The Impact of the EEU Access to Finance and Land Rental Interventions on Rural Ethiopian Households

(First Round Data Collection 2017)

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LIFT
LAND INVESTMENT FOR TRANSFORMATION PROGRAMME

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MINISTRY OF AGRICULTURE

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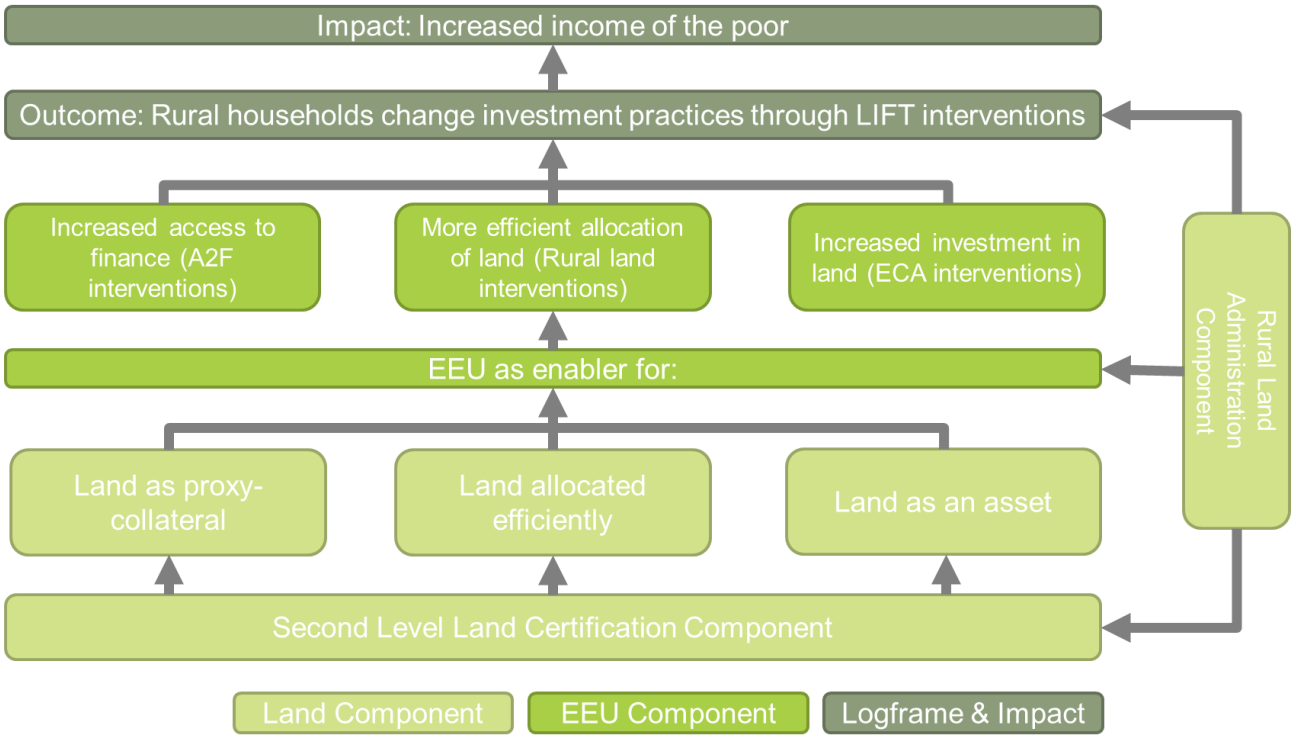
Introduction

Background

The UK Aid-funded Land Investment for Transformation Programme (LIFT) works with the Government of Ethiopia (GoE) to deliver Second Level Land Certificates (SLLC) to smallholder farmers and to create a national database to manage and update SLLC data and land related transactions, the Rural Land Administration System (RLAS). The introduction of SLLC and the RLAS is expected to improve both the administration and management of land in Ethiopia.

A better functioning land system creates multiple opportunities for improving the livelihoods of rural dwellers. Since 2014, through the Economic Empowerment Unit (EEU), LIFT works to leverage these opportunities as shown in Figure 0-1. For this, the programme applies market systems thinking in three main intervention areas: rural land rental, access to finance and environment & conservation agriculture.

Figure 0-1 LIFT programme overview



The EEU Component

The EEU component is currently piloting 10 interventions (see table 1). Qualitative field assessments carried out by the EEU team show that the key interventions have been positively received. Also, the recently-completed Kebele Land Administration Committee (KLAC) survey and Woreda Land Administration Office (WLAO) surveys confirmed there is demand for the innovations introduced through EEU interventions beyond areas directly targeted by the component, which indicates spill-over effects. While the original intent of EEU interventions was as to capitalise on the increased security of tenure offered by SLLC and RLAS, available evidence suggests that they also encourage the uptake of second-level land certificates so that they can be used as support for loans, or to provide additional security in rental transactions. There are also indications that EEU interventions may encourage landholders to formally register land transactions in RLAS, which is crucial to the sustainability of SLLC, and to ensuring security of tenure in the long term.

Table 1: Status of EEU interventions

Area	No.	Intervention Name
Land Rental	1	Introduction of commercially viable rural land rental service providers
	2	Increase awareness on functioning of land rental system
	3	Generate evidence on, and advocate for improved regulations and policies for land rental
Access to Finance	4	Development and introduction of SLLC linked credit financial product(s)
	5	Development and introduction of other SLLC linked non-credit financial products
	6	Development of products/partnerships to overcome and sector limitations
Env. & conservation agriculture	7	Development and introduction of commercially viable clean agriculture input distribution hubs
	8	Promote use of small irrigation systems and appropriate agricultural machineries
	9	Development of output markets through promotion of contract farming
	10	Facilitate delivery of non-commercial GAP and information to farmers

The EEU Early Impacts Survey

In August 2017, the EEU team conducted a survey to measure the early impacts of interventions in the land rental market and access to finance sectors. The EEU Impacts Survey complements routine monitoring activities by the team that are presented as part of the evidence package for the Mid-Term Review (MTR), including:

- Qualitative assessments (through field visits) of EEU interventions in the three markets;
- Qualitative evaluation of the SLLC-loan pilot;
- RLAS Customer Satisfaction Survey;
- KLAC survey;
- Conflict Mediator Survey;
- WLAO Survey; and
- Gender Equity and Social Inclusion research.

The timing for this survey was appropriate because as shown in Figure 0-1, LIFT-EEU interventions can only take place once SLLC has taken place. Rolling out the certification is a phased approach, with the sequence of areas covered decided in conjunction with the Government of Ethiopia. The EEU component used this time to refine the design of its interventions and conduct in-depth market analyses. The actual roll-out of interventions only happened in August 2016. The EEU Impacts Survey has therefore aimed to capture early instances of behaviour change, focusing on the transformational potential of the piloted initiatives.

Methodology and Limitations

Research questions

The EEU Early Impacts Survey, tied to LIFT MTR objectives and LIFT logframe, addresses the following questions:

- What are the impacts on the poor of the EEU component?
- Are there early indications that SLLC and land rental market interventions resulted in higher activity in the land rental market?
- Have the SLLC and EEU interventions resulted in increased availability of credit to rural land holders? Have the SLLC and EEU interventions resulted in uptake of more credit and for what?
- How many have used the SLLC as a guarantee to get loans? What are the default rates on such loans? What is the situation of pre-existing debt among the rural poor?[1]

Specifically, the EEU Early Impacts Survey is tasked with providing quantitative data from households who have engaged with the Land Rental (LR) and access to finance (A2F) interventions. The target groups of the EEU are:

- Smallholder farmers (have the use right of or are renting two hectares or less of land to farm)
- Vulnerable groups:
  - Female-headed households

1 The EEU EIS also provides data and results that are complementary to other Monitoring and Results Measuring activities in responding to other MTR questions.

- Households with orphan children
- Elderly

- Landless people (who have an interest in farming)

Three distinct beneficiary groups are identified:

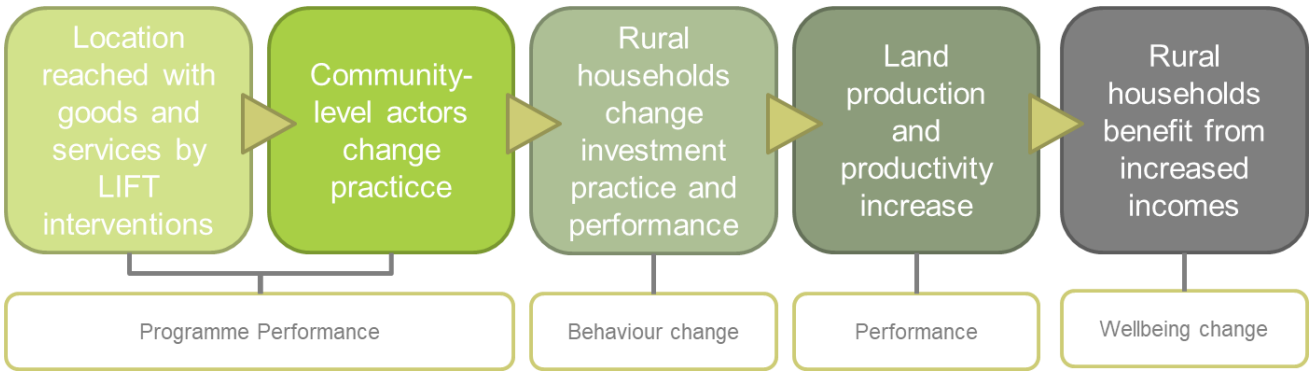
- Land renter farmers: farmers that have engaged with LRSP and as a result are renting or sharecropping out land using the new standard land rental contract;
- Land rentee farmers: farmers that have engaged with LRSP and as a result are renting or sharecropping in land using the standard land rental contract;
- A2F beneficiaries: farmers that have applied for and obtained a SLLC-linked loan from one of the EEU-partner MFIs.

Additionally, the EEU Early Impact Survey provides critical data to feed into LIFT Outcome Indicators 2A and 2C(ii):

OI 2A: Percentage of SLLC farmers who have invested/increased investment in improved inputs and other/new income-generating activities as a result of EEU interventions, disaggregated by gender

OI 2C(ii): Percentage of renters who are from vulnerable groups (women, elderly, orphan children and people with disabilities).

To better understand the motivation of the research questions, it is useful to pinpoint the kind of change that is measured in a simplified Theory of Change of the LIFT programme[2]. The chart below illustrates the levels of change that are to be triggered and supported by the LIFT programme.



Given the early stage of the EEU interventions, to meaningfully respond to the research questions, the main focus of the EEU Early Impacts Survey is on measuring *behavioural change* of the households that have been reached by A2F or LR interventions. In the impact logic three steps of behavioural change are identified:

- Change in households' perceptions and knowledge of SLLC, and associated changes in access to finance, and the functioning of the rural land rental market;
- Change in households' land rental and access to finance practice; and
- Change in households' investment practice (on- and off-farm), land inputs practice, and land use practice.

Achieving behavioural changes is necessary to ensure lasting impacts in terms of productivity of the land, incomes of the poor, food security and other wellbeing dimensions.

Research Approach

In order to respond to the research questions, we employed a statistically representative survey of LR and A2F beneficiaries in selected woredas (districts) in Amhara and Oromia. To detect the impact of EEU, we asked respondents factual and perceptions questions about changes to their knowledge of SLLCs, practice in rural land rental markets and A2F, investment behaviour (on- and off-farm), and land inputs use. The reference periods vary according to the questions but were normally the agricultural year 2015-2016 (pre-intervention) and the agricultural year 2016-2017 (during and post-intervention). We compared and interpreted responses across time for a sample of beneficiaries.

2 This TOC is inspired by the model proposed by the EETSP in recent presentations to LIFT ITSP.

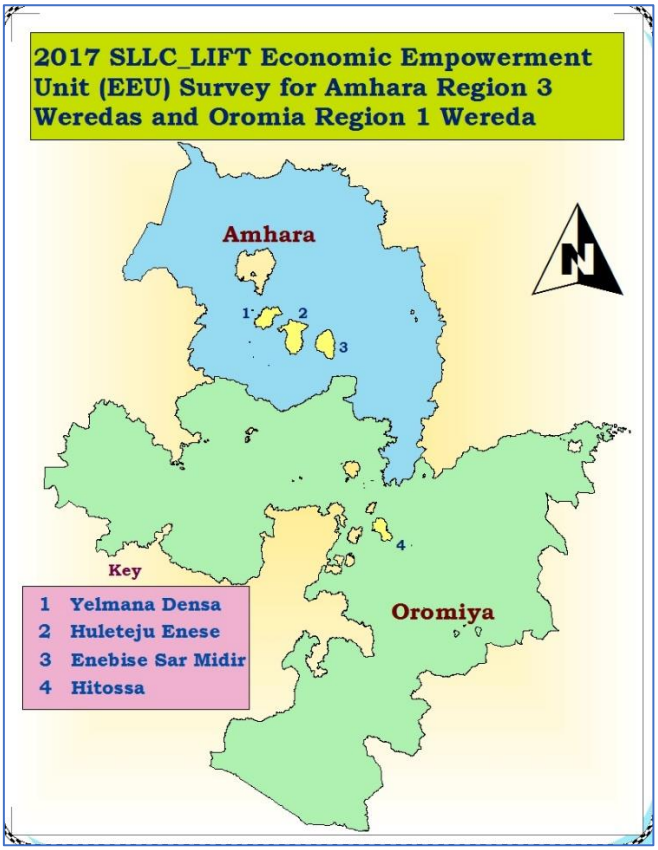
We profiled respondents across relevant demographic and socio-economic characteristics such as sex, age, education, disability (for the respondent and all her households members), poverty status, land holdings, access to banking and insurance.

Sampling framework and sample sizes

The EEU EIS was conducted with a sample of 340 beneficiaries who have engaged with the LR and A2F components. To identify the sample, firstly we purposely selected woredas (districts) where the EEU has been active for at least one agricultural season prior to the survey so that the locations and the respondents have had sufficient exposure to the interventions for the early impacts to materialise (if at all). The selected woredas are Hulet eju Ensie and Yilmana Densa for Amhara and Hitosa for Oromia.

In the selected woredas, we obtained lists of beneficiaries who could be reached for interviews from Microfinance Institutions (MFIs) and Land Rental Service Providers (LRSP). Due to the survey taking place during the rainy season (the busiest season for farmers), lists were obtained only for a subset of the MFI branches and LRSPs in each of the selected woreda. The MFI active in Hulet eju Ensie determined that there would not be enough available respondents in that woreda and provided a replacement list from the neighbouring Enbbise Sar Midir woreda. Figure 0-1 provides a map of the woredas covered by the survey.

Figure 0-1 Survey woredas' map



Although the plan was to pick at random an equal number of male and female respondents from the lists and replace cases within the lists where needed, in the case of the rentee respondents and A2F respondents the field team could not identify sufficient numbers of female respondents and these were eventually replaced by male respondents in order to make up the sample sizes.

Table 2 provides the final sample sizes disaggregated by sex of respondent, beneficiary group and woreda. Eleven respondents interviewed as renters or rentees did not actually engage in any rental or sharecropping of land and were therefore excluded from analysis[3].

