"We're All in This Together": Experimental Evidence from a Universal Livelihoods Program*

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September 5, 2025

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Abstract

Most anti-poverty programs target only the poorest households, but this is costly and often error prone. We ask whether a universal program delivered to all households in a community can improve welfare. Using a clustered randomized controlled trial with 4,000 randomly sampled households from 335 villages in rural Uganda, we study a universal livelihoods program that provided agricultural and livestock inputs, training, and support for health, savings, and entrepreneurship to all households. Households in treated villages experienced significant gains after three years: monthly income increased by USD 40 PPP (26%), wealth by USD 389 PPP (31%), and monthly consumption by USD 59 PPP (10%). Impacts are positive throughout the distribution, with no evidence of concentration among better-off households, suggesting that the program improved welfare for all. The benefit–cost ratio exceeds 350%, demonstrating that a universal program can be a highly effective approach to alleviating rural poverty.

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1 Introduction

700 million people continue to live in extreme poverty, half of whom reside in rural Sub-Saharan Africa and are dependent on agriculture (World Bank, 2024). Rural poverty in Sub-Saharan Africa is highly concentrated, with on average 46% of rural households classified as extremely poor. Addressing poverty therefore requires strategies that can effectively increase the incomes of agricultural households in high-poverty areas. However, such poverty is complex to address: the poor face a range of constraints that prevent them from improving their incomes, highlighting the need for multifaceted approaches (Banerjee et al., 2015, Sedlmayr et al., 2020). Moreover, the approach must be effective at reducing poverty when provided to a significant portion of a community at once. Could targeting high-poverty communities with a universal, multi-faceted program be an effective way to help many households transition out of poverty together?

In a universal program, multiplier and general equilibrium effects may generate additional program impacts beyond those seen when only a subset of a community is included, potentially making a village-level program more effective at reducing aggregate poverty than an individually targeted program (Egger et al., 2022). Further, targeted programs can have unintended drawbacks: they may create negative spillover effects on those not included (Duflo et al., 2023, Haushofer and Shapiro, 2018), use resources on a targeting process that is often error-prone and perceived as unfair (Banerjee et al., 2024, Brown et al., 2018, Hanna and Olken, 2018, Merfeld and Morduch, 2023) and may carry stigma for recipients (Thomas et al., 2020). On the other hand, a universal program is likely to be more expensive overall unless targeting costs are high, large economies of scale are realized by reaching more households within the same community or significant positive complementarities in treatment status allow smaller transfers. Universality may also be less effective: Delivering the same inputs and training to everyone simultaneously may lead to congestion in economic activities in the villages. This may result in the program failing to improve household welfare, especially for the poorest, who may lack the complementary skills and inputs needed to compete with better-off households.

We address these questions through a randomized controlled trial with 335 villages in western Uganda, offering the first causal evidence on the effects of a universal livelihoods program. The livelihoods program (henceforth referred to as the "RTV program") is run by Raising the Village (RTV) and is provided in rural villages reliant on agriculture. A key feature 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 to house-

holds, training and mentorship, health support and the formation of saving groups. Because all households participate, trainings can be delivered collectively, and ongoing mentorship can be provided by committees of volunteers from the community, keeping costs low while ensuring high levels of participation and engagement. There are also some village-level inputs provided to the community and managed collectively, such as wells, large agricultural tools and livestock medications. The program therefore has elements in common with both the multifaceted targeting the ultra poor (graduation) programs, which provide similar packages of support and mentorship, and income-generation focused community-driven development programs, which provide community chosen projects.[1]

The study setting provides a relevant context for exploring the impacts of a universal livelihoods program: villages in rural Uganda have high burdens of poverty similar to the Sub-Saharan average, with 43% of households in rural western Uganda classified as extremely poor on average (Ugandan National Bureau of Statistics (UBOS), 2021). 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 three 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 experience large and significant improvements in all of these outcomes relative to households in control communities.

Households in treatment villages have USD 40 PPP (26%) 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 50% of the total income increase.[2] 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 finan-

[1]Programs like the Millennium Villages Project (MVP) and Community-driven Development (CDD) also take a community level approach to development. However, these differ from the RTV program in their focus on public goods and projects that only a part of the community participates in. The MVP focused on providing public services and infrastructure and nearly 40% of the budget was allocated to health initiatives. Community-driven Development (CDD) programs often focus on public good provision such as wells, roads, health and education (Casey, 2018, Casey et al., 2012, Heß et al., 2021). While some CDD programs are more growth focused and include elements like agricultural tools, seeds or livestock, projects usually only include community managed inputs and focus on one area (Hess et al., 2021). The RTV program differs in that the program always include multiple elements designed to raise incomes, and some inputs are provided directly to households.

