"We're All in This Together": Addressing Poverty in Village Economies*

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Abstract

Most anti-poverty programs focus on targeting only the very poorest households. Can household welfare be improved with a universal program provided to everyone in a community? To answer this question, we conducted a clustered Randomized Control Trial of a universal graduation program across 335 villages in rural Uganda. The program we consider offers a package of support to every household in the community, including agricultural and livestock inputs and training, health, and entrepreneurship support over a 24-month period. We examine the effects of the program 3 years after its start with a sample of 4,000 randomly selected households. We find large positive effects of the programme, with average monthly household incomes increasing 40 USD PPP (25%), wealth increasing 410 USD PPP (32%) and monthly consumption increasing 60 USD PPP (10%). We see positive effects throughout the distribution, and no evidence that benefits are concentrated in better-off households. At a cost of only 321 USD PPP per household, consumption benefits exceed program costs in just over a year. This study shows that a universal program can effectively alleviate rural poverty.

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1 Introduction

Most anti-poverty programs target only the poorest households within a community. However, household targeting is costly, error-prone and often perceived as unfair (Banerjee et al., 2024, Brown et al., 2018, Hanna and Olken, 2018, Merfeld and Morduch, 2023). Further, targeting programs at only a small percentage of a community may limit their effectiveness at alleviating poverty more widely. Recent evidence on general equilibrium effects suggests that targeting a poverty alleviation program at a higher share of households within a community leads to larger poverty impacts, as aggregate demand and multiplier effects increase incomes further (Egger et al., 2022). This implies that raising the incomes of everyone in a community will result in higher incomes than when households are treated in isolation, and is supportive of universal approaches (Banerjee et al., 2019).

In this study, we provide the first causal evidence on a universal livelihoods program. The livelihoods program (henceforth referred to as the "RTV program") is run by Raising the Village (RTV) and takes place in rural villages reliant on agriculture, where most of the world's 700 million poor remain (World Bank, 2022). A key innovation of the program is that it is universal and so offered to *every* household within a village. The program seeks to address multiple dimensions of poverty simultaneously over 24 months through the provision of in-kind transfers of agricultural inputs and small livestock, training and mentorship, health support and the formation of saving groups. Since the program is provided to every household in the village, training can be delivered in groups, and mentorship can be provided by the community, helping to keep costs low.

Can a universal program be effective at improving household welfare? By including everyone in a village, multiplier and general equilibrium effects may generate additional program impacts beyond those seen when only a subset of a community is included, making a village-level program more effective at reducing aggregate poverty than an individually targeted program (Egger et al., 2022). If there are positive interactions between households' incomes, a universal program could raise the incomes of everyone in a community more than the sum of the effects on households treated individually (Banerjee et al., 2019). Further, targeted programs can cause negative spillover effects on those not included (Duflo et al., 2023, Haushofer and Shapiro, 2018) and there may be stigma associated with taking targeted programs (Thomas et al., 2020), concerns that are lessoned in a universal program.

On the other hand, since everyone is getting the same inputs and training at the same time, there may be crowding in economic activities in the villages. This may result in the program failing to improve household welfare, especially for the poorest. A universal program may also be more vulnerable to elite capture (Heß et al., 2021). Additionally, universality

will result in wealthier households being included than under a targeted program, who may be better placed to benefit from the program (Haushofer et al., 2022). Therefore, beyond the average effects in these communities, it is important to consider the heterogeneous effects of the treatment by baseline poverty to ensure that the poorest still benefit.

To answer these questions, we conduct a randomized controlled trial in western Uganda with 335 villages. Clusters of 2-4 villages sharing services and infrastructure were randomly assigned equally to either treatment, which received the RTV program, or to control, which did not. We examine the effects of the RTV program on household welfare just under 3 years after its start with a random sample of 4,000 households from these villages. To capture household welfare, we look at the impact on household income, wealth, and consumption. Households in treated villages see large and significant improvements in all of these outcomes relative to households in control communities.

Households in treatment villages have USD 40 PPP (25%) higher average monthly income. A significant driver of this appears to be the program successfully delivering agriculture training and input support, which has led to a large rise in crop sales, accounting for 65% of the total income increase.[1] One-third of the increase in income can be attributed to non-farm enterprise profits, primarily due to a greater number of non-farm businesses in treatment villages, rather than businesses in treatment villages having higher assets or being more profitable. This aligns with the program's design, which does not provide direct financial support for starting or growing enterprises but provides training and saving support to start new enterprises. Importantly, the increase in income has been stable since the end of the program, suggesting inputs are not being used up over time and that households are continuing to make productive investments. Consistent with the rise in income, households report increased labour supply across all household economic activities, while reducing their supply to casual labour outside the home.

Higher incomes have allowed households to accumulate assets: the value of non-land wealth is 410 USD PPP (32%) higher in treated villages, driven by an increase in household durable assets (27%), livestock (46%) and savings (15%). While the increase in livestock holding is partly explained by the transfer as part of the program, we also see large increases in the number and value of livestock that were not transferred, suggesting households are purchasing livestock. Saving group (VSLA) formation and expansion was encouraged in the intervention, and we see that a large portion of the increase in savings is held in these groups.

Higher incomes and investments in agriculture allow households to increase monthly consumption by 60 USD PPP (10%) in the treated villages. The largest increase is in food

[1]To validate self-reported measures, we had enumerators verify certain investments, practices and assets. These measures confirm the validity of the self-reports.

consumption and is driven by an increase in the value of consumption of own production, consistent with the large expansion in crop activity.[2] The households in the treatment group are also eating a more diverse diet and are less likely to be hungry. In turn, their physical health has improved, with households reporting losing fewer days of work due to ill health and children under 6 experiencing fewer illnesses. While households don't report increasing education investments (expenditures or enrollment), they do report children, especially girls, being less likely to miss school due to illness. The positive effects are not just limited to physical health with treated households also experiencing improved mental health: they are 5 percentage points less likely to be depressed, are less stressed, and are happier and generally more satisfied with their quality of life and optimistic about their future quality of life. Households in treated villages also participate more in their communities and levels of trust in others are higher.

Targeted, multi-faceted livelihood programs have been shown to be effective in both the short and long term at alleviating poverty. However, they are also extremely costly, and so require persistent benefits for many years for the benefits to exceed the cost (Bandiera et al., 2017, Banerjee et al., 2015, 2021). While cash transfers are low-cost to disburse using digital methods, the large size of the cash transfers usually given for poverty alleviation means these programs are still costly. Due to the universal approach allowing for group-level training and community mentorship, and the small value of the input transfer, the RTV program costs only USD 321 in 2023 PPP per household.[3] As a result, the increase in households' consumption exceeds the program cost in just over one year. The RTV program is therefore substantially more cost-effective than other targeted programs, including multifaceted programs and large, lump sum cash transfers (Bandiera et al., 2017, Banerjee et al., 2015, Orkin et al., 2023): the benefit-cost ratio of the RTV program of 356% after 3 years is between 5 and 15 times greater, and comparable to the 10-year benefit-cost ratio in Banerjee et al. (2021).

There are two potential concerns with a universal program of the type we are evaluating. One, a large transfer at the village level could have affected prices and caused spillovers beyond treated villages. However, market price surveys show no such effects, aligning with

[2]To check that seasonality is not driving the results we find, we conduct a phone survey 9 months after the endline survey (almost 4 years after the program started) to capture consumption during the agricultural lean season. We find even larger treatment effects on consumption in this phone survey.

[3]In theory, a universal approach will be higher cost at the village level than if the same program was targeted. However, this assumes low costs of carrying out the targeting, and that costs scale with the number of households included, rather than having large fixed components regardless of the number of participants. Given the low cost of the RTV program, it would only be more cost-effective to provide a targeted program if you wanted to target less than 20% of the village and attached zero weight to improvements in the welfare of other households. See Section 7 for a discussion of this.

the findings of Egger et al. (2022). The randomization of villages in clusters was designed to make spillovers less likely, and spatial analysis capturing the number of treated households within a distance radii of the cluster also confirms no evidence of spillovers. Second, we find no evidence that the program benefits are concentrated in better-off households, who may monopolise the program or be better able to benefit from it due to complementary resources. There is no evidence of heterogeneity in treatment effects in our main measures of household welfare by pre-specified dimensions of heterogeneity or when using a machine learning approach (Chernozhukov et al., 2018). Further, we see treatment effects throughout the distribution and statistically significant effects across quantiles for all the main outcomes. We also see no evidence that villages with certain characteristics, such as size and level of equality, were better able to benefit from the program. We view this as evidence that the universal program was effective at enabling all types of households and villages to improve their welfare.

Our study contributes to the early literature on universal anti-poverty programs (Banerjee et al., 2019, Hanna and Olken, 2018). To the best of our knowledge, the only study of a universal program is the on-going Universal Basic Income (UBI) experiment in Kenya (Banerjee et al., 2023). We provide the first experimental evidence on the effects of a universal livelihoods program.[4] There is growing interest in universal programs as targeting is not only expensive and complex, using up resources that could otherwise be provided to beneficiaries, but, when it relies on proxies, can be seen as arbitrary or unfair within communities (Alatas et al., 2012, Brown et al., 2018). There may also be psychological costs due to the stigma associated with receiving benefits (Banerjee et al., 2024). Further, targeting can be error-prone, as households frequently move in and out of poverty (Merfeld and Morduch, 2023) and targeting only the poorest may also be less effective at raising welfare than including those who could benefit most from a program (Haushofer et al., 2022). Given that individuals are embedded within networks of mutual support, targeting may be at least partially undone (Angelucci and De Giorgi, 2009) and providing a program to only a subset of the community reduces the potential for multiplier effects to enhance program impact (Egger et al., 2022). We provide evidence that the poorest households experience substantial benefits from a

[4]The United Nations Millennium Villages Project (MVP), which delivered a package of services to villages, was implemented across Sub-Saharan Africa starting in 2006. Notably, the MVP differs from the RTV program in its priorities: MVP focused on providing services and nearly 40% of the budget was allocated to health initiatives while the RTV program is primarily centered on improving livelihoods. A major limitation of the project was its lack of rigorous evaluation, as it was implemented in clusters of a large number of villages, making randomization infeasible. Masset et al. (2020) assess the program's impact in Ghana and find that it had small insignificant effects on key welfare outcomes. The RTV program also differs from Community-driven Development (CDD) programs which generally focus on public good provision (Casey, 2018)

universal program, while the slightly less poor also benefit.

By eliminating the need for complex, individualized training – one of the key barriers to scaling targeted interventions – the RTV program is a promising model for large-scale poverty reduction. This potential for the program to scale easily coupled with the significant impact at a low cost means that the RTV program stands out as a viable solution for addressing rural poverty across countries.

The rest of the paper proceeds as follows: we discuss the experimental design and intervention in Section 2, the data in Section 3 and the results in Section 4. In Section 5 we discuss general equilibrium effects and Section 6 alternative explanations. In Section 7 we discuss the cost-benefit-analysis and comparison with other anti-poverty programs. Section 8 concludes.

2 Setting and Experimental Design

The study takes place in 335 villages from 12 sub-counties in the Kagadi and Kyenjojo districts in Uganda, which are new districts that the partner NGO RTV expanded their operations into in 2020. There were no inclusion criteria for the study participants above those imposed by RTV to be a participating community: RTV meets with the local government to identify villages with limited access to markets or government services such as schools, health centres and piped water and high (>50%) poverty rates as measured in the most recent census. In the 12 study sub-counties that the study took place in, 335 out of 395 villages met the eligibility criteria for the RTV program. Every household in eligible villages is eligible to be part of the study.

2.1 Intervention: The Raising the Village Programme

The RTV program is offered to every household residing within a village selected to receive the intervention. It consists of a combination of household-specific inputs and village-level training. The precise program is tailored to each village based on the specific needs and priorities of the households in that village. Unlike other graduation programs, which are usually provided to one individual within the household, this program is provided to the household, with all adults able to attend trainings and expected to participate.

The program includes the following core components, provided during the first six months of the program implementation: agricultural inputs and training, livestock inputs and training, saving groups (VSLAs), sanitation, hygiene and health access and mindset change trainings.

1. **Agriculture inputs and training**:

   (a) All households in a village receive the same package of seeds and tools. The precise package of inputs is chosen using a combination of village climatic data[5] and consultation with the households in the village in a series of design sessions. Typically, the household inputs include 2-4kg each of bean, groundnut and maize seeds, a variety of vegetable and fruit seeds and tools such as hoes, spades and sacks. The agricultural inputs aim to increase the production of staple crops for both own consumption and sale to market, and increase the varieties of fruits and vegetables households grow to raise the nutritional diversity of household's diets.

   (b) Four one-day trainings take place: The first takes place before inputs are provided to households and focuses on planting, fertilizer and pest management; the second takes place a month later and focuses on planting methods such as line spacing; the third takes place one month before harvest and is focused on post-harvest management and storage; and the final is a refresher training scheduled at a time dependent on the needs of the community.[6] Demonstration plots are set up in the village to teach best-growing practices as part of the trainings.

   (c) An agriculture committee is formed, whose members receive an additional day of training and are responsible for ensuring adoption of taught techniques by households in the village and provide regular support and mentorship in the community.

2. **Livestock inputs and training**:

   (a) All households attend a one-day training on livestock management. This focuses on proper feeding, animal shelter, how to monitor animals for signs of illness and how to avoid overcrowding. It also covers simple ailments like caring for sick animals and births. Qualified veterinarians provide the training.

   (b) VSLAs are set up with the goal of purchasing livestock (see saving groups below).

   (c) Approximately 40% of households receive small livestock in the form of pigs. The amount of livestock received is considerably less than under other graduation programs.[7] The village can choose which groups receive livestock, though

[5] RTV utilise climatic data to assess crop suitability by village. This includes information on the altitude, soil type, temperature and rainfall in that village.

[6] The trainings include sessions on core agronomic practices such as land preparation, timing of planting, weed control, thinning, pruning, supporting and propping, soil fertility management, planting depth, plant spacing, mulching and translating, crop rotation, pest and disease management, post-harvest handling and storage, and crop diversification.

[7] In Banerjee et al. (2015), households received the equivalent of 4-8 goats. A pig has a similar value to a goat here, so the size of the livestock transfer is only 1/8-1/4.

women-headed and youth-headed households are often selected as recipients.[8] An innovative pass-on model is used to provide the pigs: The selected households form groups of 5 and one member of that group is chosen to receive an adult, female pig. The first litter of piglets is then passed on to the other four households in the group, such that all members have an adult pig within 12 months. The pass-on model combined with a smaller livestock allows the RTV program to provide livestock at a considerably lower cost compared to other graduation programs that typically provide a large adult livestock to all participants at the beginning of the program. Households selected to receive pigs are required to attend a one-day training on pig management, and set up a pigsty, before receiving the pig.

(d) A livestock committee is formed of households with experience of livestock, who receive an additional day of general livestock training. The additional training covers more advanced topics such as how to provide medication and vaccinations. The committee provides support and mentorship for the care of livestock to the other households in their village. They manage village-level livestock inputs, including medication and vaccination, which are available to all households in the community. They provide simple disease diagnosis, referral to veterinarians and administer medication and vaccinations as needed. The committee also ensures that livestock is passed on amongst the households selected to receive them.

3. **Savings groups**:
   Village Saving and Loan Associations (VSLAs) are set up. The village can set up multiple saving groups with different purposes depending on the needs of households, but they usually focus on the purchase of household assets and livestock and small business creation. Groups can both own assets themselves and give out loans to members. As part of the programme, the village is required to set up at least two VSLAs, focused on business creation, livestock purchases or asset purchases.

4. **Sanitation, hygiene and health access**:
   Shallow wells are constructed in the village to provide access to clean water to all households. A one-day training on Water, Sanitation and Hygiene (WASH) takes place. In this training, households are instructed on specific hygiene practices, such as installing hand washing stations by latrines. Committees conduct bi-weekly follow-ups to ensure these WASH measures are being implemented by all households and to

[8] Women-headed households are almost always widows. Youth-headed households have a head age of 18-30.

maintain the wells. RTV arranges for visits by health workers to the village every quarter for the first 12 months of the program. These identify minor illnesses for treatment or referral and address HIV/AIDS, COVID-19 and family planning.

5. **Mindset change**:
   Four one-day training sessions are carried out to boost aspirations, entrepreneurship, financial literacy and women's equality. The first training focuses on mindset, in particular improving self-efficacy and aspirations, goal setting, over-coming obstacles and having a growth mindset. The second training is on financial literacy, in particular setting financial goals, financial planning, budgeting, cash flow management and savings and credit resources. The third training focuses on entrepreneurship and builds on the financial literacy training, including topics such as making investments and obtaining funding for a business, marketing your business and monitoring performance. The fourth training is on gender equality and gender roles, with an emphasis on questioning those roles, understanding the impact of these roles on the household's ability to generate income and discussions around domestic violence.

All inputs and training are provided during the first 6 months of program implementation. During this initial implementation phase, program officers track the village's progress closely on a range of targets to ensure high program compliance. Program officers continue to followup and track village progress from months 7-24, after which the village is considered 'graduated'.

A key part of the RTV program is the formation of committees to provide on-going mentorship and ensure practices taught during trainings are carried out. Members of these committees receive additional training and are expected to conduct frequent check-ins and support their community members adopt taught practices. Committees are formed for agriculture, livestock and sanitation by election within the village and have quotas of 40% men, 40% women and 20% youth households. The use of committees ensures high participation and buy-in into the program within the community.

The RTV program costs only USD 320 PPP per household. The asset transfer in the form of seed and livestock inputs given to households is the largest component of the program, at USD 130.86 PPP per household (see Table A1 for the program cost breakdown). The use of the pass-on model for the livestock reduces the cost of the input transfer. Personnel costs, which include salaries of all staff carrying out training and monitoring activities, are only USD 40.91. Group trainings and the organisation of committees within the community to provide ongoing mentorship and support in core program areas negates the need for program officers to provide these elements, keeping costs low. Indirect costs are relatively

large at 138.61, and include all office staff involved in developing the program and ensuring implementation is on track against targets. Startup costs are USD 11.03 PPP and cover the village eligibility assessment and tailoring of the program to the village using needs assessments and climatic data.

2.2 Randomization

Randomization is at the cluster level. RTV classified the study villages into 114 'clusters'. Each cluster is comprised of 2-4 villages that are geographically close and share some services, such as schools, markets or water sources. We assigned the 114 clusters to either be a treatment cluster, receiving the RTV intervention or be a control cluster, receiving no intervention. Assigning close villages to treatment in clusters ensures that any spillover effects of treatment between villages will be minimised. We stratified the randomisation using median splits on the cluster mean of a household assets index (household ownership of various assets, livestock and land), a village services index (availability of various services such as health centres, markets and roads), and the district (Kagadi and Kyenjojo), to ensure balance on these important measures of wealth and economic integration. A map of the study locations and treatment assignment is shown in Figure A1.

The randomization was carried out in two phases (June or November 2020) based on the timing of the baseline survey, of 50 and 64 clusters respectively. The intervention delivery started in October 2020, and is staggered as follows according to the two phases: phase one (Kagadi in October 2020 and Kyenjojo in January 2021) and phase two (Kagadi in June 2021 and Kyenjojo in September 2021). A timeline showing the phases of the study and data collection is shown in Figure A2.

2.3 Sampling

Within each village included in the study, we worked with the village leadership to compile a complete list of all households in the village (the sampling frame for the household baseline survey). We randomly selected 24 households to be surveyed from this list, stratifying on the marital status of the household head. This process should ensure that in expectation our sample is representative of the village.

Survey respondents were approached in their households and asked to take part in the study. Enumerators were provided with a list of 24 households split by marital status. Within the list of married and unmarried households, the list was equally split into a main and reserve list. Enumerators first approached the households on the main list and replaced households with reserves of the same marital status if they could not reach all the main

households. Respondents were taken through the oral consent process, and if they agreed to take part in the study, the baseline survey was conducted. We baselined nearly 4,000 randomly selected households from 335 villages.[9]

3 Data

We use a baseline survey, midline survey and an endline survey for the analysis presented here. The baseline survey took place in June (phase 1) or November (phase 2) 2020.[10] Both study districts were included in each phase of the baseline survey. A midline survey took place with a sub-sample of married households from August to September 2022, with the female spouse of the household head. An endline household survey took place from August to October 2023 with the household head or his spouse. The midline and endline surveys were timed to take place just after one of the two main harvests of the year.[11] We also conducted a short phone survey in June 2024 covering consumption only.

Both the baseline and endline surveys covered a comprehensive list of questions designed to capture the economic and social situation of households. This included detailed questions on crop production by season, expenditures, income, wealth, labour supply, mental and physical health and community engagement. The midline survey only included a subset of questions focused on capturing household consumption, income, wealth and labour supply.

In addition to measures using traditional survey questions, the endline survey included a number of alternative measures intended to verify household reports. These included the verification of livestock, assets, housing conditions and sanitation practices by enumerators.

Simultaneously with the endline survey, a survey was conducted with the village chairperson in each village and in the nearest market. The village chairperson survey covered access to services in the village, experience of shocks and migration in the village, and verified program elements in treatment villages. The market survey captured the prices and range of goods available in the village market. Prices were collected for 79 common food and non-food items in specified quantities. If available, we collected prices for three vendors within each market.