Table 2: Sample Sizes

		Renters		Rentees		A2F		
Region	**Woreda**	Males	Females	Males	Females	Males	Females	Total
Amhara	Yilmana Densa	22	27	50	3			102
	Hulet eju Ensie					13	15	28
	Enbbise Sar Midir					16	12	28
Total Amhara		22	27	50	3	29	27	158
Oromia	Hitosa	29	29	41	15	46	11	171
Total Oromia		29	29	41	15	46	11	171
Grand total		51	56	91	18	75	38	329

It should be noted that female respondents may belong to households with a male head. This is because the lists of beneficiaries are compiled based on the first *point of contact* for any rental contract or SLLC-linked loan. Where the household has both a male and a female head, any of the two may engage with LRSPs or with the MFI officials, however both heads normally jointly hold the contract as the land certificates include both the male's and the female's names. The proportions of female-headed households among female respondents are respectively 77% in the renters group, 67% in the rentees group and 32% in the A2F group. In order not to reduce sample sizes further, we do not show results for female-headed households separately.

Survey design and implementation

The EEU EIS questionnaire was designed in consultation with the LIFT team and after a review of the relevant literature. The key references for best practice in this survey are:

- Household Consumption and Expenditure (HCE) Surveys of the Central Statistical Agency of Ethiopia
- Living Standard Measurement Study (LSMS) of the World Bank in cooperation with the Central Statistical Agency
- The Simple Poverty Scorecard for Ethiopia
- The LIFT Baseline Survey conducted by SIAPAC International of the ITSP;
- The Land Tenure Module for LSMS developed by Stein Holden; and
- The Washington Group questions on disability

Questions pertaining to specifics of the project were crafted by the EEU team in consultation with the M&E and survey firms for LIFT, SIAPAC International and Abcon. The EETSP provided inputs to a draft of the questionnaire and was involved in the conceptualisation of the survey.

A final draft of the survey was prepared prior to training of the enumerators. During training, final changes were made based on the expert inputs of the training team and trainees, with particular focus on ensuring that the concepts of the survey would be understood by the respondents. The questionnaire was repeatedly updated and circulated within the team for inputs and comments. The questionnaire was finalised after training, pre-testing, piloting, and a questionnaire review retreat.

Each data collection team was headed by a supervisor, with a set of supervisors overseen by a field manager. Every questionnaire was checked, by the enumerator her/himself and by the supervisor, before spot checking by the field manager. A training and field report was made available within a month of completion of fieldwork.

Data were collected on tablets, and cases loaded onto a server into Addis Ababa. The management of that database was handed by the data manager from Abcon. Data cleaning took place during entry, and final cleaning took place using STATA.

3 It is possible that renter or rentee respondents who are not engaged in land rental market at the time of the survey might have been engaging previously. This possibility is reinforced by the fact that land rental agreements are oftentimes made for short durations. In spite of this possibility, we take a conservative approach and exclude these respondents from the analysis.

Challenges and Limitations of The Research

The main challenges and limitations of the EEU EIS included:

Lack of baseline and recall bias. In the absence of a baseline survey specifically designed for the EEU, the respondents were asked to recall their economic and financial situation across different seasons before and after entering in a new land rental contract or taking up the new SLLC-linked loan. This was necessary in order to measure change that may have taken place thanks to the interventions. However, recalling such information can be difficult and is affected by bias. Respondents may feel that they need to give positive answers, for example if they perceive that the survey will affect their future ability to engage in land rental or obtain a loan. To offset this, the survey was designed to limit recall bias as much as possible. The data collectors clarified to respondents that there are no right or wrong answers and that respondents do not necessarily benefit from the survey.

Logistical difficulties. The survey took place during the 2017 rainy season (August). As it was expected that rains and muddy roads might impede data collection in certain areas, local conditions in terms of accessibility were verified before the final selection of the woredas was made. Additionally, during rainy seasons farmers are normally very busy working on their fields and have very little time for unannounced data collection at their household. To avoid low respondent rates, we instructed LRSPs and MFI officials to facilitate interviews by contacting respondents in advance of data collection and gathering them at contact points such as kebele land offices or MFI branch offices.

Underachievement of sample of female respondents. The sampling framework provided that an equal number of male and female respondents were to be interviewed in order to obtain statistically sufficient samples for separate analysis. While for the renters group the target number of female respondents has been achieved (56), for the rentees group and A2F group, the samples of female respondents are considerably smaller – i.e. 18 and 38 respectively. This is mainly due to low numbers of female beneficiaries in those two groups, which in turn have made it difficult for LRSPs, MFI officials and data collectors to meet the sample targets. Statistics for these two sub-groups will always be provided separately from males' respondents and need to be interpreted with care as they are based on very small samples.

External validity and systemic change. The results obtained from the selected woredas are not necessarily representative of the larger group of LR and A2F beneficiaries, which currently covers more than 30 woredas. The choice of the locations to roll-out the EEU interventions was driven first and foremost by the completion of the SLLC process in those locations and additionally by opportunity considerations, i.e. driven where the interventions are likely to have stronger effect (this is in line with M4P best practice, which favours interventions in areas where there are willing and capable partners, setting the path for replication). Especially the A2F component relies on MFIs accepting to pilot the SLLC-linked loans and they will target this to the communities where demand is highest. This means that the intervention cannot be thought to be delivered "at random", both at individual level and at woreda level.

The decision to limit the coverage of the survey reflects the current stage of the EEU roll-out and gives the highest chance to identify an impact that can be achieved overtime across all locations. As such results will be contextualised so lessons and recommendations can account for contextual variations. Another limitation related to the short implementation timeframe is that the survey cannot capture the systemic change that may result from the EEU interventions in the future, thereby providing an underestimation of the true impacts.

Limited exposure to interventions for some respondents. As the survey respondents were selected randomly from lists of current beneficiaries, some of them had engaged with the project for a short period of time. To be more precise, around 50% of the A2F sample had accessed its first SLLC-linked loan up to five months before the survey (see

Table 3 below). About 40% of standard land rental contracts in the LR sample are five months or shorter. This is due to the way EEU interventions operate: LRSPs and MFI officials provide EEU-based services, specifically rental market intermediation and access to financial instruments, on a demand basis.

Table 3: Dates of Standard Land Rental Contracts and SLLC-linked loans in the EEU EIS sample

Month	Renters Percentage of parcels rented or sharecropped out of total sample	Rentees Percentage of parcels rented or sharecropped in out of total sample	A2F Percentage of loans out of total sample
Aug-16	9%	10%	12%
Sep-16	3%	0%	1%
Oct-16	5%	0%	3%
Nov-16	5%	1%	6%
Dec-16	8%	2%	3%
Jan-17	15%	17%	4%
Feb-17	5%	9%	12%
Mar-17	12%	11%	7%
Apr-17	13%	14%	21%
May-17	12%	3%	11%
Jun-17	14%	34%	22%
Total	100%	100%	100%

Varying lengths of exposure across beneficiaries have at least one significant implication for the interpretation of the data: some of the behavioural changes that are detected in the survey might be easier to attribute to the interventions than others due different timeframes it will take for these changes to materialise. For example, practice changes in rental market and access to finance will start to materialise as soon as the beneficiaries engage with the project, but investments on land might take more time to happen. The discussion around outcomes is caveated to account for this.

Profiling of EEU beneficiaries

This section describes the EEU EIS sample across demographic and socio-economic characteristics and addresses the question of whether the EEU interventions are reaching the intended groups of beneficiaries.

Household Demographic Characteristics

We begin the description of the households of the respondents with the size of the household and age of the households' members.

Table below reports these key demographic characteristics for each of the EEU sub-groups. Some findings stand out:

- The average size of the households varies across groups between 6.1 for male A2F beneficiaries and 4.1 for female renters; interestingly, while the average size of female and male rentees' households are similar, among renters' households, the males' households are larger than the females';
- The number of adults and minors are fairly in line with the overall size of the households.
- The average age of the respondents is highest among male renters (52.3) and lowest among female rentees (41.5); male rentees are the next youngest group. These results are consistent with the idea that older households are more likely to rent out land as they may be less able to farm the land themselves while younger households might have spare labour capacity to employ into farming. Female renters in the sample are also relatively young (43.6 on average), and this is likely to be linked to female-headed households who do not have sufficient capacity to farm land and therefore prefer to rent it out.

Table 4: Size of the households and age of the households' members

variable	Renters					
	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Size of the household	5.0	4.7	51	4.0	4.1	56
Number of adults in the household (18+)	3.0	2.9	51	2.0	2.0	56
Number of minors in the household (17-)	1.0	1.7	51	2.0	2.0	56
Age of the respondent	53.0	52.3	51	42.0	43.6	55
Age of adults in the household (avg.)	39.3	40.4	51	35.0	36.9	55
Age of minors in the household (avg.)	11.7	11.4	33	10.6	10.6	44

variable	Rentees					
	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Size of the household	5.0	5.1	91	4.5	4.9	18
Number of adults in the household (18+)	2.0	2.8	91	2.0	2.4	18
Number of minors in the household (17-)	2.0	2.3	91	2.0	2.5	18
Age of the respondent	41.0	42.3	91	39.5	41.5	18
Age of adults in the household (avg.)	33.0	35.0	91	30.8	33.7	18
Age of minors in the household (avg.)	9.7	9.4	80	10.3	10.6	17

variable	A2F					
	Males			Females		
	median	*mean*	*count*	*median*	*mean*	*count*
Size of the household	6.0	6.1	75	6.0	5.6	38
Number of adults in the household (18+)	3.0	3.3	75	3.0	3.2	38
Number of minors in the household (17-)	3.0	2.9	75	3.0	2.4	38
Age of the respondent	50.0	48.6	75	49.5	49.3	38
Age of adults in the household (avg.)	34.7	37.2	75	33.9	36.2	38
Age of minors in the household (avg.)	10.7	10.2	73	11.8	10.7	33

Next, we look at the education levels of the respondents and their households' members (see Table 5 and Table 6). The most outstanding findings are the following:

- Across the three beneficiary groups, female heads are less likely to be able to read and write than male heads; the difference is most striking in the A2F beneficiary group, where only 32% of female heads can read and write while 64% of male heads can.
- The most common level of education among adults in the respondents' households is no traditional or formal education, with the exception of the female rentees households and male A2F households, where it is the second cycle of primary. A relatively small number of adults have completed high school or higher level of education (between 18% and 33% across the groups). No major difference is observable in education levels of adults between male respondents' households and female respondents' households.

Table 5: Reading and writing skills of household heads

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
HH head cannot read nor write	43%	68%	29%	50%	16%	63%
HH head can read in a language	12%	0%	4%	6%	15%	3%
HH head can write in a language	2%	5%	7%	6%	5%	3%
HH head can read and write in a language	43%	27%	60%	39%	64%	32%
Total	100%	100%	100%	100%	100%	100%

Table 6: Highest education level attained by adult household members

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Pre - school	4%	6%	3%	0%	0%	1%
First Cycle Primary (G1 - G4)	10%	8%	11%	9%	10%	10%
Second Cycle Primary (G5 - G8)	23%	24%	24%	40%	29%	15%
High School (G9 - G10 incl. old high school)	13%	19%	19%	16%	26%	19%
Preparatory School (1st and 2nd year Prep)	1%	3%	2%	2%	3%	5%
TVET (10+1 - 10+4)	3%	4%	4%	0%	2%	7%
Any tertiary	1%	0%	2%	5%	1%	2%
Non-formal or adult education	6%	1%	3%	0%	5%	7%
Traditional (Madras, religious etc.)	3%	3%	2%	0%	2%	1%
No traditional or formal education	35%	34%	28%	21%	22%	33%
Don't know / cannot say	2%	0%	3%	7%	0%	0%
Total	100%	100%	100%	100%	100%	100%
Total # of adult HH members	163	119	267	43	246	123

Income and Poverty

In this sub-section we look at sources of income for the households of the respondents as well as varying indicators of poverty in order to determine whether the EEU reaches poor households.

It is known from qualitative observations from LIFT staff as well as from nationally representative surveys that the majority of households in rural Ethiopia rely on agriculture as their primary source of livelihoods. We analyse the main sources of cash incomes for each households' member in order to verify whether the claim holds for our sample of EEU beneficiaries. Table 7 below shows that household sales of agricultural products are indeed the first source of cash incomes for 56%-70% of all adults living in the respondents' households across the six groups[4]. A significant share of adults have no cash income at all (from 12% to 35% across groups), which would suggest that these individuals rely primarily on self-produced food and cash from other households' members. Finally, a small share of 3%-14% of adults rely on paid jobs as their first source of incomes. The composition of sources of incomes is fairly consistent across the six groups.

Table 7: Main sources of cash income

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Working full-time for a regular salary	1%	0%	2%	9%	1%	2%
Working part-time for a regular salary	1%	0%	0%	0%	1%	0%
Working occasionally, irregular pay	4%	5%	1%	5%	2%	2%
Household sales: staple crops	42%	52%	49%	47%	46%	54%
Household sales: staple crop products	5%	10%	11%	0%	5%	1%
Household sales: high value crops	12%	3%	3%	2%	9%	0%
Household sales: livestock	1%	4%	3%	7%	1%	0%
Household sales: livestock products	2%	0%	5%	0%	3%	1%
Sale of forest products	1%	0%	0%	0%	1%	0%
Sale of non-agricultural products/services	0%	3%	1%	2%	0%	2%
Commercial manufacturing/production	0%	0%	1%	0%	0%	0%
Repair / maintenance work	0%	1%	0%	0%	1%	1%
Informal activities	2%	8%	2%	7%	2%	2%
Income from land/house rental	3%	3%	1%	0%	0%	1%
Remittances/retirement income	0%	0%	0%	0%	0%	0%
None (no cash income)	26%	12%	22%	21%	26%	35%
Don't know / cannot say	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%
Total # of adult HH members	163	119	267	43	246	123

Next, we profile households based on their links with agricultural produce markets. This is important to understand whether the EEU households practice farming for subsistence or to sell on the market. Results show that 59% of female renters place on the market one fourth of produce or less and can therefore be

4 The figures are obtained by summing up five types of household sales: staple crops, staple crop products, high-value crops, livestock, and livestock products.

classified as 'subsistence farmers' (see Table 8). The share of subsistence farmers is also relatively high among male renters (45%) but is lower among rentees and A2F beneficiaries (24%-29%). Also, it is important to notice that the proportion of households that sell most of the produce on the market is very low, therefore almost all EEU households can be defined as partly subsistence farming.

Table 8: Proportion of produce that is sold on the market

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Most	4%	0%	6%	0%	11%	0%
Approx. 3/4	21%	16%	33%	33%	25%	29%
Half	30%	26%	33%	39%	40%	42%
Approx. 1/4	36%	22%	20%	22%	21%	21%
Very little or none	9%	36%	8%	6%	3%	8%
Total	100%	100%	100%	100%	100%	100%

Finally, we use the Simple Poverty Scorecard as well as poverty self-assessment questions to determine EEU households' poverty status[5]. The Simple Poverty Scorecard uses eight indicators based on the Ethiopia's 2011 Welfare Monitoring Survey to estimate the likelihood that a household has consumption below a given poverty line. The logic of the Simple Poverty Scorecard is to aggregate results from the strongest possible predictors of consumption to get a score that is highly correlated with poverty status as measured by exhaustive consumption survey such as the Household Consumption and Expenditure Survey of the Ethiopian Central Statistical Agency[6].