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

cial support for starting or growing enterprises but provides training and savings 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 USD 389 PPP (31%) higher in treated villages, driven by an increase in household durable assets (28%), livestock (47%) and savings (16%). 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 enable households to increase monthly consumption by USD 59 PPP (10%) in the treated villages. The largest increase is in food consumption and is driven by an increase in the value of consumption of own production, consistent with the large expansion in crop activity.[3] 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 do not 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.

A potential concern with a universal program is that benefits may be concentrated in better-off households, who monopolise the program or are more able to benefit from it due to complementary resources. We find no evidence of this in our setting: treatment effects are seen throughout the distribution and we see statistically significant effects across quantiles for all the main outcomes. Heterogeneity analysis using both pre-specified household characteristics and a machine learning approach (Chernozhukov et al., 2018) reveal no ev-

[3]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.

idence that treatment effects are driven by specific subgroups. We also find no systematic differences in program impacts across villages with varying baseline characteristics, such as population size, market access or inequality. In addition, we do not find evidence in support of poverty traps: households that started with lower levels of wealth do not appear to be stuck in low-wealth states after three years. Together, we view this as evidence that the universal program was effective at enabling all types of households and villages to improve their welfare.

The aggregate value of the in-kind transfers to the clusters is moderately large. These could have affected local prices and caused spillovers beyond treated clusters. Using price surveys at local markets for a range of goods, we see no effects on prices, consistent with 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 clusters within a distance radius of 0-5 km shows no evidence of spillovers to control clusters and suggestive evidence of some positive spillovers in treated clusters.

We next compare the benefits and costs of the RTV program to other types of anti-poverty programs. We focus on graduation programs such as Targeting the Ultra Poor program and large unconditional cash transfers because there is good data on both their total costs and consistent measurement of their economic benefits in terms of consumption gains for the household.[4] Targeted, multi-faceted graduation 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 also costly and so similarly require strong persistent for the benefits to cover the costs.

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.[5] As a result, the RTV program is 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 368% after three years is between 5 and 15 times greater than

[4]We do not include CDD programs in this comparison since, while there is detailed cost data on many of these programs, the economic benefits in terms of changes in household consumption are not consistently measured.

[5]In theory, a universal approach could 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.

that seen in these other programs at a similar time point, and comparable to the 10-year benefit-cost ratio in Banerjee et al. (2021).

Our study contributes to the early literature on universal anti-poverty programs, in contrast to the majority of anti-poverty interventions that impose household eligibility criteria (Banerjee et al., 2019, Hanna and Olken, 2018). We provide the first experimental evidence on the effects of a universal livelihoods program,contributing evidence on both the overall impact of such a program and its distributional consequences. To the best of our knowledge, the only other study of a universal program is the on-going Universal Basic Income (UBI) experiment in Kenya (Banerjee et al., 2023). There is growing interest in universal programs as targeting is not only expensive and complex, diverting resources that could otherwise be provided to beneficiaries, but, when it relies on proxies, can be seen as arbitrary or unfair within communities, may create stigma for beneficiaries or negative spillovers on those left out (Alatas et al., 2012, Banerjee et al., 2024, Brown et al., 2018, Duflo et al., 2023, Haushofer and Shapiro, 2016, Merfeld and Morduch, 2023, Thomas et al., 2020). Moreover, if there are positive complementarities in treatment, providing support to all households in a community raises the potential for multiplier effects to enhance program impact (Banerjee et al., 2019, Egger et al., 2022). 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., 2025). We show that a universal program not only improves outcomes for households on average but also delivers substantial gains to the poorest households.

We also contribute to the literature on designing effective anti-poverty programs. Cash transfers are a widely used tool, but evidence on their long-term impacts remains mixed and few studies examine outcomes beyond 2 years (Blattman et al., 2020, Crosta et al., 2024, Haushofer and Shapiro, 2018). While graduation programs have demonstrated success in alleviating poverty in both the short and long term (Bandiera et al., 2017, Banerjee et al., 2015, 2021, Bedoya et al., 2019), large asset transfers and one-on-one mentorship make them expensive and complex to scale. Attempts to develop a more cost-effective graduation approach that have focused on unpacking the bundled program have not consistently been successful (Banerjee et al., 2022). 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. We show that the RTV program is effective in typical rural Sub-Saharan African villages, where most of the poor live. This potential for the program to scale 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 universal livelihoods program in Section 2, the experimental design and intervention in Section 3, the data in Section 4 and

the results in Section 5. In Section 6 we discuss general equilibrium effects and Section 7 alternative explanations. In Section 8 we discuss the cost-benefit-analysis and comparison with other anti-poverty programs. Section 9 concludes.