[9] All baselined households belong to the list of 24 households per village that we provided.

[10] We originally began the baseline survey in-person in March 2020. The project was then put on hold due to the start of the Covid-19 pandemic. In June 2020, we updated the baseline survey by phone to account for the dramatic change in household situation due to the severe lockdown in Uganda (Mahmud and Riley, 2021). Households interviewed in November 2020 were surveyed in person.

[11] There are two main growing cycles in Western Uganda, with harvests taking place in January and August/September.

3.1 Sample Descriptives

We present summary statistics for our control group at endline in Table 1.[12] The average household head is 45 years of age, 21% have no schooling and 25% of the households in our sample are female-headed (i.e. headed by a widow).

The average household has a monthly consumption of 583 USD PPP. Daily per capita consumption is low, with half of all households living on less than 3 USD PPP per day. Even among the top 5% of households, per capita consumption reaches only 6 USD PPP per day. A large proportion (75%) of total monthly consumption is comprised of the value of food consumption, 64% of which comes from the value of food consumed from own production.

The average household has 1,274 USD PPP of total non-land wealth. This is comprised primarily of household assets and livestock. However, this non-land wealth varies considerably across households. Households below the 50th percentile have no livestock and no savings.

Households across the distribution earn some income from crop sales. This is because land ownership in these communities is high and everyone has engaged in farming in the last two cropping seasons. This is typical of villages in the region: in the Ugandan National Panel Survey 2019-20, 88% of the households in the lowest wealth quartile report farming in rural areas. Hence, crop sales are the primary source of income, making up around half of income on average. Income from casual labour outside the household and profits from non-farm enterprises each account for 20% of the total income for the average household.

In Table A2 we present the characteristics of sample households in the control group by levels of non-land wealth quartiles to further explore the variation in characteristics within villages. Income for households in the top non-land wealth quartile is about 4 times that of the bottom quartile. The highest quartile households are distinguishable from the other quartiles by a larger proportion of their income coming from non-farm enterprises (29%) and very little from wage labour (10%). The pattern is reversed for the two lowest quartiles where 12-15% of the income on average is from non-farm enterprises and 31-37% is from wage labour. On the other hand, there is little variation in land ownership, farming and consumption per adult equivalent.

While the household head age and household composition have little variation, there are inequalities in other demographic characteristics: 28% of those in the bottom quartile are headed by someone with no schooling, compared to 13% in the top quartile. Households in

[12]We present endline summary statistics because the baseline surveys were administered during the Covid pandemic and economic outcomes have significantly changed since then (see Mahmud and Riley (2021) for the significant immediate adverse impact on these communities as a result of the pandemic and Mahmud and Riley (2023) for the impacts over time and one year later). As a result, the statistics for the control group at the endline are more informative for describing the economic position of the households.

Table 1: Summary Statistics

			Percentiles			
	Mean	Median	5^{th}	25^{th}	75^{th}	95^{th}
HH Head Age	44.55	40.00	23.00	32.00	55.00	76.00
HH Head Has No Schooling	0.21	0.00	0.00	0.00	0.00	1.00
HH Head Female	0.25	0.00	0.00	0.00	1.00	1.00
Total Adults	2.37	2.00	1.00	2.00	3.00	5.00
Total Children	2.57	3.00	0.00	2.00	3.00	5.00
Total Consumption (USD PPP)	583.10	515.12	158.15	326.72	759.20	1,253.05
Consumption Per Capita Per Day	3.08	2.67	0.98	1.80	3.86	6.35
Food Purchased Consumption	171.32	125.56	9.77	65.14	230.28	485.31
Food Produced Consumption	287.98	244.29	27.03	130.29	395.56	721.78
Non-Land Wealth (USD PPP)	1,274.84	579.12	-120.08	209.00	1,460.72	5,149.00
Asset Value	620.10	312.74	64.22	171.00	597.36	2,720.80
Livestock Value	606.77	190.00	0.00	0.00	608.00	2,466.20
Savings	207.11	38.00	0.00	0.00	228.00	912.00
Amount of Money Lent	88.26	0.00	0.00	0.00	11.40	380.00
Outstanding Loan Amount	-246.94	-21.66	-1,311.00	-243.20	0.00	0.00
HH Owns Land	0.97	1.00	1.00	1.00	1.00	1.00
HH Has Farming Activities	0.98	1.00	1.00	1.00	1.00	1.00
HH Has Business	0.25	0.00	0.00	0.00	1.00	1.00
Total Income (USD PPP)	154.15	95.00	4.75	38.95	187.78	530.92
Crop Sales (Monthly)	76.86	46.98	0.00	16.15	108.62	254.60
Income from Animals	11.76	0.00	0.00	0.00	3.17	63.33
Profits	33.21	0.00	0.00	0.00	0.00	228.00
Total Wage	28.32	0.00	0.00	0.00	22.80	136.80
N	1,794	1,794	1,794	1,794	1,794	1,794

Notes: All statistics are reported from the endline household data from only the control villages. HH Head Has No Schooling is an indicator for the household head having no schooling. HH Head Female is an indicator for female household head. Total Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Consumption per capita per day is calculated by dividing total household consumption by household size and adjusting it to a daily measure. Food Purchased Consumption is the value of food consumed that is purchased and Food Produced Consumption is the value of food consumed from own production. Non-land wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wage, and rental income. Any land is an indicator for household ownership for any type of land. Any farming is an indicator for household having grown a crop in the last two farming seasons. Any business is an indicator for any member of the household currently owning a non-farm enterprise.

the bottom quartile are more than twice as likely to be headed by a woman i.e. by a widow, highlighting their greater vulnerability.

3.2 Balance

We test for balance across treatment and control for a range of baseline covariates and find no significant differences at the 10% level or below for these 24 measures (Table A3). We also perform an omnibus test to see whether the variables jointly predict treatment. The F-statistic from this test is an insignificant 0.61 (p value = 0.91).

3.3 Intervention Compliance

We have administrative data from RTV on household attendance at each training session. For our sample of households, attendance at RTV trainings is greater than 90% with 83% households attending all 4 types of training, and 97% attending at least three out of the four training sessions (Table A4). We also confirmed in the village chairperson survey at endline that all treatment villages received the RTV program, and that no control villages received it. Since this is a village-level program, we do not consider further the degree to which a household was treated, but consider all villages to have received the RTV program as intended.

We also used our endline survey to confirm that certain program elements were implemented in treated villages. All village elders confirm that the RTV program took place in treated villages, and none that it took place in control villages. In treated villages, 93% of village elders reported that RTV initiated health and nutrition programs, 97% that they built wells, 93% that they provided agricultural programs and 96% that they provided livestock programs.

3.4 Attrition

We have low attrition of 8% at endline which is not correlated with treatment (Table A5, column 1). All households that completed the baseline survey are considered to be part of the study sample and so attriters are all households that we could not survey at the endline. Of the 292 households we could not survey at the endline, 122 (41%) of the households were not available, 23 (8%) refused, 82 (28%) had moved away, and 65 (22%) could not be found.

We also had low attrition of 14% in our midline survey which is not correlated with treatment (Table A5, column 2). Note that the midline survey was only carried out with

married women. Of these 365 households, 219 (60%) no longer had a female married adult in the household, and so were not eligible to complete the midline survey. 45 (12%) had moved away, 23 (6%) could not be found, 72 (20%) were unavailable and 7 (2%) refused to take part in the survey.

We had extremely low attrition of only 3% in our consumption phone survey which is not correlated with treatment (Table A5, column 3). Three people did not consent to the survey and we were unable to reach the rest. We were extremely successful at reaching respondents in this phone survey as we utilised village leadership to find respondents we could not reach directly, and update any contact information that had changed. Such high rates of followup are not uncommon in phone surveys (Banerjee et al., 2020, Mahmud and Riley, 2023).

3.5 Empirical Specification

We estimate the following specification to measure the intent-to-treat effects of the RTV program:

$$Y_{ic} = \beta_0 + \beta_1 \text{Treated}_c + \delta Y_{0ic} + \alpha_s + \epsilon_{ic} \quad (1)$$

Where Y_{ic} is an outcome of interest for a household i in cluster c, Y_{0ic} is the equivalent measure in the baseline survey, $Treated_c$ is an indicator for the household being in a cluster that was randomly assigned to receive the RTV programme, α_s are stratification fixed effects and ϵ_{ic} is a random error term. Hypothesis tests use standard errors that allow for heteroskedasticity and are clustered at the cluster level.

We follow a pre-analysis plan for the specification and all outcome variable definitions. We specified that we will correct for testing multiple hypotheses across our four primary outcomes and within a family of outcomes by calculating q-values adjusted for the false discovery rate following Benjamini et al. (2006).

4 Results

The RTV program leads to large and statistically significant increases in our four primary economic outcomes of interest: households have higher monthly income, supply more labour, consume more each month and have higher total non-land wealth (Table 2). Household monthly income is USD 39 PPP higher (25%), monthly household labour supply is 3.5 days greater (8%), household monthly consumption is USD 59 PPP higher (10%) and total non-land wealth is USD 410 PPP higher (32%) in treated households compared to control. These results are robust to the exclusion of baseline controls (Table A6, panel A) and to not

winsorising (Table A6, panel B). All survive a multiple hypothesis test correction at the 5% level or lower. These effects are comparable to impacts found in other studies of multifaceted anti-poverty programs such as Banerjee et al. (2015) and Bandiera et al. (2017), which we discuss in detail in Section 7.

Since we analyse all outcomes at the household level, we check for impact on household size, fertility and on migration. We don't find any change in these outcomes as a result of the RTV program (Table A7).

Table 2: Impact on Primary Outcomes

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	39.192	3.447	409.923	58.943
	(9.040)	(1.225)	(81.702)	(14.330)
	[0.000]***	[0.006]***	[0.000]***	[0.000]***
	{0.000}***	{0.012}**	{0.000}***	{0.000}***
Control Mean	154.151	43.332	1,274.839	583.097
N	3,560	3,560	3,560	3,560

Notes: Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. p-values are in square brackets and sharpened q-values controlling for the false discovery rate across outcomes are in curly brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.1 Income

Household income is USD 39 PPP (25%) higher in treated households as compared to the monthly household income of USD 154 PPP in the control group (Table 3). Half of this rise is due to an increase in farm crop sales of USD 20 PPP (scaled to monthly). One-third of the rise in income is due to an increase in business profits and another 11% is due to an increase in income from the sale of livestock and animal products. We see no changes in wage or rental income.

The large increase in farm income of 26% as compared to the control group is driven equally by crop sales in seasons 1 and 2 and the sale of perennial crops (Table A8 shows crops

Table 3: Impact on Income

	(1) Total Income	(2) Farm Sales	(3) Livestock and Animal Product Sales	(4) Business Profits	(5) Wage Income	(6) Rental Income
Treated	39.192	20.317	4.443	12.631	1.514	0.509
	(9.040)	(4.515)	(1.501)	(4.659)	(2.856)	(0.725)
	[0.000]***	[0.000]***	[0.004]***	[0.008]***	[0.597]	[0.484]
		{0.000}***	{0.021}**	{0.030}**	{1.000}	{1.000}
Control Mean	154.151	76.862	11.765	33.208	28.322	4.057
N	3,560	3,560	3,560	3,560	3,551	3,560

Notes: Monthly Income is monthly household income comprised of Farm Sales, Livestock and Animal Product Sales, Business Profits, Wage Income and Rental Income. Farm Sales are a scaled aggregate of the sale of seasonal crops which are scaled to monthly by dividing by 6, and perennials which are asked on an annual recall. Rental Income is asked for the last year, and divided by 12 to scale to monthly. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. p-values are in square brackets and sharpened q-values controlling for the false discovery rate across outcomes are in curly brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

sales for the entire season 1 and season 2 and perennial crops over a year). The increase in crop sales is due to the expansion of farming activities and the increase in the use of various inputs by the treatment group. This is consistent with the strong emphasis in the RTV programme on agriculture, and the provision of inputs and training for expanding agricultural activity. Both the number of crops planted across the two agricultural seasons and the land area planted have increased (Table A9). Fertilizer quantity, including organic ones, nearly doubled[13] and the households are also more likely to use irrigation and improved/hybrid seeds (Table A11).

Investments in agriculture lead to an increase of nearly 20% in the value of total crop yield in both seasons (Table A12 column 6). This is driven by an increase in higher yields across multiple crops in both seasons (Table A13), which in turn drive an increase in crop sales. Maize and beans make up 80% of total crop sales and about 50-60% of the total increase in crop sales across the two seasons (Table A14). There is no evidence of significant price increases for the crops sold – maize prices, for example, show only a small rise of less than 2% (Table A14, column 7). Therefore, the growth in sales is primarily driven by the increased yields rather than higher prices.

The second largest source of the increase in household income are from non-farm enter-

[13]The RTV training included information on best practices for drying produce and having a compost pit for organic fertilizer and we find an increase in the enumerator-verified presence of these in the treatment households (Table A10).

prises, where we see a 38% increase in profits compared to a control group mean of USD 33 PPP (Table 3 column 4). Households have higher average sales, and stock levels in treatment villages (Table A16). However, household businesses don't have significantly larger asset stocks. This is not surprising given there was no cash or big asset transfer.

Households in the treatment group are five percentage points more likely to be operating a non-farm enterprise as compared to the control group rate of 25% (Table A15). The enterprises in the treatment villages are similar to those in the control group with no significant difference in profits, sales, or expenses when we analyse these outcomes at the enterprise level (Table A17, panel A). Hence, the increase in income at the household level is mainly driven by there being more enterprises in the treatment villages rather than by an average enterprise doing more business. This is true both for enterprises that existed before the intervention (at the time of the baseline) and 'new' enterprises that have opened since (Table A17, panels B and C).

There is a small increase in overall household income from the sale of livestock and animal products of USD 4.4 PPP (Table 3 column 3). This is a large 37% increase as a percentage of the control group mean of USD 11.8 PPP. Consistent with this, we see households working more on livestock activities (Table 4 column 3) and using more inputs such as feed and medicines (Table A18).

4.2 Labour Supply

In line with the increase in income, we find that households are working more on all household economic activities.[14] Total household labour supply increases by about 3.5 days, an 8% increase as compared to the control group's mean of 43 days of labour supply in a month (Table 4). This is driven by an increase in labour supplied to the household farm, livestock and businesses of 1.6 days, 1.3 days and 0.9 days a month respectively. There is a reallocation from casual labour supplied outside the household to households' economic activities, with casual labour days declining 0.8 days, in line with the finding of Bandiera et al. (2017). The training and inputs provided in the RTV program appear to have enabled them to shift away from casual labour outside the household to working on household economic activities.

4.3 Wealth

Total household non-land wealth increased by USD 410 PPP (32%) as compared to the control group's wealth of USD 1,275 PPP (Table 5). 41% of this is explained by an increase

[14]This increase is driven by household members above 16 working harder and not child labour increasing (Table A19). The labour supply of household members under 16 to casual work has decreased.

Table 4: Impact on Labour Supply

	(1) Total Labour Supply	(2) Household Farm	(3) Household Livestock	(4) Household Business	(5) Salaried	(6) Casual
Treated	3.447	1.606	1.324	0.863	0.420	-0.790
	(1.225)	(0.919)	(0.404)	(0.343)	(0.264)	(0.226)
	[0.006]***	[0.083]*	[0.001]***	[0.013]**	[0.115]	[0.001]***
		{0.237}	{0.008}***	{0.050}**	{0.262}	{0.008}***
Control Mean	43.332	27.639	6.696	4.370	1.474	3.266
N	3,560	3,560	3,560	3,457	3,560	3,560

Notes: Total Labour Supply is reported in days aggregated across all household members. Household Farm, Household Livestock, and Household Business are measures of labour supplied to different household economic activities. Labour supply is measured for the last 4 weeks except for to the household farm, for which it is measured over the two farming seasons and then scaled to 4 weeks. Salaried is labour supplied to a salaried job. Casual is casual labour supplied outside the household. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. p-values are in square brackets and sharpened q-values controlling for the false discovery rate across outcomes are in curly brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

in livestock, 26% by an increase in household assets and 15% by an increase in savings. The rest is due to an insignificant effect on loans given and loans that are outstanding. The large increase in wealth is explained by the nearly USD 40 PPP increase in household monthly income, while household expenditures increase by about USD 20 PPP[15] allowing households to accumulate assets, livestock, and savings.

The large increase in livestock holdings is partly explained by the transfer of a livestock asset by RTV to some households. However, households also see an increase in the number and value of other non-transferred livestock such as chickens and goats, suggesting they are also purchasing livestock (Table A20). The reported increase in ownerships of pigs is verified by enumerators (see Section 6.1 and Table A21).

The USD 110 PPP higher assets (Table 5 column 2) are driven by increases in both small assets such as radios but also bigger assets such as furniture, mattresses, solar panels and even vehicles (Tables A22 - A23).

There is a sizeable increase in savings of USD 61 PPP (%). Nearly all of the increase in savings is held in formal accounts such as saving groups (VSLAs) and bank accounts. As part of the RTV program, households are encouraged to set up saving groups for different purposes, such as to buy assets for a small enterprise, household assets or to purchase livestock. These groups often also give out loans to members for larger purchases. There is

[15]This is given by the difference between a USD 60 PPP increase in household consumption and a USD 40 PPP increase in household consumption from own production.

a 7 percentage point (11%) increase in the likelihood of a treated household being a member of a village saving group, on a mean of 65% in the control group, as well as an increase in the number of groups they are part of (Table A24). Crucially, these groups are of better quality – they are bigger, with on average 3 members more on a mean of 7.5 members, 10 percentage points more likely to give out loans or own assets and the required monthly contribution amount is around 30% higher (Table A25). Consequently, treated households see a 45 USD PPP (30%) increase in the value of their savings in groups, an 8 USD PPP increase in the value of assets held in groups and a doubling of income from group assets.[16]

We do not include the value of the house in non-land wealth but we measure spending on home improvements and objectively verify these. We find that treated households spend about USD 78 PPP (54%) more in the last year on home improvements. Consistent with this, we find an enumerator observed improvement in wall quality, but not in other dimensions such as the floor and roof materials (Table A26).

Table 5: Impact on Non-Land Wealth

	(1) Total Non-Land Wealth	(2) Assets	(3) Livestock Value	(4) Savings	(5) Loans Given	(6) Loans Outstanding
Treated	409.923	109.342	188.747	61.464	13.470	31.559
	(81.702)	(31.198)	(47.398)	(19.420)	(12.292)	(19.111)
	[0.000]***	[0.001]***	[0.000]***	[0.002]***	[0.275]	[0.101]
		{0.004}***	{0.001}***	{0.008}***	{0.629}	{0.290}
Control Mean	1,274.839	620.103	606.773	207.113	88.261	-246.944
N	3,560	3,560	3,560	3,543	3,558	3,558

Notes: Total Non-Land Wealth is an aggregate Assets (the value of all assets owned by the household), Livestock Value (the value of all livestock owned), Savings (total household savings in all forms), Loans Given (the value of all household loans given) and Loans Outstanding (the value of all household loans outstanding). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. p-values are in square brackets and sharpened q-values controlling for the false discovery rate across outcomes are in curly brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

[16]Note that we follow our pre-analysis plan variable definitions and do not include the value of assets held with groups in total household assets value and consequently in non-land wealth. We also do not include income from renting out these assets in our total income measure, again following our pre-analysis plan. This expansion of saving groups can explain the large increases in savings, assets and livestock in the treated households.

4.4 Consumption

Household monthly consumption is higher by 59 USD PPP (10%) as compared to the control group (Table 6).[17] The largest increase of 45 USD PPP is in food consumption, which is almost entirely driven by an increase in the value of consumption of own production, consistent with the increase in crop production discussed above (Table A28). Households in the treatment group are eating a more diverse diet as a result, consuming on average 0.29 additional food groups out of seven each week (Table A29).[18] In line with the increased consumption and more diverse diet, treated households report being less hungry: the likelihood of there being no food to eat of any kind in the house because of a lack of resources to get food in the last 30 days is lower by 10 percentage points as compared to the control group mean of 31% (Table A30). In addition, for both adults and children, the likelihood and frequency of going to sleep at night hungry because there was not enough food in the house decreases.

Beyond the increased consumption from own production, we also see increased spending on non-food items: There is an increase in spending on durable goods amongst treated households of 3.6 USD PPP (50%), consistent with the increase in value of household assets that we find, and in non-food non-durable goods of 6.4 USD PPP (8%).

However, treated households do not report a significant increase in education expenditures. We also analyse education expenditures and enrollment at the child level and find no effects (Table A31, panel A). We also find no significant differences in education expenditures by gender or by age (Table A31, panels B and C). This is consistent with other anti-poverty programs such as the graduation program which also finds no increase in education spending with growth in income as a result of these programs (Banerjee et al., 2015), and suggests programs must explicitly target education to have effects.

4.5 Well-Being and Social Effects

The RTV program led to large improvements in the physical and mental health of households in treatment villages (Table 7). An index of physical health capturing the degree to which the household head can perform physical activities and work increases by 0.12 standard deviations (see Table A32 for components). We see a reduction in the probability that children below age 6 in treated households experience any of four common symptoms of illness, and school-aged children, particularly girls, are less likely to miss school due to

[17] To allow for comparison across studies, we also report consumption per adult equivalent and per capita without education (Table A27).