The Simple Poverty Scorecard's data show that using the $1.90 a day poverty line, which identifies extreme poverty, poverty rates by household count vary between 19% among male rentees and 26% among female A2F beneficiaries (see Table 9)[7]. The share raises to 57%-65% if we consider as poor households below the $3.10 a day poverty line. By headcount the $1.90 poverty rates raise slightly to 22%-29%, reflecting the fact that larger households are more likely to be poor. Using the national poverty line, the poverty rates are generally consistent with the $1.90 a day poverty line (16%-22% by household count, 19%-25% by headcount).

The six groups are remarkably similar in terms of poverty rates, with only the male rentees group who may be slightly less poor than the others. These figures suggest that the EEU has managed to reach extremely poor households.

As points of comparison to the poverty data of EEU beneficiaries, according to the World Bank's 2014 Ethiopia Poverty Assessment, in 2011 the poverty rate by headcount in Ethiopia was 31% using the $1.90-day line and 30% using the national line[8]. This statistic cannot be compared directly to the poverty rates for a number of reasons, including the different timeframes (2011 v. 2017), the different geographic coverage of the samples (whole of Ethiopia v. four woredas in rural Oromia and Amhara) and the small sample of the EEU survey. Nonetheless, the figures are reasonably close to suggest that the EEU beneficiaries may be as likely to be poor as any other Ethiopian person.

Table 9 Poverty rates by household count and headcount

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
	by household count					
Below $1.90 poverty line	22%	23%	19%	23%	24%	26%
Below $3.10 poverty line	56%	59%	57%	62%	64%	65%
Below national poverty line	19%	19%	16%	19%	20%	22%
	by headcount					
Below $1.90 poverty line	29%	29%	22%	27%	26%	29%
Below $3.10 poverty line	67%	69%	62%	69%	67%	69%
Below national poverty line	25%	25%	19%	23%	22%	25%

5 The Simple Poverty Scorecard is known as the Progress Out of Poverty Index in other countries where it is used (see: www.progressoutofpoverty.org).
6 The indicators are calculated from: 1. Size of the household; 2. Reading and writing skills of male head; 3. Reading and writing skills of female head; 4. Main source of energy for cooking; 5. Ownership of mattresses or beds; 6. Ownership of radios/radio-and-tape players/tape players; 7. Ownership of gabi; 9. Ownership of ploughs.
7 The most commonly used poverty line is the $1.90 a day, based on 2011 Purchasing Power Parity. This is the same as the $1.25 line defined at 2005 PPP.
8 See: Ethiopia Poverty Assessment 2014

We substantiate the finding that EEU has reached poor households by showing results from a self-assessment of economic status and questions on episodes of hunger and food scarcity. We show in table 10 tables of frequencies for the questions. Some findings stand out:

- 14% of male renters and 28% of female renters claim to be unable to meet basic needs without help from a charity; this share is much lower among rentees and A2F beneficiaries. The majority of respondents across groups claim to be able to meet basic needs, but nothing more9.
- Looking at episodes where food stocks were low in the past year, 25% of male renters and 38% of female renters claim they have had such episodes. Respondents in the other groups are less likely to have experienced food insecurity.
- As for cases of hunger, 16% of male renters and 22% of female renters claim that they or other households' members have experienced hunger in the past year. Again, the proportions are much lower among rentees and A2F beneficiaries.

In summary, Table 10 suggests that renters have significantly lower economic status than rentees and A2F beneficiaries. This is consistent with theory and on-the-ground observations that renting out and sharecropping out land are used by extremely poor households as means to increase their incomes.

Table 10: Economic status, food scarcity and hunger

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
	Q: Please tell me which of the following phrases best suits your household situation:					
Unable to meet basic needs without charity	14%	28%	4%	6%	3%	5%
Able to meet basic needs	70%	64%	48%	67%	49%	76%
Able to meet basic needs with some non-essential goods	7%	2%	23%	11%	27%	16%
Able to purchase most non-essential goods	4%	3%	13%	0%	17%	3%
Plenty of disposable income	5%	3%	12%	17%	4%	0%
	Q: At any time over the past year, have your household's food stocks ever fallen to a level where you only had a few days of food available and there was no means to purchase food?					
Yes	25%	38%	10%	17%	9%	8%
No	75%	60%	91%	83%	91%	92%
Don't know / cannot say	0%	2%	0%	0%	0%	0%
	Q: At any time over the past twelve months, has any household member gone to bed hungry because there was not sufficient food available and/or no money to purchase food?					
Yes	16%	22%	4%	11%	4%	3%
No	84%	76%	96%	89%	96%	97%
Don't know / cannot say	0%	2%	0%	0%	0%	0%

Vulnerability to Shocks

In this section we explore the shocks to livelihoods that EEU beneficiaries experience and the coping mechanisms households can rely on when they are affected by such shocks. This analysis does not have an immediate implication for project targeting, and therefore does not differentiate between beneficiary groups, but helps to understand whether households face risks of shocks that may suddenly deplete households' resources and push households into extreme poverty and hardship. Indeed, the risk to sustaining livelihoods of people overtime is a key feature of poverty. Looking at Table 11Table , which shows figures for male and female respondents overall, some results stand out:

- Firstly, about 47% of male respondents and 40% of female respondents have experienced a major shock affecting their livelihoods in the last five years. We cannot investigate the intensity of these shocks; however, the result may be interpreted as that about half of the EEU beneficiaries are affected by potentially critical shocks to their livelihoods.
- In terms of the most frequent shocks that were experienced, both male and female respondents cite mostly natural events affecting their agricultural sources of livelihoods, for example livestock illness or death (experienced by 14% of males and 7% of females), droughts (10% and 9% of males and females

9 As the definition of 'basic needs' is not provided by the enumerator, the responses are affected by what 'basic needs' means to different people. In addition, even if the definition was clear to everyone, the question asks respondents to self-assess their household's situation. Capacities of self-assessment as well as perceptions around what the correct answer should be are likely to vary. As such the results from this question are most useful for cross-group comparison but should not be used in isolation to identify poor households.

respectively), damage of crops or bad harvests (7% and 4%), and pest of the crop (9% and 1%). Among all other shocks, illness of family members stands out as the most frequently mentioned by both males and females (10% within each group).

Table 11: Major shocks to households' livelihoods

	Males	Females
	Has the household experienced any shock in the last five years?[10]	
Yes	47%	40%
No	50%	54%
Don't know / cannot say	3%	5%
	Has any of the following shocks been experienced? (Pct. of yes over the total)	
Drought	10%	9%
Heavy rains preventing work	2%	1%
Other natural calamity	1%	0%
Pest of the crop	9%	1%
Damage to the crop/a bad harvest	7%	4%
Livestock illness/death	14%	7%
A fall in prices of food items	5%	1%
An increase in prices of food items	2%	4%
Increase in price of inputs (seed/fertiliser)	3%	4%
Loss of non-farm jobs of household member	1%	0%
Involuntary loss of your land due to redistribution or land grabbing	0%	1%
Unrest/violence	0%	0%
Fire	0%	3%
Theft/robbery	1%	1%
Illness of family members	10%	10%
Death of family members	1%	4%
Divorce or other fight within the family, e.g. over inheritance	1%	0%
Other (specify)	0%	2%

In response to these shocks, the EEU beneficiary households can rely on a variety of coping mechanisms mainly using own savings (37% of males and 29% of females), help from relatives and friends (25% and 27%) and sale of agricultural assets (12% and 16%, see Table 12)[11]. Although savings have been reported by the highest number of households, it should be noted the about two thirds of respondents who have experienced a shock do not cite savings as one of their top coping mechanisms. Aside from receiving help from relatives, friends or the government, the other most chosen options are selling households asset, such as fixed agricultural assets, livestock and even durable goods. More drastic forms of coping mechanisms such as changing eating patterns (i.e. eating less food), reducing expenditure on health or education, and migrating are less prominent options.

In summary, over 40% of the EEU beneficiaries' households experienced a shock such as droughts and sickness of livestock during the 2012-2017 period. For these vulnerable households, the most prevalent options to cope with the shocks were relying on own savings and receiving help from relatives and friends. However, some respondents reported also relying on the sale of agricultural assets and livestock, changing eating patterns and putting more household members to work. These respondents' households are more prone to risk of falling into poverty where they are hit by a shock[12].

10 To be precise, the question is: "Over the past five years, what were the main shock/s or unexpected event/s if any, that has negatively affected your household's livelihoods?" We then isolate respondents who said they were not affected by shocks from the ones who were.
11 Up to three responses were possible.
12 Measuring vulnerability to shocks in the future is a complex task because "it is all about what might happen" (Ethiopia Poverty Assessment 2014). The task would involve estimating a relationship between shocks and poverty, calculating the likelihood of a shock taking place for each household, simulating the distribution of consumption outcomes for a number of scenarios in the following year, and finally calculating the probability to fall into poverty (idem). We do not have sufficient data and time to carry out these operations so we rely on recall data from EIS respondents.

Table 12 Coping mechanisms against shocks

	Males	Females
	Pct. of respondents who reported using the coping mechanism out of respondents who were affected by at least one shock.	
Rely on own savings	37%	29%
Receive help from relatives and friends	25%	27%
Receive help from government	13%	2%
Receive help from non-governmental organisation or religious institution	7%	2%
Change eating patterns (eat less or less often, rely on less preferred food option)	8%	5%
Employed household members take on more employment, e.g. off-farm	6%	11%
Unemployed households members (including the old and the young) take on employment	0%	5%
Migrate	0%	0%
Reduce expenditure on leisure and less essential goods and services	2%	5%
Reduce expenditure on health, and/or education	0%	0%
Obtain credit	4%	14%
Sell agricultural assets	12%	16%
Sell durable assets	2%	5%
Sell livestock	10%	13%
Other	3%	0%

Land Holdings

In this section we look at the land holdings of EEU households, number and size of parcels held, rented out or sharecropped out, and accessed through renting or sharecropping. We aim to assess whether the EEU has mostly reached smallholder farmers, defined as farmers who hold directly less than 2 hectares of land. In the next section we look at landless households. Table 13 and Table 14 show key statistics for the number of parcels and holding sizes across the six groups.

Table 13: Number of parcels held directly, rented or sharecropped

	Renters					
variable	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Number of parcels held or accessed	3.0	3.7	51	2.0	2.8	56
Number of parcels rented or sharecropped out	1.0	1.5	51	1.0	1.4	56
Number of parcels rented or sharecropped in	0.0	0.0	51	0.0	0.0	56
Number of parcels held and used directly	2.0	2.2	51	1.0	1.4	56

	Rentees					
variable	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Number of parcels held or accessed	3.0	4.0	91	3.0	2.9	18
Number of parcels rented or sharecropped out	0.0	0.1	91	0.0	0.1	18
Number of parcels rented or sharecropped in	1.0	1.7	91	1.0	1.2	18
Number of parcels held and used directly	2.0	2.2	91	2.0	1.7	18

	A2F					
variable	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Number of parcels held or accessed	4.0	4.0	75	4.0	4.1	38
Number of parcels rented or sharecropped out	0.0	0.1	75	0.0	0.0	38
Number of parcels rented or sharecropped in	0.0	0.2	75	0.0	0.7	38
Number of parcels held and used directly	4.0	3.7	75	3.0	3.4	38

Table 14: Size of land holdings in hectares

variable	Renters					
	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Size of parcels held or accessed	1.25	1.88	51	1.04	1.27	56
Size of parcels rented or sharecropped out	0.53	0.87	50	0.37	0.80	56
Size of parcels rented or sharecropped in	.	.	0	.	.	0
Size of parcels held and used directly	0.57	1.24	42	0.50	0.63	42

variable	Rentees					
	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Size of parcels held or accessed	1.05	1.79	91	1.37	1.63	17
Size of parcels rented or sharecropped out	0.18	0.36	11	0.21	0.21	2
Size of parcels rented or sharecropped in	0.50	1.13	72	0.52	0.86	16
Size of parcels held and used directly	0.55	0.97	80	1.09	0.96	14

variable	A2F					
	Males			Females		
	median	*mean*	*N*	*median*	*mean*	*N*
Size of parcels held or accessed	1.82	2.00	75	1.30	1.50	38
Size of parcels rented or sharecropped out	0.46	0.61	4	0.05	0.05	1
Size of parcels rented or sharecropped in	0.64	0.82	8	0.37	0.50	13
Size of parcels held and used directly	1.70	1.91	74	1.13	1.32	38

The EEU targets smallholder farmers that may struggle to produce enough food to feed their households with the land they cultivate. In line with the prevalent definition[13], we employ the 2 hectares threshold to identify smallholder farmers alongside a more conservative 1.5 hectares threshold. Using the higher threshold, in the EIS the share of respondents' households who are smallholders is lowest among males A2F beneficiaries (59%) and highest among female A2F beneficiaries (82%, see Table)[14]. With the lower threshold, over 50% of farmers can be classified as smallholders in all groups, except the female renters group where the share is 43%[15].

In summary, the large majority of EEU farmers are smallholders. It is perhaps surprising that so many A2F beneficiaries are smallholders. Other factors than land size likely play a role in using land as guarantee, for example fertility of the land, slope, irrigation and water source, distance from main roads, type of crops planted, and pre-existing investments. Furthermore, as the SLLC-link loan can be used to increase economic activity off-farm, the viability of the new business also plays a key role in determining whether the debtor is credit-worthy. In this sense, the results might suggest that smallholder farmers can access credit through the SLLC-linked loan, as other factors than size of the land to be used as guarantee play a key role. This topic deserves further investigation in the context of the microfinance literature.

Table 15: Smallholder farmers

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Share of smallholder farmers <1.5ha	57%	73%	56%	56%	43%	58%
Share of smallholder farmers <2ha	75%	80%	70%	72%	59%	82%

Landless Households

Landless households are a key target group of the land rental interventions as they are expected to benefit from greater access to land and formalisation of their rights as rentees. We therefore focus on the rentee group to assess whether landless households have been reached. The share of rentees who are landless is 11% among male respondents and 17% among female respondents. According to the 2015-2016 Living Standard Measurement Study carried out by the Central Statistical Agency of Ethiopia for the World Bank, 3.8% of the farming households in Amhara and 7.4% in Oromia do not hold directly any of the land they farm. By comparison, the figures suggest that EEU has successfully engaged a significant group of landless households.

13 See for example "The economic lives of smallholder farmers" by the Food and Agriculture Organization of the United Nations (link).
14 It is useful to keep in mind that we are looking at land accessed or held at the time of the survey rather than before of engagement of the beneficiaries. Accordingly, for the rentees group, the share of smallholder farmers is probably under-estimated as some of the land they rent or sharecrop in might have been accessed through the help of the LRSPs.
15 Using and comparing results from two different thresholds can be useful since any threshold is arbitrary and measurement of the size of the holdings is a complex exercise affected by multiple size units used across Ethiopia and bias in recalling the size of the parcels.