2 Universal Livelihoods Program

In this section, we discuss the potential of universal anti-poverty programs. We focus on the theoretical benefits and limitations of universality as it relates to a livelihoods program, of the sort studied here.

If there are positive complementarities in income, providing a program to a larger share of households will generate greater effects than providing the program to households in isolation (Banerjee et al., 2019). Recent findings support such positive spillovers: Evidence from an anti-poverty program in Kenya suggests that when a larger proportion of a community gets the intervention, there are multiplier effects which increase the benefits of the program to all (Egger et al., 2022). Similarly, increases in aggregate demand meant that a cash transfer targeted at women to open businesses in Nigeria had large positive spillovers on non-beneficiary women in the same villages as beneficiaries (Papineni et al., 2025). Positive general equilibrium and large multiplier effects mean a universal program could deliver similar economic impacts as highly targeted programs but with smaller input and asset transfers, thereby saving on cost. However, if everyone invests in the same activities at the same time, there could be congestion in the village economy. This is less likely to be a concern if the additional output generated, for example, crops, can be sold in markets and to traders for consumption outside the area. A universal program may also impact prices: there could be an increase because of increased economic activity or a decrease if there is an expansion in output of the same products. However, previous work hasn't found big changes in market prices even when substantial amounts of cash are injected into the economy (Egger et al., 2022) and including everyone may prevent negative spillovers on those not included (Filmer et al., 2023). In addition, including everyone in the program will result in households who may be better placed to benefit from taking part, and potentially make "transformative investments" increasing the total welfare gains (Banerjee et al., 2019, Haushofer et al., 2025).

For households, universal programs eliminate the risk of exclusion due to targeting errors, an important advantage given that poverty is dynamic rather than static (Baulch and Hoddinott, 2000). Targeting is often imprecise: Hanna and Olken (2018) show for Indonesia and Peru that reaching 80% of the truly poor (i.e., tolerating a 20% exclusion error) requires including 20–30% of the non-poor households. Such errors can lead to confusion and negative spillovers, as households struggle to understand why they were excluded (Duflo et al.,

2023, Haushofer and Shapiro, 2018). Targeting also raises concerns around horizontal equity when households in similar economic situations receive different treatment, the program may be perceived as arbitrary or unfair (Banerjee et al., 2024, Brown et al., 2018, Hanna and Olken, 2018, Merfeld and Morduch, 2023). Consistent with this, targeting has been shown to be undone by households providing transfers to excluded households (Angelucci and De Giorgi, 2009). Moreover, targeted programs may carry stigma for recipients (Thomas et al., 2020). In contrast, universality may foster social cohesion and minimizing feelings of marginalization.

A common feature of targeted livelihood programs is one-to-one coaching and training, usually tailored to the asset transferred. This training is a key reason why these programs are expensive, but removing the training has been shown to reduce effectiveness (Banerjee et al., 2022). Scaling such an approach to a universal level presents a major challenge since providing individual training to everyone would be financially unsustainable. The RTV program addresses this by delivering group training sessions for the entire village. This could be potentially beneficial as it creates a sense of shared knowledge in the village. However, it also introduces the risk that the most vulnerable participants, those who may need the most support, might not benefit. To address this, RTV establishes village committees whose members receive additional training and are tasked with offering ongoing peer support. Yet, the efficacy of this strategy remains uncertain, as these committees operate on a voluntary basis and may lack the incentives or capacity to provide consistent support.

A universal program may also be more vulnerable to elite capture (Heß et al., 2021). This is less likely to be a concern with the RTV program, where the inputs given to each household are quite small. Mechanically, universality will result in wealthier households being included than under a targeted program, who, due to complementary skills and inputs, may be better placed to benefit from the program. Therefore, beyond the average effects in these communities, it is important to consider the heterogeneous effects of the treatment by baseline welfare to ensure that the poorest still benefit.

