.001	-0.019	-0.028	-0.001	-0.020	-0.029	-0.002	-0.009	0.018	0.027
=1 if head/members engaged in regular wage work for an employer	0.010	0.020**	0.001	0.002	0.010	-0.009	-0.007	-0.019	-0.017	0.002
=1 if head/members carried out or managed an earning activity	-0.000	0.004	-0.009	0.003	0.004	-0.009	0.003	-0.012	-0.001	0.011
=1 if household received any other income such as remittances	0.019	-0.016	-0.022	0.009	-0.036*	-0.041	-0.010	-0.006	0.025	0.031
=1 if HH engaged in casual work/wage employment/earning activities	0.001	-0.008	-0.033	0.005	-0.008	-0.034	0.004	-0.026	0.013	0.039
Overall aspiration index (income, asset, level of social status, children's education)	-0.007	-0.000	0.013	0.003	0.007	0.020	0.010	0.013	0.003	-0.010
Total consumption expenditure per adult equivalent per month (Birr)	40.240	44.364	17.474	55.181*	4.124	-22.766	14.941	-26.890	10.817	37.707
Food expenditure per adult equivalent per month (Birr)	16.745	17.260	-6.579	21.596	0.516	-23.324	4.851	-23.840	4.336	28.175
=1 if households perceived themselves as poor relative to others in the village	0.014	-0.015	0.015	0.039	-0.029	0.001	0.025	0.030	0.054	0.024
=1 if households perceived themselves as poor based on own circumstances	0.028*	0.004	0.011	0.011	-0.024	-0.017	-0.017	0.007	0.007	-0.000

Source: Authors' calculation using data from the Livelihood Transfer Evaluation End-line Survey (2018).

Notes: Control and treatment arms are as defied above. SE= 'Standard Error', MD= 'Mean difference'. The value displayed for t-tests are the differences in the means across the treatment arms. Standard errors are clustered at the Kebele level. ***, **, and * indicate significance at the 1, 5, and 10 percent, respectively.

2.6.3 Estimation strategy

Impacts of the LT program is estimated using single difference model on end-line data as a main specification. In addition, Analysis of Covariance (ANCOVA) and difference-in-difference (DID) models are used for robustness checks using baseline and end-line data.

The single difference model using end-line data is preferred against ANCOVA and DID models because of higher statistical power following the increase in end-line sample size. We estimated intention to treat (ITT) effects of the LT program by estimating the average impact of the LT program treatment arms on the random sample of beneficiaries, regardless of whether they participate in all aspects of the intervention for their relevant treatment arm. Study subjects in all treatment arms, including those in control Kebeles, are PSNP4 beneficiaries. What varies by Kebele in this experimental design is the provision of the Livelihood Transfer and related programming modalities. The ITT effect captures differences in coverage of the program within communities or decisions by beneficiaries not to participate in the program. The average treatment effect (ATE), on the other hand, is the actual effect of the full intervention for that treatment arm on households that receive it. However, because compliance is not perfect, and not all beneficiaries receive all components of the program for their treatment arm, using the ITT effect is the better approach.

In short, we restrict the impact estimation to end-line sample households to ensure that the ITT is based on as complete outcomes data as possible. The case for this approach is further bolstered by two finings reported earlier. First, there is little cross-over from control households to treatment households. Second, the primary source of non-compliance is weaknesses in program intervention and not participant choice (such as no take-up or withdrawal).

The impact of each treatment arm is estimated separately against the Control group using the following model:

$$Y_{hv} = \beta_0 + \beta_1 T1_v + \beta_2 T2_v + \beta_3 T3i_v + \beta_4 T3ii_v + \beta_5 W_h + \varepsilon_{hv}, \quad (1)$$

where Y_{hv} is the outcome of interest at endline for household *h* from Kebele *v*, $T1_v$ is an indicator for whether the household in Kebele *v* was randomly assigned to treatment T1, $T2_v$ indicates randomized assignment to T2 and $T3i_v$ indicates randomized assignment to T3i, $T3ii_v$ indicates randomized assignment to T3ii, and W_h is Woreda dummies to capture Woreda fixed effects. β_1, β_2, β_3 and β_4 measure the impact of T1, T2, T3i and T3ii respectively, compared to the Control group. Woreda fixed effects are included to accommodate the stratification of randomized treatment assignment by Woreda.

The evaluation also differentiates impacts across the Livelihood Transfer approaches embedded in the treatment arms of this study. For example, we test whether the Livelihood Transfer alone (T1) or the Livelihood Transfer plus training (T2) is more effective by testing the null hypothesis. $\beta_1 =$

β_2 Similarly, we test whether adding the Digital Green training in addition to the Livelihood Transfer has a larger impact by testing the null hypothesis: $\beta_2 = \beta_3$

Robustness checks

The following specifications are estimated to check the robustness of impact results.

Combined treatment group vs. control: To maximize statistical power, we estimate the impact of the combined treatment group $T \in \{T1, T2, T3ii, T3iiii\}$ against the Control group, using the following empirical specification:

$$Y_{hv} = \beta_0 + \beta_1 T_v + \beta_2 \mathrm{W}_h + \varepsilon_{hv}, \qquad (2)$$

where T_v is an indicator for whether Kebele *v* was assigned to any of the LT treatment arms. β_1 measures the impact of the combined treatment as the difference in the average outcome between the treatment arms T1, T2, T3i and T3ii combined and the Control group.

We estimate ANCOVA and DID models, also as robustness checks. Using the DID model helps to capture the changes in outcome variables across baseline and end-line between control and treatment arms. However, DID model assumes observed and unobserved characteristics of households in the control and treatment groups remain the same over time. The ANCOVA model is more flexible than a DID model because the ANCOVA model allows for the autocorrelation in the outcome over time to be estimated, rather than fixed at one, as in the DID model. This provides a better model fit (McKenzie (2012)). Moreover, there are statistical power gains from using ANCOVA models over DID models which get larger as the autocorrelation in the outcome falls. When autocorrelation in the outcome is low, the benefit in statistical power from using ANCOVA is substantial.[24]

We estimated the impact of each treatment arm separately against the Control group using the following ANCOVA model (3) and DID model (4):

$$Y_{1hv} = \beta_0 + \beta_1 T1_v + \beta_2 T2_v + \beta_3 T3ii_v + \beta_4 T3iiii_v + \beta_5 Y_{0hv} + \beta_6 \mathrm{W}_h + \varepsilon_{hv}, \qquad (3)$$

where Y_{1hv} is the outcome of interest at endline for household *h* from Kebele *v,* and Y_{0hv} is the outcome of interest at baseline.

$$Y_{hvt} = \beta_0 + \beta_1 Tiime + \beta_2 (TS_v * Tiime) + \beta_6 \mathrm{W}_h + \varepsilon_{hvt}, \qquad (4)$$

where Y_{hvt} is the outcome of interest for household *h* from Kebele *v* at time *t,* $Tiime$ is a dummy variable which takes the value of 1 for end-line survey round. TS_v is an indicator for whether the

[24] The ratio of the difference in differences variance to the ANCOVA variance is 2/(1+ρ), where ρ is the autocorrelation. When ρ=.25, with a single baseline survey and follow-up survey, the sample size needed is 60 per cent larger with a DID model than with ANCOVA to get the same power (McKenzie (2012)).

household in Kebele *v* is assigned to treatment T1, T2, T3i and T3ii. β_2 is vector of difference-in-difference estimators which measures the impact of each treatment arms.

Appendix 2.1: Implementation of the Livelihoods Transfer RCT in the Sample Woredas

This section describes how the LT interventions were implemented after the baseline survey has been conducted.

A2.1.1. Preparation[25]

The preparation to implement the RCT after the baseline survey had three key elements - assignment of Kebeles to treatment, training of DAs, and production/adaptation of videos. Each of these are described below.

Assignment of Kebeles to Treatment

As noted above, the randomized assignment of treatment took the form of a public lottery that assigns each Kebele to a treatment arm. The process took place at the regional level with all the Woredas and many of the Kebeles were represented. Each meeting began with an in-depth review of the LT program followed by the administration of the lottery. Note that the process has been recorded (in the form of videos and still photographs).[26]

After the review, the actual assignment process began with a restatement of the reasons for conducting the lottery. The discussion highlighted the fact that the procedure is a simple, fair, and transparent way of assigning Kebeles to alternative treatment under the circumstances. Subsequently, the lottery was administered for each Woreda separately (see Appendix 2.3).

Selection and Production of the Videos

As mentioned above, IFPRI proposed two video-based interventions to accompany the program-specified support offered to beneficiaries. The two interventions focus respectively on 'technology' and aspirations. Two treatment arms are formed using these combinations.

The 'technology' intervention uses Digital Green-type videos to complement the standard technical support provided by DAs as part of the LT transfer program. The Digital Green (DG) approach has two key features – locally produced videos and group dissemination sessions. The technical support reaching beneficiaries is expected to be more effective through this complementation. Adoption rates will be higher as a consequence and, subsequently, incomes and well-being will rise. The videos for this treatment were produced in collaboration with DG (see further details in the next section).

The aspirations intervention attempts to alter beneficiaries' perceptions of their opportunities and whether and how they can realize them by screening short documentaries in which people from backgrounds similar to theirs narrate their own life stories. The documentary subjects improved their socio-economic position from being poor or average to being relatively successful through

[25] Sections III.1 and III.2.1 were extracted from the LT evaluation baseline report (see Berhane (2020)).

[26] The instructions used in conducting the lottery and the assignment of Kebeles that resulted from the procedure are reported in Appendix A2.3.

their efforts in agriculture (for example, saving to purchase an irrigation pump) or in small business (for example, starting a business selling flour). The stories they tell suggest that they achieved this through careful choices, which appears consistent with goal setting, with much perseverance and hard work, and not based on help from government or NGOs. This treatment used videos already produced and deployed by Bernard et al. (2017) in Ethiopia.

Digital Green (DG) videos

The DG-type videos were produced in a formal collaboration with DG Ethiopia. DG Ethiopia staff led the production of the videos and provided some of the Pico projectors used to screen them. DG Ethiopia has kindly agreed to collaborate without charging for staff time, equipment or professional fee. Nevertheless, the cost of travel, subsistence, and accommodation of DG staff during the production of videos as well as the provision of training to implementers need to be covered. The World Bank covered the cost in a separate contract with DG Ethiopia.

i. Selection of topics for the DG-type videos

The DG-type videos focus on topics (activities) and content relevant to the communities covered and the pathways supported through the LT program. A combination of

- As a first step in the video content selection process, the DCT team, in coordination with the Ministry of Agriculture (MoA),[27] collected various documents prepared as guidelines for extension/technology packages.[28] In total, 58 packages covering grains, fruits, vegetables, root crops, and livestock products are included in those documents. The information was usedas input into the DG-type video preparation in line with its relevance to the pathways supported through the LT program.
- In parallel, the relevant data that the LT baseline survey collected through household, DA, Community, and Woreda questionnaires, were summarized and used to identify the main topics that the DG-type videos should focus on by region/Woreda. The summary identified the major primary economic activities that sample households engage in. (See below on howmany topics were selected).
- A consultation process was initiated by the MoA with all the appropriate Woreda officials and many DAs to obtain mor information on major economic activities in their respective localities.
- A set of topics were selected after triangulating all these pieces of information. A validation workshop was convened on the main topics selected. Participants from DCT, WB, MoALR, DG Ethiopia, and the study team assessed the proposed topics in terms of their relevance and feasibility. Those endorsed were passed on to DG Ethiopia for video production.

[27] At that time the Ministry was named Ministry of Agriculture and Livestock Resources (MoALR).
[28] We would like to thank Ato Alema Woldemariam Atsebaha (MoA) and Ato Tesfaye Tilahun Workineh (WB/DCT) for promptly gathering and sharing these documents.

ii. Production of the DG-type videos

The next step was the actual production of the videos. The following steps were followed.

- DG Ethiopia prepared scripts for the DG-type videos based on the selected topics, technologies, and key messages. It did so in collaboration with IFPRI and based on the MoA's guidelines for the corresponding packages. It was agreed to select 1-2 topics per Woreda and produce 3 videos per region. These choices were in part justified by budget constraints.

  The most preferred pathway turned out to be on-farm livestock production focusing on ox fattening, shoats rearing, shoats fattening, and raising poultry. Each video has six segments: benefit of improved practices, selection of cattle/shoats, housing, feed and feeding, health care and hygiene management, egg storage, handling, packaging and transportation technique (only for poultry and instead of selection), and Marketing and Record keeping

- DG Ethiopia subsequently produced one video for each main topic and then have it "localized" to different Woredas in part by using local farmers as narrators. Videos were produced on site in the respective Woredas. One DG staff and 3 DG-trained video producers from neighboring Woredas were involved.[29] On average, it took this team of 4 people a week to produce a video. Four teams produced a total of 12 videos (see Table A2.1.1) in 4 weeks with an additional week of travel and contingencies.

Table A2.1.1: DG-type Videos by Woreda

Region	Woreda	DG-type Video
Amhara	Mekdella	Sheep Fattening
	Bati	Goat Rearing
Oromiya	Bedeno	Goat Rearing
	Doba	Shoat Fattening
	Habro	Ox Fattening
SNNP	Meskan	Ox Fattening
	Konso	Shoat Fattening and Ox Fattening
	Sodo Zuria	Shoat Rearing
Tigray	Hintalo -Wajirat	Shoat Fattening
	Ganta - Afeshom	Improved Poultry Production-
	Nader Adet	Sheep Rearing

Aspiration videos

As noted above, the aspiration videos were prepared and used by another study in Ethiopia (Bernard et al. (2017)). The only additional task was to translate the narration into the local language where that language is different from the original one in the video (see Table A2.3.1 in Appendix A2.3).

[29] There were no DG-trained video producers in the LT Woredas. Thus, such producers were co-opted from Woredas where DG is operating. The latter Woredas were selected according to their proximity to the LT Woredas.

A2.1.2. Training

The importance of training Woreda officials and, particularly, DAs has been emphasised at all stages of the RCT design. Three rounds of training took place.

Training of Woreda Officials

The first of these training workshops was arranged for regional and Woreda officials. These workshops were organized separately for each region and occurred after the baseline in August 2018. The primary aim was to fully apprise them of the LT study in the sample Woredas. A delegation from each of the sample Woredas, zonal and regional experts, representatives from the Food Security Coordination Directorate of the Federal MoA and the World Bank participated. Features of the study covered in detail include objectives, methodology, theory of change, overall design, sample design, evaluation questions, instruments, and timeline. The secondary purpose of these workshops was to conduct the random assignment of Kebeles to treatment arms via the public lottery described above.

The workshops were well attended and successfully completed.

DA Training

Two sets of training sessions were organized for DAs in treatment Kebeles only.

The first set took place in late October and early November of 2018 over a day and half for each region. The focus was to comprehensively familiarize DAs with the overall nature of the study and the details of the treatment arm to which their respective Kebele has been assigned. To facilitate the second aim and to minimize contamination, the DAs were grouped by the treatment arms to which their Kebeles belong and trained separately. The half day was specifically added to train DAs from Treatment Arm 3 Kebeles to introduce the DG-type videos and the aspiration videos and discuss screening modalities.

The training was attended by Kebele representative DAs. Woreda livelihood transfer program focal persons and coordinator from Ministry of Agricultural were also present. Unfortunately, 12 treatment Kebeles did not have DAs at this training.

The second set of training workshops focused on the video-based interventions and were run in March 2019 (after the production of the DG-type videos was completed). Thus, only those DAs from Treatment arms 3i and 3ii Kebeles were invited. Again, these workshops were conducted for each region separately. The training did particularly focus on the DG-type technology videos which were introduced by DG Ethiopia staff. Also, screening modalities for both the DG-type videos and the aspiration videos were described and demonstrated using Pico projectors. At the same time DAs were trained in the use of the Pico projectors which they ultimately used to show the videos to LT beneficiaries according to the treatment arm to which their respective Kebeles belong.

A2.1.3. Screening of Digital Green (DG) and Aspiration Videos

Screenings

After the training, GPS field coordinators were deployed to supervise the screening of DG and aspiration videos for selected HH under each treatment arm, 3i and 3ii. The videos were screened in Tigray and Amhara during between April 11 – 15, 2019 and in SNNP and Oromiya during May 2 – 8, 2019. One week ahead of screening of the videos each Kebele DA was contacted and consulted on the planned days of the screening. It was recommended to avoid market days and other competing activities to ensure higher number of attendances among households in the treatment groups including those in the baseline sample. The related advice was to choose the screening site with an eye to ease of accessibility for the majority selected households. Accordingly, schools, health posts and Kebele administration offices were used for screening of videos. Most screenings took place during 9-11AM in the morning.

In almost all Kebeles, screening started before 10am and the Kebele DA took the lead in setting the room for screening, setting up the Pico projector and leading and facilitating the screening process with the help of GPS field coordinators. Except those sessions conducted in schools, invited household members had to seat on the floor in small health posts and Kebele DA offices.

Prior to starting the video screening, DAs' took attendance of participants and confirm they are the right LT beneficiaries assigned to the screening. Similarly, GPS coordinators also took attendance to ascertain all beneficiaries in the LT baseline sample were present. Once attendance was taken, the DA explained why the attendants were invited, how long they will stay, and provided a few instructions on when and how they can ask questions and provide feedback.

Both DG and Aspiration videos screened in all treatment Kebeles were in the local language of the community. During the DG videos screening, the DA provided explanation by pausing the video and allowing Q&A after the screening has been completed. For the Aspiration videos, IFPRI-provided Screening Protocol was strictly followed by Kebele DA's and GPS field coordinators. The process of DG and Aspiration videos screening were also recorded on screening evaluation forms by GPS coordinators using IFPRI prepared semi-structured questionnaire.

A2.1.4. Compliance

A significant degree of noncompliance was discovered during the screening process. Missing the screening session was the first kind of noncompliance (Table A2.1.2). Only about half of the households assigned to Treatment 3i and 3ii attended the screening of the videos.

Table A2.1.2: Attendance of Screening Sessions (DG and Aspiration videos)

Region	Woreda	Households assigned to treatment 3i			Households assigned to treatment 3ii		
		Sample (number)	Attended video screening for 3i (number)	Attended video screening for 3i (%)	Sample (number)	Attended video screening for 3ii (number)	Attended video screening for 3ii (%)
Amhara	Bati	20	15	75.0	20	19	95.0
	Mekdela	20	19	95.0	10	10	100.0
Oromiya	Bedeno	30	28	93.3	40	39	97.5
	Doba	50	8	16.0	50	3	6.0
	Habro	50	12	24.0	40	10	25.0
SNNP	Meskean	30	2	6.7	30	12	40.0
	Konso	40	24	60.0	30	19	63.3
	Sodo Zuriya	40	33	82.5	40	38	95.0
Tigray	Ganta Afeshum	30	14	46.7	20	13	65.0
	Hintalo Wajirat	20	5	25.0	30	5	16.7
	Nader Adet	20	2	10.0	20	3	15.0
All Regions		**350**	**162**	**46.3**	**330**	**171**	**51.8**

Source: Authors' computation using data collected at the screening sites by GPS supervisors.

According to Kebele DA's and Woreda officials, distance of households from the screening site, illness, graduation from PSNP, and revision of the LT beneficiaries list after the LT baseline survey were the reasons behind this outturn. A closer look at the reasons for nonattendance revealed the main underlying cause of noncompliance (Table A2.1.3). By far the largest culprit (accounting for 89 percent of the cases) was the revision of the beneficiaries list leading to the replacement of many that were deemed eligible at the time of the baseline.

Woreda officials and Kebele DAs also identified the desire to ensure that the LT grants benefit the poorest in the community as the main motivation for the revision. Towards this end, they claimed that households benefiting from similar NGO development programs were disqualified. So were those deemed to have more income or land than the threshold levels for the bottom 10 percent of the wealth ranking. Nevertheless, GPS field coordinators met, during the screening sessions, household members who claim that their households were dropped from the LT program unfairly. They were there to express their dissatisfaction with the outcome. Needless to say, it was not possible for the GPS personnel to ascertain the veracity of such claims at the time.

Table A2.1.3: Reasons for not attending the screening sessions

Region	Reasons for not attending the screening session						
	The screening site too far	Other engagement (funeral, marriage…)	Did not want to attend	Graduated from PSNP	Illness	Migrated	Household removed from the LT beneficiaries list
SNNP	4	10	0		1	0	67
Oromiya	0	2	0	1	1	0	155
Amhara	4	2	2		0	1	0
Tigray	1	0	0	3	1	4	89
Total	**9**	**14**	**2**	**4**	**3**	**5**	**311**

Source: Authors' computation using data from Kebele DAs.

Appendix 2.2: The Lottery procedure for treatment assignment[30]

The following are the instructions used in conducting the lottery.