[18] RTV encouraged households to set up a vegetable garden to have a more nutritious diet. We find an increase in an enumerator observed measure of having a vegetable garden in Table A10 column (3).

Table 6: Impact on Consumption

	(1) Total Consumption	(2) Food	(3) Durables	(4) Non-Food Non-Durables	(5) Education Expenditure
Treated	58.943	45.333	3.604	6.422	2.474
	(14.330)	(12.652)	(1.093)	(1.924)	(2.471)
	[0.000]***	[0.001]***	[0.001]***	[0.001]***	[0.319]
		{0.004}***	{0.004}***	{0.004}***	{0.664}
Control Mean	583.097	460.223	6.413	79.231	42.407
N	3,560	3,560	3,560	3,560	3,119

Notes: Total Consumption is monthly household consumption comprised of consumption of Food, Durables, Non-Food Non-Durables and Education Expenditure. Food is the total food consumed in the last 7 days within and outside the household, whether purchased or produced. Durables are total spending on purchasing durable goods in the last month. Non-Food Non-Durable is the sum of spending on personal goods, house maintenance, utilities, transport, recreation, gifts and health, all scaled to the last month. Education Expenditure is the total spending the last complete academic year. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. p-values are in square brackets and sharpened q-values controlling for the false discovery rate across outcomes are in curly brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

illness in treated households (Tables A33 and Table A31 column 3). These improvements in health are considerably larger than those seen in other graduation programs (Banerjee et al., 2015), likely due to the increased focus on health and particularly hygiene in this program. We find enumerator-verified evidence that households continue to use some of the hygiene practices taught as part of the RTV program (Table A34): they are more likely to have a two-tiered disk rack, a handwashing set-up outside the toilet, and a hangline to dry clothes.

An index of mental health capturing the PHQ-9 validated measure of depression, stress and life satisfaction for the household head increases 0.21 standard deviations for treated households. All components of the mental health measure improve substantially, with treated households 5 percentage points less likely to be depressed, less stressed, happier and generally more satisfied with their quality of life and optimistic about their future quality of life (Table A35). Their view of the future is also more optimistic: treated households have substantially higher expected and desired income in 10 years as compared to the control group, though their self-efficacy is unchanged (Tables A36 and A37).

Households in treated villages also have higher levels of community empowerment. We see an increase of 0.09 standard deviations in an index of community engagement in treatment villages, driven by increases in expressing your voice, trust and the holding of leadership roles (Table A38). There is an increase in an index of voice in the community in treatment villages

Table 7: Impact on Well-Being and Community Empowerment

	(1)	(2)	(3)
	Physical Health Index	Mental Health Index	Community Empowerment Index
Treated	0.122	0.207	0.090
	(0.039)	(0.040)	(0.035)
	[0.002]***	[0.000]***	[0.012]**
Control Mean	0.000	0.000	-0.000
N	3,560	3,560	3,560

Notes: Physical Health Index is an index of reverse-coded measures for difficulty in completing daily activities including bathing, lifting and walking, an indicator for the respondent being unable to work due to sickness in the last 30 days, and the number of days of work missed by the respondent. Mental Health Index is an index of an indicator for the respondent not being depressed (score on PHQ-9 scale being less than 5), sum of the responses to 4 questions on the not stressed scale, and a happiness and satisfcation index consisting of satisfaction with quality of life, level of happiness, improvement in quality of life in the last 12 months and the expectations for improvements in the next 12 months. Community Empowerment Index is an index of voice in the community, an index of indicator variables capturing feeling comfortable speaking up in public about infrastructure and disputes and approaching the village elder and the number of village meetings attended and participated; trust, an index of categorical variables about whether people in the village can be trusted and relied on, and out of 10 women how many they could borrow from or go to for advice; and leadership, an indicator of if the household head has any leadership position in the village. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

of 0.09 standard deviations, capturing whether people speak at and attend village meetings (Table A39). An index of trust in the community increases by 0.11 standard deviations, driven by an increase in perceptions that others in the community would help in times of need, let you borrow from them and provide advice (Table A40). These improvements in community empowerment are corroborated by reports from the village elder survey (Table A41). Overall, these findings suggest that households in treated villages are more engaged in their community, taking a more active part in meetings, taking on leadership roles and are more helpful and trusting of each other.

4.6 Distributional Effects

The universal nature of the intervention raises concerns about the program getting captured by the wealthier subgroups in the village, potentially limiting access for more vulnerable households, such as female-headed households.[19] The wealthier households may also be better placed to take advantage of the inputs provided by the program because they possess complementary inputs, skills, capital and networks. However, we find no evidence to support these concerns. Treatment effects do not significantly differ for poorer households i.e. those with below median consumption, wealth, or income at baseline or for female-headed households (Figure A3).[20] This may be because the RTV program encouraged the expansion of agriculture, which nearly all households, even within the poorest quartile, engage in and hence could benefit from.

We do three further pieces of analysis to explore who benefits most from the RTV program. First, we estimate quantile treatment effects for our primary outcomes of interest and find no evidence of capture by the top end of the distribution (Figures A4, A5, A6 and A7). The treatment effects are significant for all quantiles, and, while larger in absolute terms for higher quantiles, are proportionally greater for the lower quantiles (Tables A42, A43, A44 and A45).[21] Second, we confirm that there are treatment effects throughout the distribution using distribution plots and the Kolmogorov–Smirnov test (Figures A8, A9, A10 and A11). These analyses make us confident that despite not being targeted, the poorest households

[19]Since we stratified on the marital status of the households, we have a large enough sample of female-headed households (who are almost all widows) to look at the heterogeneous treatment impacts by gender of the household head.

[20]We also find no heterogeneity by other pre-specified dimensions including marital status, age and education of the household head or psychological characteristics such as mental health, aspirations, self-efficacy, time or risk preferences.

[21]For example, while the treatment effect for consumption is USD 33 PPP for the 10th quantile and USD 113 PPP for the 90th quantile, these represent 16% and 11% of the control group mean respectively. Likewise for wealth the treatment effects are USD 83 PPP for the 10th quantile and USD 954 PPP for the 90th, but these are 198% and 29% of the control group mean respectively.

benefitted from the program.

Third, we implement the method outlined by Chernozhukov et al. (2018) to estimate heterogeneous treatment effects for the most and least impacted households using a set of baseline covariates. The method uses machine learning techniques to generate proxies of conditional average treatment effects for all households, with appropriate methods to conduct inference using quantile aggregation. In Table A46, we present the group average treatment effects (GATES) for households above and below the median, where we implement random forest algorithms over 1,000 splits. We find no evidence of treatment effect heterogeneity in all four primary outcomes of interest. Our results are robust to using other machine learning techniques such as elastic net regularisation, as well as when dividing the sample into a larger number of groups such as comparing households in the top and bottom quintiles.

We do not find any compelling evidence that treatment effects are different across households with different characteristics. However, since RTV program is universal, villages with particular characteristics may benefit more or less from the program. Therefore, we prespecified checking for heterogeneity in treatment effects by the number of households, proportion of households with an enterprise, and standard deviation of consumption and wealth at the community level. We find no evidence that villages with particular characteristics benefit more or less from the program (Figure A12). This is promising evidence for scaling this program as it suggests that it can work equally well in villages with different characteristics.

5 General Equilibrium Effects

The RTV program involves a large transfer of inputs at the village level, which may affect prices and impact households outside of the treated villages. To test for this, we examine whether there are changes in prices in treated markets compared to control markets and whether there are any effects on control villages based on their proximity to treated villages. We find no evidence for effects of the RTV program on prices and no evidence of spillovers.

5.1 Prices

We do not find evidence that the RTV program had any effect on prices, consistent with other studies of cash transfer programs (Egger et al., 2022), and of in-kind transfers (Gadenne et al., 2021). This is likely because the RTV program led to a large increase in crop production, and food is the main purchase of households, resulting in expansions of both supply and demand, and so no changes in prices.

To test for changes in prices as a result of the RTV program, we collected data on the prices of common goods and services at trading centers located within the treatment and control clusters.[22] We construct a price index by cluster by weighting the average price of each good in that cluster by its share of consumption. We did not ask about the specific good and quantity that we collected a price on in our consumption module at baseline, and so we obtain consumption shares for each good from two sources: 1) the Ugandan National Panel Survey 2018 and 2) the data replication package of Egger et al. (2022), which included a file containing expenditure weights from their consumption survey . We use both approaches since neither dataset includes all of the goods which we collected prices for. We construct price indices in this manner for both food and non-food items.[23]

Results for the effect of treatment on the average prices of food and non-food items at the cluster level weighted using the two approaches described above are shown in Table A47. We see no significant effect of treatment on the price index constructed using either weighting procedure. In most cases, the coefficient on treated is negative, suggesting, if anything, that prices are lower in treated clusters than control for both food and non-food items. This finding is consistent with that of Egger et al. (2022), who did not find effects on prices from a large cash transfer distribution in Kenya. In our case, this is likely because of the large expansion in the supply of food production alongside the increase in demand.

We also test for changes in the number of vendors and types of goods available in markets in treated clusters in Tables A48 and A49. We see no changes in the number of markets or vendors, opening times or availability of different categories of goods in treated compared to control clusters.

5.2 Spillovers

Prior programs of cash transfers have found evidence of large spillover effects, both within and across villages Haushofer and Shapiro (2016). The design of the RTV program differs in key ways from cash transfer programs that makes spillovers less likely. First, this is a village level program, shutting down spillovers within the village. Second, the RTV program was clustered at the level of 2-4 close villages that shared services and infrastructure, such as markets, minimising the potential for spillovers across clusters. Third, the fact that this is an in-kind transfer rather than a cash transfer reduces the likelihood of spillovers, with Bandiera et al. (2017) finding no within-village spillovers from a graduation program. Consistent with

[22]Trading centers are small markets located in a village. Villages frequently share trading centers, and this was one of the criteria used to construct the clusters.

[23]The RTV program provided agricultural inputs with the aim of expanding food production in the treated communities. Hence prices for food may behave differently to prices for non-food items.

this, we find no evidence of spillovers from the RTV program.

We test for potential spillovers using distance radii around a cluster and augment equation 1 with the number of treated households within that radius alone and interacted with the treatment indicator, controlling for the total number of households within the radius. . We pre-specified that we would examine a radius of 5km. Standard errors are calculated following Conley (2008) using a uniform kernel out to 10 km.

Results are shown in Table A50 for the four primary outcomes. We see little evidence of spillover effects. The number of treated households nearby is marginally statistically significant and negative for wealth, though only a third of the magnitude of the coefficient on the total number of households nearby. This suggests that for households in control clusters, wealth is increasing in the total number of households but decreasing in the total number of treated households. We also see that total labour supply is increasing in the total number of households nearby. The interaction of treated with the number of treated households nearby is small and insignificant in all cases. The magnitude of the coefficient on Treated is similar to that in our main specification. This finding is consistent with the level of randomisation at the cluster level minimising spillover effects across clusters, in contrast to village randomised programs.

6 Alternative Explanations

We explore alternative explanations for the large positive effects of the RTV program that we find: Experimenter demand effects, seasonality, and temporal dynamics. We present evidence that none of these can explain the effects that we observe.

6.1 Validating Self-Reported Outcomes

Economic studies such as this one generally cannot blind subjects, or enumerators, to treatment status. They are therefore vulnerable to experimenter demand effects (de Quidt et al., 2018). For an anti-poverty program, these could conceivably go in either directly, with subjects reporting improvements in welfare as they want to show the program was helpful, or under-reporting their welfare in a bid to receive additional support.

We captured multiple measures in our endline survey to validate self-reported responses. We had enumerator verification of certain assets, investments or practices. We also included a measure of social desirability in our endline survey to examine heterogeneous treatment effects by this measure (Dizon-Ross and Jayachandran, 2023). These measures confirm the

validity of the self-reported responses.

We verify that certain agricultural practices that households were trained on were carried out. We see that households have constructed compost pits, carryout storage practices after harvest and have planted gardens (Table A10). We had enumerators verify the household ownership of a pig and the existence of a pig shelter (Table A21).[24] These observations confirm the presence of pigs in treated households.[25] We had enumerators verify a variety of health practices that households were encouraged to implement during the WASH training, observing high continued adherence even 3 years later (Table A34).

Following Dizon-Ross and Jayachandran (2023), we included a validated measure of social desirability bias in the endline survey. Since we did not have this at baseline, we first confirm that there are no treatment effects on this measure (Table A51). We then examine heterogeneous treatment effects by social desirability (Table A52). We find no evidence that individuals with a higher bias to report socially desirable outcomes have differential treatment effects, with coefficients small and generally negative.

6.2 Seasonality

The RTV program had a strong focus on agriculture and we did our midline and endline surveys just after the harvest. This could overstate program benefits, particularly if there is strong seasonality in treatment effects. To test for this, we conducted a phone survey to capture consumption and hunger during the lean season in June 2024, 9 months after the endline survey.[26] The phone survey also provides further insight into whether treatment effects are increasing or decreasing (see discussion in Section 6.3). An additional advantage of the phone survey is that we could feasibly blind enumerators to treatment status, ruling out any bias from their side.[27]

We find that the treatment effects from the phone survey are larger than those seen in the endline survey (Table A53). Consumption is 154 USD PPP higher amongst treated households compared to control, 39% higher than the control group mean of 397 USD PPP. Every dimension of consumption is higher in the treated group, though the majority of the

[24] Livestock other than pigs are hard to verify since they are often out in the fields for grazing.

[25] We wanted the enumerator to also verify the quantity of a subset of the assets but this was not successful. The mean values in the control groups are considerably lower than self-reported ownership of these assets and enumerators reported substantial difficulties verifying these assets across control and treated households.

[26] We used exactly the same questionnaire for the lean season phone survey as for the endline survey, but only asked the consumption and hunger modules. The survey took 19 minutes on average (median 18 minutes).

[27] We also conducted audio audits of 5% of all the phone surveys and had these transcribed by an independent enumerator unknown to the survey team. These confirmed no mention of RTV or the program in any way, and provided a useful quality check on the phone survey data.

increased value of consumption is coming from food consumption (113 USD PPP (36%) higher in treated households). We also confirm that in the control group, every measure of consumption is lower in the lean season survey than immediately after harvest, with total consumption 397 USD PPP compared to 583 in the post harvest period, or 68%. This suggests that the RTV program in fact provided more benefit to households during the lean season, when households were otherwise hungry due to low food production and little funds for food.

The increase in food consumption is driven by both own food production and higher expenditure on food, in contrast to our findings post-harvest which showed only an effect of treatment on own production (Table A54). This suggests that higher incomes enable households to purchase more food during the lean season, when their own production is lower (the value of own production has halved in the control group compared to our endline survey). We also see that diet diversity is 0.5 points higher out of 7 in treated households, a slightly larger treatment effect than that seen in the endline survey, on a slightly lower control group mean. Hunger in the last month is substantially lower amongst treated households, from a higher mean in the control group (Table A55). The incidence of any hunger (44%) and extreme hunger in the form of sleeping without food for adults (38%) and children (25%) are substantially higher in the control group during the lean season than during the post-harvest season (when they were 31%, 16% and 11% respectively). In the treatment group, any incidence of hunger is 35 percentage points lower, sleeping without food for adults is 32 percentage points lower and for children 21 percentage points lower, suggesting the RTV program reduced hunger substantially at this vulnerable time of year.

Overall, the lean-season phone survey suggests that if anything the treatment effects were *underestimated* by doing the endline survey immediately post harvest, when the control group was also relatively better off. It also provides evidence that households may have further benefited from the program through being able to better smooth their consumption. It further suggests that treatment effects are not diminishing over time. While the quality of phone surveys has been questioned (Abate et al., 2023, Anderson et al., 2024), the short duration of the survey, high followup rate and the additional quality checks we could conduct using audio audits make us confident in the validity of this data.

6.3 Temporal Dynamics of the Treatment Effects

We find a strong positive impact of the RTV program on household economic outcomes around 3 years after the start of the program. How do these impacts evolve with time? In this section, we present two pieces of evidence on this, using data from a midline survey

with a subsample and leveraging the staggered program rollout. Both pieces of evidence support the idea that treatment effects have not diminished since the end of the program implementation and are likely to persist.

First, we utilise a midline survey to examine how treatment effects changed between program end and one-year later. We conducted a midline survey in late 2022, around the time the RTV program ended, with the primary female in 2,259 households. The sample for this midline survey was all monogamously married households from the study baseline.[28] We asked the same questions at both the midline and endline regarding the primary outcomes, enabling us to construct consistent measures. The results on primary outcomes suggest that the program's impact on consumption grew substantially during the year between the program's conclusion and the endline survey (Table A56). The impact on income and non-land wealth is also positive but much smaller and not statistically significant. This suggests that the households are building on the initial inputs provided by RTV and have not used up or consumed these inputs, such that the positive impacts we find are likely to persist.

Second, we utilise the staggered rollout of the program implementation in two phases approximately 6 months apart.[29] To analyze whether the effects differ across clusters in the early and late phases, we interact the treatment indicator with an indicator variable for the second phase of roll-out of the intervention. We find that the effects of the program are significantly larger in villages treated in the earlier phase (phase 1) compared to those treated in the later phase (phase 2) for household wealth, monthly income and labour supply (Table A57). This provides evidence that not only are impacts not diminishing, they may indeed be growing.

7 Cost-Effectiveness and Benefit Comparison

We use the estimated program impacts to gauge the magnitude of the benefits to recipient households relative to the program costs in the RTV program. We find that by 3 years, the benefit cost ratio of the program is 356%. We also compare the benefit-cost ratio of the RTV program to other anti-poverty programs, including large lump-sum cash transfers distributed by GiveDirectly and the Targeting the Ultra Poor multifaceted programs developed by BRAC. Relative to these, the RTV program has a benefit cost ratio 5-15 times higher after 3 years. The RTV program is therefore an extremely cost-effective approach to alleviating rural poverty.

[28] The original household randomisation was stratified by marital status, so it is internally valid to look at a subsample of married households.

[29] The randomisation was done in two batches corresponding to these two phases of implementation, making this analysis internally valid.

We follow the standard practice and use changes in household consumption as the core measure of program benefits. This includes yearly changes in consumption expenditure and a one-time change in household assets as measured in year 3.[30] This assumes that any increases in financial and productive assets fully materialise in consumption changes. If they do not, we will underestimate program benefits.[31]

Program cost data came directly from our implementing partner, RTV, and include comprehensive cluster-level figures on the value of inputs, personnel salary costs, travel costs, government contributions and indirect costs for both local and international staff and office costs (Table A1). We convert the cluster-level program cost into a per-household cost by dividing by the number of households in a cluster for comparability with other programs.

Table 8 reports our estimates of the RTV program costs and benefits (column (1)). All benefits are reported on an annual basis, costs are inflated to year 3 and both reported on a per household basis.[32] The total benefits of the RTV program are USD 1,321 in 2023 PPP. The total costs are only USD 321 PPP. The program, therefore, has a benefit cost ratio of over 350%, making this an extremely cost-effective program that pays for itself in one-year.

We compare the benefit-cost ratio of the RTV program against other multifaceted anti-poverty and cash transfer programs in (columns (1)-(4)). For the comparison to other multi-faceted anti-poverty programs, we draw on Banerjee et al. (2015) and Bandiera et al. (2017), who study the Targeting the Ultra Poor program originally developed by BRAC. For the cash transfer, we draw on Orkin et al. (2023), who studied a lump sum cash transfer provided by GiveDirectly in Kenya.[33] We report both the benefits and costs in the year they were reported for in the paper, preventing direct comparisons of these across studies.[34]

In column (2) we report the average of the 6 sites studied in Banerjee et al. (2015). In column (3), we report the costs and benefits found at the India site, which was the lowest cost site in (Banerjee et al., 2015). In column (4), we report the costs and benefits from Bandiera et al. (2017).[35] We see that after 3 years, the benefit-to-cost ratio of the TUP

[30]Since we did not measure consumption at the end of year one, we use the year two consumption treatment effect as an estimate for year one, as done in Banerjee et al. (2015).

[31]This analysis also does not account for utility gains from smoother consumption across the year and does not account for other benefits of the program that might enter an individual's utility function through avenues other than consumption, such as improved mental health and social benefits.

[32]Rows (b) and (c) are taken from Table A59 column (1) and multiplied by 12 to annualise them. Row (e) is taken from Table A60 column (1) and multiplied by 12 to annualize it. Row (d) is taken from Table A61 column (1).

[33]The GiveDirectly cash transfer analysed in Orkin et al. (2023) is the same as that examined in Egger et al. (2022) in a different region of Kenya. Orkin et al. (2023) is the only study of the GiveDirectly cash transfer program that included cost-benefit analysis.

[34]See Table A58 for a detailed comparison of program costs for the multifaceted programs in 2014 USD PPP.

[35]We deflate costs to year 3 rather than year 4, and show benefits up to year 3, so that they are comparable

program on average, in India and in Bangladesh is between 23% and 65%.[36] In column (5), we report the costs and benefits of the cash transfer.[37] The benefit-cost ratio of the cash transfer is 65%.