3 Study Design

3.1 Setting: Rural Western Uganda

We work in rural, western Uganda. Uganda is the 18th poorest country in the world, with 48% of rural households living below the $2.15 a day poverty line of extreme poverty in 2019 (Ugandan National Bureau of Statistics (UBOS), 2021). This poverty rate is comparable to the Sub-Saharan Africa average, where approximately 46% of rural households live in poverty

(World Bank, 2024). Rural villages in western Uganda have high rates of poverty similar to the national and Sub-Saharan African rate, with on average 43% of households classified as poor in 2019 (Ugandan National Bureau of Statistics (UBOS), 2021). Our setting is therefore a good one for studying poverty in rural Sub-Saharan Africa, where 50% of the world's extreme poor live.[6]

The study took place in 335 villages from 12 sub-counties in the Kagadi and Kyenjojo districts. Our partner NGO RTV selected the study area as one with high rates of poverty that it had not previously worked in. RTV selected rural villages for inclusion in the study following their existing village selection process: 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, RTV determined that 335 out of 395 villages met the eligibility criteria for the program. There were no inclusion criteria for the study above those imposed by RTV to be a participating community, and so all 335 eligible villages are included in the sample for this study.

3.2 Intervention: The Raising the Village Program

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, but always includes the core components described below. Unlike other livelihood programs, which are often provided to one individual within the household, this program is provided to the household, with all adults expected to attend trainings and participate in the program.

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[7]

[6]Evidence on the GiveDirectly unconditional cash transfers as well as the ongoing universal basic income study is from western Kenya, which is a similar context to ours (Banerjee et al., 2023, Egger et al., 2022, Haushofer and Shapiro, 2016, Orkin et al., 2023).

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

and consultation with the households in the village in a series of design sessions. Typically, the household inputs include 2-5kg each of bean, groundnut and maize high-yield seeds, 0.25 bag of Irish potatoes and a variety of vegetable and fruit seeds. Households also receive tools and equipment such as hoes, forks, spades and sacks. Additional tools are provided to the village for communal use, including pangas, wheelbarrows, water drums, watering cans and spray pumps. 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, organic 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, such as crop drying and use of PICs bags; and the final is a refresher training scheduled at a time dependent on the needs of the community. 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. The committee provide regular support and mentorship in the community. It is responsible for ensuring that at least 90% of households attend the training and successfully adopt key techniques trained on. The committee also manages community inputs, such as large agricultural tools and machinery available for all households.

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.[8] The village can choose who receives livestock, though women-headed

[8]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.

and youth-headed households are often selected as recipients.[9] 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.[10] 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 village livestock team 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. It must ensure at least 90% of households attend the livestock training and adopt key aspects of the training. The committee manage village-level livestock inputs, including medication and vaccination, which are available to all households in the community. The committee members 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. Separate groups for women, men and youth as well as joint groups are set up. Groups can both own assets themselves and give out loans to members. As part of the program, 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

[9]Women-headed households are almost always widows. Youth-headed households have a household head aged 18-30.

[10]Male pigs are provided in a ratio of 1:7 female pigs. Individuals to care for the male pigs are identified from the selected primary beneficiaries.

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 maintain the wells. RTV arranges for visits by health workers to the village two months, for a total of six visits during 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 training sessions are carried out to boost aspirations, entrepreneurship, financial literacy, and women's equality. The first training takes place over two days. The first day focuses on financial literacy and includes topics such as setting financial goals, financial planning, budgeting, cash flow management, and savings and credit resources. The second day focuses on mindset change and includes topics such as improving self-efficacy and aspirations, goal setting, overming obstacles, and having a growth mindset. The second training is on Village Savings and Loans (VSLA) groups and entrepreneurship. It 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 third training is Gender Equality, Roles, and Responsibilities and focuses on questioning gender roles, understanding the impact of these roles on the household's ability to generate income and discussions around domestic violence. The fourth training is a refresher depending on the needs of the community.

Monitoring:

During the first year, project officers closely track village progress against set targets to ensure high compliance. Quarterly monitoring reports verify that at least 90% of households are practicing the key behaviours taught in the agriculture, livestock and WASH trainings. Project officers also check that VSLAs are functioning properly and ensure that committees are carrying out their role effectively. Villages falling short receive additional training and support to bring all households up to speed. This intensive monitoring and early intervention likely explain the program's broad effectiveness. Project officers continue to follow-up and track village progress through months 12-24, after which the village is considered 'graduated'.