Rationale

Begin the process by restating the reason for conducting the lottery.

i. There are different treatment interventions – Treatment 1 – Treatment 3ii.

ii. The current budget (2020) does not allow the coverage of all eligible Kebeles in the region.

iii. As a result, some of the Kebeles will be randomly selected to serve as controls for the study (refer to the value of controls mentioned earlier).

iv. A lottery is a simple, fair, and transparent way of assigning Kebeles to alternative treatments.

Procedure

i. The lottery is administered for each Woreda separately;

ii. Use Table 3 below for each Woreda to determine to which treatment a Kebele drawn in each draw is assigned. The order differs slightly from Woreda to Woreda due to the difference in the number of Kebeles and the marginally differential allocation across Treatment 3i and Treatment 3ii (see Table 2 (which is now Table A2.12.9 above)).

iii. Though drawing lots is a common practice, it is helpful to run a practice round of the drawing process described below to familiarize participants;

iv. Please video record the drawing process using a cell phone camera or other device;

Steps

i. Prepare a number of equal-sized pieces of paper (as many as the number of Kebeles in the Woreda);

ii. Clearly write the name of each Kebele in each Woreda only once;

iii. Roll each piece of paper and put it in a bowl and thoroughly mix them;

iv. Both steps (ii) and (iii) should be completed in front of the participants;

v. Invite participants from a different Woreda to draw for a given Woreda;

vi. Make sure that the person drawing the lot should not look into the bowl;

vii. After each draw, record the assignment of the Kebele selected on the printed and distributed table for each Woreda;[31]

viii. Thoroughly mix the remaining lots and repeat the process until all draws are made and all Kebeles are assigned;

ix. Repeat the process for each Woreda;

[30] Video and photographic records of the public lottery were made.

[31] Drawing with replacement is unlikely to be helpful since we have restricted how many Kebeles can be assigned to treatment in each Woreda and overall.

Table A2.2.1: Order of Assignment by draw and Woreda

Draw	*Bati*	*Mekdela*	*Habro*	*Doba*	*Bedeno*
1	Control	Control	Control	Control	Control
2	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1
3	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2
4	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i
5	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii
6	Treatment 3ii	Treatment 3i	Treatment 3ii	Treatment 3ii	Treatment 3ii
7	Treatment 3i	Treatment 2	Treatment 3i	Treatment 3i	Treatment 3i
8	Treatment 2	Treatment 1	Treatment 2	Treatment 2	Treatment 2
9	Treatment 1	Control	Treatment 1	Treatment 1	Treatment 1
10	Control	Control	Control	Control	Control
11	Control	Treatment 1	Control	Control	Control
12	Treatment 1	Treatment 2	Treatment 1	Treatment 1	Treatment 1
13	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2
14	Treatment 2	Treatment 1	Treatment 3i	Treatment 3i	Treatment 3i
15	Treatment 1	Control	Treatment 3ii	Treatment 3ii	Treatment 3ii
16	Control		Treatment 3ii	Treatment 3ii	Treatment 3ii
17			Treatment 3i	Treatment 3i	Treatment 2
18			Treatment 2	Treatment 2	Treatment 1
19			Treatment 1	Treatment 1	Control
20			Control	Control	Control
21			Control	Control	Treatment 1
22			Treatment 1	Treatment 1	Treatment 2
23			Treatment 2	Treatment 2	Treatment 2
24			Treatment 3i	Treatment 3i	Treatment 1
25			Treatment 2	Treatment 3ii	Control
26			Treatment 1	Treatment 2	
27			Control	Treatment 1	
28			Control	Control	
29			Treatment 1	Control	
30			Treatment 2	Treatment 1	
31				Treatment 2	
32				Treatment 2	
33				Treatment 1	
34				Control	
35				Control	
36				Treatment 1	
37				Treatment 2	
38				Treatment 2	
39				Treatment 1	
40				Control	

Draw	*Sodo Zuriya*	*Konso Special*	*Meskan*	*Ganta Afeshum*	*Hintalo Wajirat*	*Nader Adet*
1	Control	Control	Control	Control	Control	Control
2	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1
3	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2
4	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i
5	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii
6	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 3ii
7	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i
8	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2
9	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1
10	Control	Control	Control	Control	Control	Control
11	Control	Control	Control	Control	Control	Control
12	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1	Treatment 1
13	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2	Treatment 2
14	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3i	Treatment 3ii	Treatment 2
15	Treatment 3ii	Treatment 3ii	Treatment 3ii	Treatment 2	Treatment 2	Treatment 1
16	Treatment 3ii	Treatment 3i	Treatment 2	Treatment 1	Treatment 1	Control
17	Treatment 3i	Treatment 2	Treatment 1	Control	Control	Control
18	Treatment 2	Treatment 1	Control	Control	Control	Treatment 1
19	Treatment 1	Control	Control	Treatment 1	Treatment 1	Treatment 2
20	Control	Control	Treatment 1	Treatment 2	Treatment 2	Treatment 2
21	Control	Treatment 1	Treatment 2		Treatment 2	Treatment 1
22	Treatment 1	Treatment 2			Treatment 1	Control
23	Treatment 2	Treatment 2			Control	
24	Treatment 2	Treatment 1				
25	Treatment 1	Control				
26	Control	Control				
27	Control	Treatment 1				
28	Treatment 1	Treatment 2				
29	Treatment 2	Treatment 2				
30		Treatment 1				
31		Control				
32						
33						
34						
35						
36						
37						
38						
39						
40						

Table A2.2.2: Kebele Treatment Assignment

Region	Woreda	Kebele	Kebele Id	Assignment
Amhara	Bati	Choqort	31002124	Control
Amhara	Bati	Kame	31002111	Control
Amhara	Bati	Kurkura	31002114	Control
Amhara	Bati	Melkalum	31002112	Control
Amhara	Mekdela	Beso Ber	30401114	Control
Amhara	Mekdela	Debre Zeit	30401119	Control
Amhara	Mekdela	Gonderoch	30401123	Control
Amhara	Mekdela	Kibitiya	30401112	Control
Oromiya	Bedeno	Burka Badaso	41013115	Control
Oromiya	Bedeno	Burqa Nagayya	41013116	Control
Oromiya	Bedeno	Dachatu	41013117	Control
Oromiya	Bedeno	Ganammii	41013121	Control
Oromiya	Bedeno	Haro qarsa	41013125	Control
Oromiya	Bedeno	Mata Ramis	41013129	Control
Oromiya	Doba	Baha Adu	40902122	Control
Oromiya	Doba	Bakalcha Biftu	40902134	Control
Oromiya	Doba	Barihe	40902117	Control
Oromiya	Doba	Bilisumma	40902112	Control
Oromiya	Doba	Dire Negeya	40902115	Control
Oromiya	Doba	Ifa Ballam	40902113	Control
Oromiya	Doba	Jalala	40902121	Control
Oromiya	Doba	Laga Lencaa	40902127	Control
Oromiya	Doba	Mada Talila	40902129	Control
Oromiya	Doba	Walkituma waji	40902136	Control
Oromiya	Habro	Abdi Gudina	40908111	Control
Oromiya	Habro	Firi Jiru	40908121	Control
Oromiya	Habro	Laga Bera	40908132	Control
Oromiya	Habro	Lelisa	40908133	Control
Oromiya	Habro	Malka Balo	40908135	Control

Region	Woreda	Kebele	Kebele Id	Assignment
Amhara	Bati	Aela	31002118	Treatment 1
Amhara	Bati	Fera	31002123	Treatment 1
Amhara	Bati	Garero	31002115	Treatment 1
Amhara	Bati	Jaldeti	31002116	Treatment 1
Amhara	Mekdela	Bebazura	30401125	Treatment 1
Amhara	Mekdela	Deferge	30401111	Treatment 1
Amhara	Mekdela	Dender	30401122	Treatment 1
Amhara	Mekdela	Gogos	30401118	Treatment 1
Oromiya	Bedeno	Balchek kala	41013112	Treatment 1
Oromiya	Bedeno	Dirota Ramis	41013119	Treatment 1
Oromiya	Bedeno	Dodota Mojo	41013120	Treatment 1
Oromiya	Bedeno	Ija Buna	41013127	Treatment 1
Oromiya	Bedeno	Jiru Balina	41013128	Treatment 1
Oromiya	Bedeno	Waldaya Ramis	41013135	Treatment 1
Oromiya	Doba	Dire ballo	40902128	Treatment 1
Oromiya	Doba	Gemechu	40902137	Treatment 1
Oromiya	Doba	Hake Bas	40902114	Treatment 1
Oromiya	Doba	Ifa Aman	40902131	Treatment 1
Oromiya	Doba	Lencha Wadesa	40902143	Treatment 1
Oromiya	Doba	Mada Bilisuma	40902146	Treatment 1
Oromiya	Doba	Misra Chifra	40902142	Treatment 1
Oromiya	Doba	Oda Bultum	40902145	Treatment 1
Oromiya	Doba	Terkanfeta	40902144	Treatment 1
Oromiya	Doba	Urjii	40902125	Treatment 1
Oromiya	Habro	Busoytu	40908115	Treatment 1
Oromiya	Habro	Cafee 12	40908116	Treatment 1
Oromiya	Habro	Cafee 13	40908117	Treatment 1
Oromiya	Habro	Dikicha	40908120	Treatment 1
Oromiya	Habro	Haro Charchar	40908125	Treatment 1

Oromiya	Habro	Oda Muda	40908136	Control
Oromiya	Habro	Odaa Anani	40908137	Control
SNNP	Konso	Abaroba	71501111	Control
SNNP	Konso	Gaho	71501120	Control
SNNP	Konso	Gelgelena qolmale	71501141	Control
SNNP	Konso	Gera	71501122	Control
SNNP	Konso	Mechelo	71501113	Control
SNNP	Konso	Mecheqe	71501121	Control
SNNP	Konso	Sew geme	71501118	Control
SNNP	Konso	Tish male	71501119	Control
SNNP	Meskan	Bamo	70106117	Control
SNNP	Meskan	Bati Lejano	70106111	Control
SNNP	Meskan	Bechi	70106122	Control
SNNP	Meskan	Inseno Usme	70106113	Control
SNNP	Meskan	Wejabati	70106123	Control
SNNP	Sodo Zuriya	Dalibo Wogene	70605116	Control
SNNP	Sodo Zuriya	Damote waja	70605123	Control
SNNP	Sodo Zuriya	Kokate	70605135	Control
SNNP	Sodo Zuriya	Kuto Sorfela	70605132	Control
SNNP	Sodo Zuriya	Wachiga Busha	70605115	Control
SNNP	Sodo Zuriya	Waja Shoya	70605127	Control
SNNP	Sodo Zuriya	Wareza Gerera	70605129	Control
Tigray	Ganta Afeshum	Dibla Seat	10304125	Control
Tigray	Ganta Afeshum	Golea Genahati	10304127	Control
Tigray	Ganta Afeshum	Hadinet	10304122	Control
Tigray	Ganta Afeshum	Haga-Arega	10304114	Control
Tigray	Ganta Afeshum	May-Weyni	10304116	Control
Tigray	Hintalo Wajirat	Adi Keyih	10403121	Control
Tigray	Hintalo Wajirat	Adi Mesno	10403120	Control
Tigray	Hintalo Wajirat	Genka	10403116	Control
Tigray	Hintalo Wajirat	Genti	10403118	Control

Oromiya	Habro	Kalacha	40908130	Treatment 1
Oromiya	Habro	Wene Gudo	40908139	Treatment 1
SNNP	Konso	Arfayide	71501130	Treatment 1
SNNP	Konso	Birbirsa	71501134	Treatment 1
SNNP	Konso	Buso	71501136	Treatment 1
SNNP	Konso	Debeno	71501128	Treatment 1
SNNP	Konso	Gocha	71501123	Treatment 1
SNNP	Konso	Guragna	71501114	Treatment 1
SNNP	Konso	Lulitu	71501133	Treatment 1
SNNP	Konso	Naliya segen	71501117	Treatment 1
SNNP	Meskan	Debo Tuto	70106118	Treatment 1
SNNP	Meskan	Dirama	70106125	Treatment 1
SNNP	Meskan	Ile	70106114	Treatment 1
SNNP	Meskan	jole 2 and 3	70106127	Treatment 1
SNNP	Meskan	Ocha geneme	70106124	Treatment 1
SNNP	Sodo Zuriya	Guligula	70605137	Treatment 1
SNNP	Sodo Zuriya	Humbo larena	70605136	Treatment 1
SNNP	Sodo Zuriya	kodo Gawlia	70605131	Treatment 1
SNNP	Sodo Zuriya	Ofa Gendeba	70605122	Treatment 1
SNNP	Sodo Zuriya	Tome Gerera	70605112	Treatment 1
SNNP	Sodo Zuriya	Wareza Lasho	70605113	Treatment 1
SNNP	Sodo Zuriya	Woyede Mesena	70605125	Treatment 1
Tigray	Ganta Afeshum	Bahri Seheta	10304130	Treatment 1
Tigray	Ganta Afeshum	Beatimay Mesanu	10304128	Treatment 1
Tigray	Ganta Afeshum	Bikot	10304124	Treatment 1
Tigray	Ganta Afeshum	Megulat	10304118	Treatment 1
Tigray	Ganta Afeshum	Wuhdet	10304111	Treatment 1
Tigray	Hintalo Wajirat	Adigudem	10403130	Treatment 1
Tigray	Hintalo Wajirat	Bahari Tseba	10403114	Treatment 1
Tigray	Hintalo Wajirat	Dejen	10403112	Treatment 1
Tigray	Hintalo Wajirat	Fre weyni	10403123	Treatment 1

Tigray	Hintalo Wajirat	Mayi nebiri	10403126	Control
Tigray	Hintalo Wajirat	Senale	10403117	Control
Tigray	Nader Adet	Adet Bekli	10207122	Control
Tigray	Nader Adet	Adi Laheyen	10207113	Control
Tigray	Nader Adet	Adi Serawit	10207114	Control
Tigray	Nader Adet	Humre	10207121	Control
Tigray	Nader Adet	Laylay Hedug	10207115	Control
Tigray	Nader Adet	Seberu Ruba Adet	10207124	Control
Amhara	Bati	Aware	31002126	Treatment 2
Amhara	Bati	Bira	31002113	Treatment 2
Amhara	Bati	Salmene	31002119	Treatment 2
Amhara	Bati	Urenegu	31002125	Treatment 2
Amhara	Mekdela	Dedere	30401124	Treatment 2
Amhara	Mekdela	Haroge	30401120	Treatment 2
Amhara	Mekdela	Tebi	30401116	Treatment 2
Amhara	Mekdela	Yekoso	30401113	Treatment 2
Oromiya	Bedeno	Ashuqo	41013111	Treatment 2
Oromiya	Bedeno	Bortolo	41013114	Treatment 2
Oromiya	Bedeno	Hara danaba	41013123	Treatment 2
Oromiya	Bedeno	Ija Biyyaa	41013126	Treatment 2
Oromiya	Bedeno	Mojo Hamid	41013131	Treatment 2
Oromiya	Bedeno	Tortora Qala	41013134	Treatment 2
Oromiya	Doba	Biyo Jeneta	40902150	Treatment 2
Oromiya	Doba	Dhalottaa	40902133	Treatment 2
Oromiya	Doba	Dhaqabaa	40902138	Treatment 2
Oromiya	Doba	Ibsa Bate	40902139	Treatment 2
Oromiya	Doba	Ifa Haqa	40902124	Treatment 2
Oromiya	Doba	Ifa Janata	40902126	Treatment 2
Oromiya	Doba	Ifa Jeyna	40902141	Treatment 2
Oromiya	Doba	Oda Jalala	40902118	Treatment 2
Oromiya	Doba	Oda Jeneta	40902116	Treatment 2

Tigray	Hintalo Wajirat	Tsehafiti	10403119	Treatment 1
Tigray	Hintalo Wajirat	Waza Adi Awana	10403122	Treatment 1
Tigray	Nader Adet	Abeba Yohannes	10207118	Treatment 1
Tigray	Nader Adet	Debere Genet	10207128	Treatment 1
Tigray	Nader Adet	Kisad Ahu	10207131	Treatment 1
Tigray	Nader Adet	May Danya	10207126	Treatment 1
Tigray	Nader Adet	Metahilo	10207116	Treatment 1
Tigray	Nader Adet	Teragay	10207112	Treatment 1
Amhara	Bati	Hato	31002121	Treatment 3i
Amhara	Bati	Kebela	31002122	Treatment 3i
Amhara	Mekdela	Adiguya	30401117	Treatment 3i
Amhara	Mekdela	Gobadin	30401121	Treatment 3i
Oromiya	Bedeno	Hariro Gultii	41013124	Treatment 3i
Oromiya	Bedeno	Mangudo Ramis	41013130	Treatment 3i
Oromiya	Bedeno	Oda Bishani	41013132	Treatment 3i
Oromiya	Doba	Badhasa	40902123	Treatment 3i
Oromiya	Doba	Lubu Dakab	40902120	Treatment 3i
Oromiya	Doba	Tokuma Mata Lencha	40902149	Treatment 3i
Oromiya	Doba	Walkituma Ibsa	40902130	Treatment 3i
Oromiya	Doba	Waltane	40902148	Treatment 3i
Oromiya	Habro	Bareda	40908113	Treatment 3i
Oromiya	Habro	Gadisa	40908122	Treatment 3i
Oromiya	Habro	Garbi Goba	40908123	Treatment 3i
Oromiya	Habro	Garbi Taka	40908124	Treatment 3i
Oromiya	Habro	Wene No. 8	40908138	Treatment 3i
SNNP	Konso	Doha	71501112	Treatment 3i
SNNP	Konso	Jarso	71501138	Treatment 3i
SNNP	Konso	Kashile	71501127	Treatment 3i
SNNP	Konso	Kemele	71501129	Treatment 3i
SNNP	Meskan	Bati Fato	70106121	Treatment 3i
SNNP	Meskan	Jole 1	70106128	Treatment 3i

Oromiya	Doba	Tokuma jalala	40902135	Treatment 2
Oromiya	Habro	Bora	40908114	Treatment 2
Oromiya	Habro	Darara	40908119	Treatment 2
Oromiya	Habro	Hunde Daba	40908126	Treatment 2
Oromiya	Habro	Ifa Gamachu	40908128	Treatment 2
Oromiya	Habro	Ifa Jiru	40908129	Treatment 2
Oromiya	Habro	Kufa Kas	40908131	Treatment 2
Oromiya	Habro	Lugo	40908134	Treatment 2
SNNP	Konso	Dara	71501125	Treatment 2
SNNP	Konso	Doketu	71501135	Treatment 2
SNNP	Konso	Durayite	71501126	Treatment 2
SNNP	Konso	Fasha	71501115	Treatment 2
SNNP	Konso	Gamole	71501124	Treatment 2
SNNP	Konso	Gelebo	71501131	Treatment 2
SNNP	Konso	Madoriyana gizaba	71501140	Treatment 2
SNNP	Konso	Sorobo	71501137	Treatment 2
SNNP	Meskan	D/Gola	70106120	Treatment 2
SNNP	Meskan	Dida	70106112	Treatment 2
SNNP	Meskan	Shershera Bido	70106129	Treatment 2
SNNP	Meskan	Wita	70106126	Treatment 2
SNNP	Meskan	Yimerwacho 2nya	70106116	Treatment 2
SNNP	Sodo Zuriya	Buge Wanche	70605119	Treatment 2
SNNP	Sodo Zuriya	Bukema fekeka	70605124	Treatment 2
SNNP	Sodo Zuriya	Dalibo Atiwaro	70605118	Treatment 2
SNNP	Sodo Zuriya	Gilo Bisare	70605139	Treatment 2
SNNP	Sodo Zuriya	Gurumo Woyde	70605133	Treatment 2
SNNP	Sodo Zuriya	Mante Gerera	70605128	Treatment 2
SNNP	Sodo Zuriya	Waja Kero	70605111	Treatment 2
Tigray	Ganta Afeshum	Hagere Selam	10304123	Treatment 2
Tigray	Ganta Afeshum	Keta gedeba	10304113	Treatment 2
Tigray	Ganta Afeshum	Sasun Betehawariyat	10304126	Treatment 2
SNNP	Meskan	Semen Shorshora	70106131	Treatment 3i
SNNP	Sodo Zuriya	Amacho Kodo	70605134	Treatment 3i
SNNP	Sodo Zuriya	Haba Gerera	70605130	Treatment 3i
SNNP	Sodo Zuriya	Shela Borkoshe	70605121	Treatment 3i
SNNP	Sodo Zuriya	Zeiga Borkoshe	70605138	Treatment 3i
Tigray	Ganta Afeshum	Azeba	10304121	Treatment 3i
Tigray	Ganta Afeshum	Gahgot	10304129	Treatment 3i
Tigray	Ganta Afeshum	Simret No.2	10304117	Treatment 3i
Tigray	Hintalo Wajirat	Mesanu	10403133	Treatment 3i
Tigray	Hintalo Wajirat	Sebebera	10403115	Treatment 3i
Tigray	Nader Adet	Dagena	10207111	Treatment 3i
Tigray	Nader Adet	Seriha Bla	10207119	Treatment 3i
Amhara	Bati	Mehamed	31002120	Treatment 3ii
Amhara	Bati	Motuma	31002117	Treatment 3ii
Amhara	Mekdela	Genatit	30401115	Treatment 3ii
Oromiya	Bedeno	Biyyo Ramis	41013113	Treatment 3ii
Oromiya	Bedeno	Dhertu Ramis	41013118	Treatment 3ii
Oromiya	Bedeno	Gololcha	41013122	Treatment 3ii
Oromiya	Bedeno	Tortora Gudda	41013133	Treatment 3ii
Oromiya	Doba	Biftu oromia	40902119	Treatment 3ii
Oromiya	Doba	Ifa din	40902140	Treatment 3ii
Oromiya	Doba	Ifa Rahmeta	40902132	Treatment 3ii
Oromiya	Doba	Kufa Kas	40902147	Treatment 3ii
Oromiya	Doba	Oda negeya	40902111	Treatment 3ii
Oromiya	Habro	Badada	40908112	Treatment 3ii
Oromiya	Habro	Danse	40908118	Treatment 3ii
Oromiya	Habro	Ibsa	40908127	Treatment 3ii
Oromiya	Habro	Wene Qaloo	40908140	Treatment 3ii
SNNP	Konso	Borqara	71501139	Treatment 3ii
SNNP	Konso	Gesergiyo	71501116	Treatment 3ii
SNNP	Konso	Lehayite	71501132	Treatment 3ii