The benefit-to-cost ratio of the RTV program is 5-15 times as large as those seen in other anti-poverty programs. The main reason for this is the lower cost of the RTV program, while the benefits are similar in magnitude to those seen in other programs. However, given this is a village-level program it is important to note that the total cost of providing the program to a village will be more under the RTV program than under a targeted program as long as the proportion targeted is less than 20%. Therefore, the RTV program will only be more cost-effective at a village level in locations where one would have wanted to have targeted at least one-fifth of the village with the program.[38]

The cost-benefit analysis focuses on benefits only in the form of consumption. However, anti-poverty programs have been shown to affect a wide variety of outcomes beyond consumption, and improvements in these areas may also enter an individual's utility function. Here we compare the effects of the RTV program on a range of summary outcomes commonly examined in the literature to the effects seen in Banerjee et al. (2015) (Figure A13). All outcomes are measured in standard deviation terms, allowing a comparison across programs in different countries and time points.[39] This provides a more comprehensive picture of the

with Banerjee et al. (2015) and our estimates.

[36]For this analysis, we consider only costs and benefits after 3 years. This contrasts with both Banerjee et al. (2015) and Bandiera et al. (2017) who make various assumptions about the persistence of the program benefits beyond 3 years. This is because strong assumptions are needed regarding persistence to generate positive benefit-cost ratios in these programs. In Banerjee et al. (2021), the authors found the 10 year benefit-cost ratio of the India site to be 379%. Thus the benefit-cost ratio of the RTV program at 3 years is almost equal to the benefit-cost ratio of the TUP program at 10 years.

[37]The cost-benefit analysis reported in Orkin et al. (2023) was carried out after 17 months. We make assumptions about the persistence of the benefits in that study in order to allow a comparison with the 3 year point reported in this and the other studies shown in Table 8. These assumptions mean that the benefits are an upper bound of those expected to persist to 3 years.

[38]In our endline we see that 35% of the village is classed as ultra poor using the World Banks $2.15 a day threshold. Note, however, that most targeting criteria for anti-poverty programs use proxy means tests that can be administered in short censuses to determine eligibility. In Orkin et al. (2023) 43% of households met the targeting criteria, of whom 89% would be classified as poor according to the World Bank poverty line. In Bandiera et al. (2017) only 6% of households were eligible for the program, of whom 53% were classified as poor according to the World Bank threshold. However, 49% of the 22% of the village classified as "near-poor" would also be classified as poor according to the World Bank threshold. In Banerjee et al. (2015), households were selected for the program using a Participatory Wealth Ranking. Of the households selected, 48% would be classified as poor according to the World Bank poverty threshold.

[39]For this analysis, we construct outcomes as closely aligned with Banerjee et al. (2015) as possible. Detailed notes on any differences in the construction of an outcome between our studies are reported in the table notes. Consumption, assets, net finance and income are constructed in an identical manner to Banerjee et al. (2015). Labour supply is measures on a different time frame across the two studies. Food security, health, mental health and community empowerment are indices composed of different questions across the two studies.

Table 8: Cost-benefit analysis comparison

	(1) RTV	(2)	(3) TUP	(4)	(5) Cash
Country	Uganda	Average	India	Bangladesh	Kenya
Cost-benefit Year	2023	2014	2014	2007	2018
Total cost (as if incurred yr 0)	321	3,717	1,257	1,121	2,149
(a) Inflated total cost yr3	372	4,303	1,455	1,298	2,388
(b) Y1 annual nondurable consumption ITT	281	351	344	61	564
(c) Y2 annual nondurable consumption ITT	281	351	344	106	363
(d) Y3 household asset ITT	105	18	6	40	406
(e) Y3 annual nondurable consumption ITT	656	251	251	237	202
(f) Total benefit (b)+(c)+(d)+(e)	1,321	971	945	444	1,553
Benefit-cost ratio (f)/(a)	356%	23%	65%	34%	65%

Notes: Cost-benefit year gives the USD PPP year for costs and benefits reported in that paper. Costs deflated at 5% annual rate to year 3 for all programs. All numbers shown are annual on a per household basis. All costs and benefits shown on a per household basis. TUP simple average and TUP India taken from Banerjee et al., 2015 of 6 RCTs examining the TUP program at 3 years, prices in 2014 USD PPP. TUP India is the country with the highest benefit-cost ratio. Banerjee et al., 2015 and Mahmud and Riley 2024 did not carry out surveys at the end of Y1, so the Y2 surveys are used. TUP Bangladesh taken from Bandiera et al., 2017 examining the TUP program at 7 years, prices are in 2007 USD PPP, assets is from Y4. Cash Kenya is taken from the cash transfer arm of Orkin et al. (2023). They present benefit-cost analysis at their endline after 17 months in Table C.1. To enable a comparison with the benefit-cost ratios in the other studies, the consumption benefits they report for non-durable consumption and education expenditures have been annualised and assumed to persist for 3 years. The expenditure on land and housing has not been assumed to persist and is included only in years 1 and 2, scaled to 12 months and 5 months, respectively. The assets accumulated after 17 months are assumed to persist to 3 years. These are generous assumptions and represent an upper bound on the total three year benefits.

range of benefits of each program, on a comparable scale and at the same time point compared to program start. We can see that the effect size of the RTV program is very similar to that of the TUP program across nearly all the outcomes. The main exceptions are food security and mental health, where we see a significantly larger positive effect of the RTV program. Overall, the RTV program offers comparable benefits across outcomes to those seen under the TUP graduation program.

8 Conclusion

We examine a unique universal livelihoods program provided to every household residing in the village. In the program, households receive agricultural and small livestock inputs,

training and mentorship, healthcare and saving support. Using an RCT with nearly 4,000 households in 335 villages randomly assigned to receive the program or not, we see that the program leads to large improvements in household welfare 3 years after its start. Household incomes are 25% and non-land wealth is 32% higher in the treatment group. The increase in household incomes is driven by higher crop sales due to higher yields. The higher crop yields have enabled household consumption from their own production, and hence overall consumption, to increase. We also see evidence of an improvement in overall well-being, with physical and mental health in treated villages significantly better.

Importantly given the universal nature of the program, we find no evidence of the program being captured by the more well-off households or the more vulnerable households such as female-headed households being able to benefit from the program. Households of all types, from across the distribution, and from different types of villages all benefit from the program. This suggests that the program will also work when scaled to other locations.

While the economic and well-being gains are comparable to those seen in other targeted multifaceted programs at a similar time after the start of the program, the cost of the program we consider is dramatically lower, at only USD 321 PPP. As a result, the program has a benefit-cost ratio 5-15 times larger than these comparable programs (Bandiera et al., 2017, Banerjee et al., 2015). Benefits exceed program cost in just over one year, making this program a cost-effecitve approach to alleviating rural poverty.

This program is tailored at the village rather than individual level, provides training in groups and utilises within village mentorship through committees. As a result, it is in principle considerably simpler to scale than comparable programs, which require highly skilled staff to administer individualised training and mentorship. Future work should explore how the program scales to other settings as well as attempt to quantify the general equilibrium effects from a universal program when expanded.

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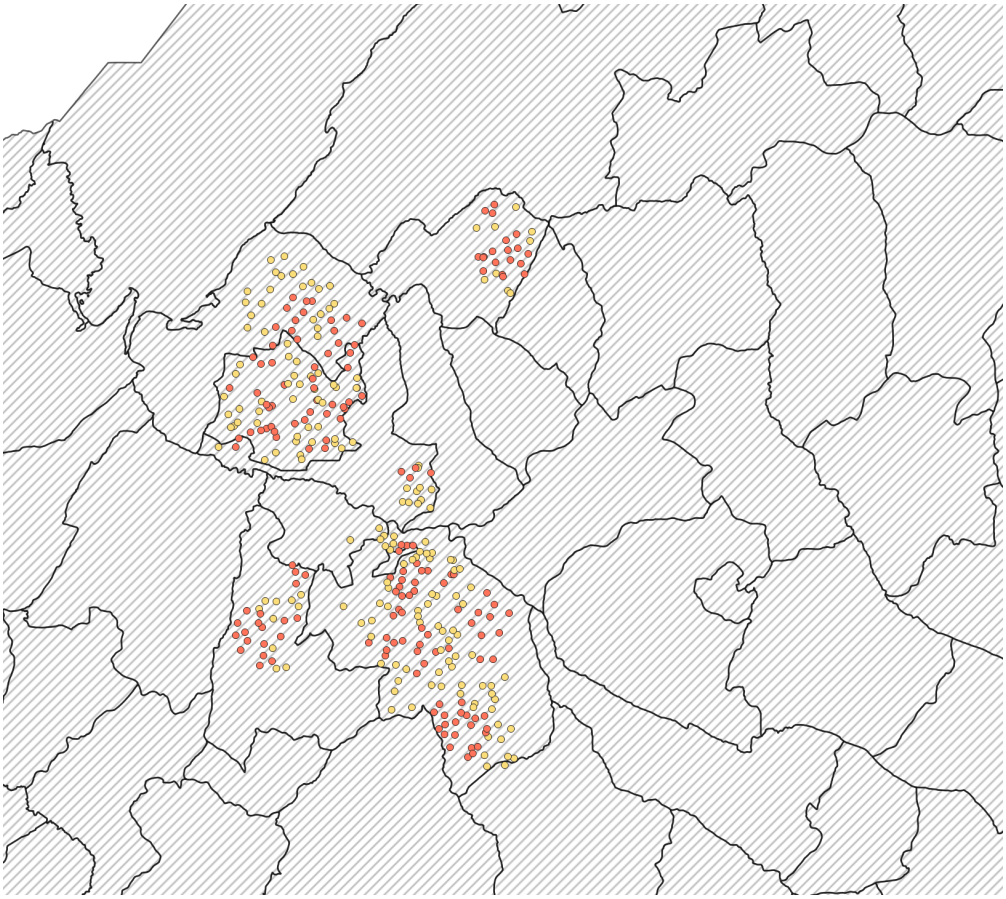
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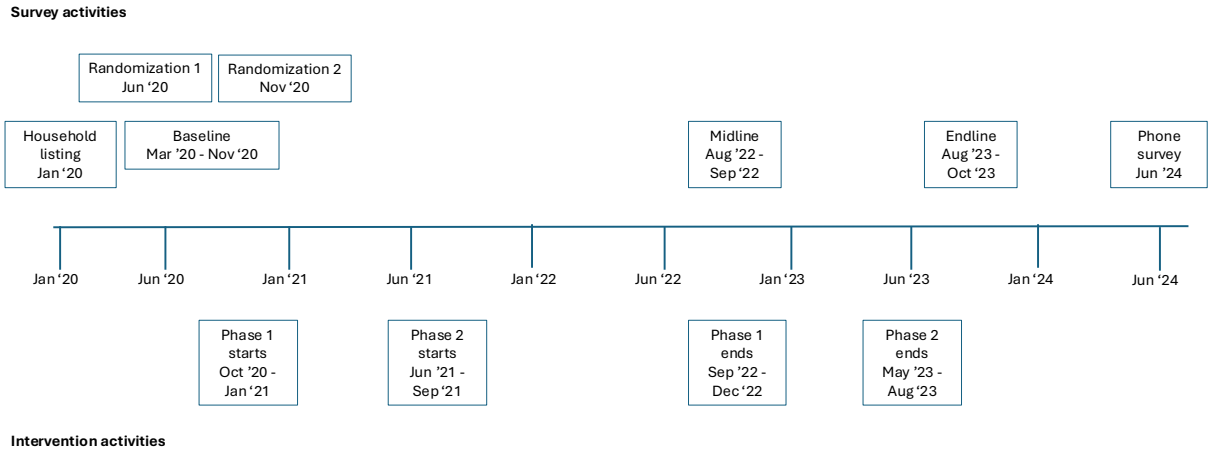
Online Appendix

Figure A1: Map of Study Villages



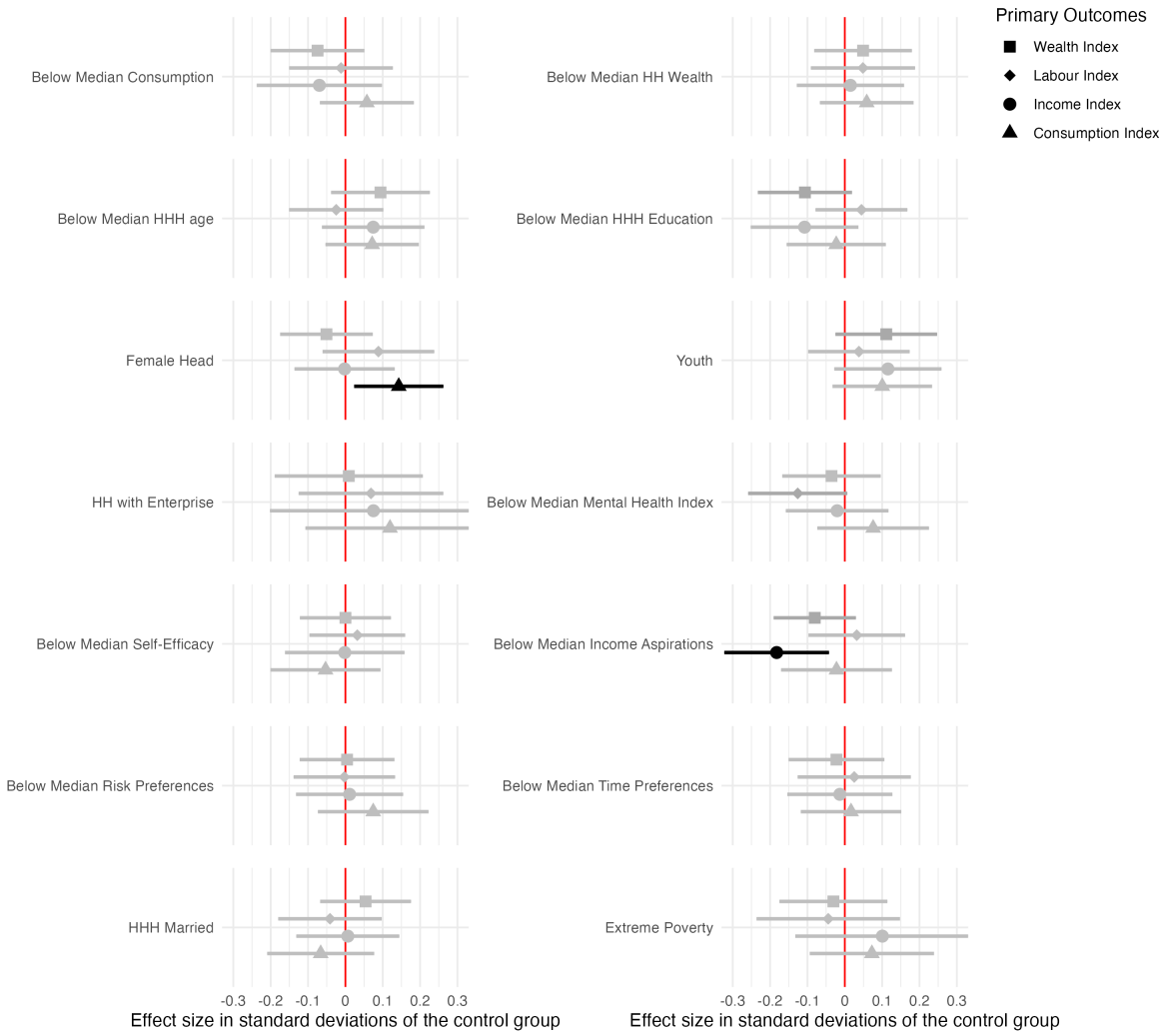
Notes: This figure displays of map the study villages, with treatment villages in red and control villages in yellow.

Figure A2: Experiment Timeline



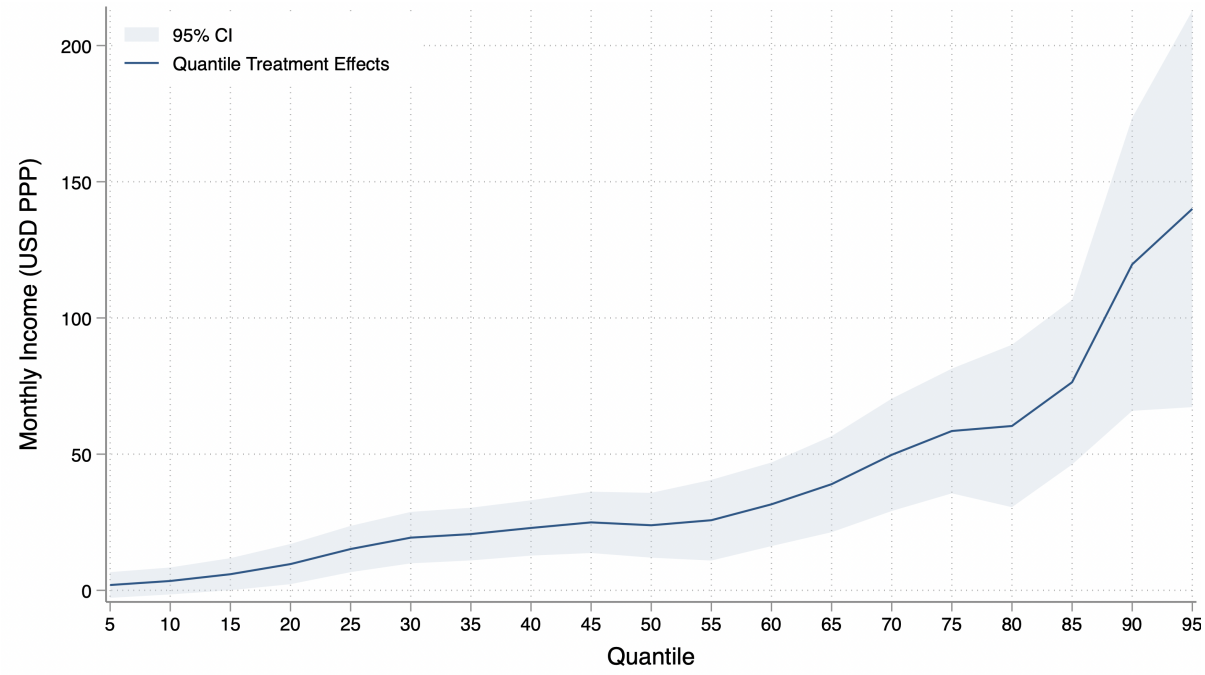
Notes: This figure displays a visual representation of the experimental timeline, beginning in January 2020 and ending in June 2024.

Figure A3: Heterogeneous Effects by Household Characteristics on Primary Outcomes



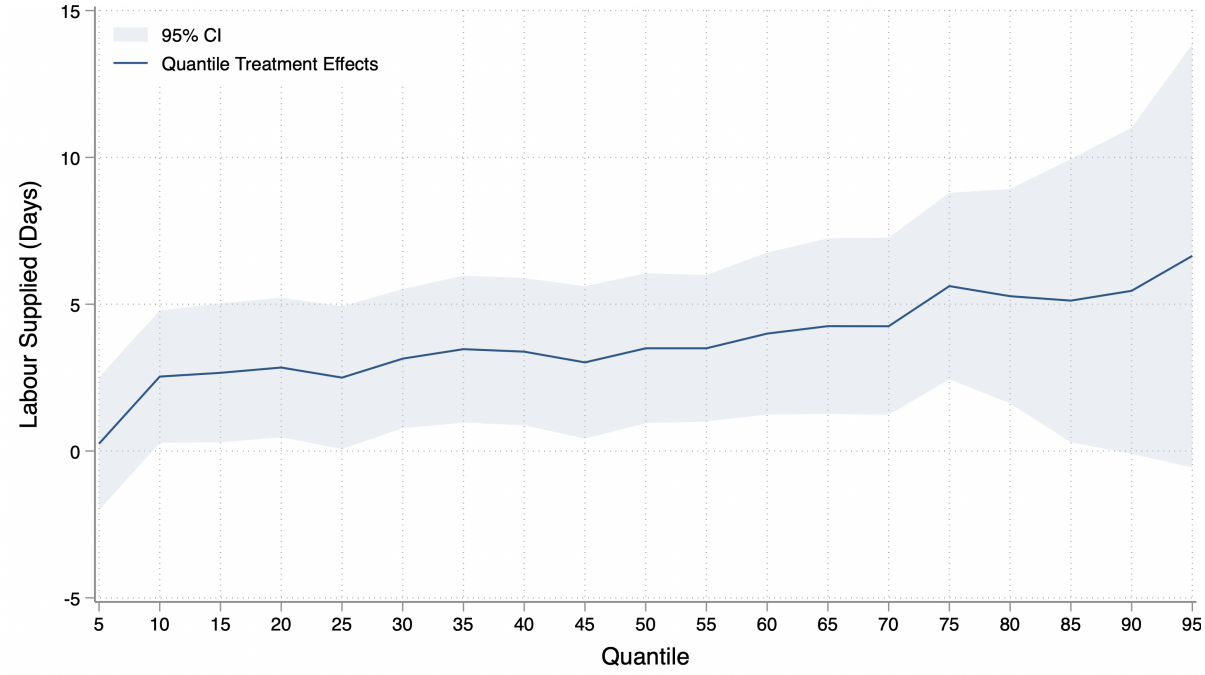
Notes: This figure plots the coefficient of the interaction between treatment and a dimension of heterogeneity using a heterogeneous treatment effects specification. Each sub-figure corresponds to a different dimension of heterogeneity. All outcomes have been normalised relative to the control group. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Heteroskedasticity-robust standard errors are clustered at the cluster level. Confidence intervals are presented at the 95% significance level.