Since landless households need not be poor or vulnerable, for example where the household resides in an urban area and can rely on remunerative urban jobs, next we investigate how the EEU landless households compare with non-landless ones across a few key statistics such as age and poverty rates. The data, summarised in Table , suggest that the EEU landless households are much younger than non-landless ones (-10.7 years on average), relatively less likely to be poor (-6.7%), and slightly more likely to be farming for subsistence rather than to sell produce on the market (+4.8%). Nonetheless it should be noted that only the difference in age is statistically significant as the sample of landless households is small (17 households). Thus, the evidence suggests that the EEU LR interventions have reached the landless youth and that their households are fairly comparable to non-landless rentees in terms of poverty and engagement in the produce markets.

Table 16: Landless and non-landless rentees

	Rentees	
	Landless	Not landless
Average age of the respondent	32.7	43.4
Pct. below $1.90 poverty line (by household count)	14.0%	20.7%
Pct. below $3.10 poverty line (by household count)	50.3%	58.8%
Pct. subsistence farmers	30.8%	26.0%

Vulnerable Groups

In this section we look at factors of vulnerability other than economic conditions, in particular the presence of elders, orphan, disabled and sick members of the household. We collected data about the vulnerability factors for each member of the households of the respondents. This allows us to calculate how many households have at least an elder, a sick person, an orphan, and a disabled person[16]. From the results, shown in Table , we can identify some outstanding findings:

- The share of households with an elder is highest among male renters (26%) and lowest among rentees, especially female rentees. This is consistent with the fact that renting out is often justified by lack of manpower.
- The share of households with an orphan or abandoned child is highest among female respondents, especially female renters with 39%. This reflects the fact that most female respondents are the only head of the household as the male head has either died or abandoned the household.
- The share of households with a disabled person is highest among female A2F group (21%) and lowest among male rentees (10%).
- The share of households with an ill person is high both among renters and A2F (22%-20%), while it is lower among rentees (11%-6%). This is consistent with the fact that renting-in households have capacity for farming.
- Looking at presence of any vulnerable people in the household, the renters group stands out as the most vulnerable with about 52% of both male and female respondents' groups being vulnerable.
- Overall the presence of vulnerable people in the EEU beneficiary households is quite high. This suggests the EEU is been successful at reaching vulnerable households.

Table 17 Vulnerable households

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Share of HHs with an elder (>=65 years old)	26%	5%	8%	0%	15%	16%
Share of HHs with an orphan or abandoned minor	15%	39%	1%	35%	8%	18%
Share of HHs with a disabled person[17]	14%	18%	10%	11%	11%	21%
Share of HHs with an ill person	22%	20%	11%	6%	21%	21%
Share of HHs with at least one person who is elder, orphan, disabled and/or ill	53%	52%	20%	33%	39%	42%

EEU Impacts on Land Rental Beneficiaries

In this section we investigate how EEU beneficiaries changed their practice and perceptions in the land rental market.

16 The question around orphan (or abandoned) people is only for persons aged 17 or less. The types of disabilities are defined based on the Washington Group recommendations as difficulty in seeing, hearing, climbing steps, remembering or concentrating, and washing or dressing. Therefore it includes both physical and mental disabilities. An ill person is someone who has been ill for at least three months over the last 12 months.
17 It is important to notice that most disabled people in the sample have a difficulty in seeing.

Practice change in the Land Rental Market

In this section we describe changes taking place in the land rental market between the 2015-16 and 2016-17 agricultural years, and in particular before and after the EEU renters and rentees enter in a new standard land rental contract (or SLRC for short). We use mostly data collected at the parcel level, so the parcel status and features of any rental agreement can be tracked over time.

As an introduction to the main findings, we begin with describing the level of participation in the land rental market of the EEU beneficiaries and the motivations farmers have to rent out or rent in land. Next, we focus on several changes in the land rental market, namely:

- Changes in the rental status of parcels over time, i.e. from rented to used directly and vice versa;
- Changes in the share of cash rental agreements versus sharecropping agreements;
- Changes to the form of the rental agreements, i.e. written and registered, written only, oral etc.;
- Changes to tenants and landholders that land is rented to or rented from;
- Change to duration of the land rental agreements;
- Changes to the rent amount; and
- Changes to the proportion of harvest that goes to renter/rentees under sharecropping.

Level of participation in the land rental market

Although all LR beneficiaries engage in the land rental market, their level of participation varies across individuals and can change overtime. In the 2016-17 agricultural year, the level of participation in the land rental market, as measured by the share of land held or accessed that is rented or sharecropped, is quite high for EEU beneficiaries: as shown in Table , among renters the average share of land that is rented or sharecropped out is 52% and 65% for male and female respondents group respectively; among rentees the average share of land that is rented in or sharecropped in is 42% for males and 47% for females[18]. Within the groups, participation in the market varies a lot: for male renters, the 25th percentile is 25% and the 75th percentile is 93%, meaning that the least engaged renters rent or sharecrop out one quarter of land or less while the most engaged renters rent out or sharecrop out more than 90%. A similar pattern can be observed among female renters (25th percentile is 41% and 75th percentile is 99%). Also, there is stark difference between the median male renter (33%) and the median female renter (67%): female renters rent or sharecrop out more than male renters.

As for the rentees, the variation is also noticeable, with the top quarter of rentees that rents or sharecrops in about 70% of land or more, while the bottom quarter rents or sharecrops in 13% of land or less.

Table 18: Level of participation in the Land Rental Market (2016-17)

		Participation in the Land Rental Market				
		Share of land size that is rented or sharecropped out				
		25th percentile	Average	Median	75th percentile	Sample size
Renters	Males	25%	52%	33%	93%	51
	Females	41%	65%	67%	99%	56
		Share of land size that is rented or sharecropped in				
		25th percentile	Average	Median	75th percentile	Sample size
Rentees	Males	13%	42%	36%	71%	91
	Females	26%	47%	33%	67%	17

Different levels of participation in the land rental market can be justified by different motivations for engaging in renting and characteristics of the households, for example availability of manpower and size of the landholding. Table shows what reasons that push farmers to engage rent or sharecrop land.

Among the renters, the most cited reasons for renting or sharecropping out land are:

- Need for cash (57% of male respondents and 45% of female respondents)
- The farmer is unable to farm the land due to lack of manpower (27% of males and 54% of females)
- The farmer is unable to farm the land due to lack of oxen or other input (33% of males and 43% of females).

Among the rentees, the most cited reasons for renting or sharecropping in land are:

18 The figures in the table are based on full parcel sizes, including for the parcels that are only partially rented/sharecropped. In our sample, the majority of parcels are rented or sharecropped in full.

- Renting is an opportunity to increase incomes (62% of males and 89% of females)
- The farmer holds insufficient amount of land (45% of males and 17% of females)
- Through renting the farmer can expand agricultural production for food-security in household (21% of males and 22% of females)
- The farmer holds no land at all of its own (17% of males and 17% of females)

Table 19: Reasons to rent or sharecrop land

	Renters	
	Males	Females
	What are the main reason you decided to rent-out or sharecrop out?	
Need for cash	57%	45%
Unable to farm the land (lack of manpower)	27%	54%
Unable to farm the land (lack of oxen/inputs)	33%	43%
Land not productive	6%	0%
It is more profitable to than farming it	8%	4%
Pressure from family member(s)	6%	2%
Pressure from non-family member(s)	12%	4%
Dispute with neighbour(s)	0%	2%
Parcel is too far away from homestead	6%	5%
Moved to a new area	2%	2%
To help family member(s)	18%	21%
To help non-family member(s)	2%	0%
To gain access to irrigation scheme	0%	0%
Can exchange for other valuable goods and services	0%	4%
To get access to farming resources	10%	7%
It is a problem to hire labourers to farm on own land	0%	4%
To take or continue off-farm job	0%	0%
	Rentees	
	Males	**Females**
	What are the main reason you decided to rent-in or sharecrop in?	
No land directly by household	15%	17%
Insufficient land directly held by the household	45%	17%
Unproductive land held by the household	4%	6%
Unable to farm land directly held by the households	1%	0%
Land directly held by household is too far away	1%	0%
Dispute with neighbour for land directly held	0%	0%
Good value of the rental price	14%	6%
To expand agricultural production for food-security in household	21%	22%
Opportunity to increase income	62%	89%
To access irrigable land	1%	0%
Family member offered	2%	0%
Non-family member offered	2%	0%
Moved to a new area	2%	0%

Changes in the rental status of parcels over time and to decisions to rent or sharecrop

We use parcel status data for each of the dry and wet seasons of 2015-16 and 2016-17 to track and describe changes to renting status. We focus only on the parcels that in the most recent year are rented under provisions of a Standard Land Rental Contract, so we can analyse whether using this agreement form stimulates or hinders rental. Table shows the proportion of parcels under each of the following statuses:

- Directly held for the sole use of the household
- Directly held and rented out in full or in part
- Directly held and sharecropped out in full or in part
- Partly rented out and partly sharecropped out
- Directly held but other use

Some key findings stand out:

- The share of parcels that are directly held for the use of the household in the dry season is fairly constant between 2015-2016 and 2016-17; for the males, it slightly increases from 34% to 39% and for

females it drops from 28% to 18%. Therefore, at least for the female respondents, there is evidence that under the new SLRC more parcels are being rented out

- The share of parcels that that are directly held for the use of the household in the wet season decreases considerably between 2015-16 and 2016-17; for the males it drops from 37% to 2% and for females it drops from 23% to 2%. In other words, about one third of the parcels that are rented or sharecropped by male renters with the SLRC were not rented out at all in previous wet season. For female respondents it is one fifth of parcels. This means that engagement in the land rental market is increasing due to the EEU.
- The share of parcels that are rented out grows year-on-year while the share of parcels that are sharecropped out declines. Looking at the wet season, the share of parcels that are rented out grows from 37% of parcels in 2015-16 to 78% in 2016-2017 for males, and from 32% to 53% for females. In the same reference periods, the share of parcels that are sharecropped out drops from 24% to 17% for males and from 38% to 32% for females. This is not surprising, as a more formalised rental market is expected to result in a shift from sharecropping, which are typically inefficient and dispute prone, to cash rental arrangements. It is noteworthy that the change is stronger for males than females (+41% v. +21%), however females preferred sharecropping already before.

Table 20: Rental status of parcels under Standard Land Rental Contract (Renters)

	Males				Females			
	2016-17		2015-2016		2016-17		2015-2016	
	Dry season	Wet season	Dry season	Wet season	Dry season	Wet season	Dry season	Wet season
directly held for the sole use of the household	39%	2%	34%	37%	18%	2%	28%	23%
directly held and rented out in full or in part	49%	78%	46%	37%	40%	53%	27%	32%
directly held and sharecropped out in full or in part	12%	17%	17%	24%	40%	32%	40%	38%
partly rented out and partly sharecropped out	0%	0%	0%	0%	0%	0%	3%	5%
directly held but other use	0%	0%	2%	2%	0%	0%	2%	2%
Do not know/cannot say	0%	2%	0%	0%	2%	13%	0%	0%

Next, looking at the change in rental status of parcels rented in or sharecropped in by EEU rentees under the provisions of a SLRC, farmers report that only 20% of these parcels were rented or sharecropped in the previous year. In addition, only for 3% of the remaining 80% of parcel, the farmer reports having been in another rental agreement in the previous year. These results suggest that EEU rentees rent in or sharecrop in more land than before. As for the change in the decision to rent or sharecrop, we choose not to provide a result that would be based on a very small sample of parcels, i.e. the ones who are continuously rented or sharecropped between 2015-16 and 2016-17.

Changes to the form of the rental agreements

One of the key goals of the EEU land rental market intervention is to stimulate farmers to formalise their land rental agreements and register them with the Kebele and Woreda Land Administration. The survey data shows that about 75% of EEU land rental beneficiaries have registered their latest land rental agreement and that within this group, about 70% had never registered before using the SLRC (see

Table).

Table 21:Registration of land rental contracts

	Renters & rentees (all)	
	Males	Females
	Was the rental agreement that you signed taken to the Kebele or Woreda where it was registered and stamped?	
Yes	75%	73%
No	23%	19%
Don't know / cannot say	2%	8%
	Renters & rentees (only farmers who have registered)	
	Males	Females
	Have you ever registered a written land rental contract with Kebele or Woreda previous to using the standard land rental contract?	
Yes	26%	30%
No	71%	68%
Don't know / cannot say	3%	2%

We are also interested to understand what forms of agreements the farmers are used to (written and registered, written, or oral) and how their use changes overtime with the introduction of the SLRC. In Table we report the share of all rental agreements in each form in 2016-17 and 2015-16. Importantly, the samples of rental agreements for the two periods are different:

- 2016-17 sample: agreements on all parcels rented or sharecropped out by renters (including SLRC and non-SLRC)
- Sample of previous agreements: agreements only on parcels that in 2016-17 are rented or sharecropped out with the SLRC.

Two key findings stand out from the forms of rental agreements:

- In 2016-17, the majority of the rental agreements are made with SLRC, followed by not-registered written contracts (20% for parcels of male respondents and 10% parcels of female respondents), and written contracts that are registered but not made on the new standard template (15% for males and 5% for females). Oral agreements are not very common among the EEU beneficiaries in 2016-17.
- Farmers report that their previous contracts on parcels currently rented out under SLRC were already mainly SLRCs (about 80%); there are two chief explanations for this this. First, the SLRC template was first introduced by the EEU in 2015, approved by the regional governments and filtered down to woreda land office and kebeles land administration so it could have been used during the 2015-16 seasons. Second, farmers who rent for short periods of less than six months may have rented land in two consecutive periods using the same SLRC contract form. Hence, from this finding we can infer that farmers decide to continue using the SLRC when the contract expires, and a new agreement is needed, which is a sign of buy-in that farmers find the SLRC to be beneficial.

Table 22: Forms of the land rental agreement

	Males		Females	
	2016-17: all rental agreements	Previous agreements: only on parcels rented with SLRC in 2016-17	2016-17: all rental agreements	Previous agreements: only on parcels rented with SLRC in 2016-17
	What form of rent or sharecropping agreement do you have for this parcel?			
Written contract registered with local Rural Land Administration (not standard)	15%	3%	5%	4%
Standard written contract registered with local Rural Land Administration	51%	79%	74%	81%
Standard written contract but not registered	4%	9%	4%	6%
Other written contract, but not registered	20%	0%	10%	4%
Verbal agreement, with witnesses	1%	6%	3%	2%
Verbal agreement, without witnesses	9%	3%	4%	2%

Changes to the tenants and landholders' profiles

Next, we look at the profile of person that renters and rentees choose as their counterparts in the land rental market, focusing mainly on their relationship. The relationship between the tenant and landholder is crucial as farmers may feel that renting in/out to/from relatives or friends is safer than doing so with farmers that that are

not initially close to them. One of the expected results of the SLRC is that it should encourage rental arrangements outside immediate family and community. The benefits of this include potentially higher rental prices for renters and more efficient use of land as it accessed and used by more productive farmers (rentees).

Unfortunately, due to the fact that for most parcels we do not have data for the period before they were rented under SLRCs, it is not possible to determine with precision whether the kind of tenants or landholders change with the use of the SLRCs. Nonetheless, in Table we show the shares of tenants of EEU renters that have given relationships to EEU renters, i.e. they are relatives, friends, or other households.