Tigray	Ganta Afeshum	Simret No.1	10304112	Treatment 2
Tigray	Ganta Afeshum	Tseada Tihamelo	10304120	Treatment 2
Tigray	Hintalo Wajirat	Ara Asegeda	10403129	Treatment 2
Tigray	Hintalo Wajirat	Fikire Alem	10403127	Treatment 2
Tigray	Hintalo Wajirat	Hareko	10403131	Treatment 2
Tigray	Hintalo Wajirat	Hintalo	10403128	Treatment 2
Tigray	Hintalo Wajirat	Hiwane	10403124	Treatment 2
Tigray	Hintalo Wajirat	Muja	10403125	Treatment 2
Tigray	Nader Adet	Adereb	10207120	Treatment 2
Tigray	Nader Adet	Adi Selam	10207132	Treatment 2
Tigray	Nader Adet	Gundi	10207129	Treatment 2
Tigray	Nader Adet	Jira	10207125	Treatment 2
Tigray	Nader Adet	May Temket	10207117	Treatment 2
Tigray	Nader Adet	Rubaye	10207127	Treatment 2

SNNP	Meskan	Beresa	70106119	Treatment 3ii
SNNP	Meskan	Debub Shershera	70106130	Treatment 3ii
SNNP	Meskan	Yimerwacho 1nya	70106115	Treatment 3ii
SNNP	Sodo Zuriya	Ansome Genbela	70605126	Treatment 3ii
SNNP	Sodo Zuriya	Bosa Kacha	70605120	Treatment 3ii
SNNP	Sodo Zuriya	Shola Kodo	70605114	Treatment 3ii
SNNP	Sodo Zuriya	Zala shasha	70605117	Treatment 3ii
Tigray	Ganta Afeshum	Adikeney	10304115	Treatment 3ii
Tigray	Ganta Afeshum	Mergaheya	10304119	Treatment 3ii
Tigray	Hintalo Wajirat	Amidi Weyane	10403113	Treatment 3ii
Tigray	Hintalo Wajirat	Hagere Selam	10403132	Treatment 3ii
Tigray	Hintalo Wajirat	Metkel	10403111	Treatment 3ii
Tigray	Nader Adet	Shenako	10207123	Treatment 3ii
Tigray	Nader Adet	Sika	10207130	Treatment 3ii

Appendix 2.3: The Aspiration Videos

Table A2.3.1: The Aspirations Videos

Name	Gender	Location	Woredas for Screening	Language	Changes
Adem Mohammed	Male	Bati Woreda, Oromia Zone, Amhara	(Ganta Afeshum, Hintalo Wajirat, Nader Adet), (Bati)	Amharic narrative, Oromiffa dialogue	narrative and dialogue translated into Tigrigna
Awaki Fayera	Male	Bako Tibe Woreda, West Shoa, Oromia	(Bedeno, Doba, Habro), (Bati, Mekedela), (Konso, Sodo Zuria, Meskan)	Amharic narrative, and dialogue; Oromiffa narrative, and dialogue	narrative and dialogue translated into Konso, Wolaita, Guragigna (Meskan)
Ayelech Fikre	Female	Kebele, North Shewa Zone, Amhara	(Ganta Afeshum, Hintalo Wajirat, Nader Adet), (Bedeno, Doba, Habro), (Bati, Mekedela), (Konso, Sodo Zuria, Meskan)	Amharic narrative, and dialogue; Oromiffa narrative, and dialogue	narrative and dialogue translated into Tigrigna, Konso, Wolaita, Guragigna (Meskan)
Beshir Malim Isaq	Male	Madda Wolabu Woreda, Bale Zone, Oromia	Bedeno, Doba, Habro	Oromiffa narrative, and dialogue	None
Degie Fentie	Male	Bure Woreda, West GojjamZone, Amhara	Mekedela	Amharic narrative and dialogue;	
Elfinesh Bermejie	Female	Ada Woreda, East Shoa Zone, Oromia	(Ganta Afeshum, Hintalo Wajirat, Nader Adet), (Bati, Mekedela), (Konso, Sodo Zuria, Meskan)	Amharic narrative and dialogue;	narrative and dialogue translated into Tigrigna, Konso, Wolaita, Guragigna (Meskan)
Kes Amde	Male	Atsbi-Womberta Woreda, Eastern Zone, Tigray	Ganta Afeshum, Hintalo Wajirat, Nader Adet	Tgirgna narrative and dialogue;	None
Teiba Abdula	Female	Grawa Woreda, East Hararghe Zone, Oromia	Bedeno, Doba, Habro	Oromiffa narrative and dialogue	None
Wajena Wada	Male	Offa Woreda, Wolaita Zone, SNNPR	Konso, Sodo Zuria, Meskan	Amharic narrative and dialogue;	narrative and dialogue translated into Konso, Guragigna (Meskan)

CHAPTER 3: THE LIVELIHOODS TRANSFER PROGRAMME – FEATURES AND IMPLEMENTATION[32]

This chapter begins with a brief description of the LT program followed by a discussion of its implementation.

3.1. The Livelihood Transfer (LT) Programme

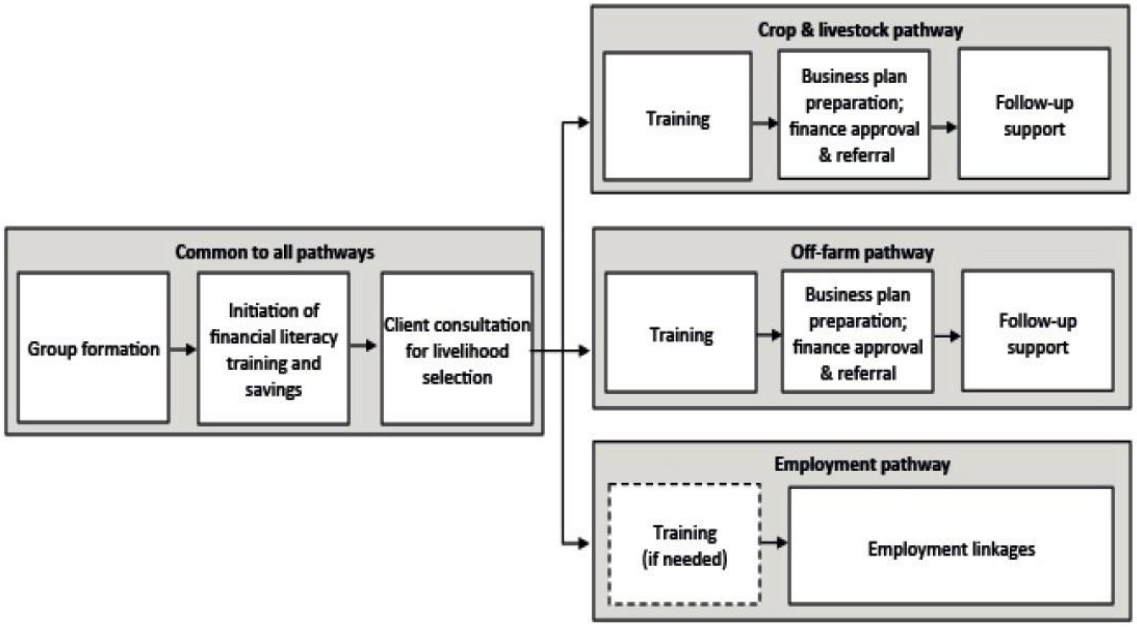
The section provides a brief description of what the LT programme aims at, who it targets, and what it offers.

The Project Implementation Manual (PIM) of PSNP4 (MoANR (2016)) envisages that the livelihoods transfer program will enable beneficiaries to "(build productive assets, develop their livelihoods, access credit, and, ultimately, become self-sufficient". The program targets the poorest PSNP beneficiaries, selected through wealth ranking process within communities, and deemed "capable of participating in the livelihoods support services (financial literacy, training, saving, livelihoods selection, technical and business skills training and business plan development), (and) capable of managing the livelihoods activities (to be specified in corresponding business plans)."

Figure 3.1.1 highlight the elements of the livelihoods transfer program and the key steps in its implementation. Forming livelihood groups of potential beneficiaries is the first step. These groups serve as point of contact with DAs and platform for corresponding support. This step is followed by the beginnings of financial literacy training and savings promotion. Consultation-based livelihood pathway and specific livelihood selection by beneficiaries follows. DAs provide information on livelihood options to facilitate this process. Subsequently, training customised to suit the selected pathway and livelihood is provided to beneficiaries. The training covers relevant technical and business/marketing skills. Business plan development forms the next step. With the endorsement of the business plan the selected LT beneficiary receive a grant equivalent to US$200. In fact, completion of the earlier steps is a condition for receiving the grant. The final component of the LT program is DA follow-up support with mentoring and coaching of beneficiaries that is expected to continue for up to two years.

[32] Parts of Sections 3.2 and 3.3 are taken from Berhane et al. (2020), the Baseline Report.

Figure 3.1.1: Livelihoods implementation flow chart



Source: Extracted from MoANR (2016), p. 36.

Two pathways are the focus of the livelihoods grant programme – crop and livestock pathway and off-farm pathway (Table 3.1.1).[33] The wage employment pathway is not offered to households identified to receive the livelihood grant. The following list identifies some alternatives that the livelihood programme beneficiaries could pursue.

Table 3.1.1: Livelihood Pathways and Livelihoods

Crop and livestock (on-farm)	*Off-farm*
• Ox fattening • Fruit seedling production • Sheep fattening • Poultry • Vegetable production • Beekeeping	• Petty trading • Sand collection • Tailoring • Donkey cart transport • Carpentry • Masonry • Milling

Source: Extracted from MoANR (2016), p. 37.

3.2. Targeting principles and Processes

MoANR (2015a) provide the most detailed description of what the LT program is and how it is to be implemented. The document describes the livelihood transfer as:

[33] As can be surmised from Table 3.1.1, 'off farm' in this context captures what is strictly speaking both 'off-farm' and 'non-farm' activities. The report uses 'off farm' the same way to be consistent with the use in official documents.

> ‘a grant that is provided to the poorest households in the PSNP after they have completed all the required trainings, and developed a business plan. The transfer, which will be provided in cash, is worth the ETB equivalent of (US)$200 and will be provided for the livelihood activities outlined as per the business plan.” (MoANR (2015a, 3)

The grant is aimed at encouraging and enabling very poor risk-averse households to make livelihood-enhancing investments in income-generating activities. Specifically, the LT program aspires to help such households:

- invest in productive assets and diversify their livelihoods;
- access credit from formal sources including microfinance institutions and/or RUSACCOs;

Limited available resources and the desire to use them effectively/efficiently meant that the LT program has to be targeted. Accordingly, poverty combined with ability to run income-generating activities determine eligibility. MoANR (2015a, 3) summarizes as follows:

> “The poorest PSNP clients, as identified during a community wealth ranking process, are eligible for the livelihoods transfer provided that they are capable of participating in the livelihoods support services (financial literacy, training, saving, livelihoods selection, technical and business skills training and business plan development), capable of managing the livelihoods activities (as specified in the business plan) and **are aspiring to graduate from the PSNP**. The poorest permanent direct support clients may be considered for eligibility on a case by case basis, provided that they are capable of managing livelihoods activities and are aspiring to graduate from the PSNP.”

The targeting process has three phases – selection of participating Woredas, selection of roll-out Kebeles, and selection of beneficiary households

Step 1: Selection of Woredas

Regional governments are responsible for selecting Woredas that participate in the LT program from among the PSNP Woredas in their respective region. In making the selections, the regional governments are advised to consider, among others, the capacity of Woredas to implement the program; representativeness of ‘the diversity of livelihoods system and opportunities’; and the presence of the functioning and equipped number of Farmer Training Centers (FTCs) (MoANR (2015a)).

Step 2: Selection of Kebeles

Once the Woredas are selected, the next step is for each Woreda to selecting implementing Kebeles. The option of choosing all Kebeles or only some is a decision left to the relevant Woreda authorities. Nevertheless, it is recommended that each selected Kebele has “3 DAs, a basic FTC …, and functioning Kebele Food Security Task force (KFSTF) …. and Kebele Appeals Committee (KAC)” (MoANR (2015a, 5).

Step 3: Selection of households

Targeting of is perhaps the most important component of the selection process. It involves the following number of steps.

- The first step in to conduct a community wealth ranking of Public Works (PWs) participants. If there is a recent ranking available (for example from retargeting for PSNP4), it may be sufficient to ensure the wealth ranked list is up to date. As noted above, poor Direct Support (DS) beneficiaries can also be considered case by case.
- The next task is to delineate the bottom 10 percent of the wealth-ranked lists. This sub-set will constitute the very poor that, in principle, are eligible for the LT transfers. Whether someor all of them will get the grant depends on the implementation capacity of the Kebele including the number of DAs it has to manage the program.
- Community verification follows. The delineated candidate grantees are then 'verified by the CFSTF, and then by the community' (MoANR (2015a, 7).
- The grantee list endorsed by the community is subsequently posted at the Kebele office and other public places within the Kebele. Appeals of inclusion/exclusion need to be made to the Kebele Appeals Committee (KAC) during the 10 days that follow the date of posting. Investigation and resolution are expected from KACs within 15 days (MoANR (2015a)).
- Finally, the list is submitted to the Woreda Food Security Task Force and the relevant Woreda offices.

As reported in the IE design above, 41 Woredas in Tigray, Amhara, Oromiya, and SNNP were selected to implement the LT program. Twelve from among these Woredas (three from each region) with a total of 286 beneficiary Kebeles form the study area for this impact evaluation. See the sampling sections in Chapter 2 for further details.

3.3. Perspectives

In this section, the perspectives and experiences of different stakeholders related to the LT program are reported. The community surveys at baseline and end-line, the qualitative survey at end-line, the DA survey at baseline and end-lie, and the separate monitoring survey provide the required information.

3.3.1. Kebele Perspectives

As noted in Chapter 2, a community survey has been conducted in each sample kebele.[34] From among the multiple topics covered by the survey, awareness and targeting related to the LT program are the focus here.

It is encouraging that more than three-quarters of surveyed communities report knowledge of how the beneficiaries are selected to the three livelihood pathways supported by the LT program (Table 3.3.1). A somewhat week performance is recorded in community confirmation of the LT beneficiary list (slightly less than two-thirds report a meeting to do so). Note that these features do not vary in a statistically significant way by treatment status.

Table 3.3.1: The Livelihoods Transfer Program: Kebele-level Awareness of Targeting

	All	Control	Treatment	Mean difference t-test (p-value)
Percentage of communities who know how beneficiaries are selected to receive the livelihoods transfer for crop and off-farm pathways	76.3	71.2	78.0	0.265
Percentage of communities who know how beneficiaries are selected to receive the livelihood transfer for employment pathway	79.5	75.8	80.7	0.390
Percentage of communities that had a meeting to select who will receive livelihood transfer	64.2	60.6	65.4	0.482

Source: 'Table V.6: Livelihoods Transfer - Kebele-Level Perceptions' in Authors' in Berhane et al. (2020), p. 43.
Note: The last column reports the p-value of a two-tailed test of the hypothesis that values corresponding to control and treatment communities are on average the same.

Community survey respondents were also asked to choose from a pair of statements the one they agree most with. The statements and the corresponding choice are intended to illicit the Kebele-level beliefs/perceptions regarding aspects of the LT program. The results are reported in Table 3.3.2.

It appears that there is a clear belief and understanding that poor members of the community should be the prime beneficiary of the LT program. The one worrisome exception: in 40 percent of the Kebeles respondents agreed that "There will be tension in this community/Kebele if the grant from the PSNP4's livelihoods transfer program only go to some households." Again, no statistically significant difference in responses is detected across treatment status.

[34] Recall that in each Kebele, the group interviewed must include at least one member of the Kebele Food Security Task Force, at least one member of the Kebele Council, at least one Development Agent, at least one Health Extension Worker and at least one woman.

Table 3.3.2: Livelihoods Transfer - Kebele-Level Perceptions

	"Yes" (% of Kebeles)			Difference t-test (p-value)
	Total	Control	Treatment	
(1) "Fairness requires that everyone in this community have access to the grant from the PSNP4's livelihoods transfer program."	11.9	9.1	12.8	
OR				0.420
(2) "Fairness requires that only the poorest households in this community/Kebele have access to the grant from the PSNP4's livelihoods transfer program."	88.1	90.9	87.2	
(1) "We know who is poor in this community/Kebele."	85.4	86.4	85.1	
OR				0.795
(2) "It is difficult to distinguish between poor and less poor households in this community/Kebele"	14.6	13.6	14.9	
(1) "There will be tension in this community/Kebele if the grant from the PSNP4's livelihoods transfer program only go to some households"	40.2	42.4	39.5	
OR				0.675
(2) "People in this community/Kebele agree that the grant from the PSNP4's livelihoods transfer program should only go to some households, not all."	59.8	57.6	60.5	
(1) "Because we know who is poor in this community/Kebele, we can target the grant from the PSNP4's livelihoods transfer program to those who need them most."	80.3	81.8	79.8	
OR				0.722
(2) "The differences between households are so small that the only fair way to allocate the grant from the PSNP4's livelihoods transfer program is to give them to many households."	19.7	18.2	20.2	

Source: 'Table V.7: Livelihoods Transfer - Kebele-Level Perceptions' in Authors' in Berhane et al. (2020), p. 43.
Note: The last column reports the p-value of a two-tailed test of the hypothesis that values corresponding to control and treatment communities are on average the same.

One interesting result relates to the main implementation challenge. When asked to "identify the three major problems faced in the implementation of the LT program in your Kebele," limited budget or quota topped the list for community survey participants (38 percent).

3.3.2. Development Agent (DA) Perspectives

Given the prominent role of DAs in the implementation of the LT program, a look into their knowledge of the program and activities related to it would be informative. They also have an inside look at implementation challenges faced by the program.

The Monitoring Survey (see brief description in Chapter 2) asked DAs about several related dimensions. Tables 3.3.3 – 3.3.4 report on their response. Most DAs have heard of the program prior to the Monitoring Survey (Table 3.3.3). As expected, all DAs in treatment kebeles were aware of the program. Woreda officials were the main source of information on the program. DAs' awareness of the key elements in the targeting process – wealth ranking and asset verification – appears solid.

This strength is not present with respect to major elements of training, however. The fraction of DAs in treatment kebeles who are knowledgeable about financial literacy training, business training, business plan preparation, and coaching and mentoring hovers around 50 percent. The awareness rate of DAs in control kebeles is less but not by a significant margin.

Table 3.3.3: DAs knowledge of LT-related activities

	Control	T1	T2	T3i	T3ii
Time first heard about LT (N = 269):					
Before December 2018 (%)	45	55	76	71	65
Between December 2018 and December 2019 (%)	37	41	24	29	35
January to February 2020* (%)	2	4	0	0	0
Never heard of LT (%)	16	0	0	0	0
Source of information (N = 261):					
Other DAs (%)	14	14	12	18	12
Woreda officials (%)	63	71	84	75	81
Region or Federal officials (%)	8	14	4	7	8
Unprompted responses of tasks related with livelihoods component (N = 261)					
Wealth ranking (%)	88	98	96	100	96
Asset verification (%)	63	73	74	86	69
Financial literacy training (%)	35	43	66	46	69
Business skill training (%)	19	41	44	39	58
Developing business plan (%)	23	29	58	39	46
Coaching and mentoring (%)	51	49	54	46	65

Source: Authors' computation using data from the Livelihood Transfer Second Monitoring Survey DAs and Households data (February 2020).