Figure A4: Quantile Treatment Effects for Monthly Income



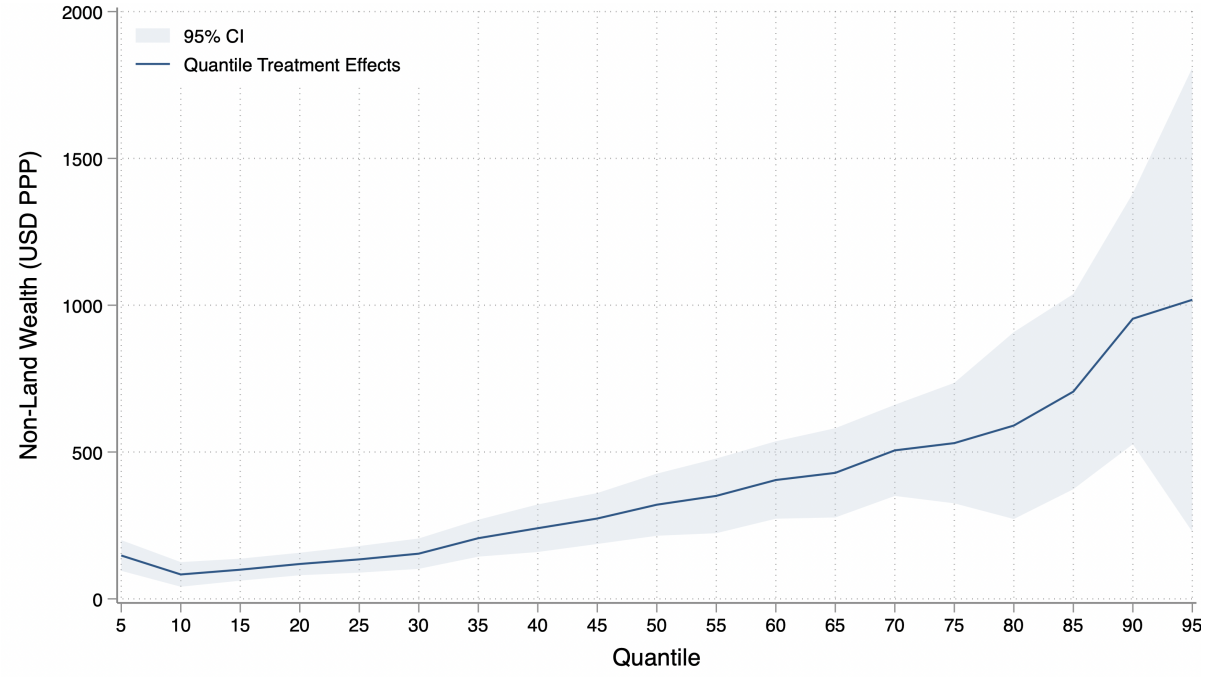
Notes: The figure presents quantile treatment effects. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. All regression include stratification fixed effects. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors are clustered at the cluster level. Confidence intervals are presented at the 95% significance level.

Figure A5: Quantile Treatment Effects for Labour Supplied (Days)



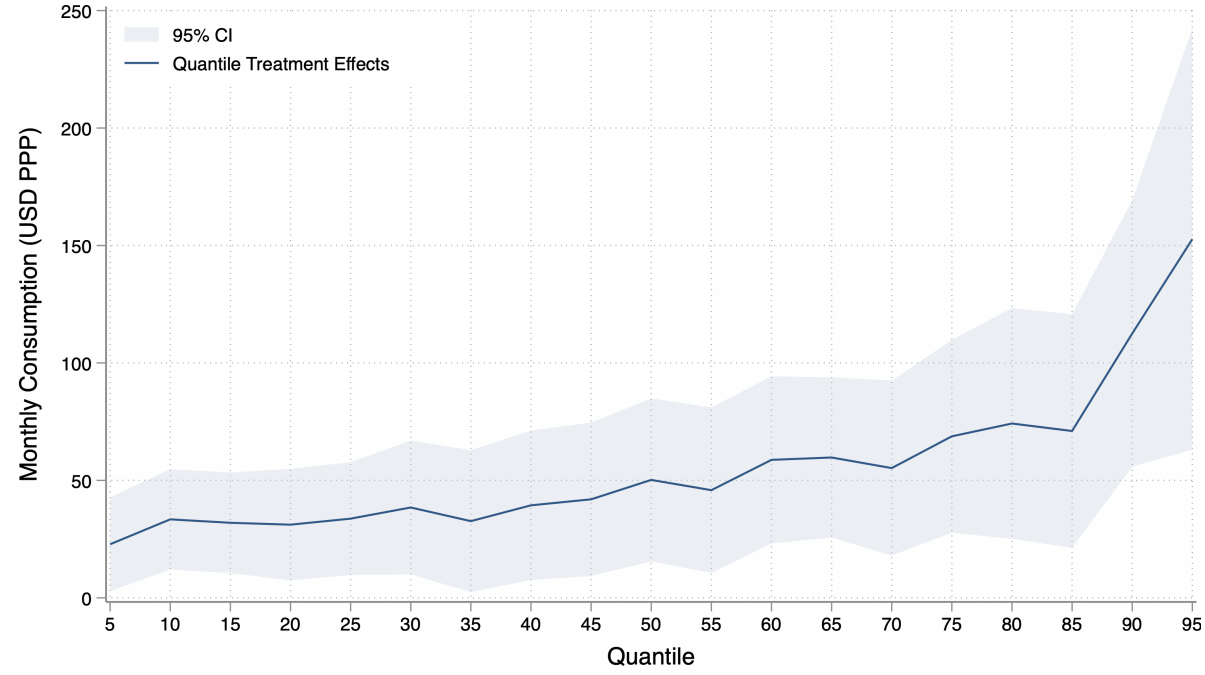
Notes: The figure presents quantile treatment effects. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. All regression include stratification fixed effects. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors are clustered at the cluster level. Confidence intervals are presented at the 95% significance level.

Figure A6: Quantile Treatment Effects for Non-Land Wealth



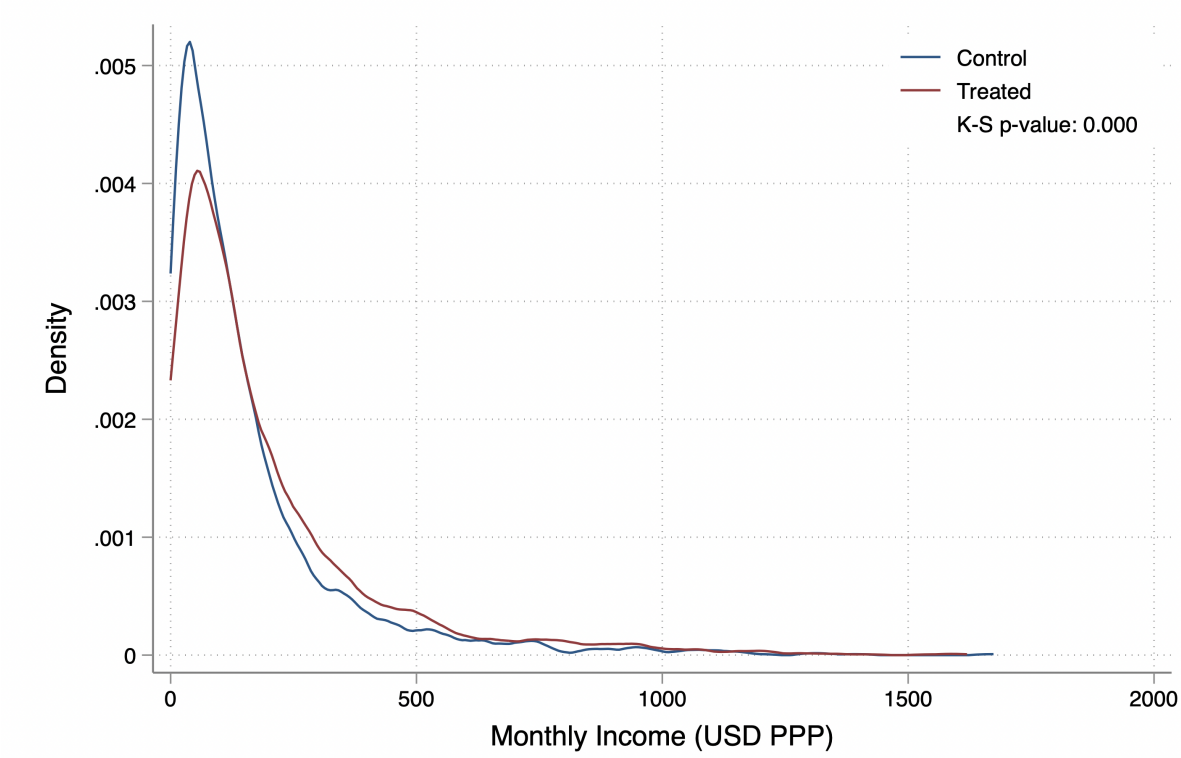
Notes: The figure presents quantile treatment effects. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. All regression include stratification fixed effects. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors are clustered at the cluster level. Confidence intervals are presented at the 95% significance level.

Figure A7: Quantile Treatment Effects for Monthly Consumption



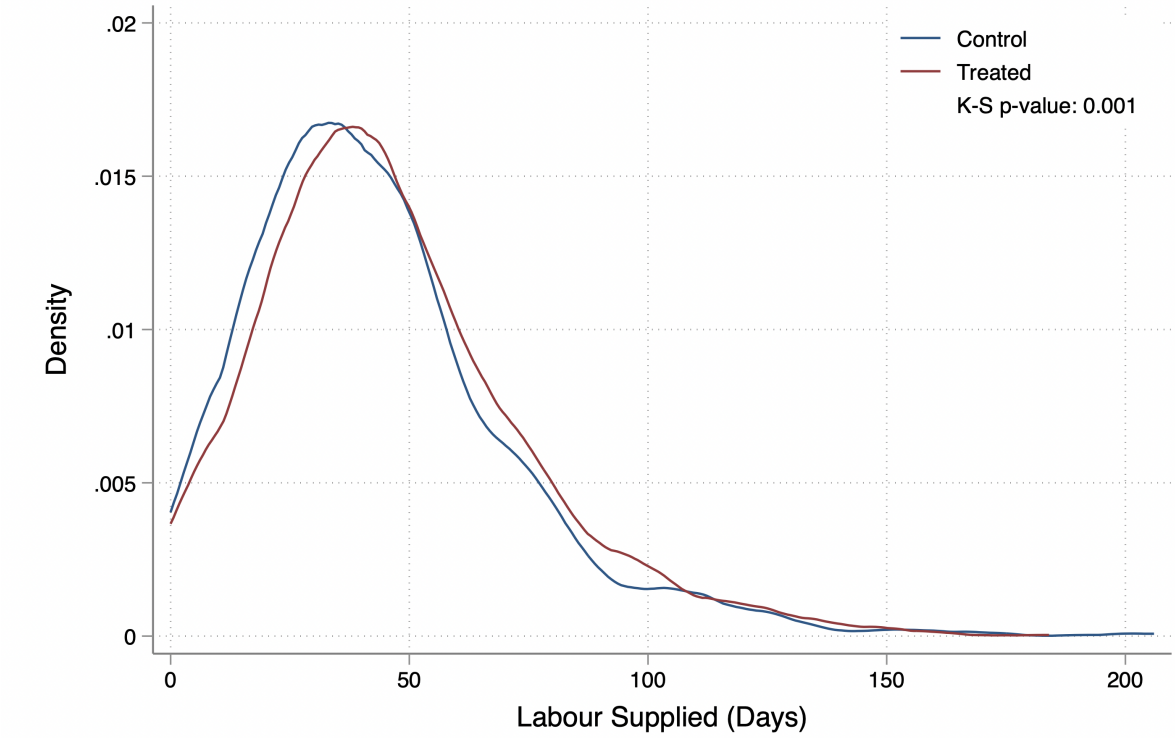
Notes: The figure presents quantile treatment effects. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. All regression include stratification fixed effects. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors are clustered at the cluster level. Confidence intervals are presented at the 95% significance level.

Figure A8: Distributions of Monthly Income



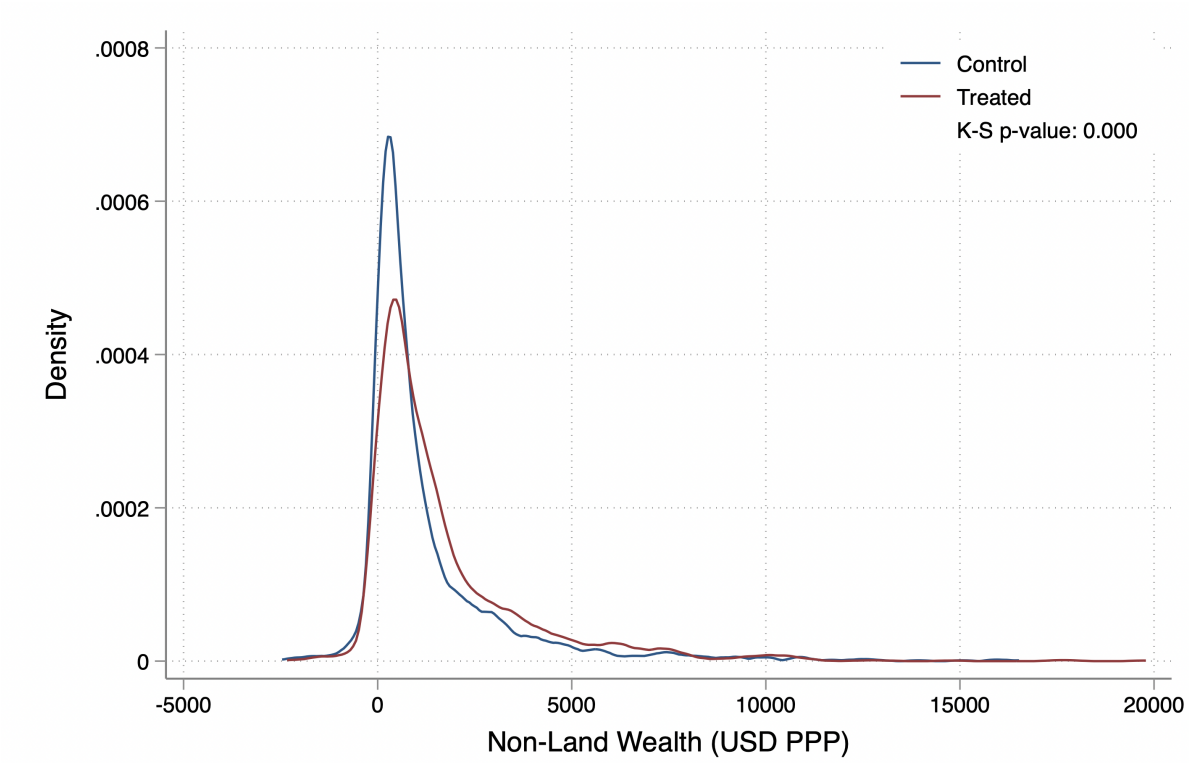
Notes: This figure plots the distributions of Monthly Income for control and treated households. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. K-S p-value is the value from the Kolmogorov–Smirnov test of the equality of the two distributions. Confidence intervals are presented at the 95% significance level.

Figure A9: Distributions of Labour Supplied (Days)



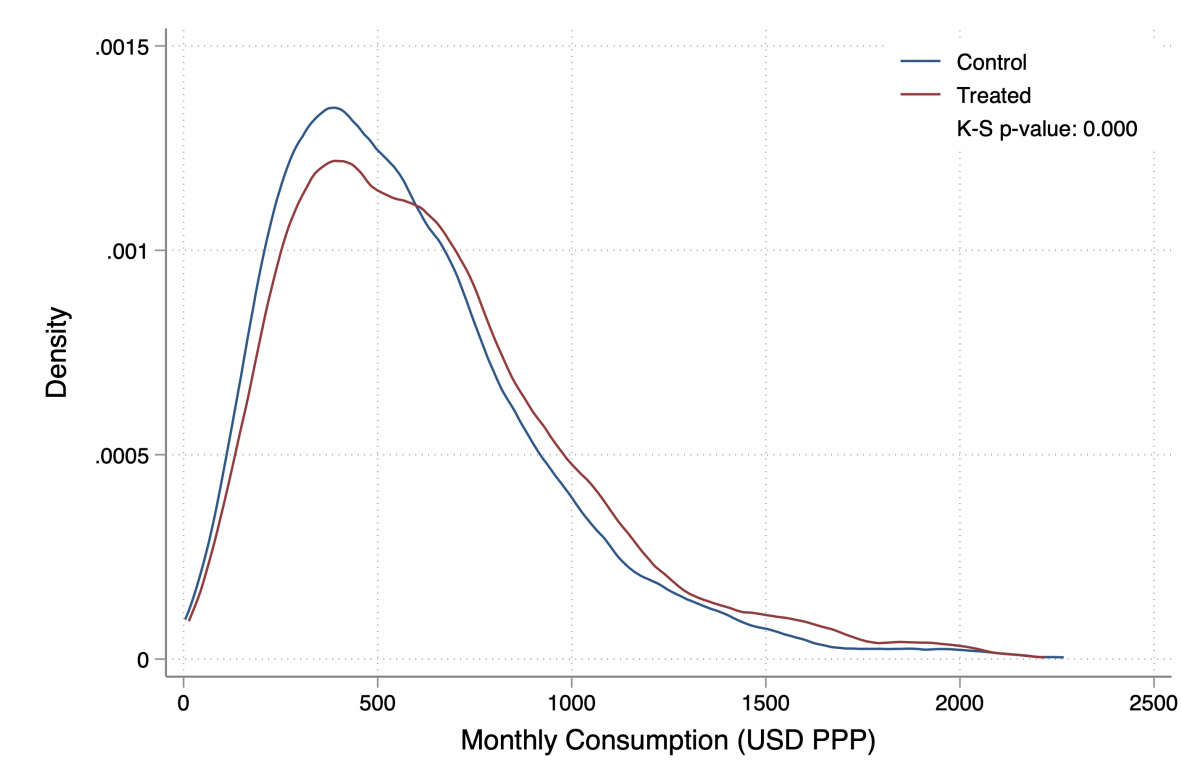
Notes: This figure plots the distributions of Labour Supplied (Days) for control and treated households. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. K-S p-value is the value from the Kolmogorov–Smirnov test of the equality of the two distributions.

Figure A10: Distribution of Non-Land Wealth



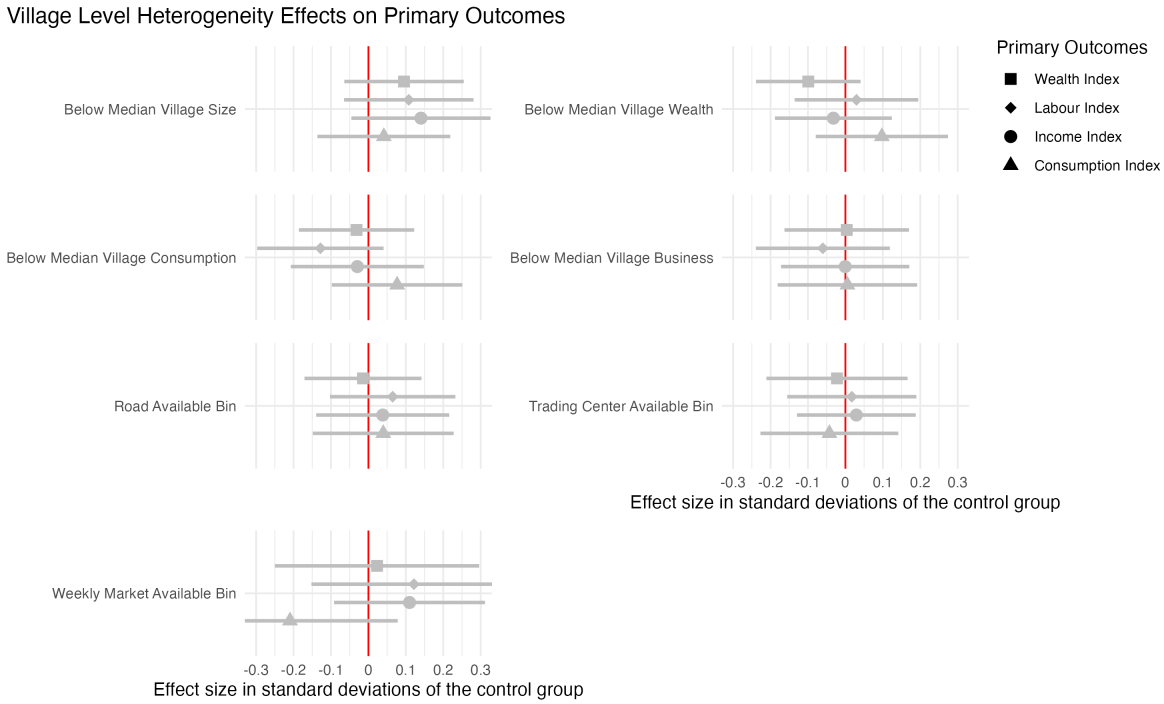
Notes: This figure plots the distributions of Non-Land Wealth for control and treated households. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. spending. K-S p-value is the value from the Kolmogorov–Smirnov test of the equality of the two distributions.