Two key findings stand out from Table :

- There is a significant share of tenants in the most recent contracts that are relatives or friends with the EEU renters (43% for males, 37% for females). This may indicate that some EEU renters still feel safer by renting out to relatives or friends.
- In terms of changes overtime, there is a slight trend towards renting out to households that are not living in the same community of the EEU renter (from 15% to 23% for males, from 17% to 21%), while the share of tenants that are relative or friends declines slightly.
- In summary, the evidence overall is inconclusive about changes brought about by using the SLRCs here, but if anything, the data shows that SLRCs might encourage EEU renters to choose tenants on the basis of economic performance as opposed to social ties, arguably because it reduces the risks associated to renting out to strangers [19].

Table 23 Tenants' relationship to EEU renters

	Tenants of renters			
	Male renters		Female renters	
	Most recent agreements	Previous agreements (same parcels)	Most recent agreements	Previous agreements (same parcels)
relative	35%	42%	37%	40%
friend	8%	6%	0%	0%
other household in community	35%	36%	41%	44%
other household in same kebele but different community	13%	9%	19%	17%
other household in other kebele within the same woreda	10%	6%	3%	0%

Changes to the duration of land rental agreements

The duration of the land rental contract is another indication of the trust that farmers place in land rental. Longer contracts can encourage the rentees to make investments that bear fruit in the medium term, treat the soil in sustainable way, and maintain conservation structures. On the other hand, however, longer contracts increase the risk from the renter's side of having a dispute with the rentees. A written and registered contract is more enforceable and clear to all participants so rentees can successfully commit to stick to the agreement.

Before we show the key findings, it should be noted that the responses to the duration questions were not always provided consistently by the respondents. In particular, the question asked to provide the duration of the rental agreement in months, however in a number of instances, the responses were probably provided in years or fractions thereof. It has not been possible to fully reconcile the issues and we have therefore decided to recode the dubious answers as follows:

- Response 0.5 to 6
- Response 0.6 to 7
- Response 0.7 to 8
- Response 1 to 12
- Response 2 to 24
- Response 3 to 36

These responses represent the majority for only one of the questions on durations. However due to these limitations the results need to be taken with care.

19 We do not show results for the rentees group as the sample of parcels rented in or sharecropped in for two consecutive periods is too small (27 parcels).

Table displays the share of the rental agreements in each of five duration brackets. Some observations can be made:

- Among the rental agreements preceding the most recent ones, there is a relatively high share of short contracts with duration of six months or less (33% among male renters and 36% among female renters). However, this share declines among all groups with the most recent SLRCs.
- The share of agreements that are made for one year (up to 18 months) grows significantly in all groups (+23% for male renters, +27% for female renters, +40% for male rentees) and so it becomes the most chosen agreement duration overall[20].
- As for the contracts of two years or more, these are also increasing in all groups, but less so than the one-year contracts.
- Contracts of three or more years are rare across all groups and do not increase significantly overtime.
- As such there is some evidence that contracts are becoming longer, but long contracts of three years or more remain very rare.

Table 24: Duration of land rental agreements

	Renters					
	Males			Females		
	Most recent agreements	Previous agreements	Diff	Most recent agreements	Previous agreements	Diff
Six months or less	5%	33%	-28%	13%	36%	-23%
One year (7 to 18 months)	68%	45%	23%	68%	41%	27%
Two years (19 to 30 months)	24%	15%	9%	17%	14%	3%
Three years (31 to 42 months)	3%	7%	-5%	3%	2%	1%
Four years or more (43 months or more)	0%	0%	0%	0%	8%	-8%

	Rentees					
	Males			Females		
	Most recent agreements	Previous agreements	Diff	Most recent agreements	Previous agreements	Diff
Six months or less	6%	73%	-68%	10%	NA	NA
One year (7 to 18 months)	67%	27%	40%	76%	NA	NA
Two years (19 to 30 months)	19%	0%	19%	10%	NA	NA
Three years (31 to 42 months)	7%	0%	7%	5%	NA	NA
Four years or more (43 months or more)	1%	0%	1%	0%	NA	NA

Changes to the rent amount

Setting the rent to be paid by the rentee to the renter does not only depend on the size of the plot or parcel, the fertility of the land, and the duration of the rent, but also by the bargaining power of the prospective renters and rentees. In Ethiopia, where renters are more likely to be vulnerable households that may lack manpower or inputs for farming, prospective rentees usually have greater bargaining power than renters, and can exert influence over the terms of the deal, particularly the rent amount. As such, the assumption, confirmed by the EEU qualitative assessments, is that without SLRCs and LRSP intermediation, in the past on several instances renters obtained a low price for the rental of their land. We therefore analyse changes in the rent amounts to investigate whether the bargaining power may shift in favour of vulnerable renters.

To track changes to rental price we use two measures: the rent amount for the entire contract and the rent amount per year of contract. The latter indicator is obtained as the fraction of the former one over the duration of the contract. Since we do not control for other factors such as fertility of the land and size of the plot or parcel, we exclude the parcels that are rented in the most recent period but not the previous one, as well as parcels that change rental status from sharecropping to cash rental. Two key limitations are implied with this approach:

- as stated above, in most cases both the most recent and the previous agreements are SLRCs; therefore, changes between overtime cannot be entirely attributed to adopting the SLRCs;
- The duration of the rental agreement was misreported by farmers in some cases, so results may not be very accurate.

20 For the male rentees we have a sample of only 27 agreements that are active over two periods. Results should not be overstated.

With these two caveats in mind, some key findings can be highlighted (see Table):

- On average, the rent amount per agreement grows by 604 Birr between the most recent and the previous contracts; the increase is statistically significant at 10%. However, by focusing on the distribution of the rent changes we observe that the large majority of rents stay exactly the same as before, meaning that the contracts were just renewed at the same price.
- On average, the rent amount per year of agreement decreases by 920 Birr.
- The two findings can be reconciled by observing that, as seen above, the duration of the rental contract has increased. As such the findings suggest that renters are getting higher rents per agreement by increasing the duration of the rental; however, in terms of rent per year they are actually getting less.

In summary, the evidence on rental prices is ambiguous and affected by some limitations , therefore more research is needed to provide a definite assessment.

Table 25 Rent amounts

		All renters (parcel data)				
		25th percentile	Median	Average	75th percentile	Sample size (parcels)
Rent per agreement-parcel (in Birr)	Most recent agreements	2750.0	4750.0	5841.7	8000.0	48
	Previous agreements	2450.0	4000.0	5237.5	7750.0	48
	Diff.	0.0	0.0	604.2	0.0	48
Rent per year of agreement (in Birr)	Most recent agreements	1500.0	4000.0	4677.8	6750.0	48
	Previous agreements	2000.0	4000.0	5598.1	7750.0	48
	Diff.	-1894.6	0.0	-920.3	0.0	48

Changes to the proportion of sharecropping

As for the rent in the rental agreement, the proportion of produce that goes to the tenant and the landholder in sharecropping agreements is at least partially determined by the bargaining powers.

The results of the survey on the changes in the sharecropping terms are measured with the data on parcels that are sharecropped out for two consecutive periods, i.e. under the most recent contract or under the preceding one. Unfortunately, there are very few such parcels across the male and female renters' sample (34), and therefore we do not have sufficient data to draw firm conclusions. However, from the available data, we can observe the following:

- Among all parcels sharecropped in the most recent period (55), in 82% of the sharecropping agreements the renter is entitled to half of the produce; in 9% of cases he or she is entitled to a quarter of produce, in 4% to a third, and in 5% to two thirds.
- When we look at the parcels that are continuously sharecropped over the two periods (34), in the most recent agreements 91% the share of produce going to the renters stayed the same (at either half or two thirds) while it has grown for the remaining 9% from one third to half.

If we are to accept the limits of the data, there is some evidence that sharecropping deals may be becoming fairer to the renter. However more research is needed to provide a more definite and nuanced assessment.

Perception change in the Land Rental Market

By introducing the SLRC and LRSP, the EEU is trying to make renting safer and more beneficial to the renters and rentees. To achieve these outcomes, farmers should feel more secure about renting with an SLRC and registering it as opposed to renting without it. We therefore test the changes in the perceived level of risk associated with renting in different stages: prior to SLLC, under SLLC without SLRC, and under SLLC with SLRC. Alongside the changes in perceived risks, we also investigate what other benefits that the farmers perceive from using and registering the SLRC.

Changes to perceived levels of risks from renting in or out

When deciding to rent out land, farmers perceive risks of two kinds:

- The risk of losing the land to the rentee
- The risk of having a dispute with the rentee, e.g. in terms of the duration of the agreement and the respect of parcel boundaries.

The risk of disputes can be felt by the rentees as well. We ask the respondents to rate the level of risk they associate to three different rental agreement scenarios over three different stages. The three scenarios are:

- Renting out (in) to (from) a relative or friend
- Renting out (in) to (from) a non-relative or friend
- Renting out (in) for three or more years continuously

The three stages in terms of tenure system and land rental contracts are the:

- Prior to second level land certification
- Following second level land certification with demarcation
- Following the signing of the new standard land rental contract.

All farmers in the sample have gone through the first two stages in the past and are asked to rate the risk that they were perceiving. As for the last stage, it is the current one for most of the respondents.

The scale used to rate the risk is not numerical but ordinal with six levels from ‘extremely low’ to ‘extremely high’.

The results of this perceived risk assessment, suggest that that both second level land certification and using the standard land rental contracts reduce considerably the perceived risks associated to renting. If we define an increase in confidence as an increase in the share of respondents who are rating a risk as extremely low or very low, we observe the following:

- On average, SLLC increases confidence by 21% against the time previous to SLLC, and using SLRC increases confidence by another 18%;
- Lower risks are perceived consistently across all types of scenarios, risks and renters and rentees;
- The highest risks’ reductions from SLLC are felt by rentees across the three scenarios, i.e. where they rent in from relatives or friends (+39% confidence); where they rent in from non-relatives (+28%); and where they rent in for 3 years or more (+25%).
- The highest risks’ reduction from SLRC (on top of the one attributed to SLLC) are felt again by rentees across the three scenarios, i.e. where they rent in from relatives or friends (+23% confidence); where they rent in from non-relatives (+28%); and where they rent in for 3 years or more (+23%).
- By comparison, renters seemingly record lower increase in confidence than rentees. On average, renters enjoy a 17% increase in confidence from SLLC and a further 16% increase from using
- The lowest increase in confidence is associated to the risk to have a dispute with the rentee in the scenario in which the duration of the rent is 3 years or longer. In that case, signing a SLRC reduces the risk by only 9%, on top of the reduction achieved by SLLC only (+16%).

To put into context these achievements, it is important to note that very high shares of EEU beneficiaries, particularly the rentees, perceived high levels of risks from renting prior to the SLLC, for example renting in from a non-relative was perceived as safe only by 27% of rentees. Also, an interesting finding is that there are still significant shares of EEU beneficiaries that do not completely trust renting in or out using the SLRC under different scenarios. For example, 31% of renters still perceive renting out for more than 3 years to be risky (from extremely high to somewhat low) in terms of likelihood to have a dispute with the rentee.

Perceived benefits from using and registering standard land rental contracts

What do farmers think are the benefits of using and registering a SLRC? (

Table) The key finding is that the majority of farmers (over 80%) agree that using the SLRC will reduce the potential for dispute and conflict.

Table 26: Perceived benefits from using and registering the Standard Land Rental Contract

	Males	Females
	What do you think the benefits are, if any, from using the standard land rental contract (whether registered or not) versus any other forms or no written contract? (up to 3 responses possible)	
None	1%	7%
To reduce the risk of conflicts and disputes	84%	78%
To prove the agreement happened	54%	38%
To avoid scams like double renting	55%	38%
To get better prices/conditions	13%	8%
To ensure that I get the land back	18%	28%
To ensure that rental is transparent in the household	7%	9%
To access credit	0%	1%
To invest more in land	2%	1%
To invest more in inputs use	0%	1%
To engage more in produce markets	0%	1%

	Males	Females
	What do you think the benefits are, if any, from registering the standard land rental contract with the Kebele or Woreda? (up to 3 responses possible)	
None	1%	0%
To reduce the risk of conflicts and disputes	81%	87%
To prove the agreement happened	61%	49%
To avoid scams like double renting	52%	32%
To get better prices/conditions	15%	7%
To ensure that I get the land back	18%	32%
To ensure that rental is transparent in the household	7%	3%
To access credit	1%	6%
To invest more in land	3%	4%
To invest more in inputs use	0%	1%
To engage more in produce markets	1%	0%

EEU Impacts on Access to Finance Beneficiaries

In this section we investigate how A2F beneficiaries changed their practice and perceptions around accessing credit and saving between one year previous to entering into the SLLC-linked loan and the present.

Practice Change in Access to Finance

We present results for five distinct but interrelated types of practice changes in the rural financial markets since A2F beneficiaries took up the SLLC-linked loan. Specifically, these practice changes are:

- Changes to financial constraints
- Changes in value, duration and interest rates of loans
- Changes in financing needs and capacity to supply to those needs
- Changes in savings practice
- Re-application for SLLC-linked loans

Changes to financial constraints

Smallholder farmers in rural Ethiopia often lack resources to finance investments in off-farm activity or to buy sufficient inputs to farm land to its full potential. In this context, access to finance from standard private banks is constrained by lack of critical information in screening potential borrowers and in monitoring them once they receive funding. Microfinance Institutions (MFIs) provide a much-needed solution through group loan schemes by which groups of borrowers take a join responsibility to repay the loan and therefore put efforts in screening and monitoring one another. Farmers can also form Savings and Credit Cooperatives (SACCOs) which disburse finances collected among members. Despite the recent growth of these financial instruments, participation in financial markets remains low among smallholder farmers.

In this context, one key objective of the SLLC-linked loan is to reach households who are still credit constrained, for example because they cannot qualify to join a group loan, had dropped from one of them or did not want

to take joint liability. The capacity to put forward the land as guarantee for the loan is supposed to be a solution for credit-constrained households. Therefore, we investigate whether the A2F beneficiaries are new entrants who had not accessed finance in the year before taking up the SLLC-linked loan and the constraints they faced.

Table summarises the EIS evidence to assess financial constraints. As it can be seen from the table, in the year previous to accessing the SLLC-linked loan, only 23% of male A2F beneficiaries and 16% of females had applied for credit from a formal institution. Among those who did not seek to get credit, a majority of 53% reported not to have been interested or to have had adequate farm or business finances. However significant shares of the respondents also mentioned financial constraints. Among male respondents, the most cited constraints were:

- The expectation that the loan would be rejected (21%);
- Fear of not being able to repay the loan (19%);
- Not liking the idea of being in debt (14%);
- Lack of collateral (12%); and
- Being able to borrow from informal lenders (12%).

Among female respondents, the most cited constraints were:

- Lack of collateral (28%);
- Not knowing any formal lender (25%); and
- Unwillingness to assume group liability for a group loan (13%).

These results suggest that the through the SLLC-linked loan, the MFIs provided credit to households who were facing a number of financial constraints, among which the lack of collateral is important but not exclusive. It should also be noted that even households who had no interest in borrowing may have been constrained without the opportunity to access the SLLC-linked loan[21]. We do not have data from comparable non-beneficiary households from underserved communities and therefore we cannot be conclusive about that.