Note: 'Control', 'T1', 'T2', 'T3i', and 'T3ii' stand for the Control group, Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, and Treatment Arm 3ii, respectively.

DAs identify multiple factors which constrain the delivery of support to beneficiaries of the LT program (Table 3.3.4). Lack of infrastructure, particularly means of transport to villages, tops the list. A distant second is the fact that DAs give priorities to other tasks due to a heavy workload.

Table 3.3.4: Constraints in implementing LT program identified by DAs

	All Treatment Arms
DA believes factor is an important constraint (%):	
Lack of information about program requirements	28
Delay in selection process of beneficiaries	22
Lack of infrastructure for program delivery	76
Delays in transfer of grant money	26
Farmers do not adhere to suggested procedures	20
DA prefers working on other activities	34

Source: Authors' computation using data from the Livelihoods Transfer Second Monitoring Survey DAs and Households data (February 2020).

Note: The second column covers Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, and Treatment Arm 3ii.

A DA survey was completed as part of the LT evaluation end-line survey. Two of the question in that survey are particularly relevant here. The first focuses on their assessment of the size of investment needed for the implementation of households' business plans. The question is whether a grant of US$200 (initially equal to about Birr4000, though higher at the time of implementation due to exchange rate changes) can be sufficient to make relatively decent investments in the contexts that the LT operates.

Table 3.3.5: Level of the Transfer and Expertise/Experience – DA Responses

	Mean	Median
How much start-up capital do you think the average household would need to move forward with their livelihoods plan? (Birr)	13,255	10,000
Do you feel like you have enough experience / expertise to provide households guidance on off-farm livelihoods? (% Yes)	49.0	

Source: Authors' computation using data from Livelihoods Transfer End-line DA Survey (2021).

DAs were also asked "How much start-up capital do you think the average household would need to move forward with their livelihoods plan?" The average of their estimated start-up capital is Birr13,255 with 50 percent of them setting the level above Birr10,000 (Table 3.3.5). In short, a majority of DAs believe that the size of the grant fails short of the estimated investment needs associated with the business plan of beneficiary households in their community.

3.3.3. Household Perspectives

Both the LT end-line evaluation survey and the Monitoring survey collected information about households' awareness about and experience. A brief report on some of the key aspects follows.

Table 3.3.6: Awareness about the Livelihood Transfer program

	N	Control	All Treatment	T1	T2	T3i	T3ii
Aware of the program (%)	N=828	37	88	89	85	88	90
Source of information (%)	N=828						
DA		20	62	61	62	66	57
Locals		9	13	13	11	12	16
FSTF		5	10	12	7	9	13
Local administration		5	10	12	7	9	13
Other sources		0	0	0	0	0	2

Source: Authors' computation using data from the Livelihoods Transfer Second Monitoring Survey DAs and Households data (February 2020).

Note: N, 'Control', 'T1', 'T2', 'T3i', and 'T3ii' stand for 'Number of observations', Control group, Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, and Treatment Arm 3ii, respectively. FSTF is Food Security Task Force.

Most sample households are aware of the LT program. Perhaps unsurprisingly, households in treatment Kebeles much more aware of the program than those in control Kebeles. For the large majority, the DA is the source of the relevant information.

Table 3.3.7: Selection into Livelihood Transfer program

	N	Control	All Treatment	T1	T2	T3i	T3ii
Selected for any livelihoods benefit (%)	828	14	67	71	66	65	67
Participated in any Livelihood activity (%)		4	63	64	62	63	63
Received any Livelihood related training (%)		5	52	42	53	61	61
Frequency of training (%)	828						
At least once a month (%)		1	15	11	14	21	15
Once every three months (%)		0	5	4	5	8	7
Once every six months (%)		1	5	3	7	3	7
Only once (%)		2	18	16	16	25	20
Do not know (%)		0	9	7	12	4	12
Never received training (%)		96	48	59	46	39	39
Familiar with Business Plan (%)	828	2	46	34	51	53	48
Developed a business plan (%)		0	42	29	49	47	46
Received mentoring (%)		0	41	27	48	47	46
Attended technical-video-screening session (%)		0	20	3	2	54	50
Received grant money (%)		0	63	65	64	61	60

Source: Authors' computation using data from the Livelihoods Transfer Second Monitoring Survey DAs and Households data (February 2020).
Note: N, 'Control', 'T1', 'T2', 'T3i', and 'T3ii' stand for 'Number of observations', Control group, Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, and Treatment Arm 3ii, respectively. .

As expected, a much larger fraction of treatment households claims to have been selected into the LT program (Table 3.3.7). The vast majority subsequently report to have been participating in livelihoods activities. Only around half got training and those that got training divide into two main groups – those who received monthly training and those who got training only once. A similar fraction express familiarity with a business plan and benefiting from mentoring. Two observations, in this regard. First, almost no household in the control group participated in any of these LT-related activities. Second, a smaller fraction of households in T1 developed a business plan. This proportion declines noticeably in the case of receiving training and mentoring as well as developing a business plan.

On the one hand, about two-thirds of treatment households report receiving the LT grant. On the other hand, nobody received transfers in the control group. Both are good outcomes in terms of program implementation as designed. Nevertheless, about 25 percent of those who secured a grant did so without developing a business plan. This suggests a degree of non-compliance in the

implementation of the LT interventions. Finally, video screening was in line with delivery design since it applies only to T3 households, Still, only around 50% in T3 report attending the screening.[35]

A qualitatively similar pattern, albeit at lower proportions, can be seen in Table 3.3.8 which summarize the analogous information from the main LT end-line evaluation survey.

[35] Recall that a comparable attendance rate is found at the time of screening (see section A2.1.4 above on compliance).

Table 3.3.8. Livelihood Transfer program- End-line Sample

	All		Control		T1		T2		T3i		T3ii	
	N	%	N	%	N	%	N	%	N	%	N	%
Selected as a beneficiary of the Livelihood Transfer program/ received any benefits from the program (coaching/mentoring and/or grant)	2590	29.1	640	21.6	653	31.9	631	30.0	339	28.9	327	37.0
Aware of any retargeting process that resulted in changing the beneficiary lists	2590	6.6	640	4.2	653	5.4	631	7.3	339	9.4	327	9.2
Received information about the benefits from the program during selection	2590	18.0	640	12.2	653	20.2	631	19.5	339	19.2	327	20.8
Received any of the Livelihood Transfer Program benefits (training, coaching/mentoring, or grant)	2590	22.7	640	13.6	653	27.3	631	22.8	339	22.4	327	31.2
Received financial literacy training and information regarding saving practice from a DA regarding livelihoods	2590	17.0	640	12.2	653	18.8	631	14.4	339	19.2	327	25.4
Familiar with business plan required to be developed for the Livelihood Transfer Program	2590	7.3	640	5.0	653	6.6	631	7.8	339	7.4	327	11.9
Finished or in the process of developing a business plan	189	39.7	32	40.6	43	41.9	49	34.7	26	42.3	39	41.0
Received mentoring while developing a business plan	75	54.7	13	53.8	18	61.1	17	41.2	11	81.8	16	43.8
Business plan was rejected by DA after revision	316	3.8	81	4.9	81	3.7	73	2.7	40	5.0	41	2.4
Attended the screening of the technical training videos on on-farm and/or off-farm activities or “Digital Green type” videos	2590	8.5	640	3.6	653	5.4	631	2.5	339	17.1	327	27.2
Attended the screening of videos narrating the success stories of other farmers	2590	5.9	640	2.8	653	3.5	631	1.3	339	11.5	327	19.6
Found the technical training videos helpful	2590	7.8	640	3.0	653	4.9	631	3.2	339	14.7	327	25.1
Found the life of the people in the success stories video similar to the respondent’s	2590	2.3	640	0.6	653	1.8	631	1.1	339	4.1	327	7.0
Received Livelihood Transfer grant	2590	20.8	640	5.3	653	25.6	631	23.1	339	25.7	327	32.1
The economic activity was related with the designed business plans	539	28.0	34	14.7	167	26.3	146	28.1	87	37.9	105	26.7
The economic activity was in a business plan approved by a DA	539	20.4	34	11.8	167	22.2	146	16.4	87	28.7	105	19.0
Received mentoring after finishing the preparation of a business plan	539	9.6	34	2.9	167	11.4	146	10.3	87	9.2	105	8.6

Source: Authors’ computation using data from the Livelihoods Transfer End-line Survey (2021).

Note: ‘Control’, ‘T1’, ‘T2’, ‘T3i’, ‘T3ii’, and N stand for the Control group, Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, Treatment Arm 3ii, Number of observations, respectively.

DAs are expected to support LT grantees in a variety of ways. The initial step in the process is access. Households report their engagement with DAs as summarized in Table 3.3.9. The central message from the table is that though a large fraction of sample households interacts with a DA, the interaction is rather infrequent and focused primarily on farming techniques. This is a narrower engagement than what is envisaged by the LT program.

Table 3.3.9: Interaction with Development Agents

	N	Control	All Treatment	T1	T2	T3i	T3ii
Interacted with a development agent over the past year (%)	N=828	66	80	80	78	81	85
Frequency of meeting with DA (%)	N=636						
Once a week		20	20	16	15	25	27
Once a month		22	22	21	25	25	15
Once per three months		13	12	12	8	16	11
Just once over a year		37	38	35	47	29	38
Do not know frequency		7	9	15	4	4	9
Content of discussion (%)	N=636						
Farming technique		93	96	96	96	100	95
Off farm activities		6	8	7	8	9	7
Financial planning		28	38	32	43	42	36
Business planning		5	14	4	17	22	19
Input access		31	37	27	35	45	48

Source: Authors' computation using data from the Livelihoods Transfer Second Monitoring Survey DAs and Households data (February 2020).
Note: N, 'Control', 'T1', 'T2', 'T3i', and 'T3ii' stand for 'Number of observations', Control group, Treatment Arm 1, Treatment Arm 2, Treatment Arm 3i, and Treatment Arm 3ii, respectively. .

In the same vein, treatment households overwhelmingly select livestock-related business activities with shoat farming, animal fattening and animal husbandry representing 85% of selections (Table 3.3.10). It is also almost universally the case that households rely on DA business plan templates rather than developing a new one (Table 3.3.11).

Table 3.3.10: Approved business plans lack diversity

Type of Business Plan	Frequency	Percent
Shoat farm	146	47
Animal fattening	78	25
Animal husbandry	39	13
Dairy	18	6
Poultry	7	2
Crop production	6	2
Breeding	6	2
Construction	1	.3
Apiculture	1	.3
Bakery	1	.3
Other	9	3
N	**312**	

Source: Authors' computation using data from the Livelihoods Transfer Second Monitoring Survey DAs and Households data (February 2020).

Table 3.3.11. Business Plan Development Households

How does a household develop business plan	percent
The mentor showed me a set of complete business plans with different pathways and economic activities, and I select one	48
The mentor provided me with a business plan template, and I finished the inputs where necessary	41
The business plan was fully written by me with the mentor support	10
The business plan was fully written by me with no mentor support	1
N	312

Source: Authors' computation using data from the Livelihoods Transfer Second Monitoring Survey DAs and Households data (February 2020).

3.4. Findings from the qualitative survey at end-line

As described in Chapter 2, eleven *woredas* were covered by an in-depth qualitative survey in Amhara (3), Oromiya (4), SNNPR (3), and Sidama (1). From among the 11 Woredas, two – Mekedla (Amhara) and Sodo Zuriya (SNNP) – are part of the LT program evaluation sample. Key informants interviewed during the survey include DAs, members of the kebele, woreda, and regional food security task forces (FSTFs) as well as the staff of woreda and regional livelihoods implementation and coordination units (LICUs). This section reports on the findings of this qualitative survey focusing on the following for questions.

vi. How are PSNP clients targeted to receive a livelihood transfer?
vii. What kind of support does the Livelihood Transfer program offer to beneficiaries?
viii. Have there been challenges during implementation of the Livelihood Transfer program?
ix. Do you think that the Livelihood Transfer programme has been a success? Explain.

Targeting: All respondents emphasized that selection into the LT program support was based on wealth ranking of eligible PSNP beneficiaries. The poorest according to this ranking, who are also willing and able, were chosen to receive the support. They also claim that the list of selected individuals was posted publicly, and that the community was involved in verifying the selection.

LT program support: Key informants identified training, cash grant, and follow up as the main elements of the support offered to beneficiaries. Training covered financial literacy, business skills, and technical knowhow relevant to selected livelihoods. DAs also help the preparation of business plans. The grant amounts to the Birr equivalent of US$200. Follow-up of progress in the implementation of the business plan with the provision of appropriate assistance is expected to continue.

Challenges: A number of implementational challenges were mentioned during the interviews. The most reported challenge is the small size of the transfer relative to investment needs (especially considering inflation and price fluctuations). According to respondents, this has led in some cases

to beneficiaries using the grant primarily for consumption instead of asset building. A related challenge mentioned often is insufficiency of the overall budget allocated ultimately to Kebeles to implement the LT program. This problem has two elements. The budget is usually smaller than the amount required to provide the livelihoods grant to all those deemed eligible. In addition, no budget is set aside to support the administration of the program. Consequently, fewer beneficiaries than stipulated were covered and/or limited follow-up support services given. Also noted are the limits imposed by negative shocks such as drought, heightened insecurity, locust invasion, inflation, and the COVID-19 pandemic. Drought led to livestock death in some instances thereby destroying the assets accumulated by households.

Success: Despite considerable challenges, most respondents claim that the LT program has achieved some success. Almost invariably, they associate the success with increased livestock holdings by beneficiaries.

3.5. Summary

Overall, the results suggest that:

i. There is a clear belief and understanding that poor members of the community should be the prime beneficiary of the LT program.

ii. While there is non-compliance with treatment assignment, it is mostly from lower delivery in treatment groups rather than unplanned delivery in the control group. Households in treatment groups were most likely to receive transfers. They also received training and mentoring, but at a lower level of incidence.

iii. There seems to be little activity from the livelihoods components program in control Kebeles even though the program was meant to operate in such Kebeles.[36] This suggest that the presence of the LT grant galvanized support to actually implement the livelihoods component activities that were meant to be operational independently of the LT program.

iv. Business plan choices suggest that decisions were mostly based on boilerplate options rather than deliberate discussions on different business options, and almost all plans focused on livestock (Table 3.3.10).

v. The size of the LT grant is deemed small relative to what is considered necessary for a reasonable investment in the localities where program operated (Table 3.3.5).

vi. DA support seems inadequate (Table 3.3.9). The problem has a number of sources. The skills DAs have did not always align with those required to assist program beneficiaries (Tables 3.3.3,

[36] More broadly, the main PSNP4 process evaluation also found limited uptake/implementation of the Livelihoods Component (Berhane et al. (2021)).

3.3.5, and 3.3.9). Officials mentioned lack of budget dedicated to the administration of the LT program as another constraint. A related challenge was overstretched DAs.

vii. Negative shocks complicated the implementation of the program. These include drought, heightened insecurity, locust invasion, inflation, and the COVID-19 pandemic. In particular, drought led to losses due to livestock deaths in some cases.

CHAPTER 4: IMPACT OF THE LIVELIHOOD TRANSFERS PROGRAM

Chapter 4 explores the impact of LT program interventions on a set of selected outcomes. It has three sections. The first section highlights the nature and objectives of the program, while the second looks at trends between the baseline and end-line. These two sections jointly provide a background to the impact analysis presented in the third section.

4.1. The LT Program

The LT program aims to address the multiple barriers that prevent the ultra-poor escaping poverty. These barriers include thin goods and factors markets, absent credit/insurance markets, limited access to education and health systems, difficult natural environment, constraining social norms, inappropriate government policies, and strong psychological or 'internal' constraints such as restricted aspirations which reflect their experiences and constrained circumstances. The consequence is a self-sustaining state of extreme poverty that is sometimes referred to as a poverty trap or resilience trap (see chapter 1 for further discussion).

Consequently, a development programme that focuses exclusively on any one of them may fail to produce the desired outcome of poverty alleviation. This realization has increased the adoption of multi-pronged program in recent years. The LT program is designed as such a program with the following features:

- focus on the ultra-poor – the bottom 10 percent of PSNP PWs beneficiaries from each target community (Kebele) by wealth ranking;
- grant – provision a grant of US$200 for the selected beneficiaries to finance investment in income-generating activities;
- transfer – consumption support in the form of transfers through PWs projects;
- training and technical support – offer training for financial literacy and business plan development, support in livelihood pathway selection and business plan development, and follow-up during plan implementation.

As noted in Chapter 3, the grant is aimed at encouraging and enabling very poor risk-averse households to make livelihood-enhancing investments in income-generating activities. More specifically, the LT program aspires to help such households:

- invest in productive assets and diversify their livelihoods; and
- access credit from formal sources including microfinance and/or RUSACCO credit.

For the impact evaluation study, two interventions were added to this basic design – screening of Digital Green-type videos to provide additional training on selected livelihood pathways and aspiration videos to address some of the internal constraints note earlier.

The above outlined interventions are expected to jointly produce the desired effect of breaking out of the poverty trap by beneficiary households. In short, the underlying 'theory of change is that the combination of these activities is necessary and sufficient to obtain a persistent impact' (Banerjee et al. (2015)). The LT grant, training in financial literacy and business plan development, and DA-supplied technical support, combined with PWs transfers, encourage and help beneficiaries to invest in income-generating activities. Productive asset accumulation and livelihoods diversification are thus the first step. Productivity and incomes grow as a consequence. Ultimately, welfare improvements follow in the form of higher food security and lower poverty. Accordingly, impacts of the program are assessed by tracking indicators of assets accumulation, improved agricultural production, enhanced aspirations, and higher food security (falling food gap, better diet diversity, and rising consumption expenditure), and lower poverty.

4.2. Trends in Outcomes – setting the scene[37]

This section reports on the trend in these outcome indicators between baseline and end-line. Specifically, the following are covered here: assets, aspirations, agricultural production, food security, and poverty. The tables in this section do not report impact of the interventions on outcome indicators. They answer two questions: what are the levels of the indicators for 'all households' at baseline and end-line? Are average levels for 'all households' at end-line statistically significantly different from the corresponding levels at baseline. The average levels for 'all households' and the related mean difference tests capture the trend in the outcome variables. Estimates of the impact of the LT interventions are reported in section 4.3 below.

4.2.1 Assets

Although very poor, many of these sample households have some assets. The baseline and end-line surveys collected data on the quantity and/or value of land holdings, productive assets (predominantly farm implements), livestock holdings, and consumer durables. The values of these items are aggregated by the corresponding category to provide the information reported in Table 4.2.1.

[37] The trend between baseline and end-line is based on data from the panel of households across the two rounds. Some of the estimates may differ from those obtained separately from baseline and end-line sample primarily due to attrition.

Perhaps the most important asset to farmers is land. At baseline, the average per capita landholding in the sample 0.09 hectares. This average rose slightly to 0.11 (Table 4.2.1) by end-line. This average hides a lot worse problem of small farm size that was also observed at baseline. Half of the households operate about 0.06 hectares per capita or less (or 0.31 hectares per household). Indeed, 90 percent of the sample household survive on 0.25hectares per capita or less (or 1 hectare per household).

It is not clear why the tiny, though statistically significant, increase is observed at end-line. The still dismal situation arises primarily because these small landholdings are combined with traditional production techniques and low-value product mix.

Table 4.2.1: Trends in Household Asset Holdings

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Value of productive asset per capita (Birr)	79.27	84.53	
Value of durable asset per capita (Birr)	148.47	149.52	
Value of livestock holdings per capita (Birr)	2316.6	2858.0	***
Total land area per capita (hectares)	0.091	0.105	***
Proportion of households who own a mobile phone (%)	23.9	34.4	***
Proportion of households that joined livelihoods group (%)	32.4	49.2	***
Proportion of households self-identifying themselves as destitute (%)	38.9	23.8	***

Source: Authors' computation using household data from the Livelihoods Transfer Baseline (2018) and End-line (2021) surveys.

Note: 'Value of productive asset per capita' and 'value of durable asset per capita' are adjusted using June-July 2018 and April-May 2021 regional CPI for baseline and end-line, respectively (December 2016=100). In other words, both are in 2016 prices. For both rounds, 'Value of livestock holdings per capita' is estimated using baseline (2018) woreda-level livestock prices. The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

Note that the situation is not caused by landlessness in the sample. Only 4 households in the panel report having no land. Indeed, a total of 6 households report no land at any time during the two survey rounds. This is not surprising because it would be difficult to find the landless households as opposed to landless individuals in household surveys of this kind. However, there is significant variation in land holdings across households. Creating terciles by land size show that median landholdings range from 0.07 hectares, 0.33 hectares, and 0.75 hectares for the bottom, middle, and top land terciles. Thus, it is the rather tiny farms at the bottom to middle of the size distribution that drives the low average land holdings.

Similarly, sample households possess very little productive capital. Their productive and durable assets per capita amounts to less than Birr200 in both rounds.[38] In this regard, it is noteworthy that a considerable fraction of panel households identify themselves as 'destitute', that is, as very poor households with little or no assets.