Figure A11: Distribution of Monthly Consumption



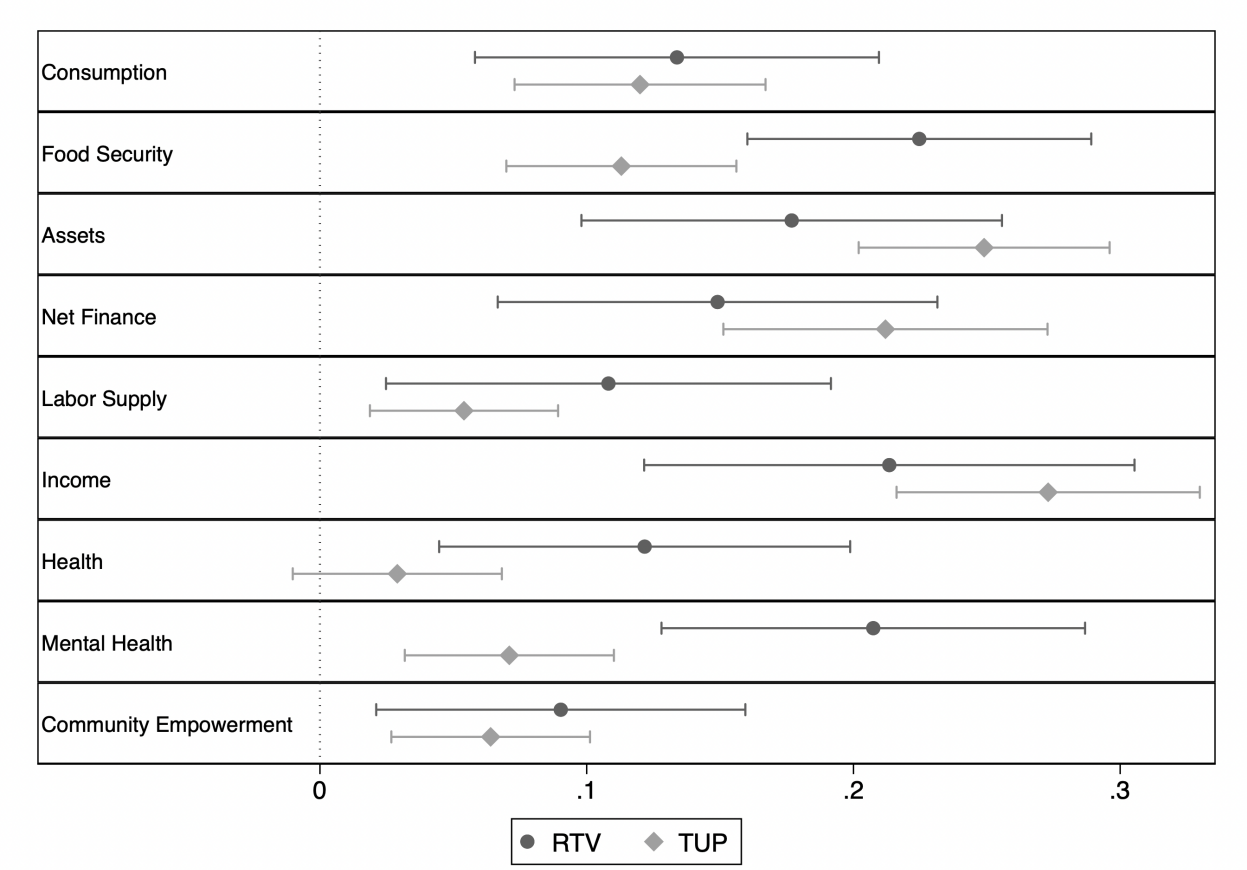
Notes:This figure plots the distributions of Monthly Consumption for control and treated households. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education K-S p-value is the value from the Kolmogorov–Smirnov test of the equality of the two distributions.

Figure A12: Heterogeneous Effects by Village Characteristics on Primary Outcomes



Notes: This figure plots the coefficient of the interaction between treatment and a dimension of heterogeneity using a heterogeneous treatment effects specification. Each sub-figure corresponds to a different dimension of heterogeneity, that is determined at the village level.. All outcomes have been normalised relative to the control group. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Heteroskedasticity-robust standard errors are clustered at the cluster level. Confidence intervals are presented at the 95% significance level.

Figure A13: Comparison of treatment effects between the RTV program evaluated here and the TUP program examined in Banerjee et al. (2015), standardized summary outcomes



Notes: Consumption, assets, net finance and income are defined in identical ways for both studies as follows: Consumption is total monthly consumption per capita, where consumption includes food, non-food and durables goods consumption for both studies (ie education spending is excluded compared to the definition of consumption used for this study, and consumption is converted to per capita) (see Table A27). Both studies use similar measures of food security, capturing hunger of adults and children (see Table A30 for our measure). Assets are the value of both assets and livestock (Table 5 columns (2) and (3)). Net finance is the value of savings and outstanding borrowing (Table 5 columns (4) and (5)). Labour supply is the total household labour to all activities - measured in days in the last 4 weeks in our study (Table 4) and minutes in the last day in Banerjee et al. (2015). Income is the revenue from crop and animal sales, business profits and wages (ie excludes rental income compared to the definition used here - Table 3 excluding column (6)). Health, mental health and community engagement differ along the following dimensions: For health, (Banerjee et al., 2015) uses indicators like daily living activities and self-reported health, while this study also considers work inability due to illness and activity difficulties (see Table A32 for our components). For mental health, (Banerjee et al., 2015) emphasizes emotional distress and prolonged worry, whereas this study measures depression, stress, life satisfaction, and happiness (see Table A35 for our measures). The community empowerment measure in Banerjee et al. (2015) includes voting and political party membership, while this study focuses on community engagement through dispute resolution, leader interaction, trust, and formal community positions (see Table A38 for our measures).

Table A1: Cost Elements of RTV Program (2023 USD PPP)

	RTV
(1) Asset/input transfer	130.86
Asset cost household	65.74
Seeds	40.83
Livestock	24.91
Asset cost village	65.12
(2) Personnel costs	40.91
Trainings	25.20
Travel costs	7.03
Other costs	8.68
(3) Indirect costs	138.61
Support & office local	103.32
Support & office int.	35.29
(4) Start-up expenses	11.03
Total Cost (1)+(2)+(3)+(4)	321.41

Costs included as part of the RTV program were as follows: Under asset/input transfer: Assets costs for the household include the seed, tool and livestock inputs and for the village include the well construction, community agricultural and livestock inputs such as seeds and tools for the demonstration plots and vaccinations for livestock and materials and handouts provided to the community. Under personnel costs: salaries include the salaries of staff carrying out training and monitoring activities, travel includes all costs for program staff to visit the communities and other costs include the value of government inputs into the program, including the time of officials during project inception, and government staff costs for staff who provided training and program elements, including vets, agricultural extension officers and health workers, and the time of government staff when identifying eligible villages. Under indirect: Staff and office costs for both local and international support personnel are included, allocated in proportion to the number of households in the study compared to the total number of households enrolled in the RTV program over the 2 years of program implementation in the study communities. Start up costs include village identification, community needs assessments and climatic data.

Table A2: Summary Statistics by Wealth Quartiles

	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
HH Head Age	45.55	44.34	44.07	44.23
HH Head Has No Schooling	0.28	0.25	0.17	0.13
HH Head Female	0.33	0.31	0.23	0.15
Total Adults	2.24	2.27	2.38	2.59
Total Children	2.26	2.47	2.68	2.90
Total Consumption (USD PPP)	439.21	460.77	612.11	820.60
Food Purchased Consumption	159.99	148.08	169.66	207.57
Food Produced Consumption	192.49	225.33	321.21	413.11
Non-Land Wealth (USD PPP)	-49.44	381.60	937.41	3,834.46
Asset Value	182.83	272.68	475.49	1,550.90
Livestock Value	58.02	141.56	421.42	1,807.92
Savings	56.27	63.75	170.37	540.25
Amount of Money Lent	13.95	19.39	43.17	277.24
Outstanding Loan Amount	-361.31	-115.63	-172.29	-338.37
HH Owns Land	0.91	0.97	0.98	1.00
HH Has Farming Activities	0.95	0.98	0.99	0.99
HH Has Business	0.14	0.21	0.24	0.42
Total Income (USD PPP)	80.20	96.32	134.40	305.93
Crop Sales (Monthly)	37.83	49.24	78.99	141.50
Income from Animals	1.05	2.33	6.69	37.03
Profits	9.93	14.77	21.05	87.17
Total Wage	29.80	29.65	25.78	28.07
N	450	447	449	448

Notes: All statistics are reported from the endline household data from only the control villages. Wealth quartiles are based on non-land wealth which is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. HHH has no schooling is an indicator for household head having no schooling. Female Headed HH is indicator for female household head. Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending divided by adult equivalents in the household. Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wage, and rental income. Any land is an indicator for household ownership for any type of land. Any farming is an indicator for household having grown a crop in the last two farming seasons. Any business is an indicator for any member of the household currently owning a non-farm enterprise.

Table A3: Balance

Variable	(1) Control	(2) Treatment	(3) Difference
HH Head Age	44.244	43.972	-0.212
	(16.176)	(15.573)	(0.635)
HH Head Has No Schooling	0.205	0.218	0.012
	(0.404)	(0.413)	(0.017)
HH Head Female	0.254	0.257	0.006
	(0.435)	(0.437)	(0.014)
Total Adults	2.301	2.357	0.056
	(1.243)	(1.201)	(0.051)
Total Children	2.813	2.887	0.067
	(1.570)	(1.523)	(0.058)
Total Consumption	230.106	224.195	-4.370
	(197.932)	(188.201)	(11.219)
Wealth	677.127	671.562	3.600
	(1,198.258)	(1,117.116)	(42.790)
Total Income	76.323	74.290	-0.784
	(158.038)	(144.746)	(6.595)
Total Labour Supply	44.133	39.697	-3.381
	(37.178)	(34.659)	(2.881)
Asset Value	393.212	400.636	15.202
	(564.256)	(557.488)	(20.168)
Livestock Value	301.780	298.940	1.901
	(843.283)	(730.252)	(26.071)
Savings	59.288	53.695	-4.455
	(121.639)	(116.263)	(5.221)
Net Loans	-77.153	-81.710	-9.047
	(257.847)	(403.887)	(16.167)
Crop Sales	36.165	35.260	-0.252
	(57.889)	(56.061)	(3.026)
Income from Animals	4.492	4.832	0.511
	(28.169)	(33.363)	(1.314)
Profits	17.863	18.469	0.981
	(116.132)	(102.848)	(4.017)
Total Wage	16.524	14.999	-1.567
	(55.786)	(45.292)	(2.293)
HH Has Business	0.134	0.132	0.000
	(0.341)	(0.338)	(0.014)
HH Has Farming Activities	0.917	0.915	-0.004
	(0.276)	(0.278)	(0.011)
WB Income Poverty Line	0.964	0.961	-0.004
	(0.187)	(0.195)	(0.007)
WB Consumption Poverty Line	0.803	0.813	0.009
	(0.398)	(0.390)	(0.019)
Not Depressed	0.497	0.477	-0.019
	(0.500)	(0.500)	(0.031)
Observations	1,948	1,904	3,852

Notes: The table reports balance tests for characteristics measured in the baseline survey. Column (1) reports the mean of the control group. Column (2) reports the mean of the treatment group. Column (3) reports the difference of the two means. HHH Has No Schooling is an indicator for household head having no schooling. HH Head Female is indicator for female household head. Total Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending divided by adult equivalents in the household. Total Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wage, and rental income.

Table A4: Training Attendance

	N	Mean	Median	Std. Dev.	Min	Max	P25	P75
Panel A. Types of Training								
Agriculture - Organics	1,905	0.93	1.00	0.26	0.00	1.00	1.00	1.00
Agriculture - Preparation and Preplanting	1,905	0.96	1.00	0.20	0.00	1.00	1.00	1.00
Healthy Households	1,905	0.95	1.00	0.21	0.00	1.00	1.00	1.00
WASH Training	1,905	0.94	1.00	0.24	0.00	1.00	1.00	1.00
Panel B. Number of Trainings								
Any Training Attendance	1,905	0.99	1.00	0.11	0.00	1.00	1.00	1.00
Attended One Training	1,905	0.00	0.00	0.03	0.00	1.00	0.00	0.00
Attended Two Trainings	1,905	0.02	0.00	0.15	0.00	1.00	0.00	0.00
Attended Three Trainings	1,905	0.13	0.00	0.33	0.00	1.00	0.00	0.00
Attended Four Trainings	1,905	0.84	1.00	0.37	0.00	1.00	1.00	1.00

Notes: The table reports summary statistics for treated households on their attendance of various training initiatives related to the RTV programmme. Panel A includes statistics for one of the four trainings. Panel B includes statistics on the number of trainings attended by households..

Table A5: Attrition

	(1) Endline	(2) Midline	(3) Consumption Phone Survey
Treated	-0.005	-0.001	0.003
	(0.011)	(0.014)	(0.012)
Control Mean	0.08	0.14	0.03
N	3852	2618	3852

Notes: Endline is a binary variable equal to 1 if the household was surveyed at endline, and 0 otherwise. Midline is a binary variable equal to 1 if the household was surveyed at midline, and 0 otherwise for the sample that was included in the midline. Consumption Phone Survey is a binary variable equal to 1 if the household was surveyed during the consumption phone survey, and 0 otherwise. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Impact on Primary Outcomes (Robustness Specifications)

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Panel A. No Baseline Controls				
Treated	39.500***	3.036**	420.191***	56.961***
	(8.884)	(1.194)	(84.893)	(14.835)
Control Mean	154.151	43.332	1,274.839	583.097
N	3,560	3,560	3,560	3,560
Panel B. No Winsorisation				
Treated	57.148***	2.906**	462.391***	59.098***
	(12.486)	(1.284)	(95.775)	(15.596)
Control Mean	163.554	43.918	1,299.849	590.774
N	3,560	3,560	3,560	3,560

Notes: Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Panel A omits baseline controls from the regression. Panel B uses outcome variables that have not been winsorized. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Impact on Household Size, Fertility and Migration

	(1) Household Size	(2) Number of Children Under 6	(3) Any Migration
Treated	0.063	0.005	-0.007
	(0.065)	(0.049)	(0.006)
Control Mean	5.747	1.091	0.025
N	3,560	3,560	3,560

Notes: Household Size is the number of members in the household. Number of Children Under 6 includes the number of household members that are aged below 6. Any Migration is a binary variable equal to 1 if any household member has migrated, and 0 otherwise. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Impact on Crop Sales

	(1) Annual	(2) Season 1 Crops	(3) Season 2 Crops	(4) Perennial Crops
Treated	235.441***	80.487***	87.212***	69.391***
	(55.737)	(25.291)	(26.007)	(18.102)
Control Mean	922.350	368.643	392.201	161.506
N	3,560	3,560	3,560	3,560

Notes: Annual is the aggregate sales for the year of Season 1 Crops, Season 2 Crops and Perennial Crops. Season 1 Crops and Season 2 Crops are the sales of all crops during Season 1 and Season 2 respectively. Perennial Crops is the sales of all perennials over the past year. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Impact on Farming Outcomes

	(1) Any Cropping	(2) Land Planted In Acres	(3) Number of Crops
Panel A. Season 1			
Treated	0.009	0.164***	0.653***
	(0.006)	(0.048)	(0.103)
Control Mean	0.962	1.104	3.679
N	3,560	3,560	3,560
Panel B. Season 2			
Treated	0.011	0.186***	0.481***
	(0.011)	(0.050)	(0.095)
Control Mean	0.903	1.010	3.232
N	3,560	3,560	3,560

Notes: Any Cropping is a binary variable equal to 1 if any cropping activitiy was undertaken. Land Planted In Acres measures the area planted in acres. Number of Crops is the number of crops planted. Panels A and B report outcomes for Season 1 and Season 2 respectively. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Impact on Observable Farm Outcomes

	(1) Observe Compost Pit	(2) Observe Post-Harvest Handling Equipment	(3) Observe Garden
Treated	0.237***	0.036**	0.088***
	(0.018)	(0.016)	(0.016)
Control Mean	0.198	0.265	0.116
N	3,560	3,560	3,560

Notes: Observe Compost Pit is a binary variable equal to 1 if the enumerator observed a compost pit. Observe Post-Harvest Handling Equipment is a binary variable equal to 1 if the enumerator observed any post-harvest handling equipment. Observe Garden is a binary variable equal to 1 if the enumerator observed a vegetable garden. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Impact on Farming Inputs

	(1) Any Inputs	(2) Any Irrigation	(3) Any Improved/ Hybrid Seeds	(4) Quantity of Fertilizer	(5) Quantity of Organic Fertilizer
Panel A. Season 1					
Treated	0.008	0.024***	0.026***	16.551***	16.201***
	(0.007)	(0.009)	(0.009)	(3.600)	(3.560)
Control Mean	0.962	0.034	0.052	10.383	9.059
N	3,560	3,560	3,560	3,560	3,560
Panel B. Season 2					
Treated	0.008	0.023**	0.036***	9.938***	9.100***
	(0.007)	(0.009)	(0.009)	(2.183)	(2.118)
Control Mean	0.962	0.033	0.047	5.813	5.021
N	3,560	3,560	3,560	3,560	3,560

Notes: Any Inputs is a binary variable equal to 1 if the household used tools, irrigation, traditional seeds, improved/hybrid seeds, insecticide, bags, insurance, machinery and other inputs for as inputs for farming. Any Irrigation is a binary variable equal to 1 if the used any irrigation. Any Improved/Hybrid Seeds is a binary equal to 1 if the household used any improved or hybrid seeds. Quantity of Fertilizer and Quantity of Organic Fertilizer are measures of the quantity of fertilizer and organic fertilizer used by the household respectively, in kilograms. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Impact on Crop Yield Values

	(1) Beans	(2) Maize	(3) Irish Potatoes	(4) Sweet Potatoes	(5) Groundnuts	(6) Total
Panel A. Season 1						
Treated	34.673*	39.604**	24.302*	16.249***	11.723***	137.712***
	(18.447)	(19.359)	(13.197)	(4.521)	(3.521)	(38.471)
Control Mean	265.501	260.927	100.350	61.660	45.251	757.577
N	3,560	3,560	3,560	3,560	3,560	3,560
Panel B. Season 2						
Treated	40.189**	40.167*	18.649*	9.965***	13.734***	130.474***
	(19.151)	(22.543)	(11.004)	(3.800)	(3.488)	(38.564)
Control Mean	256.072	272.582	94.971	47.012	39.059	729.814
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Total reports the value of the yields of all crops farmed by the household. This includes the value of the yields for Beans, Maize, Irish Potatoes, Sweet Potatos and Groundnuts. Yield values for cassava and sorghum are omitted as they account for the smallest values of crops. Panels A and B report outcomes for Season 1 and Season 2 respectively. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: Impact on Crop Yields

	(1) Beans	(2) Maize	(3) Irish Potatoes	(4) Sweet Potatoes	(5) Groundnuts
Panel A. Season 1					
Treated	16.656*	50.168*	1.705*	0.342***	3.628***
	(8.798)	(27.721)	(0.884)	(0.114)	(0.873)
Control Mean	117.492	359.627	5.376	1.349	10.786
N	3,560	3,560	3,560	3,560	3,560
Panel B. Season 2					
Treated	20.657**	43.561	1.231	0.171*	3.513***
	(9.627)	(29.273)	(0.817)	(0.095)	(0.903)
Control Mean	125.185	354.468	5.811	1.092	10.259
N	3,560	3,560	3,560	3,560	3,560

Notes: The table reports yields, measured in kilograms for Beans, Maize, Irish Potatoes, Sweet Potatos and Groundnuts. Yields for cassava and sorghum are omitted as they account for the smallest values of crops. Panels A and B report outcomes for Season 1 and Season 2 respectively. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: Impact on Beans and Maize Farming Outcomes

	(1) All Sales	(2) Beans Sales	(3) Maize Sales	(4) Quantity of Beans Sold	(5) Quantity of Maize Sold	(6) Beans Price	(7) Maize Price
Panel A. Season 1							
Treated	80.487***	18.544	23.223	9.261	24.298	-0.027	0.013***
	(25.291)	(12.429)	(14.062)	(5.692)	(19.097)	(0.033)	(0.004)
Control Mean	368.643	125.674	167.687	60.290	258.283	2.321	0.738
N	3,560	3,560	3,560	3,257	3,169	3,246	3,164
Panel B. Season 2							
Treated	87.212***	28.533**	27.584*	14.675**	31.918	-0.010	0.018**
	(26.007)	(11.193)	(16.662)	(5.804)	(20.747)	(0.031)	(0.008)
Control Mean	392.201	128.755	184.087	73.190	290.211	2.071	0.759
N	3,560	3,560	3,560	3,007	2,927	3,004	2,926