Table 27: Access to credit in the year before accessing the SLLC-linked loan

	A2F	
	Males	**Females**
Q: In the year previous to accessing the SLLC-linked loan, have you applied have you applied for credit from formal lenders?		
Yes	23%	16%
No	77%	84%
Q: If not, why did you not apply for credit from a formal lender? (up to three responses possible - pct. of respondents providing the response)		
I had no interest in borrowing	33%	44%
I could borrow enough from informal lenders	12%	3%
I had adequate farm or business finances	31%	13%
I expected it would be rejected	21%	9%
I did not like the idea of being in debt	14%	3%
I feared I was not able to pay off the loan	19%	9%
There was no credit institution to ask from	5%	9%
I did not know any formal lender	7%	25%
I had no adequate collateral	12%	28%
It was too much trouble to get started	2%	0%
I expected the interest to be too expensive	2%	3%
I expected the minimum loan amount to be too high	2%	0%
I did not want to assume group liability for a group loan	7%	13%
I could not find a loan group who would take me in	2%	6%
Q: If yes, from which lender did you apply for credit?		
Microfinance institution	65%	50%
Savings and Credit Cooperative	35%	50%
Q: If yes, were you successful in obtaining any credit from this or these sources?		
Yes	94%	100%
No	6%	0%

21 Also as the respondents are asked to provide up to three reasons for not applying for credit, the ones who reported not have been interested previously might have still have mentioned other constraints.

As for the respondents who applied for credit in the year before taking the SLLC-linked loan, only 6% did not obtain it in the end (which is equivalent to just one person in the sample). The majority of male respondents obtained credit from MFIs (65%), followed by SACCOs (35%). Among female respondents, 50% were served by MFIs and 50% by SACCOs. Interestingly, none of the respondents had obtained credit from other formal institution such as private banks.

Changes in value, duration and interest rates of loans

Next, we explore the differences between SLLC-linked loan and the loans that the same households were accessing previously. It is important to keep in mind that the sub-set of households who accessed credit previously is very small (23 respondents in total). In addition, among the previous loans, two thirds are group loans and the remaining one third are individual loans. As a consequence, in order not to reduce the sample further, we do not disaggregate data by sex of respondent or type of loan. Results need to be interpreted carefully.

We begin with the value, duration, and interest rates of the SLLC-linked loan and compare them with the previous loans (see Table). The average value of the SLLC-linked loan is 23,304 Birr while it is just 4,786 Birr in the sample of previous loans. This suggests that the SLLC-linked loans are on average four times larger than the previous loans. The data also indicates that there may also be a reduction in interest rates of about 5% between the SLLC-linked loan (15.2%) and the previous loans (20.9%). The MFIs have so far indicated that they are applying to SLLC-linked loans the same interest rates of the group loans. However, as seen above, the sample of previous loans include some MFI's group loans and some SACCOs' loans, so higher interest rates in SACCOs' loans could justify the difference with the new SLLC-linked loans. More research is needed to understand whether interest rates of the SLLC-linked loan are effectively lower than prevalent alternatives.

Finally, in terms of durations of the loans, the SLLC-linked loans are about 7 months longer than the previous loans. However, when we focus on the median, SLLC-linked loans and previous loans are very similar both in terms of interest rates and durations. It follows that the critical difference between features of SLLC-linked loans and previous loans is in the value or size of the loans[22].

From this analysis we can deduct that the A2F beneficiaries that had taken a group or an individual loan from an MFI or SACCO could access much higher loan amounts once they switched to the SLLC-linked loan. We could call these households 'quantity-constrained' as MFIs or SACCOs could not provide them additional funding they needed, arguably because they could not put forward a collateral for the loan.

Table 28: Value, duration, and interest rates of the SLLC-linked loan against previous loans

	SLLC-linked loan			Previous loans		
	median	*mean*	*count*	*median*	*mean*	*count*
Value of the loan (in Birr)	18000	23304	113	3750	4786	22
Duration of the loan (in months)	12.0	22.3	113	12.0	15.0	22
Interest rate (in %)	17.0	15.2	87	17.0	20.9	15

Changes in financing needs and capacity to supply to those needs

In comparing access to finance before and after the SLLC-linked loan, we next look at the financing objectives that motivate taking up a loan, i.e. the types of activities that farmers need finance for.

22 The survey includes data about other features such value and schedule of repayments. These results are omitted to focus on the most essential elements.

Table 29 shows that the top three reasons to get credit are to buy inputs to farm the land, to invest in the land, and to buy oxen for ploughing. These are the top three responses for accessing SLLC-linked loans as well as loans taken previously. Interestingly, most respondents indicate that they were not able to finance entirely these needs previously (87% across male and female respondents). Seventy-six percent of female respondents were not able to finance these things at all. Among the ones who could finance their needs, in full or in part, the majority had to use own savings (56%) while many also indicated that they had to sell assets such as livestock (51% of male respondents and 33% of female respondents). Consistently with the finding that most A2F beneficiaries had not taken credit before, only a minority reported to have used some form of credit.

Table 29: Financing objectives with SLLC-linked loan and previous loans

	SLLC-linked loan		Previous loans
	Males	Females	Total
What was the loan taken for: (pct. of respondents who indicated each activity, up to three responses per respondent)			
To buy inputs to farm the land	57%	37%	55%
Livestock rearing inputs	21%	24%	0%
To invest in my land	47%	21%	32%
To avoid spending all my savings	3%	0%	0%
To buy food to feed my family	5%	5%	5%
To invest in off-farm activities	17%	21%	18%
To rent in additional land	7%	5%	0%
To hire labour	3%	3%	0%
To buy oxen for ploughing	28%	24%	32%
In the year previous to taking up the loan, were the respondents able to finance these activities? (pct. of respondents)			
Yes, in full	13%	13%	NA
Yes, in part	63%	11%	NA
No	24%	76%	NA
If yes in part or in full, how were these activities financed? (pct. of respondents who indicated each activity, up to three responses per respondent)			
By renting out land	12%	22%	NA
By selling assets like livestock	51%	33%	NA
Through group lending	12%	0%	NA
Through other formal lending	7%	11%	NA
Through informal lending	2%	0%	NA
With own resources, including own savings	56%	56%	NA

Changes in savings practice

The financial services tied to the SLLC-linked loan are not limited to lending but extend to saving as well. The literature on microfinance has recently emphasised the value of the group loans and other microfinance instruments as mechanisms for farmers to commit themselves to build up savings. It is therefore important to assess whether the SLLC-linked loan also enhances savings behaviour.

For each SLLC-linked loan, the MFIs open an account where the client can deposit savings; this includes a mandatory savings amount that is retained until the loan is repaid, typically 10% of the loan value, and voluntary savings amounts which are at the discretion of the client. The key interest is in understanding if A2F beneficiaries are voluntarily saving more and more frequently than before. However, we also discuss changes to compulsory savings to understand whether changes to voluntary savings are offset by opposite changes in compulsory savings.

In our sample, both compulsory and voluntary savings are more common under the new SLLC-linked loan than in the previous year to taking this loan (see

Table 30). Among the respondents who save, the majority save on a monthly basis or less frequently, regardless of the compulsory or voluntary nature of the saving and of the time. In terms of sizes of the deposits made each time, the typical amounts are much larger on average under the SLLC-linked loan against the previous year. So, if the frequency of the savings remain roughly constant overtime and amounts increased, then A2F beneficiaries may be saving more under the new loans than previously. However, it should be mentioned that the increase in the average saved amounts is mostly driven by a minority of respondents who are saving large amounts upfront. This can be deduced by the fact that the median saved amounts are mostly constant over time.

Table 30: Frequency and amounts of compulsory and voluntary savings

	Under SLLC-linked loan		Previous year	
	Compulsory savings	Voluntary savings	Compulsory savings	Voluntary savings
Have you saved in this way?				
Yes	68%	60%	40%	50%
No	32%	40%	60%	50%
If yes, how frequently did you save?				
Weekly	0%	6%	0%	7%
Every second week	3%	0%	4%	2%
Every third week	4%	3%	7%	5%
Monthly	53%	57%	56%	48%
Every two months	6%	9%	7%	7%
Less frequently than every two months	18%	25%	11%	30%
Just once upfront	16%	0%	16%	0%
If yes, how much did you save typically each time? (average across available obs.)				
Deposit value in Birr (average)	618	740	354	552
Deposit value in Birr (median)	100	100	60	100

Re-application for SLLC-linked loans

Finally, a measure to assess whether the new SLLC-linked loan may become an established and sustainable instrument in the credit market is the likelihood that borrowers re-apply for the loan once they have completed repayment of the first loan. We look first of all at those respondents who have already completed repaying the loan once.

We find that in our sample only 23% have finished repaying the first SLLC-linked loan (see Table). This is because the duration of the SLLC-linked loan is over a year and early adopters were not systematically targeted within the clients' lists. Among these respondents, 96% applied for another SLLC-linked loan and 96% of the applicants obtained it. The loan value increased for 42% of the successful applicant, stayed the same for 33% and was lower for 25%.

Table 31: Re-applications for SLLC-linked loans

Have you finished repaying the first SLLC-linked loan?	
Yes	23%
No	77%
If yes, after you repaid the first loan, have you applied for another SLLC-linked loan?	
Yes	96%
No	4%
If yes to question above, were you awarded the loan?	
Yes	96%
No	4%
If yes to question above, is the value of the new loan higher, the same, or lower than the first loan?	
Higher	42%
The same	33%
Lower	25%

We also ask farmers if they are expecting to apply for a new SLLC-linked loan when the current one will be repaid. Among the ones who are potentially interested in continuing borrowing, 87% are certain or very likely to re-apply for the SLLC-linked loan. Most of them (78%) would be interested in borrowing more than the current loan value. These results suggest very strong demand for the SLLC linked loan.

Table 32 Prospects of re-application for SLLC-linked loans

Consider the future situation in which you will have repaid your SLLC-linked debt in full. How likely it is that you will need or be interested in taking a new loan?	
Certain	45%
Very likely	37%
Somewhat likely	8%
Not very likely	4%
Not at all likely	4%
Don't know / cannot say	1%
In that situation, how likely would you be to re-apply for the same SLLC-linked loan from the same MFI?	
Certain	48%
Very likely	39%
Somewhat likely	11%

Consider the future situation in which you will have repaid your SLLC-linked debt in full. How likely it is that you will need or be interested in taking a new loan?	
Not very likely	0%
Not at all likely	2%
Don't know / cannot say	0%
If likely to apply, will the amount that you would apply for be the same, larger or smaller than the current one?	
It would be larger	79%
It would be the same	14%
It would be smaller	3%
I have not decided yet	4%

Perceptions Change in Access to Finance

As with practice change, we identify three fundamental areas of perceptions change in order to show results, and specifically these are:

- Positive attitudes and perceived benefits from borrowing with the SLLC-linked loan;
- Perceived risks from borrowing with the SLLC-linked loan;
- Expectations to default on the loan;
- Prospect of accessing loan as motivator to collect SLLC.

Positive attitudes and perceived benefits from borrowing with the SLLC-linked loan

To assess the perceived benefits of the SLLC-linked loans, we give respondents statements about 15 possible benefits of the loans and ask to agree or disagree with them. We use a Likert scale with five points in addition to the “Don’t know / Cannot say” answer. As the framing of the statement can influence the responses, we phrase the 15 statements in way that either brings out a benefit or show a positive attitude, as in "The loan amount is suitable to my financial objectives”, or that brings out a disadvantage or show a negative attitude, as in "To obtain the loan I had to go through a long and complicated process". We will just refer to the former as ‘positive’ statements and the latter as ‘negative’ statements. Positive and negative statements are mixed

One key observation is that the respondents tend to strongly agree or somewhat agree with most statements, regardless of their ‘positive’ or ‘negative’ sense. However, normally the positive statements had overwhelming majority of respondents that strongly agree or somewhat agree while the negative statements had small majorities or indeed minorities of respondents that provided the same answers. This would suggest that even though there might be a bias towards agreeing with all statements, on balance the respondents have favourable attitudes towards the SLLC-linked loan.

We assess each of the elements that are tested based on conservative criteria, namely:

- For positively phrased statements:
    - If more than 90% of respondents strongly agree or somewhat agree, then attitudes and perceptions are ‘very positive’
    - If 60%-89% of respondents strongly agree or somewhat agree, then the attitudes and perceptions are ‘somewhat positive’
    - If less than 60% of respondents strongly agree or somewhat agree, then attitudes and perceptions are ‘not positive’
- For negatively phrased statements:
    - If more than 75% of respondents strongly disagree or somewhat disagree, then attitudes and perceptions are ‘very positive.
    - If 45%-74% of respondents strongly agree or somewhat agree, then the attitudes and perceptions are ‘somewhat positive;
    - If less than 44% of respondents strongly agree or somewhat agree, then attitudes and perceptions are ‘not positive.

The criteria ensure that only very positive views are regarded as such where the statement was positively phrased while the balance of evidence is lower for negatively phrased statements.

Based on these criteria, there are six very positive perceptions among A2F beneficiaries:

- Using the land as guarantee helps to get a good deal for the loan

- Relative to the group loan, better terms can be negotiated with the SLLC-linked loan because of individual liability
- The rights around using the land as guarantee are understood
- The obligations around using the land guarantee are understood
- Good awareness of the consequence of defaulting on the loan
- Building up savings helps to protect the household against shocks

There are six somewhat positive perceptions:

- Loan values are suitable for financing objectives
- Frequency of repayments is suitable
- It is not difficult to find money for the repayments
- The interest rate is not excessively high so that the famer will default
- Fear of consequences in case of defaults
- The process to get the loan is not long or complicated

The perceptions are not positive only in one case:

- The interest rate is unfair

From a women empowerment perspective, we also have evidence that the SLLC-linked loan and the process to obtain it favour women's participation in credit markets. In particular, women hold one very positive perception:

- The SLLC-linked loan allows to access finance as a woman individually[23]

In addition, women hold one perception that is somewhat positive:

- Because both husband and wife need to sign the SLLC-linked loan together, women participate more actively to decision making around household's finances.

Perceived risks from borrowing with the SLLC-linked loan

Smallholder farmers may face a number of fears and doubts when they take up a loan, for example insecurity about not being able to repay or fear of what could happen in case of default. As we have seen in the section on the financial constraints, these perceived risks may represent significant challenges that prevent some farmers from borrowing altogether. It is therefore important to understand whether such risks are felt when the SLLC-linked loan is taken up. Indeed, one of the crucial innovations of the SLLC-linked loan is that it is based on individual liability of the borrower. As we have seen above, one of the prevailing alternatives consists in group loans, by which borrowers in the group hold a join liability against the loan. We aim to understand what the perceived risks are from being subject to a new liability structure.

Before we assess specifically the risks, we test the respondents' knowledge of the consequences of defaulting on the loan. This is key as farmers are putting forward land as a guarantee for their loan and they should be aware of what this entails.