Four interesting bright spots can be noted. First, the livestock holdings of these households are much higher than their other stock of productive assets both at baseline and end-line. Second, an appreciable percentage of households own a mobile phone. Third, both livestock holdings and mobile phone ownership rose substantially by end-line compared to the baseline – by 23 percent and 44 percent, respectively. Fourth, the proportion of households that identify themselves as 'destitute' declined considerably (39 percent). The reported changes in the overall average livestock holdings, mobile phone ownership, and fraction of households self-ranked as 'destitute' are all statistically significant.

4.2.2. Agricultural production – Patterns, input use, productivity

Crop production is the primary economic activity for the majority of households in the sample. Cereals dominate production – a typical feature of most crop producing communities in the country. Teff, barley, wheat, maize, and sorghum jointly account for about 72 percent of cropped area. Indeed, more than three-quarters of household cultivate maize or sorghum.

Table 4.2.2: Crop Yields (quintals/hectare)

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Teff	7.0 (17.5)	6.6 (18.8)	
Barely	6.6 (21.6)	7.4 (25.3)	
Wheat	9.3 (27.4)	8.7 (30.5)	
Maize	14.2 (39.4)	14.3 (41.8)	
Sorghum	12.9 (27.3)	10.0 (26.9)	***

Source: Authors' computation using household data from the Livelihoods Transfer Baseline (2018) and End-line (2021) surveys.

Note: National averages computed from CSA (2019) and CSA (2021) are included in brackets in column 2 and column 3, respectively. The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

Crop yield levels, based on reported acreage and output, are rather low. Average yields for the top five crops range from 6.6 quintals per hectare for barley through to 14.2 quintals for maize at baseline (Table 4.2.2). No statistically significant change occurred at end-line with the exception of sorghum which recorded a decline. How low these yields can be appreciated when they compared with national averages – the reported yields are less than forty percent of the national averages (except sorghum yield at baseline). Differences in measurement

[38] Note that the value of stock of consumer durables collected using the aspiration module is much higher than that collected by the household assets module (see Table on current levels in the aspirations section below).

techniques used (crop cut vs. farmers self-reporting) and measurement error are likely to account for some of these yield gaps. Nevertheless, even with that caveat, the low yield levels are striking.

The reported low yields are also likely to be correlated with limited modern input use (Table 4.2.3). Apart from small farm size briefly discussed already, sample farm households use lower levels of irrigation, improved seeds, and chemical fertilizers. They also appear to have considerably limited access to extension support. Again, the potential value of a successful LT-like program towards improving the situation is clear.

Table 4.2.3: Input Use in Household Crop Production

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Total cultivated land area (hectares)	0.345	0.393	***
Proportion of households using irrigation (%)	5.5	7.5	**
Proportion of households using improved seeds (%)	30.7	28.6	
Proportion of households using chemical fertilizers (%)	44.8	43.6	
Proportion of households contacted by DA on crop production and marketing in the last 12 months (%)	29.5	23.9	***

Source: Authors' computation using household data from the Livelihoods Transfer Baseline (2018) and End-line (2021) surveys.
Note: The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

Note that three statistically significant changes – two increases and on decline – occurred between baseline and end-line.

Another feature of production to consider is crop diversity. Two measure of crop diversity are used. A simple count of the number of crops cultivated by the household is the first indicator. The second is the Shannon crop diversity index (SH) computed as:

$$SH = -\sum_{ii=1}^{n}(XX_{ii} * lnXX_{ii})$$

where: n is the number of crops grown by the household, X_i is proportion of area covered by crop i out of the total cropped area. The index "equals zero if there is only one crop (i.e., no diversity) and increases with the number of cultivated crops as well as with more even shares by different crops, reaching its maximum when crops are cultivated in equal shares (i.e., $X_i = 1/J$), where J is the maximum possible number of crops cultivated" (Ali, Deininger, and Ronchi (2017)).

Table 4.2.4 report the trend in these measures. Both indicators suggest a relatively low crop diversification. More importantly, diversity in crop cultivation has not changed in the sample over the two rounds.

Table 4.2.4: Trends in Crop Diversity

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Number of crops grown	2.3	2.4	
Shannon crop diversity index	0.60	0.61	

Source: Authors' computation using household data from the Livelihoods Transfer Baseline (2018) and End-line (2021) surveys.
Note: The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

4.2.3. Food security

The food gap is the main measure of food insecurity for this impact evaluation study (as per the ToR). It is the self-reported number of months that the household finds itself unable to meet its food needs in the past 12 months. Twelve less the food gap thus gives as a measure of food security during those twelve months. Table 4.2.5 summarize the trend in this indicator between baseline and end-line.

On average, households self-reported a food gap of 3 months at baseline. At end-line, this rose to 3.2 months, this small increase being statistically significant at 5 percent. A similarly marginal, but statistically insignificant, rise was recorded in the fraction of households who reported food shortage during the rainy season.

Table 4.2.5: Trends in Household Food Security

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Food gap (number of months of self-reported food insecurity)	3.0	3.2	**
Household faced food shortage during rainy season (% Yes)	62.8	64.5	
Household dietary diversity score (12 food groups) (number)	2.8	3.0	***

Source: Authors' computation using household data from the PSNP4 Livelihood Transfer Household Baseline (2018) and End-line (2021) Surveys.
Note: The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

Dietary diversity shifts the focus from availability of food to quality of diets. Dietary diversity in the sample remained low though it has increased from 2.8 food groups out of a total of 12 possible food groups to 3.0. This slight increase is statistically significant at 1 percent.

The level of food consumption expenditure is another indicator of food security. Data on the quantity and value of household consumption were collected by both survey rounds. These data allowed, among others, the computation of food and total consumption expenditure and estimates of calorie intake at the household level. Table 4.2.6 reports the average levels by treatment status.

Table 4.2.6: Trends in Household Consumption

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Total consumption expenditure per adult equivalent per day (Birr)	8.54	10.50	***
Food consumption expenditure per adult equivalent per day (Birr)	4.66	5.30	**
Food expenditure share in total consumption expenditure (%)	45.3	43.0	***
Daily calorie consumption per adult equivalent (Kcal)	2699	2521	**

Source: Authors' computation using household data from the PSNP4 Livelihood Transfer Household Baseline (2018) and End-line (2021) Surveys.

Note: All expenditures are in 2018 prices. The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

On average, households spent Birr8.54 per adult equivalent per day on consumption at baseline. This grew to Birr10.5 in 2018 prices – a rise that is statistically significant at the 1 percent level (Table 4.2.6). Food expenditure followed the same pattern across rounds. The mean daily calorie consumption per adult equivalent was 2699 Kcal at baseline. This fell to 2558 Kcal by end-line. The decline is statistically significant at 5 percent.

Table 4.2.7: Trends in calorie shares of food groups

Variable	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Calorie share (%)			
Cereals, grains, and cereal products	62.8	64.9	**
Roots, tubers, and plantain	4.4	7.1	***
Nuts and pulses	13.1	8.8	***
Vegetables	4.0	4.5	
Fruits	1.3	1.4	
Meat, poultry, and eggs	0.1	0.3	**
Dairy and related products	0.3	0.5	*
Sugars, fats, and oils	8.1	6.5	***
Beverages	2.8	1.2	***
Spices, flavorings, and related items	2.9	4.6	***

Source: Authors' computation using household data from the PSNP4 Livelihood Transfer Household Baseline (2018) and End-line (2021) Surveys.

As Table 4.2.7 suggests, a complex interplay of calorie content and price of different food groups is the probable explanation for the apparently contradictory trends in food expenditure (rising) and calorie consumption (slight fall). Moreover, the seeming inconsistency between the trends in the food gap (small increase) and food expenditure (rising) is likely due to seasonality that the former, which is reported for 12 months, captures more accurately that the former (primarily measured over a single week).

4.2.4. Poverty

Two approaches are used to ascertain the poverty status of sample households. The first approach follows the standard quantitative poverty analysis of using household income/expenditure and a poverty line to classify households into poor and non-poor (or calculate the poverty head count ratio).

The analysis uses consumption expenditure data collected by the baseline survey and the official national poverty line adjusted for inflation from 2016 to 2018. After the adjustment, the poverty line becomes Birr18.66 per adult equivalent per day. Correspondingly, total consumption expenditure per adult equivalent is computed for each sample household.[39] The same poverty line applies for both baseline and end-line since expenditures are measured in 2018 prices for both 2018 and 2021. Households with consumption expenditure per adult equivalent that is lower than or equal to Birr18.66 per adult equivalent per day are thus identified as poor. Table 4.2.8 below reports on measures for panel households. In both years and for all household groups, the poverty headcount ratio exceeded 80 percent clearly establishing that sample households are predominantly poor. Nevertheless, a small, albeit statistically significant (at 1 percent), fall in the headcount has been recorded at the end-line relative to the baseline.

The head count ratio implicitly treats all poor people as the same. Nevertheless, all poor people are not equally poor. The depth of poverty, often called the poverty gap, captures this difference in intensity of poverty. It measures the average gap between consumption expenditure levels of the poor and the poverty line, with the non-poor counted as having a gap of zero. The poverty gap is expressed as a proportion of the poverty line. It stood at 61.2

[39] Household sizes in adult equivalent units are computed using the following conversion factors:

Age (years)	Adult equivalent units	Age (years)	Adult equivalent units - Male	Adult equivalent units – Female
0-2	0.40	11-12	0.80	0.88
3-4	0.48	15-18	1.20	1.00
5-6	0.56	19-59	1.00	0.88
7-8	0.64	60+	0.88	0.72
9-10	0.76			
13-14	1.00			

Source: PDC (2018).

percent and 53.7 percent for all panel households in the baseline and end-line, respectively. It implies that, on average, the consumption expenditure of the poor was less than half of the poverty line, though it has improved by the end-line. To appreciate how very high these are note that the corresponding national level was 7.4 percent in 2015/16 (NPC (2017)).

A similar trend is observed in the measures of poverty based on self-ranking by the respondents themselves (Table 4.2.8). They were asked the following two questions in both survey rounds.

- "Compared to other households in this village, how would you describe your household?" The responses constitute a relative self-ranking by households into one of seven levels.
- "Just thinking about your own household circumstances, would you describe your household?" The responses in this case form an 'absolute' self-ranking by households again into one of seven levels.

For these self-ranking indicators, in each round, households who locate themselves at the bottom three rungs were deemed poor. The resulting proportions of the poor in the sample are very close to those obtained using the national poverty line mentioned earlier (Table xx).

Table 4.2.8: Trends in Household Poverty

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Poor (Head count), national poverty line (%)	90.8	86.8	***
Poor, 'relative' self-ranking (%)	90.6	82.2	***
Poor, 'absolute' self-ranking (%)	95.6	91.7	***
Poverty gap, national poverty line	61.2	53.7	***

Source: Authors' computation using household data from the PSNP4 Livelihood Transfer Household Baseline (2018) and End-line (2021) Surveys.

Note: The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

Also recorded are small (less than 10 percent for most) and statistically significant improvements in all indicators of poverty. The smallness of these changes becomes clear when compared with the very high initial poverty levels observed in the sample – most of the changes were less than 5 percent of the corresponding initial levels and none were higher than 10 percent of the latter (the only exception being the fall in the depth of poverty).

4.2.5. Aspirations

The baseline and end-line surveys also gathered data on individual aspirations using a validated instrument designed for the purpose (Bernard and Taffesse (2014)). Four

dimensions – income, consumer durables (assets), social status, and children's education – are covered.[40]

It is informative to start with a look at reported current levels in the four dimensions. Table 4.2.9 records the average current levels collected from the panel households expressed in 2016 prices. Statistically significant increases are recorded in all domains. A positive trend is thus apparent.

Table 4.2.9: Trends in household current levels of the aspiration dimensions

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Income - Current level (Birr)	1,377.8	2,608.9	***
Assets - Current level (Birr)	9,141.8	15,736.2	**
Social Status - Current level (%)	20.7	29.8	***
Child Education - Current level (Years)	2.9	3.5	***

Source: Authors' computation using household data from the Livelihoods Transfer Baseline (2018) and End-line (2021) surveys.
Note: Current levels of income (Birr) and asset value (Birr) are adjusted using June-July 2018 and April-May 2021 regional CPI for baseline and end-line, respectively (December 2016=100). In other words, both are in 2016 prices. The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

In contrast, as Table 4.2.10 records, no statistically significant changes occurred in aspired levels of income and assets. Nevertheless, levels of aspirations in social status rose and that in child schooling fell, both statistically significantly. It was noted before that these measured levels cannot in themselves tell us whether aspirations are high or low. It is necessary to conduct comparisons to make that assessment. The most comparable indicator, in this regard, is child education because the possible levels are the same throughout the country. Bernard et al. (2017), covering an Ethiopian rural PSNP Woreda, found the average level of child education respondents aspired to is 14 years – much higher than the 5.5-6.7 years recorded in the current study. Unlike the present case which has a sample restricted to the very poor, that study's sample is designed to be representative of the whole rural community.

[40] A bit more precisely:

- Annual household income in cash – "the amount of income the household earns from all agricultural and non-agricultural activities, and money from PSNP or other programs in the last 12 months."
- Assets – "The value of the house, consumer durables including furniture, TV-set and fridge, and any transport vehicles."
- Social status – "the fraction of people in the community (Village) who ask advice for an important decision."
- Children's education – the level of education for the oldest child.

Hence the comparison is somewhat unreasonable, though the gap is rather large when viewed from the fact that the Woreda covered by the study referred to is also a poor PSNP Woreda.

Table 4.2.10: Trends in Household Aspirations

	Mean – All Households		All Mean difference test
	Baseline (2018)	End-line (2021)	
Aspiration- Income (Birr)	163,308.7	134,157.2	
Aspiration- Asset (Birr)	227,086.3	280,085.1	
Aspiration- Social Status (%)	43.7	58.0	***
Aspiration- Child Education (Years)	6.7	5.5	***

Source: Authors' computation using household data from the Livelihoods Transfer Baseline (2018) and End-line (2021) surveys.

Note: Current levels of income (Birr) and asset value (Birr) are adjusted using June-July 2018 and April-May 2021 regional CPI for baseline and end-line, respectively (December 2016=100). In other words, both are in 2016 prices. The last column reports the significance of a two-tailed test of the hypothesis that the baseline and end-line values for all households are on average the same. *** 1%, ** 5% and * 10% level of significance.

Finally, we note that the current levels are a rather small fraction of the aspired levels, particularly for income and assets. This may mean one of the following.[41] That gap is so large aspiration levels or gaps are simply not relevant for action or choice. Or the large gap reveals that these households find it difficult to form aspirations that can meaningfully serve as goals and guide/influence their choices. It is thus sensible for a support program, such as the LT, to target to influence relevant psychological dimensions including aspiration as part of widening opportunities for the poor.

To summarize, compared to baseline, the following descriptive changes in end-line outcomes are observed:

- both livestock holdings and mobile phone ownership rose substantially – by 23 percent and 44 percent, respectively – and statistically significantly, while the stock of other productive assets and household durables remain low and unchanged;
- no statistically significant rise in crop diversity and crop yields is detected, the later primarily due to very limited progress in improved input use.
- average food gap recorded a small increase that is statistically significant at 5 percent;

[41] As usual, perhaps more than usual, measurement errors can play an important role in this.

- dietary diversity in the sample remained low, though it rose slightly and statistically significantly at 1 percent;
- households total and food consumption expenditures per adult equivalent grew and mean daily calorie consumption per adult equivalent fell, with these changes respectively statistically significant at 1 percent and 5 percent;
- small (less than 10 percent for most) and statistically significant improvements are detected in all indicators of poverty (head count ratio, depth of poverty, and self-ranked poverty status) from very high initial levels;
- in the context of the aspirations questions, households reported statistically significant increases in current level of income, value of consumer durables (assets), and children's education;
- in contrast, no statistically significant increases are recorded in aspired levels of income and assets, while that for child schooling fell statistically significantly;

Overall, there are signs of a positive trend, particularly in indicators of poverty, livestock holdings, and mobile phone ownership. Whether changes in outcomes are attributable to the interventions of the LT program is considered next.

4.3. Impact on Outcomes

We now turn to exploring the impact of the LT interventions on the selected household-level outcomes. The exploration focuses on addressing the research questions RQ1-RQ4, now restated in terms of the main specification for impact estimation. Recall the preferred specification is:

$$Y_{hv} = \beta_0 + \beta_1 T1_v + \beta_2 T2_v + \beta_3 T3i_v + \beta_4 T3ii_v + \beta_5 W_h + \varepsilon_{hv}, \quad (1)$$

where Y_{hv} is the outcome of interest at endline for household *h* from Kebele *v*, $T1_v$ is an indicator for whether the household in Kebele *v* was randomly assigned to treatment T1, $T2_v$ indicates randomized assignment to T2 and $T3i_v$ indicates randomized assignment to T3i, $T3ii_v$ indicates randomized assignment to T3ii, and W_h is woreda dummies to capture woreda fixed effects. β_1, β_2, β_3 and β_4 measure the impact of T1, T2, T3i and T3ii respectively, compared to the Control group. Woreda fixed effects are included to accommodate the stratification of randomized treatment assignment by woreda. Standard errors are clustered at the Kebele level since randomization of treatment happened at this level.

Accordingly, the research questions can be posed as follows (where *H_0* captures the hypothesis to be tested):

RQ1: What is the impact of the status quo LT program, as currently designed (H_0: $\beta_2 = 0$)?

RQ2: Can a simplified LT program that does not include the DA follow-up support/mentoring for recipient livelihoods still have an impact (H_0: $\beta_1 = 0$)?

RQ3: Can the addition of digital green training and aspirational videos increase the likelihood of having an impact on recipient households (H_0: $\beta_3 = 0$; H_0: $\beta_3 = 0$), respectively?

RQ4: What contribution do different sub-components of the LT program have towards program impact? There are a number of comparisons that can be made, including:

- what is the impact of removing the DA mentoring/post-business plan support from the LT program (H_0: $\beta_2 = \beta_1$)? and
- what is the *additional* impact of including the digital green screenings (H_0: $\beta_3 = \beta_2, H_0$: $\beta_3 = \beta_1$) and the aspirational videos (H_0: $\beta_4 = \beta_3, H_0$: $\beta_4 = \beta_2, H_0$: $\beta_4 = \beta_1$) to the LT program?

Note that the last group of comparisons are likely to have lower power than planned due to the problems discussed briefly above ('Data and Methods' chapter).

The investigation of impact focuses on what happens to a set of indicators selected a priori as target outcomes of the program:

- assets – productive assets (predominantly farm implements) and livestock holdings;
- aspirations;
- agricultural production – modern input use; and
- off-farm income generating activities – wage labour.
- food security – food gap, food expenditures, diet diversity;
- poverty – money-metric (based on consumption expenditure) and subjective (wealth self-ranking);

The single difference model (1) is employed to estimate intention to treat (ITT) effects of the LT program using the end-line survey data.42 The results of this estimation, categorized by outcome groups, are reported in Tables 4.3.1-4.3.6.

4.3.1. Asset Ownership

Expanding productive asset ownership through investments by beneficiary households is the key intermediate objective of the LT program. Such asset accumulation is expected to trigger greater livelihood diversification, increased productivity, and higher incomes. These positive changes will subsequently lead to improvements in well-being. The question in this section: has the LT program led to asset accumulation by beneficiary households as planned?

The dominant economic activity in the program areas is agriculture. Accordingly, two asset types are considered – livestock holdings and stock of productive assets. Livestock holdings are measured in terms of Tropical Livestock Units (TLU) and market value – both are aggregated over the stock of livestock owned by the household. The value of livestock holdings is estimated by using baseline (2018) woreda-level livestock prices. Given their diversity and the challenge of obtaining appropriate market prices, non-livestock productive assets (such as farm implements) are aggregated into an index using principal component analysis (PCA).

We find that the LT program increased livestock assets owned by beneficiary households (Table 4.3.1). Their stock rose in physical size as measured by TLU as well as in value. These increases are both large relative to the average holdings of control households and statistically significant (at 5 percent or lower). Each of the interventions generated a statistically significant effect as well.

Interestingly, the results suggest that the effect grows in magnitude as the intensity of the intervention rises. The most intensive intervention is Treatment arm 3ii (T3ii) which combines the LT grant with DA monitoring/mentoring, screening of a Digital Green video on the livelihood pathway chosen, and exposure to role models via an aspirational video. This bundle of interventions led to the highest observed effect on the average size of livestock assets, both in TLU and value terms. The less intensive treatments produce successively lower impact

[42] The rationale for this approach is outlined in the 'Data and Methods' chapter.