Notes: All Sales include the sales of all crops. Beans Sales and Maize Sales are the sales of beans and maize respectively. Quantity of Beans Sold and Quantity of Maize Sold are the quantities, in kilograms, on beans and maize sold respectively. Beans Price and Maize Price are the prices of beans and maize respectively. Panels A and B report outcomes for Season 1 and Season 2 respectively. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A15: Impact on Business Characteristics

	(1) Has Business	(2) Hires Workers	(3) Days of Operation	(4) Has Customers Outside Village
Treated	0.052***	0.002	0.388	0.026***
	(0.015)	(0.007)	(0.294)	(0.010)
Control Mean	0.252	0.060	2.773	0.098
N	3,560	3,560	3,560	3,560

Notes: Has Business is a binary variable equal to 1 if the household operates a business. Hires Workers is a binary variable equal to 1 if the household hires workers for their business. Days of Operation is the number of days the business was in operation over the last 30 days. Has Customers Outside Village is a binary variable equal to 1 if the household's business has customers from outside the village. Variables are unconditional, and are equal to 0 if the household does not operate a business. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A16: Impact on Business Outcomes

	(1) Profits	(2) Sales	(3) Expenses	(4) Stock	(5) Assets	(6) Stock Purchases	(7) Asset Purchases
Treated	12.631***	31.450**	2.998	43.547*	21.065	32.896**	0.255
	(4.659)	(15.212)	(2.505)	(24.030)	(16.577)	(14.416)	(0.873)
Control Mean	33.208	121.113	19.373	206.250	132.663	107.661	4.867
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Profits, sales and expenses are from the last 4 weeks. Stock is the value of all business stock and inventory. Assets are the value of all business assets. Stock Purchases and Asset Purchases are the amount spent on purchases of stocks and assets respectively for the business in the last 4 weeks. Variables are unconditional, and are equal to 0 if the household does not operate a business. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A17: Impact on Business Outcomes (Enterprise Level)

	(1) Profits	(2) Sales	(3) Expenses	(4) Stock	(5) Assets	(6) Stock Purchases	(7) Asset Purchases
Panel A. All Enterprises							
Treated	15.133	-18.444	-23.043**	-16.897	-97.225	70.519	-7.394
	(21.656)	(100.466)	(11.591)	(93.047)	(74.394)	(82.182)	(5.697)
Control Mean	148.931	613.339	83.091	843.616	576.250	459.921	26.977
N	710	710	714	714	715	716	716
Panel B. Old Enterprises							
Treated	17.502	-44.280	-20.042	-63.717	-74.511	40.164	-4.903
	(25.533)	(129.433)	(13.140)	(113.486)	(90.314)	(100.804)	(7.024)
Control Mean	148.391	669.446	81.719	928.228	571.565	490.651	26.206
N	546	545	547	548	548	549	549
Panel C. New Enterprises							
Treated	5.047	38.542	-30.078*	92.578	-193.774	158.724	-15.283
	(36.246)	(88.177)	(17.568)	(141.651)	(133.651)	(118.380)	(9.705)
Control Mean	150.599	442.939	87.191	585.603	590.362	367.358	29.297
N	164	165	167	166	167	167	167

Notes: Profits, sales and expenses are from the last 4 weeks. Stock is the value of all business stock and inventory. Assets are the value of all business assets. Stock Purchases and Asset Purchases are the amount spent on purchases of stocks and assets respectively for the business in the last 4 weeks. The data is at the enterprise level, rather than the household level. Panel A includes all enterprises. Panel B includes only old enterprises, that were in operation prior to the intervention. Panel C includes only new enterprises, that were opened after the intervention. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A18: Impact on Input Use for Livestock

	(1) Feed	(2) Medicine	(3) Machinery	(4) Transport	(5) Infrastructure	(6) Other
Treated	0.057***	0.078***	0.032**	0.010*	0.043***	0.012*
	(0.016)	(0.021)	(0.016)	(0.005)	(0.013)	(0.007)
Control Mean	0.166	0.431	0.147	0.020	0.131	0.027
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: All variables are binary variables equal to 1 if the household used any of the following inputs. Feed is animal feed. Medicine includes any veterinary services, medicines and vaccines. Machinery includes any equipment used for livestock. Transportation includes any transportation of livestock. Infrastructure includes the construction or maintenance of livestock enclosures or houses. Other includes artificial or natural insemination, bull services, slaughter fees and insurance of livestock. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A19: Impact on Labour Supply for Under-16s

	(1) Total Labour Supply	(2) Household Farm	(3) Household Livestock	(4) Household Business	(5) Salaried	(6) Casual
Treated	0.111	0.168	0.040	0.055	-0.022	-0.130***
	(0.496)	(0.366)	(0.216)	(0.046)	(0.032)	(0.042)
Control Mean	5.834	3.887	1.589	0.072	0.055	0.230
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: All variables are measured using only under-16 households members. Total Labour Supply is reported in days aggregated across all under-16 household members. Household Farm, Household Livestock, and Household Business are measures of labour supplied to different household economic activities for under-16 household members. Labour supply is measured for the last 4 weeks except for to the household farm, for which it is measured over the two farming seasons and then scaled to 4 weeks. Salaried is labour supplied to a salaried job. Casual is casual labour supplied outside the household. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A20: Impact on Values and Quantities of Livestock

	(1) Cows	(2) Goats	(3) Pigs	(4) Chickens	(5) Sheep	(6) Ducks
Panel A. Value						
Treated	0.035	0.053***	0.036***	0.010***	-0.000	0.000
	(0.025)	(0.014)	(0.007)	(0.002)	(0.003)	(0.000)
Control Mean	0.158	0.165	0.071	0.035	0.015	0.002
N	3,560	3,560	3,560	3,560	3,560	3,560
Panel B. Quantity						
Treated	0.072*	0.539***	0.373***	1.088***	-0.009	0.001
	(0.038)	(0.139)	(0.066)	(0.277)	(0.034)	(0.036)
Control Mean	0.225	1.703	0.803	4.549	0.174	0.188
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Panel A includes the value of different types of livestock owned by the household. Panel B includes the quantity of different types of livestock owned by the household. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A21: Impact on Pig Livestock

	(1) Any Pigs	(2) Quantity of Pigs	(3) Observe Any Pigs	(4) Quantity of Observed Pigs	(5) Observe Any Shelters
Treated	0.112***	0.373***	0.080***	0.201***	0.077***
	(0.020)	(0.066)	(0.019)	(0.047)	(0.019)
Control Mean	0.334	0.803	0.214	0.405	0.212
N	3,560	3,560	3,560	3,560	3,560

Notes: Any Pigs is a binary variable equal to 1 if the household owns any pig livestock. Quantity of Pigs is quantity of pigs owned by the household. Observe Any Pigs is a binary variable equal to 1 if the enumerator can see any pigs around the homestead. Quantity of Observed Pigs is the number of pigs observed by the enumerator. Observe Any Shelters is a binary variable equal to 1 if the enumerator can see any livestock shelters. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A22: Impact on Small Assets

	(1) Radios	(2) Mobile Phones	(3) Small Farm Tools	(4) Electric and Hand Tools	(5) Jerry Cans	(6) Pots and Pans	(7) Jewelry and Watches
Panel A. Asset Ownership							
Treated	0.076***	0.013	0.007**	0.012	0.018***	0.004*	0.029*
	(0.018)	(0.013)	(0.003)	(0.008)	(0.006)	(0.002)	(0.015)
Control Mean	0.412	0.807	0.985	0.051	0.959	0.993	0.179
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560
Panel B. Number of Assets							
Treated	0.088***	0.076**	0.454***	0.013	0.297***	0.473***	0.069**
	(0.019)	(0.037)	(0.076)	(0.016)	(0.073)	(0.080)	(0.029)
Control Mean	0.425	1.208	3.369	0.081	2.154	3.742	0.288
N	3,560	3,560	3,560	3,560	3,560	3,557	3,560
Panel C. Value of Assets							
Treated	2.596***	6.243***	2.903***	0.057	1.903***	7.148***	0.151
	(0.525)	(2.372)	(0.557)	(0.083)	(0.373)	(1.349)	(0.156)
Control Mean	8.022	39.458	17.620	0.488	8.876	33.388	1.168
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Panel A includes binary variables equal to 1 if the household owns the asset. Panel B includes the number of assets owned by the household. Panel C includes the value of the assets owned by the household. Small Farm Tools include implements such as hand hoes, machetes and slashers. Electric Hand Tools include power saws, drills and pliers. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A23: Impact on Large Assets

	(1) Furn-iture	(2) Farm Equi-pment	(3) Bikes and Vehicles	(4) Solar Panels and Generators	(5) Beds	(6) Ovens and Stoves	(7) Fans, TVs and Fridges
Panel A. Asset Ownership							
Treated	0.013***	0.051***	0.042***	0.070***	0.012***	0.024*	0.003
	(0.005)	(0.014)	(0.015)	(0.015)	(0.004)	(0.014)	(0.011)
Control Mean	0.966	0.128	0.239	0.668	0.973	0.124	0.110
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560
Panel B. Number of Assets							
Treated	0.495***	0.083***	0.059***	0.164***	0.457***	0.025	0.009
	(0.098)	(0.018)	(0.018)	(0.038)	(0.079)	(0.016)	(0.014)
Control Mean	3.368	0.140	0.261	0.983	3.245	0.140	0.127
N	3,560	3,560	3,560	3,560	3,559	3,560	3,560
Panel C. Value of Assets							
Treated	13.089***	1.389***	41.139*	11.797***	27.405***	0.208**	0.685
	(3.260)	(0.503)	(22.179)	(2.853)	(5.165)	(0.098)	(1.786)
Control Mean	64.746	4.206	219.252	56.103	140.044	0.788	16.570
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Panel A includes binary variables equal to 1 if the household owns the asset. Panel B includes the number of assets owned by the household. Panel C includes the value of the assets owned by the household. Furniture includes chairs, sofas, tables, desks and cupboards. Farm Equipment includes farm machinery and irrigation equipment. Bikes and Vehicles include bicycles, motorcycles, scooters and any other form of transport. Solar Panels and Generators include solar panels, batteries and generators. Beds include beds and mattressess. Fans, TVs and Fridges also includes other electrical items. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A24: Impact on Groups

	(1) Any Group	(2) Number of Groups	(3) Group Quality Index	(4) Value of Own Assets in Groups	(5) Value of Own Savings in Groups	(6) Income Received from Groups
Treated	0.069***	0.291***	0.244***	8.022*	45.106***	10.082**
	(0.022)	(0.054)	(0.046)	(4.739)	(12.769)	(4.937)
Control Mean	0.648	1.016	0.000	21.541	166.149	19.014
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Any Group is a binary variable equal to 1 if there is any group membership. Number of Groups is the number of group memberships. Group Quality Index is an an index of the size of the group, a binary variable equal to 1 if the group also gives out loans and/or own assets and does not just save, and the group minimum contribution amount scaled to monthly. Value of Own Assets in Groups is the value of the household's own assets in the group. Value of Own Savings is the value of the household's own savings in the group. Income Received from Groups is the income from the group from assets. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A25: Impact on Group Quality

	(1) Group Quality Index	(2) Group Size	(3) Group Gives Loans or Own Assets	(4) Minimum Contribution Amount
Treated	0.244***	3.073***	0.100***	3.417***
	(0.046)	(0.592)	(0.023)	(0.976)
Control Mean	0.000	7.446	0.530	12.203
N	3,560	3,560	3,560	3,560

Notes: Group Quality Index is an an index of Group Size (the size of the group), Group Gives Loans or Own Assets (a binary variable equal to 1 if the group also gives out loans and/or own assets and does not just save), and Minimum Contribution Amount (the group minimum contribution amount scaled to monthly). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A26: Impact on Housing Quality

	(1) Housing Quality Index	(2) Not Mud Floor	(3) Not Thatched/Tin Roof	(4) Not Mud/Plant Walls	(5) Wall Quality	(6) Home Improvement Spending
Treated	0.085*	0.007	0.005	0.019	0.067**	78.315*
	(0.045)	(0.014)	(0.006)	(0.022)	(0.031)	(40.647)
Control Mean	-0.000	0.158	0.972	0.386	2.338	143.983
N	3,560	3,560	3,560	3,560	3,543	3,558

Notes: Housing Quality Index is an index of Not Mud Floor (a binary variable equal to 1 if it is not a mud floor), Not Thatched/Tin Roof (a binary variable equal to 1 if the roof is not thatched or tin), Not Mud/Plant Walls (a binary variable equal to 1 if the wall is not mud or plant metter), Wall Quality (a categorical variable for wall quality ranging from 1 to 3) and Home Improvement Spending (the total spending on housing improvements). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A27: Impact on Alternative Consumption Outcomes

	(1) Total Consumption per Adult Equivalent	(2) Total Consumption per Capita without Education
Treated	18.184***	9.310***
	(5.159)	(2.687)
Control Mean	205.809	106.731
N	3,560	3,560

Notes: Total Consumption per Adult Equivalent is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending, all divided by the number of adult equivalent household members. Total Consumption per Capita without Education is monthly household consumption without education comprised of scaled food consumption (produced and purchased), durable goods and non-food non-durable goods, all divided by the number of household members. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A28: Impact on Food Consumption

	(1) Food Purchased	(2) Food Produced	(3) Food Purchased per Adult Equivalent	(4) Food Produced per Adult Equivalent
Treated	6.220	39.156***	2.855	12.289***
	(5.945)	(10.087)	(2.387)	(3.452)
Control Mean	171.324	287.983	62.645	100.400
N	3,560	3,560	3,560	3,560

Notes: Food Purchased is the total food purchased by the household in the last 7 days. Food Produced is the total food produced by the household in the last 7 days. Dietary Diversity is the number of different food groups consumed in the last 7 days. The per Adult Equivalent variables divide the intial variable by the number of adult equivalent household members. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A29: Impact on Dietary Diversity

	(1) Dietary Diversity	(2) Staples	(3) Pulses	(4) Milk	(5) Vegetables	(6) Fruits	(7) Eggs and Meat
Treated	0.290***	-0.001	0.015**	0.046**	0.059***	0.038**	0.114***
	(0.049)	(0.003)	(0.007)	(0.022)	(0.019)	(0.015)	(0.022)
Control Mean	5.027	0.993	0.940	0.238	0.576	0.790	0.571
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Dietary Diversity is the number of different food groups consumed in the last 7 days. Staples, Pulses, Milk, Vegetables, Fruits and Eggs and Meat are binary variables equal to 1 if the household consumed any of these foods in the last 7 days. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A30: Impact on Hunger

	(1) Any Hunger	(2) Hunger Frequency	(3) Adult Sleep Hungry	(4) Child Sleep Hungry	(5) Adult Sleep Hungry Frequency	(6) Child Sleep Hungry Frequency
Treated	-0.105***	-0.203***	-0.073***	-0.050***	-0.120***	-0.084***
	(0.017)	(0.032)	(0.011)	(0.010)	(0.019)	(0.017)
Control Mean	0.310	0.550	0.161	0.111	0.251	0.174
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Any Hunger is a binary variable equal to 1 if there was ever no food to eat of any kind in the house because of lack of resources to get food in the last 30 days. Hunger Frequency is the frequency of there being no food to eat of any kind in the house because of lack of resources to get food in the last 30 days. Adult Sleep Hungry and Child Sleep Hungry are binary variables equal to 1 if any adult household member and child household member respectively went to sleep at night hungry because there was not enough food in the house in the last 30 days. Adult Sleep Hungry Frequency and Child Sleep Hungry Frequency are the frequencyes of any adult household member and child household member respectively going to sleep at night hungry because there was not enough food in the house in the last 30 days. The frequency variables are measured on a scale of 1 to 3, 1 if it happens rarely, 2 if sometimes and 3 if often. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A31: Impact on Education (Child Level)

	(1) Education Expenses	(2) Currently Enrolled	(3) Missed School Due to Illness
Panel A. Main Specification			
Treated	5.356	0.009	-0.061***
	(9.049)	(0.012)	(0.018)
Control Mean	167.901	0.759	0.434
N	9,827	9,827	7,494
Panel B. Gender Specification			
Treated	0.703	0.005	-0.037*
	(10.161)	(0.013)	(0.019)
Female	-3.128	-0.003	0.038**
	(5.737)	(0.012)	(0.017)
Treated × Female	9.546	0.009	-0.048**
	(10.056)	(0.017)	(0.022)
Control Mean	167.901	0.759	0.434
N	9,827	9,827	7,494
Panel C. Age Specification			
Treated	2.794	0.000	-0.053**
	(6.604)	(0.011)	(0.021)
$\mathbb{1}(\text{Age} \geq 13)$	92.801***	-0.334***	-0.072***
	(11.611)	(0.012)	(0.019)
Treated × $\mathbb{1}(\text{Age} \geq 13)$	3.653	0.034*	-0.018
	(16.908)	(0.020)	(0.027)
Control Mean	167.901	0.759	0.434
N	9,827	9,827	7,494

Notes: Education Expenses is the expenditure on education for each child. Currently Enrolled is a binary variable equal to 1 if the child is currently enrolled. Missed School Due to Illness is a binary variable equal to 1 if the child missed school due to illness in the last 30 days. Panel A includes the main regression specification. Panel B includes heterogeneous effects by Female (a binary variable equal to 1 if the child is a female). Panel C includes heterogeneous effects by whether the child is aged 13 and over. Regressions are at the child level. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A32: Impact on Physical Health

	(1) Physical Health Index	(2) Difficulty Bathing	(3) Difficulty Lifting	(4) Difficulty Walking	(5) Unable to Work	(6) Days Unable to Work
Treated	0.122***	0.001	-0.096**	-0.125***	-0.077***	-0.880***
	(0.039)	(0.019)	(0.044)	(0.043)	(0.020)	(0.246)
Control Mean	0.000	1.165	1.834	1.779	0.527	4.676
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Physical Health Index is an index of reverse-coded measures for difficulty in completing daily activities including bathing, lifting and walking, an indicator for the respondent being unable to work due to sickness in the last 30 days, and the number of days of work missed by the respondent. Difficulty Bathing is a categorical variable for whether the respondent has difficulty bathing. Difficulty Lifting is a categorical variable for where the respondent can lift or carry heavy things, such as a bucket of water. Difficulty Walking is a categorical variable for whether the respondent can walk for two hours without resting. The categorical variables equal 1 if can complete this easily, 2 if can complete without help but it is difficult, 3 if can only complete with help and 4 if cannot complete. Unable to Work is a binary variable equal to 1 if in the last 30 days, the respondent has been completely unable to work or perform your usual daily activities because of sickness. Days Unable to Work is the number of days for which the respondent was unable to work or perform their usual daily activities because of sickness. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A33: Impact on Child Illness

	(1) Any Child Illness	(2) Diarrhea	(3) Vomitting	(4) Cough	(5) Fever
Treated	-0.041**	0.024	-0.007	-0.022	-0.033
	(0.017)	(0.020)	(0.016)	(0.022)	(0.022)
Control Mean	0.843	0.207	0.174	0.544	0.658
N	2,242	2,242	2,242	2,242	2,242

Notes: Any Child Illness is a binary variable equal to 1 if any children in the household has experienced any diarrhea, vomiting, cough or fever in the last 30 days. Diarrhea, Vomitting, Cough and Fever are binary variables equal to 1 if any children in the household has experienced those symptoms in the last 30 days. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A34: Impact on Health Improvement

	(1) Health Improvement Index	(2) Dish Rack	(3) Handwashing Outside Toilet	(4) Hangline	(5) Improved Drinking Water	(6) Covered Pit Latrine
Treated	0.389***	0.616***	0.267***	0.088***	0.034	0.000
	(0.041)	(0.033)	(0.016)	(0.019)	(0.023)	(0.013)
Control Mean	0.000	1.496	0.087	1.659	0.634	0.130
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Health Improvement Index is an index of Dish Rack (a binary variable equal to 1 for having a two tiered dish rack), Handwashing Outside Toilet (a binary variable equal to 1 for having hand washing facilities outside the toilet), Hangline (a binary variable equal to 1 for having a hangline), Improved Drinking Water (a binary variable equal to 1 for any measure to improve water quality) and Covered Pit Latrine (a binary variable equal to 1 for having a covered pit latrine). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A35: Impact on Mental Health

	(1) Mental Health Index	(2) Not Depressed	(3) Not Stressed	(4) Satisfed Quality of Life	(5) Happiness
Treated	0.207***	0.056***	0.410***	0.320***	0.140***
	(0.040)	(0.018)	(0.079)	(0.086)	(0.044)
Control Mean	0.000	0.534	10.111	4.871	3.343
N	3,560	3,560	3,560	3,560	3,560

Notes: Mental Health Index is an index of an indicator for the respondent not being depressed (score on PHQ-9 scale being less than 5), sum of the responses to 4 questions on the not stressed scale, and a happiness and satisfcation index consisting of satisfaction with quality of life, level of happiness, improvement in quality of life in the last 12 months and the expectations for improvements in the next 12 months. Not Depressed is a binary variable equal to 1 for the respondent not being depressed (score on PHQ-9 scale being less than 5. Not Stressed is the sum of the responses to 4 questions on the not stressed scale where 1 is rarely, 2 is sometimes, 3 is often and 4 is very often. Satisfied Quality of Life is a categorical variable for whether all things considered, how satisfied are you with your life as a whole at the moment, with 1 being the lowest and 10 the highest. Happiness is a categorical variable level of happiness where 1 is unhappy, 2 is not that happy, 3 is neither happy nor unhappy, 4 is happy and 5 is very happy). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A36: Impact on Psychological Index