The results from this test, however, appear to be conflicting. We presented the respondents with two statements, one true and one false, about the consequences of default. Respondents had to say if each of the two statements was true or false. The true statement is: "If I do not repay the loan, the MFI will seize the land temporarily until the debt is repaid". The false statement is: "If I do not repay the loan, I will lose the land forever." The odd finding is that the large majority of farmers think both statements are true: virtually 100% of them say the true statement is indeed true, but 84% of males and 92% of females also wrongly say that the false statement is true. The contradiction may be due to how farmers interpreted the false statement or possibly to bad translation from English to Amharic. It is worth noticing that the qualitative assessments conducted by the EEU team suggest that farmers overwhelmingly understand the consequences of defaulting. Thus, the data from the EIS is inconclusive on this and more research might be necessary to dispel any residual doubt.

Looking at the perceived risks of the loan, we find that there is a high share of respondents who think there are no risks, especially among women (37% of male respondents and 61% of female respondents). The reason why women seem to perceive less risk than men is not known and would deserve further investigation. In addition, losing land to the MFI is mentioned by 44% of male respondents and 29% of female respondents. Another prominent perceived risk concerns the success of the investment farmers are making with the loan (see Table).

23 This perception is held by female heads of the household who are not married or do not live with their husband. When the households has two heads, the loan always needs to be signed by both male and female heads.

Table 33 Perceived risks from taking up the SLLC-linked loan

	SLLC-linked loan	
	Males	Females
Please indicate whether the following statement is true or false. "If I do not repay the loan, I will lose the land forever".		
True	84%	92%
False	16%	8%
Please indicate whether the following statement is true or false. "If I do not repay the loan, the MFI will seize the land temporarily until the debt is repaid".		
True	99%	100%
False	1%	0%
What are the risks of taking a SLLC-linked loan? (pct. of respondents who indicated each risk, up to three responses per respondent)		
I feel insecure about repaying the loan	16%	8%
I am afraid the MFI can take the land away from me	44%	29%
I am afraid that my investment will fail	32%	18%
I will have taken up too much debt that I cannot repay	8%	3%
I am afraid of family disagreements	9%	0%
I am averse to paying high interest	3%	3%
There is no risk	37%	61%
Don't know / cannot say	0%	5%

Expectations on defaults

Here we look at borrowers' expectations around defaulting on the loan. Aspects of their perceptions around defaults have already been analysed in the previous, but here we explore the borrowers' own outlook around their capacity to repay.

We begin reporting on actual episodes of missing a repayment on the SLLC-linked loan at any time before the survey. As it can be seen from Table , only 4% of male borrowers and 8% of female borrowers report to have missed a repayment. Missing a payment is not equivalent to defaulting as the borrowers might have just delayed the payment. We do not have detailed data about these episodes, but the finding deserves to be investigated further in other research as it shows that a small minority of borrowers may sometimes struggle to repay.

The farmers are also fairly positive about their capacity to keep up with payments in the future. Among male respondents, only 3% state that they may miss a repayment. However, 26% of female respondents think they may find themselves in that situation.

In summary, the track record of repayments is fairly strong and expectations on capacity to repay are high. Nonetheless, as the project is willing to reduce risks of defaults as much as feasible, further research will be necessary to investigate episodes of a missed payments and prospects for repayment in the future.

Table 34: Track record and expectations of repayments of the SLLC-linked loan

	SLLC-linked loan	
	Males	Females
Q. Have you ever missed a repayment on this loan?		
Yes	4%	8%
No	85%	84%
Don't know / cannot say	11%	8%
Q. To the best of your ability to predict the future, how likely is it that you will miss a repayment of the loan in the future?		
Very likely	0%	6%
Likely	3%	20%
Unlikely	22%	31%
Very unlikely	73%	43%
Don't know / cannot say	1%	0%

Prospect to access the loan as motive to collect SLLC

Finally, we assess whether the prospect to access the SLLC-linked loan is a motive for the farmers to collect their SLLC. Based on farmers' responses, 44% of the A2F beneficiaries state that they were motivated to collect their SLLC by the prospect to access the loan (see Table). This share is quite high, especially considering that the EEU followed the completion of the SLLC process by some time so in a number of cases the MFIs began to market the SLLC-linked loan after the certificates had already been issued and collected. In other words, our sample includes beneficiaries who may have had their certificate for a while before they

became aware of the SLLC-linked loan. For them, it is unlikely that the prospect of a new loan acted as a motive to collect the certificate.

Table 35 SLLC-linked loan as motive to collect land certificate

	A2F	
	Males	**Females**
Did the prospect to access this loan (or decision to take it up) motivate you to collect or demand your Second Level Land Certificate?		
Yes	51%	31%
No	49%	66%
Don't know / cannot say	0	3%

EEU Early Impacts on Land Investments, Inputs Use, and Off-Farm Economic Activity

In this section we investigate what on- and off-farm investments and changes in inputs were made between the 2015-2016 and the 2016-2017 agricultural years. As argued in the Methodology section, the results can be interpreted as early signs of impacts achieved by the EEU at the outcome level, but need to be taken carefully because of a number of factors:

- The EEU interventions may not have been the only determinant of changes in investment and inputs use between the two agricultural years. For example, in 2015 and 2016 Ethiopia was struck by severe droughts which affected agricultural production and might have had an impact on the types and intensity of the investments and inputs use.
- EEU beneficiaries engaged with the project at different times over the 2016-2017 agricultural year, making it impossible to define a unique cut-off point to separate the pre- and post-intervention periods.
- As stated in the project's Theory of Change, the impact of the EEU component is dependent on the success of the SLLC and RLAS components in raising farmers' confidence in the land certificates and rural land administration systems. Only where farmers have greater security of tenure, a stronger rural land market system can lead farmers to invest even more. In this survey, the additional impact of the EEU on investments cannot be separated out from the impact of the SLLC/RLAS components, again due to varying timeframes in the certification of the land and delivery of RLAS.

Another key technical limitation is in that we ask if farmers made an investment or not at each point in time, but not what level of effort was put into the investment nor how much was spent. As such if a household carried out the same investment or activity overtime but put more effort and money as a result of the standard rental contract or the SLLC-linked loan, then the greater investment will not be captured. The limitation may be very relevant since we identify in Section 5 that a significant share of A2F beneficiaries financed the same range of activities before and after the SLLC-linked loan but could intensify their investments with the funds obtained from the SLLC-linked loan. The length of the survey prevented us from adding specific questions about the intensity of the investments. We still capture inputs quantitatively where quantities are easier to remember or estimate, i.e. chemical fertilisers (in kilograms) because farmers need to purchase them, and labour (in units) because farmers need to hire them and employ them.

To provide additional evidence that may validate the findings from the before-after analysis, we report on the EEU beneficiaries' own assessment of the contribution that the standard land rental contracts and SLLC-linked loans made on a number of outcomes, including more productive use of the land, investments and inputs use.

Investments on Land

Greater investment in land is the key outcome of the LIFT programme. The basic logic for this link is that SLLC and a functioning RLAS provide farmers with the confidence that they will fully realise the benefits from investments. Then, if investments on land have positive returns and there is sufficient capital and labour to make them, farmers will carry out new investments. The formalisation of land rental and access to finance are designed to strengthen the link between security of tenure and investments. We explore whether investments and improvements in the land change over time before and after farmers formalise their land rental or access finance through the SLLC-linked loans.

We begin with assessing overtime changes across investments and improvements for each parcel of land that is not rented out or sharecropped out in full[24]. The investments we use in the survey are in:

- Planting eucalyptus trees;
- Irrigation well;
- Irrigation canal;
- Private pond;
- Levelled land (includes Terracing);
- Drainage ditch;
- Plant other trees;
- Fence/barrier; and
- Water harvesting system[25].

In Table we show the shares of all parcels in the sample that were object of investments in each of two agricultural years. We also show the average difference between the two, i.e. the share of parcels that had an investment in the second year but not in the first minus the share of parcels that had an investment in the first year but not in the second one. Although not all investments hold equal potential for raising productivity of the land, we also calculate and show on the table the number of investments made on each parcel in each year and the difference between the two years. The high-level results are:

- Overall, investments are extremely low across most of the investment categories; six of the nine investment categories are made on less than 10% of parcels each year.
- The most common investments and works on the land are levelling of the land (including terracing), building or maintaining drainage ditches and building or maintaining fences or barriers. Households carry out these investments on about 30%-40% of all parcels each year.
- In terms of overtime differences, investments have increased for the three most common categories just described, and all three differences are statistically different from 0 at the 1% confidence level.
- Investments have declined slightly across four of the relatively less common categories, i.e. planting of eucalyptus, building or maintaining irrigation canals, planning of other trees, and building or maintaining of water harvesting system. However only the difference on irrigation canal is statistically significant at 5%.
- The average number of investments made on each parcel was 1.23 in 2015-16 and increased by 0.08 to 1.31 in 2016-17, which is equivalent to a 6.4% increase. The increase is statistically different from zero at the 1% level.

Table 36 Investments on land (share of parcels)

	Total sample			
	2015-16	2016-17	Diff.	p-value of difference
Planting eucalyptus	6.4%	6.0%	-0.4%	0.505
Irrigation well	1.1%	1.2%	0.1%	0.739
Irrigation canal	3.5%	2.8%	-0.6%	0.035
Private pond	0.6%	0.6%	0.1%	0.318
Levelled land (includes Terracing)	36.9%	39.6%	2.7%	0.001
Drainage ditch	36.2%	40.5%	4.4%	0.000
Plant other trees	6.4%	5.8%	-0.6%	0.318
Fence/barrier	30.3%	33.1%	2.8%	0.001
Water harvesting system	2.8%	2.3%	-0.5%	0.252
Total investments (in units)	1.23	1.31	0.08	0.000
N of parcels	*1103*	*1103*	*1103*	*1103*

In summary, between 2015-16 and 2016-17 there was a 6.4% increase in the number of investments and the increase is statistically significant at 1%. The advantage of analysing at the total of investments is that it captures net variations cancelling out any substitutions households are making between the investments or between the parcels that are object of investment. Nonetheless, as we are interested in the quality of the investments, it is noticeable that the investments that grew overtime were the most common one in first place

24 We exclude from this part of the questionnaire parcels that were rented out or sharecropped out in full during the reference periods, as responsibility may be shared between renters and rentees, and we do not have matched renter-rentee data.
25 Investments include building of a new structure, maintenance work or replacement of an existing structure, as well as one-off works.

i.e. levelling the land, building or maintaining drainage ditches and fences or barriers. The other types of investments stayed roughly constant.

Next, we analyse total investments' trends across the three intervention groups and male and female respondents. The results are shows in Table 37.

- Trends in investment numbers are positive for all groups, except for female renters' group. The largest improvements are observed for male A2F beneficiaries (+0.16 investments per parcel in 2016-17 or 15% higher than 2015-16) and among female rentees (+0.10 investments per parcel or 10% higher against the previous year.
- The only changes that are statistically positive are for male A2F beneficiaries (at 1% level) and for among male rentees (at 10% level). The sample sizes are defined by the number of parcels and therefore vary according to the number of households and number parcels per household for each group. The changes might be too small to be picked up with such samples.

Table 37: Trends in investments on land across beneficiary groups

		Total Investments per parcel (in units)				
		2015-16 average	2016-17 average	Diff.	p-value of difference	N of parcels
Renters	Males	1.41	1.48	0.07	0.233	147
	Females	1.25	1.20	-0.05	0.356	105
Rentees	Males	1.23	1.29	0.06	0.077*	346
	Females	0.96	1.06	0.10	0.133	50
A2F	Males	1.05	1.21	0.16	0.000***	298
	Females	1.50	1.56	0.06	0.282	157

The bottom line is that investments on land have increased after the intervention began but the change is not economically meaningful in the aggregate. However, the fact that trends in some investment categories are positive and statistically significant across groups suggests that the effects are highly heterogeneous across households, with a handful of households making significantly more investments and the rest possibly doing nothing. These investment-focused households come mostly from the male A2F group, male rentees, and female A2F group (in this order).

Inputs on Land

Increased use of inputs such as improved fertilisers and labour is another common way to improve land productivity and incomes in rural Ethiopia and therefore qualifies as 'investments'. To discuss results, a technical caveat about how we collected the inputs use data is that for the 2016-17 agricultural year we ask separate questions for wet and dry seasons, but not for 2015-16. Results are obtained as an aggregate of the two seasons for 2016-17: we use the sum of the two for quantitative measures such as kilograms of chemical fertiliser, and for yes or no answers, we use any yes since this will be comparable to the question for the previous year.

(For example, if a farmer has used 50kg of chemical fertiliser on a given parcel in the wet season and 150kg in the dry season, then the value will be 200kg)

We begin with the use of natural fertilisers, traditional seeds and improved seeds.

Table shows statistics for the whole group to provide a first indication of changes in inputs use over time:

- Manure used more than compost and crop residue as natural fertiliser (in terms of use / not use)
- Traditional seeds and improved seeds are both used over about 50% of the parcels overall
- Very minor changes overtime.
- Probably not worth dwelling on this much longer – the below findings far more interesting.

Table 38: Inputs on land (share of parcels)

	Total sample			
	2015-16	2016-17	Diff.	p-value of difference
Natural fertilisers: manure	29.2%	29.8%	0.6%	0.492
Natural fertilisers: compost	19.3%	18.6%	-0.7%	0.345
Natural fertilisers: crop residue	13.0%	12.9%	-0.1%	0.853
Traditional seeds	50.1%	52.5%	2.3%	0.052
Improved seeds	47.1%	48.7%	1.5%	0.186
Total inputs (above)	1.42	1.45	0.04	0.020
N of parcels	1072	1072	1072	1072

Next, we focus on chemical fertilisers, i.e. DAP, UREA, and NPC. The results are shown in Table and the key findings are the following:

- Uses of DAP and UREA are similar in terms of share of all the parcels (roughly 70%), but higher for DAP in terms of kilograms per hectare; important to notice that the average kilograms per hectare is based on all valid parcels, including the ones where no chemical fertiliser was used. NPC is relatively less used (roughly 20% of parcels).
- While use of chemical fertilisers does not go up significantly in terms of number of parcels, it grows significantly in terms of kilogram per hectare. On average, the increase in the use of chemical fertilisers is 20.3 kg per ha for DAP, 11.4 kg per ha for UREA, and 15.5 kg per ha for NPC. Average trends hide a lot of heterogeneity, with a minority of farmers increasing use of the inputs in large quantities and a majority using the same inputs as before.
- Number of parcels is affected by available responses to the questions (in particular for NPC, there were farmers who responded Don't know, as probably they don't know this chemical fertiliser); as for the kg per ha, the number of parcels is also affected by some gaps and outliers in the size of the parcels.

Table 39 Trends in use of chemical fertilisers

		Total sample				
		2015-16	2016-17	Diff.	p-value of difference	N of parcels
Chemical fertilisers: DAP	*Pct. of parcels*	71.6%	72.9%	1.3%	0.144	1039
	Avg. kg per ha	151.48	171.74	20.25	0.000	1008
Chemical fertilisers: UREA	*Pct. of parcels*	72.8%	71.3%	-1.5%	0.167	1042
	Avg. kg per ha	121.12	132.54	11.41	0.002	1011
Chemical fertilisers: NPC	*Pct. of parcels*	18.3%	22.1%	3.8%	0.000	893
	Avg. kg per ha	42.27	57.77	15.50	0.000	864

As the results in the full sample are economically meaningful, we also disaggregated them by group and show results in

Table 40:

- Improvements overtime in chemical fertilisers' use (kg per ha) are positive in all groups, but some are not statistically different from zero due to small samples (e.g. female rentees and male renters groups). The highest significant changes are recorded for NPC by the female A2F beneficiary group (+61 kg per hectare), and for DAP by A2F beneficiary group (+36 kg per hectare).
- No group has clearly superior performance than the others across the three types of chemical fertilisers.
- As before, the average increase in kilograms per hectare hides a lot of heterogeneity between the majority of parcels that are treated with the same amount of fertiliser over time and a small minority that are treated with much more fertiliser.