(rows 2, 4, 6, and 8 in Table 4.3.1). The results of the significance tests of the pairwise comparisons in rows 13-18 support this pattern. Treatment 1 (the LT grant only intervention) appears to violate this pattern (row 2). Nevertheless, the significance of this arm's effect turned out to be not robust to corrections for multiple hypotheses testing (Table A4.1.3). In contrast, the impacts of the other three arms on the value of livestock holdings survive, albeit at significance levels between 2-6 percent. Additional evidence to the stronger effect of Treatment arm 3ii is provided by the result that its effect on holdings in TLU is the only one that remains statistically significant (at 0.1 percent) after adjustment for multiple testing.

Table 4.3.1. Program impacts on asset ownership

Variables	***Livestock ownership, TLU units***	***Total livestock value (birr)***	***Ownership of productive equipment, PCA***
	b/se	b/se	b/se
=1 if treatment-1	0.328***	4636.862**	0.095
	(0.12)	(2100.69)	(0.07)
=1 if treatment-2	0.145**	2334.735***	0.087
	(0.07)	(839.07)	(0.07)
=1 if treatment-3i	0.206**	2628.350***	0.125
	(0.09)	(989.01)	(0.08)
=1 if treatment-3ii	0.535****	6538.467****	0.298***
	(0.12)	(1624.35)	(0.11)
R-Square	0.030	0.027	0.163
Observations	2594	2594	2592
Control Mean	0.762	7479.015	-1.361
P-value of F-TEST T1=T2	0.1418	0.2789	0.9105
P-value of F-TEST T1=T3i	0.3807	0.3762	0.6933
P-value of F-TEST T1=T3ii	0.1997	0.4598	0.0628
P-value of F-TEST T2=T3i	0.5185	0.7755	0.6307
P-value of F-TEST T2=T3ii	0.0022	0.0115	0.0571
P-value of F-TEST T3i=T3ii	0.0174	0.0259	0.1428
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.0002	0.0001	0.0885

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001. For baseline and end-line, 'Value of livestock holdings per capita' is estimated using baseline (2018) woreda-level livestock prices. Different types of 'productive equipment' (such as farm implements) are aggregated into an index using principal component analysis (PCA).

The impact of the LT interventions on livestock holdings raises the question whether the effects extend to modifying the composition of these holdings. It is in particular interesting to check whether the program encouraged households to favour one type of livestock over others. In this regard, there is some evidence indicating to a declining trend in the share of poultry in the stock of livestock kept by sample households. Nevertheless, this trend cannot

be attributed to the LT program. Annex Tables A4.1.8-A4.1.9 report that no statistically significant impact was detected on the share of different types of livestock owned by these households.

4.3.2. Agricultural Input Use

Raising productivity by encouraging household investment on expanding modern input use and raise productivity is one of the important objectives of the LT program. Has the program achieved this objective?

Four indicators of modern input use are considered in assessing the extent to which the program achieved this objective (Table 4.3.2). According to the results reported in the table, the LT interventions have yet to lead to statistically significantly increasing the likelihood modern inputs application by beneficiaries. The result holds for all treatments jointly as well as separately. A negative result linking Treatment arm 2 and chemical fertilizer adoption is the only exception. That exception itself disappears once adjustments to account for multiple hypothesis testing are made (Table A4.1.5 in the annex).

Table 4.3.2. Program impacts on agricultural input use

Variables	=1 if household used improved seeds	=1 if household used fertilizers	=1 if plot is irrigated	=1 if household used pesticides
	b/se	b/se	b/se	b/se
=1 if treatment-1	-0.015	-0.027	-0.013	0.031
	(0.03)	(0.04)	(0.02)	(0.03)
=1 if treatment-2	-0.03	-0.096**	-0.03	-0.024
	(0.03)	(0.04)	(0.02)	(0.03)
=1 if treatment-3i	0.027	-0.009	-0.026	-0.007
	(0.03)	(0.04)	(0.02)	(0.03)
=1 if treatment-3ii	-0.002	0.004	-0.013	0.023
	(0.04)	(0.05)	(0.02)	(0.04)
R-Square	0.207	0.267	0.042	0.154
Observations	2307	2309	2307	2304
Control Mean	0.276	0.454	0.086	0.130
P-value of F-TEST T1=T2	0.5997	0.0565	0.3452	0.0349
P-value of F-TEST T1=T3i	0.1859	0.6202	0.5548	0.1983
P-value of F-TEST T1=T3ii	0.7339	0.5329	0.9954	0.8251
P-value of F-TEST T2=T3i	0.0547	0.0152	0.8730	0.5812
P-value of F-TEST T2=T3ii	0.4281	0.0434	0.4562	0.1741
P-value of F-TEST T3i=T3ii	0.4299	0.7834	0.6136	0.4165
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.4074	0.0574	0.5503	0.2679

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Note that all the indicators in Table 4.3.2 are linked with crop production. It is thus possible that the no impact finding reflects the concentration of the interventions on activities outside crop production such as livestock rearing. In other words, almost all the household investments related to the LT program occurred somewhere other than crop production such that it is unlikely to detect impact on the latter attributable to the program.

4.3.3. Off-farm employment

Another important aim of the LT program is to broaden the income-generating opportunities of beneficiary households. Expanding employment opportunities is one avenue to achieve this objective. The program did not produce a significant impact along these lines up to the end of the current evaluation period (Table 4.3.3).

Table 4.3.3. Program impacts on off-farm employment

Variables	=1 if head/members engaged in casual or irregular wage work	=1 if head/members engaged in regular wage work for an employer	=1 if head/members carried out or managed an earning activity
	b/se	b/se	b/se
=1 if treatment-1	-0.02	0.00	0.001
	(0.02)	(0.01)	(0.01)
=1 if treatment-2	-0.004	-0.011	0.018
	(0.03)	(0.01)	(0.01)
=1 if treatment-3i	-0.039	-0.011	0.012
	(0.03)	(0.01)	(0.02)
=1 if treatment-3ii	0.016	-0.014	-0.003
	(0.03)	(0.01)	(0.01)
R-Square	0.037	0.003	0.022
Observations	2591	2591	2591
Control Mean	0.163	0.047	0.031
P-value of F-TEST T1=T2	0.5373	0.3628	0.2069
P-value of F-TEST T1=T3i	0.5068	0.3375	0.4949
P-value of F-TEST T1=T3ii	0.2549	0.2602	0.7794
P-value of F-TEST T2=T3i	0.2474	0.9637	0.7285
P-value of F-TEST T2=T3ii	0.5326	0.7915	0.1187
P-value of F-TEST T3i=T3ii	0.1226	0.8252	0.3632
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.5167	0.6718	0.5054

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.

Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001.

This outcome is not surprising in that the employment pathway – encouraging and supporting beneficiaries to seek off-farm employment – was not an explicit focus of the LT program during the years the impact evaluation covers. Similarly, household-level engagement in income-generating activities other than farming and wage employment (such as trading, transport, handicrafts, and food processing) have not been impacted by the LT interventions (last column of Table 4.3.3).

4.3.4. Food Security

The ultimate aim of the LT program is to improve the welfare of beneficiary households by encouraging and supporting asset accumulation, livelihood diversification, and income growth. Sections 4.3.1-4.3.3 considered the impact of the LT interventions on the 'intermediate' objectives. This section and the next explore the effect on well-being outcomes.

Table 4.3.4. Program impacts on food security indicators

Variables	***Food gap***	***=1 if HH faced food shortage during rainy season***	***Diet-diversity-score, 12 food groups***	***Per adult equivalent daily food expenditures (Birr)***
	b/se	b/se	b/se	b/se
=1 if treatment-1	0.185	0.001	-0.278**	-0.725
	(0.18)	(0.03)	(0.13)	(0.66)
=1 if treatment-2	0.16	-0.047	-0.246*	-0.52
	(0.20)	(0.03)	(0.13)	(0.66)
=1 if treatment-3i	0.082	-0.042	-0.275**	-0.935
	(0.20)	(0.05)	(0.14)	(0.86)
=1 if treatment-3ii	-0.047	-0.095**	0.016	0.444
	(0.21)	(0.04)	(0.14)	(0.93)
R-Square	0.064	0.029	0.214	0.026
Observations	2590	2594	2594	2572
Control Mean	3.127	0.662	3.247	6.061
P-value of F-TEST T1=T2	0.8958	0.1500	0.7748	0.7017
P-value of F-TEST T1=T3i	0.6039	0.3531	0.9762	0.7873
P-value of F-TEST T1=T3ii	0.2600	0.0259	0.0243	0.1698
P-value of F-TEST T2=T3i	0.7066	0.9193	0.8161	0.5905
P-value of F-TEST T2=T3ii	0.3329	0.2560	0.0427	0.2537
P-value of F-TEST T3i=T3ii	0.5628	0.3218	0.0373	0.1732
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.7394	0.1242	0.0379	0.5331

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Two main welfare improvements are targeted through the LT program. The first is raising food security of beneficiaries. The second is lowering the incidence of poverty. This section considers program impact on food security. Table 4.3.4 presents the impact of the LT program on food security. Three indicators of food security are considered – food gap, dietary diversity,

and real per capita food consumption expenditures. No significant impact can be detected on household food gap and food expenditure per adult equivalent. Marginally statistically significant reduction in the likelihood of households suffering food shortages in the rainy season was found. This is potentially an interesting impact since the months of the major rains are deemed the hungry or lean season.

In contrast, the estimates suggest that the LT program is linked with a fall in household diet diversity. It is difficult to offer a straightforward explanation for this result. One possibility: the LT program has encouraged savings for investment so much that the resulting reduction in consumption was strong enough to lead to a less diverse diet. This is a rather remote possibility since no change in food expenditure can be attributed to the program (last column of Table 4.3.4). Indeed, a closer look at the result thorough multiple hypotheses testing shows that no program impact on food security and savings/credit indicators is statistically significant (Table A4.1.1 and Table A4.1.7, respectively).

4.3.5. Poverty

The second group of indicators relate to poverty. Two are based on consumption expenditure – household deemed poor because its total consumption expenditure is below the poverty line both expressed in per adult equivalent terms. The remaining two are obtained from the wealth self-ranking of households themselves (see section 4.2.3 above).

Table 4.3.5. Program impacts on poverty indicators

Variables	***=1 if household poor by, national poverty line***	***Per adult equivalent daily consumption expenditures (Birr)***	***=1 if households perceive themselves as poor relative to others in the village***	***=1 if households perceive themselves as poor based on own circumstances***
	b/se	b/se	b/se	b/se
=1 if treatment-1	0.007	-1.049	0.033	-0.002
	(0.02)	(0.82)	(0.03)	(0.02)
=1 if treatment-2	-0.003	-0.638	-0.001	-0.001
	(0.02)	(0.79)	(0.03)	(0.02)
=1 if treatment-3i	0.027	-0.98	0.003	0.028
	(0.03)	(1.12)	(0.03)	(0.02)
=1 if treatment-3ii	-0.028	1.142	-0.015	-0.025
	(0.03)	(1.18)	(0.03)	(0.03)
R-Square	0.015	0.026	0.020	0.010
Observations	2572	2572	2567	2567
Control Mean	0.859	11.433	0.814	0.915
P-value of F-TEST T1=T2	0.6384	0.5577	0.2096	0.9441
P-value of F-TEST T1=T3i	0.4684	0.9486	0.2578	0.1196
P-value of F-TEST T1=T3ii	0.2232	0.0529	0.1036	0.3584
P-value of F-TEST T2=T3i	0.2852	0.7419	0.8954	0.1758
P-value of F-TEST T2=T3ii	0.3954	0.1073	0.6350	0.3536
P-value of F-TEST T3i=T3ii	0.1056	0.1193	0.5478	0.0400
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.5790	0.3122	0.5214	0.2970

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

As can be seen from Table 4.3.5, it is not possible to reject the hypotheses that, so far, the LT program interventions have not generated an impact on the poverty status of treatment households as measured by these indicators. The finding holds for the interventions individually as well as jointly (see the joint significance test in the last row of Table 4.3.5). The results do not change with multiple hypotheses testing (Table A4.1.2).

4.3.6. Aspirations

Aspirations of individuals are both a measure of well-being as well as an ingredient in the decision-making process. There is some evidence that low aspirations may constrain the economic choices that the poor make. There is also some evidence suggesting the possibility of modifying these aspirations and encourage stronger forward-looking behaviour on the part of rural households (Bernard et al. (2017)). With this premise, one of the objectives of the IE study is to check if combining aspirational interventions with opportunity-enhancing ones (the LT grant and training) will lead to a stronger combined impact on targeted outcome indicators. An intermediary or simultaneous step in the process is the revision of aspirations by treatment households. This section reports the findings regarding the impact of the LT interventions on households' aspirations and expectations.

Table 4.3.6 reports on these findings. Five measures of aspirations are covered - overall aspirations index, overall expectations index, income aspirations (birr), asset aspirations (birr), social status aspirations, and child schooling aspirations. On the whole, the results implythat, up to the time of the study, the interventions have not produced discernible impact on the aspirations and expectations of beneficiary households. First, the effect of the interventions on are jointly non-significant (bottom row of Table 4.3.6). Second, in the first instance, all the statistically significant impact estimates are counter to what was anticipated
– negative rather than positive. Third, non-significant or significant but negative effects are also found with respect to individual domains of aspirations (columns 4-7 of Table 4.3.6).

The negative effects may indicate some form of disappoint or frustration triggered by exposure to the role model videos. In other words, the screening may have forced an unflattering comparison between some of the viewers and the successful individuals in the documentaries, thereby leading to a downward revision of aspirations and/or expectations. Nevertheless, this line of reasoning has to be tempered by the finding that all the statistically significant effects disappear once corrections for multiple testing are made (Table A4.1.4).

Table 4.3.6. Program impacts on aspiration indicators

Variables	Overall aspiration index	Overall expectation index	Income aspiration (birr)	Asset aspiration (birr)	Social status aspiration	Child Schooling aspiration
	b/se	b/se	b/se	b/se	b/se	b/se
=1 if treatment-1	-0.001	-0.022*	-61400**	-45400	-0.628	0.097
	(0.01)	(0.01)	(29416.15)	(50427.93)	(2.13)	(0.35)
=1 if treatment-2	-0.019*	-0.013	-16300	-69000	0.922	0.181
	(0.01)	(0.01)	(36177.78)	(45101.03)	(2.14)	(0.36)
=1 if treatment-3i	-0.019	-0.037**	-2928.544	-52200	-0.133	0.393
	(0.02)	(0.01)	(44457.26)	(49262.88)	(2.67)	(0.50)
=1 if treatment-3ii	-0.019	-0.01	-68700**	-6091.47	4.255*	0.178
	(0.01)	(0.01)	(31170.71)	(87739.07)	(2.47)	(0.50)
R-Square	0.002	0.001	0.042	0.028	0.063	0.047
Observations	2590	2590	2584	2578	2590	2351
Control Mean	0.025	0.026	118000	228000	53.319	5.179
P-value of F-TEST T1=T2	0.1016	0.4156	0.0907	0.5491	0.415	0.8004
P-value of F-TEST T1=T3i	0.2978	0.2287	0.1191	0.8754	0.8424	0.5364
P-value of F-TEST T1=T3ii	0.1447	0.3455	0.6859	0.6419	0.0305	0.8651
P-value of F-TEST T2=T3i	0.9819	0.0713	0.7562	0.6519	0.6728	0.6637
P-value of F-TEST T2=T3ii	0.9607	0.8472	0.0721	0.4396	0.1396	0.9955
P-value of F-TEST T3i=T3ii	0.9902	0.0653	0.0946	0.5861	0.1149	0.7182
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.2531	0.1126	0.0632	0.6109	0.2696	0.9506

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.

Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

4.3.7. Robustness checks

As noted earlier, alternative specifications are explored to ascertain whether the findings reported in this section still hold. These specifications are:[43]

i. Consolidated treatment vs. control: where all treatment arms are combined to form a single treatment group $T \in \{T1, T2, T3ii, T3iiii\}$, which is then compared with the control group using spefification:

$$Y_{hv} = \beta_0 + \beta_1 T_v + \beta_2 \mathrm{W}_h + \varepsilon\varepsilon_{hv}, \qquad (2)$$

where T_v is an indicator for whether Kebele *v* was assigned to any of the LT treatment arms, β_1 measures the impact of the combined treatment as the difference in the average outcome between the treatment arms T1, T2, T3i and T3ii combined and the Control group. This specification is estimated on the end-line sample. The results are reported in Tables A4.2.3.1-A4.2.3.7.

ii. Analysis of Covariance (ANCOVA): where the basic ANCOVA specification with woreda dummies:

$$Y_{1hv} = \beta_0 + \beta_1 T1_v + \beta_2 T2_v + \beta_3 T3ii_v + \beta_4 T3iiii_v + \beta_5 Y_{0hv} + \beta_6 \mathrm{W}_h + \varepsilon\varepsilon_{hv}, \qquad (3)$$

where Y_{1hv} is the outcome of interest at endline for household *h* from Kebele *v,* and Y_{0hv} is the outcome of interest at baseline, $T1_v$ is an indicator for whether the household in Kebele *v* was randomly assigned to treatment T1, $T2_v$ indicates randomized assignment to T2 and $T3ii_v$ indicates randomized assignment to T3i, $T3ii_v$ indicates randomized assignment to T3ii, and W_h is woreda dummies to capture woreda fixed effects. β_1, β_2, β_3 and β_4 measure the impact of T1, T2, T3i and T3ii, respectively. This specification is estimated using end-line panel sample (Tables A4.2.1.1-A4.2.1.7).

iii. Difference-in-difference: where changes in outcome variables across baseline and end-line between control and treatment arms are captured using:

$$Y_{hvt} = \beta_0 + \beta_1 Tiime + \beta_2 TS_v * Tiime + \beta_6 \mathrm{W}_h + \varepsilon\varepsilon_{hvt}, \qquad (4)$$

where Y_{hvt} is the outcome of interest for household *h* from Kebele *v* at time *t,* $Tiime$ is a dummy variable which takes the value of 1 for end-line survey round. TS_v is an indicator for whether the household in Kebele *v* is assigned to treatment T1, T2, T3i and T3ii. β_2 is vector of difference-in-difference estimators which measures the impact of each treatment arms. This model is estimated on data from the baseline-endline panel households (Tables A4.2.2.1-A4.2.2.7).

[43] The 'Data and Methods' chapter provides additional details on these specifications.

Broadly similar impact estimates were obtained using ANCOVA, difference-in-difference, and the consolidated treatment-control comparisons (see the Appendix 2). Without going into details, none of the findings reported above change substantively.

4.4. Summary

The LT program is aimed at encouraging and enabling very poor risk-averse households to make livelihood-enhancing investments in income-generating activities. More specifically, the LT program aspires to help such households:

- invest in productive assets and diversify their livelihoods; and
- access credit from formal sources including microfinance and/or RUSACCO credit.

The LT grant, training in financial literacy and business plan development, and DA-supplied technical support, combined with PWs transfers, jointly encourage and help beneficiaries to invest in income-generating activities. Productive asset accumulation and livelihoods diversification are thus the first step. Productivity and incomes grow as a consequence. Ultimately, welfare improvements follow in the form of higher food security and lower poverty. Accordingly, impacts of the program are assessed by tracking indicators of assets accumulation, improved agricultural production, enhanced aspirations, and higher food security (falling food gap, rising consumption expenditure), and lower poverty.

iii. The findings reported above imply that the LT interventions have achieved one of their key intermediate objectives – encouraging and supporting accumulation of assets in the livelihood pathway selected by beneficiaries. The size of livestock holdings, both in TLU as well as market value terms, grew due to the program. All other impacts are statistically not significant once adjustments for multiple hypothesis testing are made. This may not be surprising in that almost all LT study woredas chose livestock-related activities as the livelihood pathway to invest their grant in. At least that is what can be surmised from the dialogue on and subsequent choices of topics for the Digital Green videos (see Appendix 1 below). In this regard, the following provide descriptive evidence that suggest the grant was converted to livestock holdings:

    - The fraction of sample households reporting ownership of at least one type of livestock rose from 62 percent at baseline to 76 percent at end-line.
    - Livestock ownership grew at a much faster rate for treatment households relative to control households – the ratio of growth ranging between 2.7-fold (for T1) and 3.7-fold (for T3ii);
    - Defining investment in livestock as the end-line value of livestock holdings *less* the baseline value (both in 2018 prices), it is possible to compare it with the LT grant. The mean and median of this investment for treated households was Birr4415 and

Birr4439, respectively. The investment was thus on average about the same as the mean grant value of ***Birr4500***. For control households, this investment was only Birr1332 (mean) and Birr1376 (median).