Committees

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. 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. While volunteer, communities play an

active role in program implementation and they are crucial for ensuring high participation and implementation of the program within the community. Members of these committees receive additional training and control village-level inputs, such as large agricultural tools and livestock medications. Committee members are expected to conduct check-ins with all households on a fixed schedule and support their community members to adopt taught practices. They work with the project officer to ensure at least 90% of households are attending and implementing key practices from the trainings. Project officers ensure that committee members are carrying out their duties during quarterly check ins, and will hold re-elections for committee members who are not performing adequately.

Cost

The direct program costs, excluding time cost of village committee members, is USD 321 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.

3.3 Randomization

Randomization is at the cluster level. RTV classified the study villages into 114 'clusters'. Each cluster is typically 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.

3.4 Sampling

Every household in an eligible village can take part in the RTV program and so we sample randomly from all households within each village. To construct a sampling frame, we worked with the village leadership to compile a list of all households in the village, resulting in a list of 30,082 households across the 335 villages. From this list, we randomly selected 24 households per village to be surveyed, stratifying on the marital status of the household head. This process ensures that in expectation our sample is representative of the village.

Enumerators were provided with the list of 24 households per village, split by marital status. Each group (married and unmarried households) was further split equally into main and reserve lists. Enumerators first approached the households on the main list and replaced households as necessary with reserves of the same marital status if they could not reach all the main households. This continued until they had successfully surveyed 12 households per village. Survey respondents were approached in their households, 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 households from the 335 villages.[11]

4 Data

We use data from a baseline survey, midline survey, endline survey, price survey, village survey and consumption survey for the analysis presented here. We also have data from RTV on household attendance at the training sessions.

The baseline survey for the study took place in June (phase 1) or November (phase 2) 2020.[12] Both study districts were included in each phase of the baseline survey. A midline

[11] All baselined households belong to the list of 24 households per village that we provided. In a couple of villages, enumerators could not find 12 households from the list to complete the baseline with, or had to move on from the village before 12 baseline surveys were reached.

[12] 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). We could not reach 92 households on the phone so for these we use the March 2020 responses.

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.[13] We also conducted a short phone survey in June 2024 during the agricultural lean season 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 from three vendors within each market.

4.1 Sample Descriptives

We present summary statistics for our control group at endline in Table 1.[14] 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 USD 583 PPP. Daily per capita consumption is low, with half of all households living on less than USD 3 PPP per day. Even among the top 5% of households, per capita consumption reaches only USD 6 PPP per day.

Households interviewed in November 2020 were surveyed in person.

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

[14]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.

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.

While there is variation across households in the village on economic measures, a large proportion of the village is extremely poor: immediately post harvest, 35% of the households are below the extreme poverty line living on less than $2.15 a day. During the lean season, the rate of extreme poverty is higher, with 65% of households in the control group meeting the extreme poverty threshold.[15]

The average household has USD 1,274 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 near universal 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 and in nearby western Kenya, the site of evaluations of large unconditional cash transfers and the UBI study 95% of the households grow crops (Orkin et al., 2023). 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 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. There is little variation by wealth quartile 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 the bottom quartile are more than twice as likely to be headed by a woman i.e. by a widow, which highlights their greater vulnerability.

[15]The lean season poverty rate statistic is from the phone survey carried out in June 2024. These statistics also highlight how sensitive the poverty rate is to seasonality and the importance of taking this into account in targeted programs.

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					
HH Head Female	0.25					
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)	583.1	515.1	158.2	326.7	759.2	1,253.1
Consumption Per Capita Per Day	3.08	2.67	0.98	1.80	3.86	6.35
Food Purchased Consumption	171.3	125.6	9.8	65.1	230.3	485.3
Food Produced Consumption	288.0	244.3	27.0	130.3	395.6	721.8
Non-Land Wealth (USD PPP)	1,274.8	579.1	-120.1	209.0	1,460.7	5,149.0
Asset Value	620.1	312.7	64.2	171.0	597.4	2,720.8
Livestock Value	606.8	190.0	0.0	0.0	608.0	2,466.2
Savings	207.1	38.0	0.0	0.0	228.0	912.0
Amount of Money Lent	88.26	0.00	0.00	0.00	11.40	380.00
Outstanding Loan Amount	-246.9	-21.7	-1,311.0	-243.2	0.0	0.0
HH Owns Land	0.97					
HH Has Farming Activities	0.98					
HH Has Business	0.25					
Total Income (USD PPP)	154.7	95.0	4.8	39.3	187.8	530.9
Crop Sales (Monthly)	77.42	46.98	0.00	16.15	109.06	255.55
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 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.