Table 40 Trends in use of chemical fertilisers by beneficiary groups

		Chemical fertiliser: DAP (kg per ha)			Chemical fertiliser: UREA (kg per ha)			Chemical fertiliser: NPC (kg per ha)		
		Diff 15-16 - 16-17	p-value of diff	Sample size - parcels	Diff 15-16 - 16-17	p-value of diff	Sample size - parcels	Diff 15-16 - 16-17	p-value of diff	Sample size - parcels
Renters	Males	15.10	0.136	125	10.50	0.390	123	17.45	0.132	115
	Females	6.25	0.403	84	12.02	0.101	84	19.03	0.215	73
Rentees	Males	13.91	0.036	293	13.87	0.022	292	7.96	0.029	239
	Females	48.64	0.311	38	0.07	0.324	37	1.51	0.326	29
A2F	Males	36.06	0.017	258	7.84	0.343	260	3.35	0.391	217
	Females	20.42	0.000	138	20.54	0.067	144	60.99	0.000	120

Finally, we analyse trends in labour utilization and in use of pesticides, insecticides, and herbicides (see Table). The labour statistics should be interpreted with care since we only capture the number of people who worked at two different tasks (planting and harvesting). In addition, as we ask respondents for labour inputs for the whole of 2015-16 without separating the wet and dry seasons like for the 2016-17 year, it is possible that the figures that are provided are under-estimated because the same individuals might have been working over different seasons. For example, if two household members worked in planting in the wet season as well as in the dry season of both years, the respondent could report two labourers for 2015-16, two labourers for the dry season 2016-17, and two labourers for the wet season 2016-17. So, the data for 2015-16 might discount the actual labour inputs when we compare to 2016-17. As a consequence, the results need to be taken with care.

The results, shown in Table , point to two observations:

- Labour inputs in terms of number of people increase significantly between 2015-16 and 2016-17 across field preparation and harvest and for both family members and hired non-family, with the exception of hired harvest labour which decreases slightly. The largest increase is among family labour for harvesting which grew from 3.4 people per parcel to 4.2 one year later.
- In the same table we also show changes in use of pesticides, insecticides and herbicides. These products are applied on average 1.7 times in 2015-16 and 1.6 times in 2016-17, across all parcels.

Table 41: Trends in labour inputs and pesticides use

	Total sample				
	2015-16	2016-17	Diff.	p-value of difference	N of parcels
Field preparation labour - family (n of people)	3.40	4.18	0.78	0.000	1043
Field preparation labour - hired non-family (n of people)	1.28	1.50	0.21	0.004	1020
Harvest labour - family (n of people)	3.43	4.73	1.29	0.000	1042
Harvest labour - hired non-family (n of people)	2.26	2.21	-0.06	0.584	1024
Pesticides/insecticides/herbicides (times applied)	1.69	1.56	-0.14	0.065	1041

Off-Farm Economic activity

Investments in off-farm economic activity help farmers diversify their sources of incomes and provide livelihoods for the family. In Table 42 we analyse the potential impact of EEU interventions on the types and numbers of investments in off-farm activity that each household makes

- In 2015-16, there are a number of off-farm economic activities that EEU households are starting to do or expanding operations on, mainly agro-processing related to livestock (like animal fattening) (about 30% of households), forestry-based activities (11%), service-based activity (10%), and sale or added-value to agricultural products (10%).
- Each household carried out 0.87 such 'investments' in 2015-16; the number of investments grew to 1.16 in 2016-17, equivalent to a 33% increase. The increase is statistically different from zero at the 1% level.
- Trends in start-up and expansion of operations are positive across all sectors, but changes are generally very minor over the previous year. The three activities that grew the most were in sale and value addition of agricultural products (+7.7%), agro-processing of products other than crops and livestock (e.g. beekeeping) (+6.1%), and agro-processing that is crop-related (+4.4%).

Table 42: Trends in off-farm economic activity (share of households starting or expanding an activity)

	Total sample				
	2015-16	2016-17	Diff.	p-value of difference	Sample size
Agro-processing activity - crop-related	0.9%	5.3%	4.4%	0.000	322
Agro-processing activity - animal-related	29.1%	30.4%	1.2%	0.618	326
Agro-processing activity - other	8.9%	15.0%	6.1%	0.001	327
Sale or added-value of agricultural products	10.5%	18.2%	7.7%	0.000	324
Sale of agricultural inputs and services	0.6%	3.4%	2.8%	0.006	326
Sale of non-agricultural products	8.4%	8.4%	0.0%	1.000	322
Service-based activity	10.4%	11.3%	0.9%	0.549	327
Commercial manufacturing	1.2%	3.7%	2.5%	0.021	324
Forestry-based activity	10.9%	11.2%	0.3%	0.882	322
Repair/maintenance	2.2%	3.7%	1.5%	0.059	325
Real estate services	5.1%	6.9%	1.9%	0.109	317
Total off-farm investments per household (avg. number)	0.87	1.16	0.29	0.001	328

As some of the changes in investment that we pick up in the full sample may be economically meaningful, we next focus on the results by group (see Table):

- In 2015-16, the groups who made more off-farm investments on average are the male rentees, and A2F beneficiaries (both male and female respondents' group). renters' respondents reported significantly less investments (only 0.34 to 0.49 per household). This finding is consistent with the observation that renters are relatively more vulnerable than the other groups.
- In 2016-17, respondents from all groups, except female renters, increased made more investments on average. Changes in investments are statistically positive at 5% level for male renters (+0.49 or 100% more) and male A2F beneficiaries (+0.76 or 70% more).
- The fact that changes overtime is positive but small for the other groups might indicate that only a minority of households react to the standard land rental contract or SLLC-linked loan making an off-farm investment.

Table 43: Trends in total number of off-farm investments by beneficiary group

		Total Off-Farm Investments				
		2015-16	2016-17	Diff.	p-value of difference	Sample size
Renters	Males	0.49	0.98	0.49	0.011	51
	Females	0.34	0.29	-0.05	0.518	56
Rentees	Males	1.27	1.33	0.07	0.602	90
	Females	0.44	0.56	0.11	0.542	18
A2F	Males	1.08	1.84	0.76	0.011	75
	Females	1.03	1.24	0.21	0.103	38

Respondents' Impact Self-Assessment

To triangulate and validate the results from factual questions on investments and inputs use, we analyse the beneficiaries' own assessment of the contribution of the standard land rental contract and SLLC-linked loan on behavioural change, economic activity, as well as some of the potential effects of these positive changes. At the end of the questionnaire, respondents were presented with statements of a positive outcome or change that may have taken place since engagement with EEU and they were asked to assess contribution of the standard land rental contract or the SLLC-linked loan on a four points scale (i.e. contributed significantly, contributed somewhat, contributed a little, did not contribute at all). One benefit of this approach is that each respondent provides an answer according to its own experience and exposure timeframe.

The statements we used are the following:

- "Our household has been able to employ more family members into productive activity off-farm"
- "One or more of the household members have been able to move to a city to take productive employment"
- "Our household has been able to invest more in our land, use better inputs and agricultural machinery"
- "Our household has been able to cultivate our land more productively, either by using a parcel that was not fully utilised or by increasing investments or by using better inputs"
- "Our household has been able to sell more agricultural produce on the market"
- "Our household has been able to store or keep assets like agricultural produce or livestock and sell them when it was more profitable to do so"

- “Our household has been able to put funds aside for health and education of households’ members”
- “Our household members have been able to eat more regularly and store more food for times of hardship”

In the list, statements 1-3 relate to critical changes in economic activities; statements 4-6 focus on some of the possible effects of these changes; and 7-8 focus on the long-term impacts of these effects.

Table 44 presents the full detail of the responses that were provided. The emergent findings are the following:

- A2F beneficiaries are by far the group who feel the EEU intervention is making the strongest impact across all dimensions. In both male and female groups, the share of respondents who say EEU made a positive contribution (either contributed significantly or somewhat) is highest for the statement on land productivity (n.4 in the list above, 81% for males and 82% for females) and lowest for the statement related to the ability of households' members to move to a city to take productive employment (n.2, 32% both among males and females). Importantly, when it comes to investments in land and use of better inputs (n.3), 77% of males and 53% of females in the A2F groups say that the SLLC-linked loan contributed positively.
- By contrast, the land rental market beneficiaries are much less positive overall. Male rentees feel slightly more positive than the others across most of the dimensions. In particular, male rentees think the EEU made a positive contribution to investments on land and inputs use, as well as productivity of the land (n.3 and 4, 44% and 45% respectively). a significant share of them are also convinced the changes in the land rental market already contributed to improving their wellbeing in terms of putting aside more money for health and education expenses as well as to increasing food security (n.7 and 8, 46% and 40% of respondents).
- While male renters assess EEU's contribution almost as positively as the male rentees, the majority of female land rental market beneficiaries do not think the EEU has contributed positively (significantly or somewhat) as of yet. However, a substantial share of them think the EEU at least contributed a little. For example, when they assess changes in land productivity, only 16% of them say the standard land rental contract contributed significantly or somewhat, but 30% say it contributed a little. Similarly, when they assess the long-terms impact on their wellbeing, half of them think the standard land rental contract has already contributed at least a little towards accumulating funds for health and education expenses and towards increased food security (n.7 and 8, 50% and 49% of respondents, respectively).
- Higher shares of female rentees than female renters think the standard land rental contract contributed positively to a number of dimensions.

In conclusion, significant shares of the EEU beneficiaries think that the standard land rental contract and SLLC-linked loans have to date contributed positively to changing economic practice, such as increasing investments in land and using better inputs, as well as to medium-term effects, such higher land productivity, and even long-term effects, such as greater food security. As per the own assessment of the EEU beneficiaries, the contribution of the SLLC-linked loan seems to be much greater than the standard land rental contract. Surprisingly, although male and female A2F beneficiaries have recorded similar increases in investments to date, among the land rental market beneficiaries, female respondents are considerably less positive about the impact of the standard rental contract as compared to their male counterparts.

The findings from self-assessment data trail quite closely the before-after analysis of factual investments and inputs use data, which suggested that changes to economic activity on- and off-farm have been positive in the first year of EEU intervention as compared to the previous year.

Table 44: Self-assessment of contribution of EEU towards impacts

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Q. Consider the time prior to you taking the SLLC-linked loan OR entering in the new land rental contract and compare it to your situation now. Consider if any of the following has changed, at least in part, due to the SLLC- linked loan OR new land rental contract. Use the following scale to assess the extent of the contribution: 'contributed significantly', 'contributed somewhat', 'contributed a little', 'did not contribute at all'. If the described "change" has not happened so there is no change to attribute, please just say so. Also, if you do not know please just say so.						
Our household has been able to employ more family members into productive activity off-farm						
Contributed significantly	12%	5%	15%	6%	23%	3%
Contributed somewhat	16%	5%	7%	6%	15%	37%
Contributed a little	14%	9%	8%	0%	4%	3%
Did not contribute at all	55%	63%	62%	67%	56%	58%
Does not apply (i.e. we have not seen this change)	2%	13%	4%	17%	3%	0%
Don't know / cannot say	2%	5%	4%	6%	0%	0%
One or more of the household members have been able to move to a city to take productive employment.						
Contributed significantly	8%	2%	7%	6%	19%	11%
Contributed somewhat	22%	13%	12%	6%	13%	21%
Contributed a little	8%	13%	13%	17%	5%	5%
Did not contribute at all	59%	57%	56%	44%	59%	63%
Does not apply (i.e. we have not seen this change)	2%	11%	5%	22%	3%	0%
Don't know / cannot say	2%	5%	7%	6%	1%	0%
Our household has been able to invest more in our land, use better inputs and agricultural machinery.						
Contributed significantly	8%	2%	15%	6%	35%	5%
Contributed somewhat	35%	16%	29%	28%	43%	47%
Contributed a little	20%	20%	11%	22%	9%	32%
Did not contribute at all	29%	46%	34%	17%	13%	16%
Does not apply (i.e. we have not seen this change)	8%	13%	5%	17%	0%	0%
Don't know / cannot say	0%	4%	5%	11%	0%	0%
Our household has been able to cultivate our land more productively, either by using a parcel that was not fully utilised or by increasing investments or by using better inputs.						
Contributed significantly	12%	4%	12%	6%	35%	24%
Contributed somewhat	33%	13%	33%	33%	47%	58%
Contributed a little	25%	30%	22%	39%	7%	13%
Did not contribute at all	25%	38%	25%	11%	11%	5%
Does not apply (i.e. we have not seen this change)	4%	14%	5%	11%	1%	0%
Don't know / cannot say	0%	2%	2%	0%	0%	0%
Our household has been able to sell more agricultural produce on the market.						
Contributed significantly	6%	5%	14%	0%	33%	8%
Contributed somewhat	25%	9%	32%	39%	36%	58%
Contributed a little	31%	16%	26%	22%	9%	16%
Did not contribute at all	31%	54%	21%	28%	17%	13%
Does not apply (i.e. we have not seen this change)	6%	14%	4%	11%	4%	3%
Don't know / cannot say	0%	2%	2%	0%	0%	3%
Our household has been able to store or keep assets like agricultural produce or livestock and sell them when it was more profitable to do so.						
Contributed significantly	10%	2%	14%	0%	37%	18%
Contributed somewhat	20%	11%	25%	17%	20%	32%
Contributed a little	27%	7%	21%	22%	12%	21%
Did not contribute at all	39%	63%	30%	50%	25%	29%
Does not apply (i.e. we have not seen this change)	4%	14%	5%	11%	5%	0%
Don't know / cannot say	0%	4%	4%	0%	0%	0%
Our household has been able to put funds aside for health and education of households' members.						
Contributed significantly	10%	7%	24%	6%	40%	13%
Contributed somewhat	29%	16%	23%	28%	33%	55%
Contributed a little	31%	27%	20%	22%	13%	16%
Did not contribute at all	25%	38%	27%	33%	11%	11%
Does not apply (i.e. we have not seen this change)	4%	11%	5%	11%	3%	3%
Don't know / cannot say	0%	2%	0%	0%	0%	3%
Our household members have been able to eat more regularly and store more food for times of hardship.						

	Renters		Rentees		A2F	
	Males	Females	Males	Females	Males	Females
Contributed significantly	10%	5%	22%	0%	40%	18%
Contributed somewhat	27%	14%	21%	33%	36%	45%
Contributed a little	33%	29%	26%	33%	16%	24%
Did not contribute at all	27%	39%	26%	22%	4%	13%
Does not apply (i.e. we have not seen this change)	2%	11%	4%	11%	4%	0%
Don't know / cannot say	0%	2%	0%	0%	0%	0%