These suggest that people receiving transfers accumulated assets in the form of livestock holdings, but the realization of income streams from this accumulation has not yet happened. Little impact flowed onto other wellbeing indicators (food security and poverty), as a consequence.

iv. The above main result leads to the question: why the accumulation has not yet produced an income stream for investing households. Several hypotheses may be forwarded for further exploration:

- It may be rather early for these income streams to appear. For example, the animals bought are still too young to produce milk or are not ready to be sold with profit. To explore this a bit further, we considered the impact on real net income from the sales of livestock products (Table 4.4.1).[44] Only 415 households report such sales. No impact from the LT interventions on this outcome can be detected. These two findings, which are likely to be related, are consistent with the argument that it was still early for the livestock assets to generate incomes.
- Another possible explanation relates to the rising incidence of economic and non-economic shocks including COVID-19, inflation and higher price volatility, conflict, locust invasion, and political change. Actual and perceived risk and uncertainty are likely to increase as a consequence. One response available for households under these circumstances is to hold onto their assets and use them in less risky way. Indeed, they may keep them as a buffer against expected larger negative shocks. Brune et al. (2022) forward the same argument as one explanation for the paper's finding in Yemen that households retain their assets even when they face highly distressing situations to have some means of coping with even worse conditions.
- The manner in which the program was implemented may have restricted the realization of incomes from the assets. One often-sighted complaint is that the grant of US$200 is not enough to make the investments required to significantly improve the income generating capacity of households. Another is the concentration of all grant application and use on livestock. This may complicate

[44] Real net income from livestock products (birr) is income obtained from sale of livestock products after accounting for all costs and adjusted using June-July 2018 and April-May 2021 regional CPI for baseline and end-line, respectively (December 2016=100).

the realization of income through excess supply of livestock products in the local market – a scenario anticipated in the LT manuals with emphasis on market assessment at the business plan development stage to overcome the challenge. The negative demand shocks outlined above make this outturn more likely.

Table 4.4.1. Program impacts on net income from sales of livestock products

Variables	Value of livestock sales (birr)
	b/se
=1 if treatment-1	-87.62
	(59.47)
=1 if treatment-2	-5.65
	(72.68)
=1 if treatment-3i	-106.54
	(63.98)
=1 if treatment-3ii	-28.36
	(71.24)
R-Square	0.081
Observations	415
Control Mean	263.63
P-value of F-TEST T1=T2	0.1972
P-value of F-TEST T1=T3i	0.7239
P-value of F-TEST T1=T3ii	0.3451
P-value of F-TEST T2=T3i	0.1517
P-value of F-TEST T2=T3ii	0.7729
P-value of F-TEST T3i=T3ii	0.2464
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.3179

Source: PSNP Livelihood Transfer End-line Survey (2021)
Notes: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001. *Value of livestock sales* (in birr) is constructed using number of livestock sold in the past 12 months and baseline (2018) woreda-level livestock prices.

These and other possible explanations need to be explored further.

APPENDIX 4.1 - MULTIPLE HYPOTHESES TESTING

The impact evaluation approach involves testing multiple hypotheses at the same time and using the same core dataset. In that process we compare many attributes of the same sample households. It is argued that as the number of these characteristics being compared (or hypotheses being tested) grow, the likelihood of wrongly detecting a difference between groups of interest (in the present case treatment and control households) rises. This is the multiple hypotheses testing problem. To illustrate, suppose we have five hypotheses to test. Assume that the outcomes of interest are uncorrelated, none of the treatments have an impact, and the critical value of the tests is 0.05 (i.e., there is a 5 percent chance of rejecting the null of no impact while it is true).[45] Under this circumstance, testing each hypothesis separately will fail to reject the null of no impact at 5 percent significance level. However, if we consider how likely it is that one or more true null is falsely rejected, still given the 0.05 critical value, it is given be [(1- (0.95^5))] which is equal to 0.41 or 41%. This probability rises as the number of hypotheses to test grows. "As a result, in order to reduce the likelihood of these false rejections, we want some way of adjusting for the fact that we are testing multiple hypotheses" (Mckenzie (2021)).

The common solution for this challenge is to adjust p-values for the simultaneous tests being conducted. Mckenzie (2021) summarizes a number of ways of implementing such an adjustment, each available as commands in Stata. From among those, we chose the routine known as '*mhtreg*' because it is aligned with our preferred approach of estimating ITT effects using fixed-effects regressions.

The adjustments for multiple hypothesis testing are separately conducted for each group of outcome indicators identified and used in the impact estimation section above. Results are reported in Tables A4.1.1-A4.1-7. It is common to refer to the adjusted p-values as 'q-values' and retain the name 'p-value' for the unadjusted (original) ones. The tables follow that practice. Note also that very few p-values are slightly different from their values in the impact estimates tables above. That standard errors are bootstrapped in the case of multiple hypotheses tests explains those rare differences.

[45] This example is taken from Mckenzie (2021) with minor paraphrasing.

Table A4.1.1. Results of multiple hypothesis testing - food security indicators

Outcome variables	p-value	q-value
Months of food shortage		
=1 if treatment-1	0.343	0.964
=1 if treatment-2	0.425	0.973
=1 if treatment-3i	0.703	0.993
=1 if treatment-3ii	0.832	0.996
=1 if HH faced food shortage during rainy season		
=1 if treatment-1	0.974	0.974
=1 if treatment-2	0.164	0.820
=1 if treatment-3i	0.378	0.969
=1 if treatment-3ii	0.033**	0.353
Diet-diversity-score, 12 food groups		
=1 if treatment-1	0.036	0.363
=1 if treatment-2	0.059*	0.496
=1 if treatment-3i	0.065*	0.510
=1 if treatment-3ii	0.921	0.994
Per adult equivalent daily food expenditures (Birr)		
=1 if treatment-1	0.287	0.952
=1 if treatment-2	0.441	0.961
=1 if treatment-3i	0.298	0.954
=1 if treatment-3ii	0.649	0.994

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.2. Results of multiple hypothesis testing - poverty indicators

Outcome variables	p-value	q-value
Poverty status (poor or non-poor by the national poverty)		
=1 if treatment-1	0.698	0.997
=1 if treatment-2	0.906	1.000
=1 if treatment-3i	0.333	0.986
=1 if treatment-3ii	0.371	0.977
Per adult equivalent daily consumption expenditures (Birr)		
=1 if treatment-1	0.211	0.857
=1 if treatment-2	0.436	0.944
=1 if treatment-3i	0.404	0.957
=1 if treatment-3ii	0.354	0.957
=1 if households perceive themselves as poor relative to others in the village		
=1 if treatment-1	0.247	0.881
=1 if treatment-2	0.976	1.000
=1 if treatment-3i	0.924	1.000
=1 if treatment-3ii	0.652	0.990
=1 if households perceive themselves as poor based on own circumstances		
=1 if treatment-1	0.917	1.000
=1 if treatment-2	0.977	0.977
=1 if treatment-3i	0.176	0.814
=1 if treatment-3ii	0.341	0.966

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors clustered at the Kebele level in parentheses. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.3. Results of multiple hypothesis testing - asset ownership indicators

Outcome variables	p-value	q-value
Ownership of productive equipment, PCA		
=1 if treatment-1	0.159	0.378
=1 if treatment-2	0.219	0.219
=1 if treatment-3i	0.137	0.415
=1 if treatment-3ii	0.020**	0.120
Livestock ownership, TLU units		
=1 if treatment-1	0.034**	0.151
=1 if treatment-2	0.044**	0.178
=1 if treatment-3i	0.027**	0.143
=1 if treatment-3ii	0.001****	0.001****
Total livestock value (birr)		
=1 if treatment-1	0.199	0.361
=1 if treatment-2	0.003***	0.018**
=1 if treatment-3i	0.010***	0.064*
=1 if treatment-3ii	0.007***	0.052*

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.4. Results of multiple hypothesis testing - aspirations indicators

Outcome variables	p-value	q-value
Overall aspiration index		
=1 if treatment-1	0.924	1.000
=1 if treatment-2	0.107	0.824
=1 if treatment-3i	0.290	0.984
=1 if treatment-3ii	0.174	0.933
Overall expectation index		
=1 if treatment-1	0.095*	0.801
=1 if treatment-2	0.338	0.993
=1 if treatment-3i	0.014**	0.225
=1 if treatment-3ii	0.499	1.000
Income aspiration (birr)		
=1 if treatment-1	0.064*	0.660
=1 if treatment-2	0.654	1.000
=1 if treatment-3i	0.956	0.956
=1 if treatment-3ii	0.060*	0.639
Asset aspiration (birr)		
=1 if treatment-1	0.381	0.998
=1 if treatment-2	0.135	0.872
=1 if treatment-3i	0.330	0.992
=1 if treatment-3ii	0.950	1.000
Social status aspiration		
=1 if treatment-1	0.783	1.000
=1 if treatment-2	0.683	1.000
=1 if treatment-3i	0.948	1.000
=1 if treatment-3ii	0.111	0.827
Schooling aspiration		
=1 if treatment-1	0.774	1.000
=1 if treatment-2	0.628	1.000
=1 if treatment-3i	0.487	1.000
=1 if treatment-3ii	0.737	1.000

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.5. Results of multiple hypothesis testing - agricultural input use indicators

Outcome variables	p-value	q-value
=1 if household used improved seeds		
=1 if treatment-1	0.628	0.985
=1 if treatment-2	0.279	0.962
=1 if treatment-3i	0.424	0.988
=1 if treatment-3ii	0.945	0.945
=1 if household used fertilizers		
=1 if treatment-1	0.493	0.989
=1 if treatment-2	0.009***	0.105
=1 if treatment-3i	0.804	0.999
=1 if treatment-3ii	0.938	0.998
=1 if plot is irrigated		
=1 if treatment-1	0.485	0.994
=1 if treatment-2	0.108	0.751
=1 if treatment-3i	0.259	0.958
=1 if treatment-3ii	0.601	0.994
=1 if household used pesticides		
=1 if treatment-1	0.301	0.965
=1 if treatment-2	0.420	0.990
=1 if treatment-3i	0.862	1.000
=1 if tareatment-4	0.559	0.993

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.6. Results of multiple hypothesis testing - off-farm income indicators

Outcome variables	p-value	q-value
=1 if head/members engaged in casual or irregular wage work		
=1 if treatment-1	0.436	0.975
=1 if treatment-2	0.889	0.999
=1 if treatment-3i	0.184	0.824
=1 if treatment-3ii	0.615	0.992
=1 if head/members engaged in regular wage work for an employer		
=1 if treatment-1	0.976	0.976
=1 if treatment-2	0.373	0.979
=1 if treatment-3i	0.379	0.971
=1 if treatment-3ii	0.298	0.950
=1 if head/members carried out or managed an earning activity		
=1 if treatment-1	0.944	0.999
=1 if treatment-2	0.163	0.803
=1 if treatment-3i	0.463	0.970
=1 if treatment-3ii	0.848	1.000

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.7. Results of multiple hypothesis testing - saving and access to credit indicators

Outcome variables	p-value	q-value
=1 if household taken out a loan for productive purposes		
=1 if treatment-1	0.931	0.931
=1 if treatment-2	0.562	0.998
=1 if treatment-3i	0.557	0.999
=1 if treatment-3ii	0.203	0.928
=1 if household taken out a loan for consumption purposes		
=1 if treatment-1	0.477	0.999
=1 if treatment-2	0.294	0.978
=1 if treatment-3i	0.530	0.999
=1 if treatment-3ii	0.647	0.994
=1 if household is member of RUSACC, VSLA, MFI or has bank account		
=1 if treatment-1	0.562	0.991
=1 if treatment-2	0.903	0.990
=1 if treatment-3i	0.553	1.000
=1 if treatment-3ii	0.166	0.891
=1 if household is member of equb or iddir		
=1 if treatment-1	0.721	0.995
=1 if treatment-2	0.728	0.979
=1 if treatment-3i	0.350	0.989
=1 if treatment-3ii	0.366	0.993

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.8. Results of multiple hypothesis testing – Composition of livestock holdings in TLU

Outcome variables	p-value	q-value
Share of cattle in TLU (%)		
=1 if treatment-1	0.577	1.000
=1 if treatment-2	0.448	0.996
=1 if treatment-3i	0.851	0.995
=1 if treatment-3ii	0.163	0.835
Share of shoats in TLU (%)		
=1 if treatment-1	0.875	0.979
=1 if treatment-2	0.623	0.999
=1 if treatment-3i	0.505	0.999
=1 if treatment-3ii	0.660	0.993
Share of Poultry in TLU (%)		
=1 if treatment-1	0.646	0.996
=1 if treatment-2	0.598	1.000
=1 if treatment-3i	0.192	0.866
=1 if treatment-3ii	0.013	0.152
Share of other livestock in TLU (%)		
=1 if treatment-1	0.637	0.998
=1 if treatment-2	0.156	0.839
=1 if treatment-3i	0.777	0.997
=1 if treatment-3ii	0.942	0.942

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.1.9. Results of multiple hypothesis testing – Composition of the value of livestock holdings

Outcome variables	p-value	q-value
Share of cattle in value (%)		
=1 if treatment-1	0.584	0.991
=1 if treatment-2	0.490	0.994
=1 if treatment-3i	0.938	0.938
=1 if treatment-3ii	0.084	0.605
Share of shoats in value (%)		
=1 if treatment-1	0.667	0.965
=1 if treatment-2	0.605	0.986
=1 if treatment-3i	0.534	0.991
=1 if treatment-3ii	0.621	0.977
Share of Poultry in value (%)		
=1 if treatment-1	0.556	0.994
=1 if treatment-2	0.522	0.995
=1 if treatment-3i	0.158	0.802
=1 if treatment-3ii	0.015	0.178
Share of other livestock in value (%)		
=1 if treatment-1	0.318	0.958
=1 if treatment-2	0.094	0.639
=1 if treatment-3i	0.924	0.993
=1 if treatment-3ii	0.512	0.996

Source: Authors' computation using household data from the Livelihoods Transfer End-line (2021) survey.
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

APPENDIX 4.2: ROBUSTNESS CHECKS

Appendix 4.2.1: ANCOVA (panel end-line households with woreda fixed effects)

Food Security

Table A4.2.1.1. Program impacts on food security indicators - ANCOVA estimates

Variables	Months of food shortage b/se	=1 if HH faced food shortage during rainy season b/se	Diet-diversity-score, 12 food groups b/se	Per adult equivalent daily food expenditures (Birr) b/se
=1 if treatment-1	0.332*	-0.006	-0.259*	-1.258*
	(0.19)	(0.03)	(0.14)	(0.69)
=1 if treatment-2	0.18	-0.059	-0.174	-0.691
	(0.20)	(0.04)	(0.14)	(0.69)
=1 if treatment-3i	0.20	-0.059	-0.303**	-1.612*
	(0.23)	(0.05)	(0.14)	(0.84)
=1 if treatment-3ii	-0.068	-0.113***	0.006	-1.013
	(0.21)	(0.04)	(0.17)	(0.85)
Outcome (baseline)	0.012	0.003	0.114****	0.297****
	(0.02)	(0.02)	(0.03)	(0.06)
R-Square	0.071	0.035	0.211	0.106
Observations	1962	1965	1965	1948
Control Mean	3.066	0.681	3.215	6.206
P-value of F-TEST T1=T2	0.4625	0.1608	0.5098	0.2642
P-value of F-TEST T1=T3i	0.5815	0.3147	0.7362	0.6116
P-value of F-TEST T1=T3ii	0.0637	0.0120	0.0999	0.7285
P-value of F-TEST T2=T3i	0.9358	0.9984	0.3142	0.1845
P-value of F-TEST T2=T3ii	0.2586	0.2216	0.2594	0.6477
P-value of F-TEST T3i=T3ii	0.2872	0.3461	0.0555	0.4826
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.3188	0.0504	0.1142	0.2775

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Poverty

Table A4.2.1.2. Program impacts on poverty indicators - ANCOVA estimates

Variables	=1 if household is poor (head count), national poverty line b/se	Per adult equivalent daily consumption expenditures (Birr) b/se	=1 if households perceive themselves as poor relative to others in the village b/se	=1 if households perceive themselves as poor based on own circumstances b/se
=1 if treatment-1	0.018	-1.456*	0.018	-0.011
	(0.02)	(0.87)	(0.03)	(0.02)
=1 if treatment-2	-0.017	-0.717	-0.018	-0.005
	(0.02)	(0.83)	(0.03)	(0.02)
=1 if treatment-3i	0.031	-1.387	-0.017	0.017
	(0.03)	(1.17)	(0.03)	(0.02)
=1 if treatment-3ii	0.000	-0.652	-0.002	-0.008
	(0.03)	(1.12)	(0.03)	(0.03)
Outcome (baseline)	0.228****	0.294****	0.139****	0.076
	(0.04)	(0.06)	(0.04)	(0.05)
R-Square	0.056	0.095	0.033	0.017
Observations	1948	1948	1938	1938
Control Mean	0.857	11.597	0.824	0.921
P-value of F-TEST T1=T2	0.1414	0.2662	0.2330	0.7898
P-value of F-TEST T1=T3i	0.6359	0.9471	0.2391	0.2312
P-value of F-TEST T1=T3ii	0.5111	0.4241	0.5271	0.9207
P-value of F-TEST T2=T3i	0.1054	0.5058	0.9768	0.3586
P-value of F-TEST T2=T3ii	0.5913	0.9463	0.6100	0.9132
P-value of F-TEST T3i=T3ii	0.3476	0.5596	0.6214	0.3890
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.4524	0.5036	0.7433	0.8066

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Asset Ownership

Table A4.2.1.3. Program impacts on asset ownership indicators - ANCOVA estimates

Variables	Ownership of productive equipment, PCA b/se	Livestock ownership, TLU units b/se	Total livestock value (birr) b/se
=1 if treatment-1	0.036	0.358**	5317.907*
	(0.06)	(0.15)	(2759.21)
=1 if treatment-2	0.049	0.168**	2283.649***
	(0.06)	(0.07)	(784.44)
=1 if treatment-3i	0.078	0.185**	2620.192***
	(0.07)	(0.08)	(854.56)
=1 if treatment-3ii	0.181*	0.487****	5481.410****
	(0.09)	(0.13)	(1236.99)
Outcome (baseline)	0.187****	0.425****	0.338**
	(0.01)	(0.07)	(0.14)
R-Square	0.316	0.067	0.043
Observations	1963	1965	1965
Control Mean	-1.373	0.734	7258.701
P-value of F-TEST T1=T2	0.8423	0.2083	0.2720
P-value of F-TEST T1=T3i	0.5743	0.2996	0.3585
P-value of F-TEST T1=T3ii	0.1325	0.5069	0.9592
P-value of F-TEST T2=T3i	0.6892	0.8387	0.7054
P-value of F-TEST T2=T3ii	0.1620	0.0135	0.0126
P-value of F-TEST T3i=T3ii	0.3071	0.0282	0.0278
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.3734	0.0007	0.0000

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)

Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.2.1.4. Program impacts on aspirations - ANCOVA estimates

Variables	Overall aspiration index	Overall expectation index	Income aspiration (birr)	Asset aspiration (birr)	Social status aspiration	Schooling aspiration
	b/se	b/se	b/se	b/se	b/se	b/se
=1 if treatment-1	0.004	-0.017	-52100	-38700	-0.994	-0.01
	(0.02)	(0.02)	(32276.03)	(53804.37)	(2.13)	(0.43)
=1 if treatment-2	-0.038*	-0.029	6522.14	-73800	0.241	-0.032
	(0.02)	(0.02)	(42233.36)	(48871.26)	(2.23)	(0.43)
=1 if treatment-3i	-0.036	-0.061**	22002.48	-30200	-1.009	0.639
	(0.03)	(0.03)	(53769.90)	(54177.68)	(2.89)	(0.62)
=1 if treatment-3ii	-0.046**	-0.064**	-62400*	-20700	3.619	0.096
	(0.02)	(0.03)	(34485.05)	(76071.49)	(2.49)	(0.57)
Outcome (baseline)	0.065***	0.049**	-0.003	0.059	0.051**	-0.01
	(0.02)	(0.02)	(0.01)	(0.05)	(0.02)	(0.03)
R-Square	0.007	0.005	0.042	0.040	0.070	0.047
Observations	1962	1962	1952	1942	1962	1610
Control Mean	0.032	0.034	114000	230000	54.288	5.284
P-value of F-TEST T1=T2	0.0344	0.5464	0.0845	0.4278	0.5481	0.9544
P-value of F-TEST T1=T3i	0.1638	0.0732	0.1207	0.8654	0.9959	0.2692
P-value of F-TEST T1=T3ii	0.0227	0.0803	0.6289	0.7995	0.0486	0.8407
P-value of F-TEST T2=T3i	0.9524	0.1984	0.7795	0.3322	0.6597	0.2561
P-value of F-TEST T2=T3ii	0.7122	0.1979	0.0613	0.4311	0.1650	0.8110
P-value of F-TEST T3i=T3ii	0.7460	0.9298	0.0911	0.8925	0.1294	0.4378
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.0522	0.0709	0.1086	0.6047	0.3655	0.8372