	(1) Psychological Index	(2) Aspirations Index	(3) Expected Income Level	(4) Self-Efficacy Score
Treated	0.124***	0.093***	169.657***	0.208
	(0.037)	(0.035)	(53.687)	(0.164)
Control Mean	-0.000	0.000	749.453	24.047
N	3,560	3,560	3,504	3,560

Notes: Psychological Index is an index of Aspirations Index (an index of the level of aspirations for future income for the household in 10 years and attitudes towards the future), Expected Income Level (the level of expected income for the household in 10 years), and Self-Efficacy Score (the sum of responses to 7 statements for the generalised self-efficacy scale on a scale of 1 to 4 where 1 is not at all true, 2 is not very true, 3 is somewhat true, and 4 is completely true). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A37: Impact on Aspirations

	(1) Aspirations Index	(2) Dream Better Future	(3) Better to Have Aspirations	(4) Desired Income
Treated	0.093***	0.115**	-0.036	352.693***
	(0.035)	(0.045)	(0.035)	(112.812)
Control Mean	0.000	2.420	4.109	1,653.141
N	3,560	3,560	3,560	3,544

Notes: Aspirations Index is an index of Dream Better Future (a categorical variable for whether it is better to learn to accept the reality of things than to dream for a better future), Better to Have Aspirations (a categorical variable for whether it is better to have aspirations for your family than to accept each day as it comes), and Desired Income (the level of monthly income that you would like your household to be earning in 10 years time). The categorical variables are equal to 1 if strongly disagree, 2 if disagree, 3 if neutral, 4 if agree and 5 is strongly agree. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A38: Impact on Community Empowerment

	(1) Community Empowerment Index	(2) Voice in Community	(3) Trust in Community	(4) Leadership Position Held
Treated	0.090**	0.093**	0.106***	0.030**
	(0.035)	(0.041)	(0.037)	(0.015)
Control Mean	-0.000	0.000	0.000	0.307
N	3,560	3,560	3,560	3,344

Notes: Community Empowerment Index is an index of Voice in Community (an index of indicator variables capturing feeling comfortable speaking up in public about infrastructure and disputes and approaching the village elder and the number of village meetings attended and participated), Trust in Community (an index of categorical variables about whether people in the village can be trusted and relied on, and out of 10 women how many they could borrow from or go to for advice) and Leadership Position Held (an indicator of if the household head has any leadership position in the village). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A39: Impact on Voice in Community

	(1) Voice in Community	(2) Speak On Infra-structure	(3) Speak to Intervene Dispute	(4) Approached Elder	(5) Attend Meetings	(6) Participate in Meetings
Treated	0.093**	0.035	-0.001	-0.009	0.121***	0.019
	(0.041)	(0.044)	(0.041)	(0.018)	(0.036)	(0.037)
Control Mean	0.000	4.379	4.348	0.374	0.884	1.199
N	3,560	3,468	3,468	3,468	3,560	2,325

Notes: Voice in Community is an index of indicator variables capturing feeling comfortable speaking up in public about infrastructure and disputes and approaching the village elder and the number of village meetings attended and participated. Speak On Infrastructure is a categorical variable if the respondent feels comfortable speaking up in public to help decide on infrastructure to be built in the community, with 1 no not at all comfortable, 2 yes but with a great deal of difficult, 3 yes but with a little difficult, 4 yes fairly comfortably and 5 yes very comfortable. Speak to Intervene Dispute is a categorical variable equal if the respondent feels comfortable speaking up in public to intervene in case of a family dispute, with 1 no not at all comfortable, 2 yes but with a great deal of difficult, 3 yes but with a little difficult, 4 yes fairly comfortably and 5 yes very comfortable. Approached Elder is a binary variable equal to 1 if the respondent approached the village leadership about their needs or any issue in the village in the last 6 months. Attend Meetings is the number of meeting types attended in the last year, ranging from 0 to 3. Participate in Meetings is the number of meeting types that the respondent spoke in. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A40: Impact on Trust in Community

	(1) Trust in Community Index	(2) Trust Community	(3) Agree Helper	(4) Agree Difference	(5) Agree React	(6) Financial Community	(7) Household Borrow	(8) Household Problem
Treated	0.106***	0.037	0.050**	0.014	0.048	0.021	0.266***	0.144*
	(0.037)	(0.028)	(0.020)	(0.024)	(0.039)	(0.013)	(0.098)	(0.082)
Control Mean	0.000	3.012	3.233	3.245	2.370	1.850	3.586	3.948
N	3,560	3,560	3,560	3,560	3,560	3,560	3,560	3,560

Notes: Trust in Community is an index of categorical variables about whether people in the village can be trusted and relied on, and out of 10 women how many they could borrow from or go to for advice. The categorical variables equal 4 if completely agree, 3 if agree, 2 if disagree, and 1 if completely disagree that people in the village can be trusted and relied on. Trust Community asks the question whether generally speaking would you say that the people in your village could be trusted? Agree Helper asks the question whether if I have a problem, there is always someone in the village to help me? Agree Difference asks the question whether people like me can make a difference in the village, if we wish? Agree React asks the question whether if I do not agree with something my neighbor is doing, or saying, I react? Financial Community asks the question whether you can count on your village community to help you in case of financial difficulties? Household Borrow asks the question whether out of 10 people in your community, how many of them would you be able to ask to borrow money from in an emergency? Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A41: Impact on Community Cohesion (Village Elder Report)

	(1) Trust Scale	(2) Village Helpful	(3) Village Helpful for Financial Difficulties
Treated	-0.067	0.126	0.200**
	(0.102)	(0.079)	(0.088)
Control Mean	2.231	4.166	3.598
N	334	334	334

Notes: Trust Scale is a categorical variable that asks whether generally speaking would you say that the people in your village trust each other? This categorical variable is equal 1 if completely agree, 2 if agree, 3 if disagree, and 4 if completely disagree. Village Helpful is a categorical variable that asks how likely is a typical person in your village to agree with this statement that there is always someone in the village to help me. This categorical variable is equal 5 if completely agree, 4 if agree, 3 if disagree, and 2 if completely disagree. Village Helpful for Financial Difficulties is a categorical variable that asks how likely is a typical person in your village to agree with this statement that you can count on your village community to help you in case of financial diculties. This categorical variable is equal 5 if completely agree, 4 if agree, 3 if disagree, and 2 if completely disagree. Variables are from the endline village elder survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A42: Quantile Regression for Monthly Income

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	39.192***	3.450	15.173***	23.897***	58.506***	119.687***
	(9.040)	(2.218)	(3.566)	(5.771)	(11.428)	(25.131)
Control Mean	154.151	13.268	38.950	95.000	187.783	362.583
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A43: Quantile Regression for Labour Supplied (Days)

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	3.447***	2.536**	2.500**	3.500***	5.618***	5.456**
	(1.225)	(1.122)	(1.089)	(1.231)	(1.629)	(2.652)
Control Mean	43.332	12.000	24.000	39.000	56.000	78.000
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A44: Quantile Regression for Non-Land Wealth

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	409.923***	83.159***	134.539***	320.630***	530.477***	954.009***
	(81.702)	(21.951)	(22.884)	(45.108)	(91.985)	(209.308)
Control Mean	1,274.839	41.800	209.000	579.120	1,460.720	3,298.400
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A45: Quantile Regression for Monthly Consumption

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	58.943***	33.431***	33.731***	50.218***	68.776***	112.540***
	(14.330)	(10.751)	(12.362)	(16.357)	(20.747)	(31.846)
Control Mean	583.097	212.330	326.719	515.122	759.204	1,027.629
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A46: Heterogeneous Treatment Effects using Random Forest Algorithms

	(1) Most Affected Group	(2) Least Affected Group	(3) Difference
Monthly Income	46.53***	32.43**	12.48
	(19.81,73.78)	(6.650,58.52)	(-22.05,47.06)
	[0.002]	[0.027]	[0.956]
Labour Supplied (Days)	4.403*	1.166	3.111
	(0.525,8.312)	(-2.483,4.870)	(-1.883,8.073)
	[0.053]	[1.000]	[0.447]
Non-Land Wealth	481.4***	359.0**	107.2
	(224.0,736.8)	(102.0,617.8)	(-228.1,440.7)
	[0.000]	[0.012]	[1.000]
Monthly Consumption	68.27***	47.85*	18.70
	(23.17,113.6)	(2.655,92.94)	(-40.52,79.36)
	[0.006]	[0.076]	[1.000]

Notes: This table presents sorted group average treatment effects following Chernozhukov et al. (2018). Households are divided into 2 groups, based on households being above or below the median of the machine learning proxy predictor for their conditional average treatment effects. Strata fixed effects and clustering at the cluster level are included in the estimation. Random forest algorithms with two-fold cross-validation is used. Columns (1) and (2) present medians of treatment effects over 1,000 splits for the most and least affected groups respectively. Column (3) presents the differences in treatment effects. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Baseline covariates used as predictors include monthly income, labour supplied, non-land wealth, monthly consumption, number of adults, number of children, household head age, household head has no schooling, household head has at least some secondary schooling, household head is female, household head is married, asset value, livestock value, savings, net loans, crop sales, income from animals, business profits, total wages, household has business, household has any farming activity, household below the World Bank income poverty line, household below the World Bank consumption poverty line, and household head not depressed. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. 90% confidence intervals are presented in parentheses, and p-values are in square brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A47: Impact on Food and Non-Food Price Indices

	(1) Food Price Index (UNPS)	(2) Food Price Index (Egger et al.)	(3) Non-Food Price Index (UNPS)	(4) Non-Food Price Index (Egger et al.)
Treated	0.000	-0.039	-0.024	-0.072
	(0.224)	(0.105)	(0.037)	(0.093)
Control Mean	1.742	1.256	0.379	0.542
N	114	114	114	114

Notes: Price induces are constructed by cluster by weighting the average price of each good in that cluster by its share of consumption. Consumption shares for each good are from two sources: 1) the Ugandan National Panel Survey (UNPS) 2018 and 2) the data replication package of Egger et al. (2022), which included a file containing expenditure weights from their consumption survey. The price indices are calculated separately for food and non-food items. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A48: Impact on Market Characteristics

	(1) Number of Markets	(2) Number of Vendors	(3) Number of Days Open Per Week	(4) Operating Time
Treated	-0.023	-1.606	0.029	-0.885
	(0.191)	(1.935)	(0.101)	(1.779)
Control Mean	2.421	9.599	6.629	14.846
N	114	114	114	114

Notes: Number of Markets measures the number of trading centres located in a village. Number of Vendors is the number of vendors selling at the market. Number of Days Open Per Week is the number of days that the market is open during a week. Operating Time is the number of years that the market has been operating. Variables are from the endline price survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A49: Impact on Market Products

	(1) Agricultural Inputs	(2) Livestock Inputs	(3) Livestock	(4) Crops
Treated	-0.046	-0.034	-0.031	0.021
	(0.093)	(0.097)	(0.062)	(0.076)
Control Mean	0.614	0.526	0.140	0.772
N	114	114	114	114

Notes: All variables are binary variables equal to 1 if the goods are sold at the market. Variables are from the endline price survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A50: 5km Spillover Effect: Primary Outcomes

	(1) Monthly Consumption	(2) Non-Land Wealth	(3) Monthly Income	(4) Labour Supplied (Days)
Treated	50.703*	577.213***	45.174***	2.168
	(27.515)	(103.299)	(16.658)	(3.543)
Treated X No. of	0.002	-0.079	-0.004	0.000
treated hh nearby	(0.014)	(0.062)	(0.009)	(0.002)
No. of treated	-0.002	-0.028*	-0.000	-0.000
hh nearby	(0.013)	(0.016)	(0.006)	(0.001)
No. of total hh	0.011	0.089***	0.003	0.001**
nearby	(0.011)	(0.023)	(0.004)	(0.001)
Control Mean	583.10	1257.01	154.15	43.33
Baseline Mean	259.97	772.06	85.21	42.34
Mean no. of treated hh nearby	1859	1859	1859	1859
N	3560	3560	3560	3560

Notes: Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All regression include stratification fixed effects. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Standard errors are calculated following Conley (2008) using a uniform kernel out to 10 km No. of treated households nearby is defined as the No. of treated households in nearby clusters within the radius.

Table A51: Impact on Social Desirability

	(1) Social Desirability Standardized Score
Treated	0.024
	(0.042)
Control Mean	0.000
N	3,560

Notes: Social Desirability Standardized Score is a standardized variable measuring social desirability. This is constructed using an index of 13 questions following Dizon-Ross and Jayachandran (2023). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A52: Impact on Primary Outcomes by Social Desirability

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	33.966***	4.689**	338.746***	56.854***
	(10.182)	(1.832)	(109.317)	(20.037)
High Social Desirability	31.869***	4.482***	152.002*	-19.499
	(9.163)	(1.280)	(88.872)	(15.420)
Treated × High Social Desirability	7.631	-2.260	114.337	4.244
	(14.408)	(2.055)	(140.159)	(23.502)
Control Mean	154.151	43.332	1,274.839	583.097
N	3,560	3,560	3,560	3,560

Notes: Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. The regression includes heterogeneous effects by High Social Desirability which is a binary variable equal to 1 if the household has an above median social desirability score which is is constructed using an index of 13 questions following Dizon-Ross and Jayachandran (2023). Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A53: Impact on Lean Season Consumption

	(1) Total Consumption	(2) Food	(3) Durables	(4) Non-Food Non-Durables	(5) Education Expenditure
Treated	154.092***	113.557***	1.286***	24.281***	16.225***
	(22.198)	(18.682)	(0.293)	(3.330)	(3.337)
Control Mean	396.814	310.411	1.274	50.769	41.123
N	3,734	3,734	3,734	3,734	3,143

Notes: Total Consumption is monthly household consumption comprised of consumption of Food, Durables, Non-Food Non-Durables and Education Expenditure. Food is the total food consumed in the last 7 days within and outside the household, whether purchased or produced. Durables are total spending on purchasing durable goods in the last month. Non-Food Non-Durable is the sum of spending on personal goods, house maintenance, utilities, transport, recreation, gifts and health, all scaled to the last month. Education Expenditure is the total spending the last complete academic year. Variables are from the phone survey conducted 9 months after the endline survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A54: Impact on Lean Season Food Consumption

	(1) Food Purchased	(2) Food Produced	(3) Dietary Diversity
Treated	28.610**	84.999***	0.499***
	(11.602)	(12.669)	(0.094)
Control Mean	150.779	161.663	4.790
N	3,734	3,734	3,734

Notes: Food Purchased is the total food purchased by the household in the last 7 days. Food Produced is the total food produced by the household in the last 7 days. Dietary Diversity is the number of different food groups consumed in the last 7 days. Variables are from the phone survey conducted 9 months after the endline survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A55: Impact on Lean Season Hunger

	(1) Any Hunger	(2) Hunger Frequency	(3) Adult Sleep Hungry	(4) Child Sleep Hungry	(5) Adult Sleep Hungry Frequency	(6) Child Sleep Hungry Frequency
Treated	-0.351***	-0.518***	-0.321***	-0.206***	-0.429***	-0.252***
	(0.044)	(0.067)	(0.041)	(0.033)	(0.056)	(0.038)
Control Mean	0.438	0.641	0.384	0.246	0.512	0.300
N	3,734	3,734	3,734	3,734	3,734	3,734

Notes: Any Hunger is a binary variable equal to 1 if there was ever no food to eat of any kind in the house because of lack of resources to get food in the last 30 days. Hunger Frequency is the frequency of there being no food to eat of any kind in the house because of lack of resources to get food in the last 30 days. Adult Sleep Hungry and Child Sleep Hungry are binary variables equal to 1 if any adult household member and child household member respectively went to sleep at night hungry because there was not enough food in the house in the last 30 days. Adult Sleep Hungry Frequency and Child Sleep Hungry Frequency are the frequencyes of any adult household member and child household member respectively going to sleep at night hungry because there was not enough food in the house in the last 30 days. The frequency variables are measured on a scale of 1 to 3, 1 if it happens rarely, 2 if sometimes and 3 if often. Variables are from the phone survey conducted 9 months after the endline survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A56: Impact on Primary Outcomes (Pooled)

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	28.152*	4.607***	326.122***	23.199
	(14.513)	(1.492)	(80.260)	(14.587)
Endline	-16.192**	2.250*	82.207	80.218***
	(8.026)	(1.248)	(57.073)	(12.027)
Treated × Endline	11.962	-1.243	89.122	36.449*
	(12.742)	(1.775)	(76.467)	(18.564)
Total Effect	40.115	3.364	415.244	59.647
p-value: Total Effect = 0	0.000	0.006	0.000	0.000
Control Mean (Midline)	173.898	41.615	1,253.501	510.531
Control Mean (Endline)	154.151	43.332	1,274.839	583.097
N	5,813	5,813	5,813	5,813

Notes: Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour supply is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-land wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. The regression pools the midline and endline surveys together, and includes heterogeneous effects by survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A57: Impact on Primary Outcomes by Intervention Phase

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	58.682***	5.947***	594.469***	64.545***
	(13.740)	(1.618)	(116.848)	(23.137)
Phase 2	3.503	2.906*	-1.816	3.894
	(10.401)	(1.691)	(105.938)	(18.097)
Treated × Phase 2	-35.299**	-4.568*	-333.536**	-10.208
	(17.513)	(2.458)	(155.289)	(29.329)
Control Mean	154.151	43.332	1,274.839	583.097
N	3,560	3,560	3,560	3,560

Notes: Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. The regression includes heterogeneous effects by program phase. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A58: Cost Elements of RTV versus the targetting the ultra poor (TUP) graduation programs in Banerjee et al. (2015) (2014 USD PPP)

	RTV	TUP Average	TUP India
(1) Asset/input transfer	111	1,080	700
Asset cost household	56	758	437
Seeds	35	-	
Livestock	21	758	437
Food stipend	-	305	263
Asset cost village	55	-	
(2) Personnel costs	35	2,026	407
Salaries	21	1,183	297
Materials		64	1
Training		229	19
Travel costs	6	150	17
Other costs	7	400	73
(3) Indirect costs	117	450	112
Support & office local	87	-	
Support & office int.	30	-	
(4) Start-up expenses	9	73	38
Total Cost (1)+(2)+(3)+(4)	273	3,717	1257

Average across 6 graduation programs from Table 4 of Banerjee et al., 2015. See Banerjee et al. (2015) for a breakdown of the cost categories in their study. RTV costs deflated to 2014 using the World Bank annual headline consumer price inflation and converted to 2014 PPP using the World Bank annual PPP conversion factor for Uganda (Ha et al., 2023). Costs included as part of the RTV program were as follows: Under asset/input transfer: Assets costs for the household include the seed, tool and livestock inputs and for the village include the well construction, community agricultural and livestock inputs such as seeds and tools for the demonstration plots and vaccinations for livestock and materials and handouts provided to the community. Under personnel costs: salaries include the salaries of staff carrying out training and monitoring activities, travel includes all costs for program staff to visit the communities and other costs include the value of government inputs into the program, including the time of officials during project inception, and government staff costs for staff who provided training and program elements, including vets, agricultural extension officers and health workers, and the time of government staff when identifying eligible villages. Under indirect: Staff and office costs for both local and international support personnel are included, allocated in proportion to the number of households in the study compared to the total number of households enrolled in the RTV program over the 2 years of program implementation in the study communities. Start up costs include village identification, community needs assessments and climatic data.

Table A59: Quantile Regression for Nondurable Consumption (Midline)

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	22.694	4.564	4.661	20.417	14.022	40.890
	(13.976)	(10.589)	(11.797)	(14.601)	(17.609)	(31.070)
Control Mean	508.930	208.412	307.031	442.863	646.894	899.677
N	2,253	2,253	2,253	2,253	2,253	2,253

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Nondurable Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), non-food non-durable goods and education spending. Variables are from the midline survey. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A60: Quantile Regression for Nondurable Consumption

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	54.637***	34.978***	28.426**	46.282***	56.454***	113.901***
	(13.983)	(10.299)	(12.451)	(17.163)	(19.670)	(26.382)
Control Mean	576.684	211.316	323.452	508.707	748.555	1,025.240
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Nondurable Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), non-food non-durable goods and education spending. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A61: Quantile Regression for Non-Productive Assets

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	104.831***	26.867***	38.195***	75.327***	127.921***	195.532*
	(30.599)	(6.916)	(7.949)	(13.267)	(25.347)	(118.213)
Control Mean	597.789	87.400	156.560	293.360	569.240	1,677.320
N	3,560	3,560	3,560	3,560	3,560	3,560

Notes: This table presents coefficient estimates from an OLS regression, alongside quantile regressions at 10, 25, 50, 75 and 90 quantiles. Non-Productive Assets is an aggregate of the total household value of assets, less any productive assets including small farm tools, electric and hand tools and farm equipment. Treated is an indicator for the household being in a village that was randomly assigned to receive RTV's programme. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation and winsorized at the 1% level. Heteroskedasticity-robust standard errors clustered at the cluster level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.