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Off-farm employment

Table A4.2.1.5. Program impacts on off-farm employment - ANCOVA estimates

	=1 if head/members engaged in casual or irregular wage work	=1 if head/members engaged in regular wage work for an employer	=1 if head/members carried out or managed an earning activity
Variables	b/se	b/se	b/se
=1 if treatment-1	-0.034	0.004	-0.002
	(0.03)	(0.01)	(0.01)
=1 if treatment-2	-0.024	-0.014	0.023*
	(0.03)	(0.01)	(0.01)
=1 if treatment-3i	-0.045	-0.006	0.009
	(0.03)	(0.01)	(0.02)
=1 if treatment-3ii	-0.003	-0.013	-0.016
	(0.03)	(0.01)	(0.01)
Outcome (baseline)	0.145****	0.093*	0.063*
	(0.03)	(0.05)	(0.03)
R-Square	0.061	0.010	0.027
Observations	1962	1962	1962
Control Mean	0.170	0.048	0.033
P-value of F-TEST T1=T2	0.6829	0.1669	0.0825
P-value of F-TEST T1=T3i	0.7084	0.5243	0.5002
P-value of F-TEST T1=T3ii	0.3482	0.2789	0.2832
P-value of F-TEST T2=T3i	0.4716	0.5328	0.4252
P-value of F-TEST T2=T3ii	0.5440	0.8952	0.0025
P-value of F-TEST T3i=T3ii	0.2510	0.6634	0.1152
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.5139	0.6238	0.0422

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.2.1.6. Program impacts on agricultural input use - ANCOVA estimates

Variables	=1 if household used improved seeds b/se	=1 if household used fertilizers b/se	=1 if plot is irrigated b/se	=1 if household used pesticides b/se
=1 if treatment-1	-0.007	-0.02	-0.024	0.036
	(0.03)	(0.04)	(0.02)	(0.03)
=1 if treatment-2	-0.021	-0.112***	-0.036*	-0.011
	(0.03)	(0.04)	(0.02)	(0.03)
=1 if treatment-3i	0.043	-0.035	-0.032	0.002
	(0.04)	(0.04)	(0.02)	(0.04)
=1 if treatment-3ii	0.008	-0.021	-0.011	-0.002
	(0.04)	(0.05)	(0.03)	(0.04)
Outcome (baseline)	0.127****	0.153****	0.178****	0.091**
	(0.02)	(0.03)	(0.05)	(0.04)
R-Square	0.227	0.281	0.067	0.159
Observations	1625	1625	1625	1619
Control Mean	0.290	0.491	0.096	0.131
P-value of F-TEST T1=T2	0.6787	0.0196	0.5393	0.0812
P-value of F-TEST T1=T3i	0.1973	0.6917	0.7103	0.2713
P-value of F-TEST T1=T3ii	0.7206	0.9958	0.6456	0.2967
P-value of F-TEST T2=T3i	0.0781	0.0338	0.8687	0.6921
P-value of F-TEST T2=T3ii	0.4646	0.0544	0.3904	0.8047
P-value of F-TEST T3i=T3ii	0.4289	0.7528	0.4910	0.9289
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.5123	0.0377	0.4954	0.4682

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.2.1.7. Program impacts on saving and access to credit - ANCOVA estimates

	=1 if household taken out a loan for productive purposes	=1 if household taken out a loan for consumption purposes	=1 if household is member of RUSACC, VSLA, MFI or has bank account	=1 if household is member of equb or iddir
Variables	b/se	b/se	b/se	b/se
=1 if treatment-1	-0.003	0.026	-0.024	0.027
	(0.02)	(0.03)	(0.04)	(0.03)
=1 if treatment-2	-0.009	-0.023	-0.015	-0.005
	(0.02)	(0.03)	(0.04)	(0.03)
=1 if treatment-3i	-0.024	0.038	0.029	0.049
	(0.02)	(0.04)	(0.04)	(0.03)
=1 if treatment-3ii	-0.029*	0.015	0.072	0.059*
	(0.02)	(0.04)	(0.05)	(0.03)
Outcome (baseline)	0.025	0.064**	0.105****	0.060**
	(0.02)	(0.03)	(0.02)	(0.02)
R-Square	0.022	0.060	0.076	0.086
Observations	1962	1962	1962	1962
Control Mean	0.062	0.236	0.476	0.810
P-value of F-TEST T1=T2	0.6914	0.0960	0.8340	0.2938
P-value of F-TEST T1=T3i	0.2623	0.7674	0.2456	0.4678
P-value of F-TEST T1=T3ii	0.0958	0.7517	0.0976	0.2994
P-value of F-TEST T2=T3i	0.4054	0.1307	0.2985	0.1009
P-value of F-TEST T2=T3ii	0.1774	0.2760	0.1176	0.0564
P-value of F-TEST T3i=T3ii	0.8010	0.6066	0.4626	0.7779
Joint significance T1=0; T2=0; T3i=0; T3ii=0	0.3137	0.4230	0.4328	0.2232

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Appendix 4.2.2: Difference-in-Difference results (panel households with woreda fixed effects)

Food Security

Table A4.2.2.1. Program impacts on food security - Difference-in-difference estimates

Variables	Months of food shortage	=1 if HH faced food shortage during rainy season	Diet-diversity-score, 12 food groups	Per adult equivalent daily food expenditures (Birr)
	b/se	b/se	b/se	b/se
=1 if treatment-1	0.17	0.017	-0.293**	-0.312
	(0.25)	(0.04)	(0.14)	(0.66)
=1 if treatment-2	0.466**	0.045	-0.285**	-0.513
	(0.24)	(0.04)	(0.14)	(0.63)
=1 if treatment-3i	0.308	0.047	0.02	0.424
	(0.26)	(0.05)	(0.18)	(0.82)
=1 if treatment-3ii	0.23	0.076*	-0.018	-0.232
	(0.22)	(0.04)	(0.20)	(0.55)
=1 if time=post-intervention	0.269	0.085**	0.315**	1.348*
	(0.22)	(0.03)	(0.14)	(0.71)
treatment-1*post-intervention	0.168	-0.022	-0.002	-1.051
	(0.32)	(0.05)	(0.20)	(0.92)
treatment-2*post-intervention	-0.278	-0.104*	0.069	-0.359
	(0.34)	(0.05)	(0.21)	(0.83)
treatment-3i*post-intervention	-0.108	-0.104	-0.322	-1.882*
	(0.36)	(0.08)	(0.21)	(0.97)
treatment-3ii*post-intervention	-0.281	-0.184***	0.016	-0.785
	(0.31)	(0.06)	(0.27)	(0.94)
Control mean-baseline	2.797	0.596	2.901	4.86
Control mean-end-line	3.066	0.681	3.215	6.206
R-Square	0.058	0.032	0.178	0.030
Observations	3927	3930	3930	3913

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Poverty

Table A4.2.2.2. Program impacts on poverty - Difference-in-difference estimates

Variables	=1 if household is poor (head count), national poverty line	Per adult equivalent daily consumption expenditures (Birr)	=1 if households perceive themselves as poor relative to others in the village	=1 if households perceive themselves as poor based on own circumstances
	b/se	b/se	b/se	b/se
=1 if treatment-1	0.025	-1.233	-0.01	-0.027*
	(0.02)	(0.80)	(0.02)	(0.02)
=1 if treatment-2	0.049**	-1.473*	0.015	-0.009
	(0.02)	(0.79)	(0.02)	(0.01)
=1 if treatment-3i	0.011	-0.389	-0.014	-0.014
	(0.03)	(0.99)	(0.02)	(0.02)
=1 if treatment-3ii	0.027	-1.254*	-0.038	-0.016
	(0.02)	(0.72)	(0.03)	(0.02)
=1 if time=post-intervention	-0.028	2.156**	-0.088***	-0.048**
	(0.02)	(0.90)	(0.03)	(0.02)
treatment-1*post-intervention	0.000	-0.607	0.027	0.015
	(0.03)	(1.15)	(0.04)	(0.03)
treatment-2*post-intervention	-0.055*	0.296	-0.032	0.003
	(0.03)	(1.06)	(0.04)	(0.03)
treatment-3i*post-intervention	0.023	-1.107	-0.006	0.028
	(0.03)	(1.32)	(0.04)	(0.03)
treatment-3ii*post-intervention	-0.021	0.331	0.03	0.007
	(0.04)	(1.32)	(0.04)	(0.03)
Control mean-baseline	0.884	9.447	0.913	0.969
Control mean-end-line	0.857	11.597	0.825	0.921
R-Square	0.019	0.036	0.032	0.015
Observations	3913	3913	3903	3903

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Asset Ownership

Table A4.2.2.3. Program impacts on asset ownership - Difference-in-difference estimates

Variables	Ownership of productive equipment, PCA b/se	Livestock ownership, TLU units b/se	Total livestock value (birr) b/se
=1 if treatment-1	0.19	0.068	431.645
	(0.20)	(0.07)	(820.10)
=1 if treatment-2	0.112	-0.035	112.322
	(0.20)	(0.07)	(865.83)
=1 if treatment-3i	0.32	0.08	664.359
	(0.28)	(0.10)	(1128.27)
=1 if treatment-3ii	0.557**	0.234**	3690.500**
	(0.25)	(0.10)	(1510.71)
=1 if time=post-intervention	-1.117****	0.142**	1130.393**
	(0.15)	(0.05)	(517.49)
treatment-1*post-intervention	-0.114	0.316*	5004.192*
	(0.21)	(0.16)	(2864.45)
treatment-2*post-intervention	-0.036	0.189**	2207.350**
	(0.22)	(0.08)	(865.50)
treatment-3i*post-intervention	-0.174	0.136	2157.695**
	(0.30)	(0.09)	(890.58)
treatment-3ii*post-intervention	-0.256	0.359**	3002.184
	(0.22)	(0.16)	(1895.98)
Control mean-baseline	-0.256	0.592	6128.308
Control mean-end-line	-1.373	0.734	7258.701
R-Square	0.234	0.045	0.037
Observations	3928	3930	3930

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.2.2.4. Program impacts on aspirations - Difference-in-difference estimates

Variables	Overall aspiration index	Overall expectation index	Income aspiration (birr)	Asset aspiration (birr)	Social status aspiration	Schooling aspiration
	b/se	b/se	b/se	b/se	b/se	b/se
=1 if treatment-1	0.014	0.021	-33400	-93000	1.393	-0.291
	(0.02)	(0.01)	(43773.21)	(70105.30)	(2.84)	(0.42)
=1 if treatment-2	0.003	0.016	22171.867	-76000	3.172	-0.414
	(0.02)	(0.01)	(53978.09)	(71484.08)	(2.80)	(0.41)
=1 if treatment-3i	-0.012	0.012	-70600*	-124000*	4.467	-0.262
	(0.02)	(0.02)	(36017.25)	(69944.37)	(2.79)	(0.48)
=1 if treatment-3ii	0.004	0.00	43271.027	139000	4.09	-0.111
	(0.02)	(0.02)	(63529.46)	(137152.62)	(3.10)	(0.55)
=1 if time=post-intervention	0.037*	0.039**	23834.33	11660.754	18.052****	-1.484****
	(0.02)	(0.02)	(49631.46)	(77176.56)	(2.86)	(0.40)
treatment-1*post-intervention	-0.009	-0.037	-18000	47913.61	-2.316	0.468
	(0.03)	(0.03)	(57870.69)	(93032.95)	(4.13)	(0.58)
treatment-2*post-intervention	-0.041	-0.045*	-14400	-1556.39	-2.78	0.383
	(0.03)	(0.03)	(77050.78)	(93623.00)	(3.82)	(0.57)
treatment-3i*post-intervention	-0.025	-0.073**	93051.813	85891.856	-5.313	0.942
	(0.04)	(0.03)	(73089.55)	(92776.63)	(4.85)	(0.76)
treatment-3ii*post-intervention	-0.050*	-0.065*	-98600	-138000	0.689	0.241
	(0.03)	(0.03)	(72558.18)	(159025.06)	(4.57)	(0.83)
Control mean-baseline	-0.006	-0.005	91239.264	219000	36.236	6.588
Control mean-end-line	0.032	0.034	115000	231000	54.288	5.11
R-Square	0.002	0.001	0.015	0.014	0.09	0.046
Observations	3927	3927	3917	3907	3927	3523

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Off-farm employment

Table A4.2.2.5. Program impacts on off-farm employment - Difference-in-difference estimates

	=1 if head/members engaged in casual or irregular wage work	=1 if head/members engaged in regular wage work for an employer	=1 if head/members carried out or managed an earning activity
Variables	b/se	b/se	b/se
=1 if treatment-1	-0.002	-0.011	-0.003
	(0.03)	(0.01)	(0.01)
=1 if treatment-2	0.015	-0.023***	-0.005
	(0.03)	(0.01)	(0.01)
=1 if treatment-3i	0.038	-0.001	0.011
	(0.03)	(0.01)	(0.02)
=1 if treatment-3ii	0.01	-0.004	-0.001
	(0.04)	(0.01)	(0.01)
=1 if time=post-intervention	0.004	0.017	-0.01
	(0.02)	(0.01)	(0.01)
treatment-1*post-intervention	-0.033	0.014	0.000
	(0.04)	(0.02)	(0.02)
treatment-2*post-intervention	-0.037	0.007	0.027
	(0.03)	(0.02)	(0.02)
treatment-3i*post-intervention	-0.077**	-0.005	-0.001
	(0.04)	(0.02)	(0.02)
treatment-3ii*post-intervention	-0.008	-0.009	-0.014
	(0.04)	(0.02)	(0.02)
Control mean-baseline	0.166	0.031	0.043
Control mean-end-line	0.170	0.048	0.033
R-Square	0.051	0.008	0.018
Observations	3927	3927	3927

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Agricultural Input Use

Table A4.2.2.6. Program impacts on agricultural inputs - Difference-in-difference estimates

Variables	=1 if household used improved seeds b/se	=1 if household used fertilizers b/se	=1 if plot is irrigated b/se	=1 if household used pesticides b/se
=1 if treatment-1	-0.057	-0.032	0.018	-0.004
	(0.04)	(0.04)	(0.02)	(0.03)
=1 if treatment-2	-0.055	-0.077*	0.004	0.02
	(0.04)	(0.04)	(0.02)	(0.03)
=1 if treatment-3i	-0.024	-0.053	-0.004	-0.008
	(0.05)	(0.05)	(0.02)	(0.03)
=1 if treatment-3ii	-0.031	-0.016	-0.031	-0.001
	(0.05)	(0.06)	(0.02)	(0.03)
=1 if time=post-intervention	-0.046	-0.009	0.038*	0.029
	(0.03)	(0.04)	(0.02)	(0.03)
treatment-1*post-intervention	0.04	0.003	-0.036	0.043
	(0.05)	(0.05)	(0.03)	(0.04)
treatment-2*post-intervention	0.017	-0.042	-0.032	-0.031
	(0.05)	(0.06)	(0.03)	(0.04)
treatment-3i*post-intervention	0.049	0.018	-0.026	0.013
	(0.06)	(0.06)	(0.03)	(0.05)
treatment-3ii*post-intervention	0.032	0.009	0.019	0.002
	(0.06)	(0.07)	(0.03)	(0.04)
Control mean-baseline	0.338	0.481	0.054	0.096
Control mean-end-line	0.288	0.471	0.091	0.124
R-Square	0.181	0.227	0.033	0.157
Observations	3494	3495	3494	3482

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.2.2.7. Program impacts on saving and access to credit - Difference-in-difference estimates

Variables	=1 if household taken out a loan for productive purposes b/se	=1 if household taken out a loan for consumption purposes b/se	=1 if household is member of RUSACC, VSLA, MFI or has bank account b/se	=1 if household is member of equb or iddir b/se
=1 if treatment-1	0.001	-0.001	-0.035	0.033
	(0.02)	(0.03)	(0.04)	(0.03)
=1 if treatment-2	-0.018	0.000	-0.091**	0.055*
	(0.02)	(0.03)	(0.04)	(0.03)
=1 if treatment-3i	0.006	0.025	0.057	0.045
	(0.02)	(0.03)	(0.05)	(0.04)
=1 if treatment-3ii	-0.018	0.004	0.028	0.011
	(0.02)	(0.03)	(0.05)	(0.04)
=1 if time=post-intervention	-0.004	0.075**	0.112***	0.048*
	(0.02)	(0.03)	(0.04)	(0.03)
treatment-1*post-intervention	-0.004	0.027	0.006	-0.005
	(0.02)	(0.04)	(0.05)	(0.04)
treatment-2*post-intervention	0.009	-0.023	0.066	-0.057
	(0.02)	(0.04)	(0.06)	(0.04)
treatment-3i*post-intervention	-0.03	0.014	-0.023	0.006
	(0.03)	(0.05)	(0.07)	(0.04)
treatment-3ii*post-intervention	-0.012	0.017	0.048	0.048
	(0.02)	(0.05)	(0.07)	(0.05)
Control mean-baseline	0.066	0.161	0.364	0.762
Control mean-end-line	0.062	0.236	0.476	0.810
R-Square	0.016	0.046	0.076	0.090
Observations	3927	3927	3927	3927

Source: PSNP Livelihood Transfer Baseline Survey (2018) and End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Appendix 4.2.3: Consolidated Treatment group vs. Control group (full sample of end-line households with woreda fixed effects, and pooled treatment arms).

Food Security

Table A4.2.3.1. Program impacts on food security - Fixed effect estimates

Variables	Months of food shortage b/se	=1 if HH faced food shortage during rainy season b/se	Diet-diversity-score, 12 food groups b/se	Per adult equivalent daily food expenditures (Birr) b/se
=1 if treatment	0.121	-0.038	-0.218**	-0.501
	(0.15)	(0.03)	(0.11)	(0.60)
R-Square	0.063	0.025	0.211	0.024
Observations	2590	2594	2594	2572
Control Mean	3.127	0.662	3.247	6.061

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Poverty

Table A4.2.3.2 Program impacts on poverty - Fixed effect estimates

Variables	=1 if household is poor (head count), national poverty line b/se	Per adult equivalent daily consumption expenditures (Birr) b/se	=1 if households perceive themselves as poor relative to others in the village b/se	=1 if households perceive themselves as poor based on own circumstances b/se
=1 if treatment	0.002	-0.54	0.009	0.000
	(0.02)	(0.71)	(0.02)	(0.02)
R-Square	0.013	0.023	0.018	0.008
Observations	2572	2572	2567	2567
Control Mean	0.859	11.433	0.814	0.915

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Asset Ownership

Table A4.2.3.3. Program impacts on asset ownership - Fixed effect estimates

Variables	Ownership of productive equipment, PCA b/se	Livestock ownership, TLU units b/se	Total livestock value (birr) b/se
=1 if treatment	0.131**	0.282****	3856.128****
	(0.06)	(0.07)	(938.96)
R-Square	0.160	0.026	0.025
Observations	2592	2594	2594
Control Mean	-1.361	0.762	7479.015

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Aspirations

Table A4.2.3.4. Program impacts on aspirations - Fixed effect estimates

Variables	Overall aspiration index b/se	Overall expectation index b/se	Income aspiration (birr) b/se	Asset aspiration (birr) b/se	Social status aspiration b/se	Schooling aspiration b/se
=1 if treatment	-0.013	-0.020*	-37800	-47800	0.771	0.188
	(0.01)	(0.01)	(29162.14)	(43571.96)	(1.85)	(0.30)
R-Square	0.002	0.001	0.04	0.028	0.06	0.047
Observations	2590	2590	2584	2578	2590	2351
Control Mean	0.025	0.026	118000	228000	53.319	5.179

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Off-farm employment

Table A4.2.3.5. Program impacts on off-farm employment - Fixed effect estimates

	=1 if head/members engaged in casual or irregular wage work	=1 if head/members engaged in regular wage work for an employer	=1 if head/members carried out or managed an earning activity
Variables	b/se	b/se	b/se
=1 if treatment	-0.012	-0.008	0.008
	(0.02)	(0.01)	(0.01)
R-Square	0.036	0.003	0.021
Observations	2591	2591	2591
Control Mean	0.163	0.047	0.031

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Agricultural Input Use

Table A4.2.3.6. Program impacts on agricultural input use - Fixed effect estimates

	=1 if household used improved seeds	=1 if household used fertilizers	=1 if plot is irrigated	=1 if household used pesticides
Variables	b/se	b/se	b/se	b/se
=1 if treatment	-0.01	-0.04	-0.02	0.006
	(0.03)	(0.03)	(0.02)	(0.03)
R-Square	0.205	0.262	0.042	0.151
Observations	2307	2309	2307	2304
Control Mean	0.276	0.454	0.086	0.130

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Table A4.2.3.7. Program impacts on saving and access to credit - Fixed effect estimates

Variables	=1 if household taken out a loan for productive purposes b/se	=1 if household taken out a loan for consumption purposes b/se	=1 if household is member of RUSACC, VSLA, MFI or has bank account b/se	=1 if household is member of equb or iddir b/se
=1 if treatment	-0.008	0.004	0.009	0.012
	(0.01)	(0.02)	(0.03)	(0.03)
R-Square	0.019	0.052	0.056	0.078
Observations	2591	2591	2591	2591
Control Mean	0.059	0.233	0.464	0.817

Source: PSNP Livelihood Transfer End-line Survey (2020)
Note: Standard errors are clustered at the Kebele level. * p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

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