In Table A4 we present village-level summary statistics. The average village has around 90 households. There is substantial heterogeneity in economic conditions across villages. Some villages have double the income and triple the wealth of the average village. There is less disparity in consumption. This economic disparity is mirrored in inequality, with considerable variation in the standard deviations of income, wealth, and consumption across villages. Access to public amenities also differs: while most villages have trading centers and a well source, about half of the villages have a primary school, one-third have a mobile money agent, and only one in six has a weekly market. Secondary schools and health centers are rare.

4.2 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).

4.3 Intervention Compliance

We confirmed in the village chairperson survey at endline that all treatment villages received the RTV program, and that no control villages received it. We also confirmed that certain elements of the RTV program were implemented in treated villages: In treated villages, 93% of village chairpersons 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.

We also 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 84% of households attending all four types of training, and 97% attending at least three out of the four training sessions (Table A5). Attendance is likely so high because RTV utilises the committees to ensure that at least 90% of households attend each training and tracks adherence to this.

Since this is a village-level program, we do not consider further the degree to which a household was treated, but consider all treatment villages to have received the RTV program as intended.

4.4 Attrition

We have low attrition of 8% at endline which is not correlated with treatment (Table A6, 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 A6, 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 A6, 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 follow-up are not uncommon in phone surveys (Banerjee et al., 2020, Mahmud and Riley, 2023).

4.5 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 program, 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. All values reported are in USD PPP at the 2023 exchange rate of 1 USD PPP to 1,315 UGX, and we adjust for inflation and winsorize at the 1% level. We impute missing values at baseline using the district median. At endline, we impute missing values by treatment status and district for variables that enter into aggregates. 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).

5 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 40 PPP higher (26%), monthly household labour supply is 3.3 days greater (8%), household monthly consumption is USD 59 PPP higher (10%) and total non-land wealth is USD 389 PPP higher (31%) in treated households compared to control. These results are robust to the exclusion of baseline controls (Table A7, panel A) and to not winsorising (Table A7, 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 8.

Since we analyse all outcomes at the household level, we check for impact on household size, fertility and on migration. We do not find any changes in these outcomes as a result of the RTV program (Table A8).

5.1 Income

Household income is USD 40 PPP (26%) higher in treated households as compared to the monthly household income of USD 155 PPP in the control group (Table 3). Half of this rise is due to an increase in farm crop sales of USD 21 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 significant changes in wage or rental income.

The large increase in farm income of 27% as compared to the control group is driven near equally by crop sales in seasons 1 and 2 and the sale of perennial crops (Table A9 shows crops 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 program on agriculture, and the provision of inputs and training for expanding agricultural activity. Both the number of crops planted across the two agricultural seasons

Table 2: Impact on Primary Outcomes

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	39.706	3.283	389.356	58.854
	(9.045)	(1.295)	(82.058)	(14.371)
	[0.000]***	[0.013]**	[0.000]***	[0.000]***
	{0.000}***	{0.026}**	{0.000}***	{0.000}***
Control Mean	154.713	43.918	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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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	39.706	20.855	4.473	12.351	1.517	0.509
	(9.045)	(4.505)	(1.499)	(4.665)	(2.858)	(0.725)
	[0.000]***	[0.000]***	[0.003]***	[0.009]***	[0.597]	[0.484]
		{0.000}***	{0.020}**	{0.035}**	{1.000}	{1.000}
Control Mean	154.713	77.424	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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

and the land area planted have increased (Table A10). Fertilizer quantity, including organic ones, more than doubled[16] and the households are also more likely to use irrigation and improved/hybrid seeds (Table A12).

Investments in agriculture increase the value of total crop yield by nearly 20% in both seasons (Table A13 column 6), driven by higher yields across multiple crops (Table A14). These yield gains translate into greater crop sales (Table A15, column 1). Maize and beans —accounting for 80% of total sales—contributing roughly 50–60% of the overall increase in crop sales across the two seasons (Table A15, columns 2 and 3). Prices for major crops show little change: maize prices, for example, rise by less than 2% (Table A15, column 7) indicating that the growth in sales is primarily due to increased yields rather than higher prices.

The second largest contributor to the increase in household income is non-farm enterprises, where profits increase by 38% compared to a control group mean of USD 33 PPP (Table 3 column 4). Households in treated villages report higher average sales and stock levels (Table A16). Business asset stocks do not increase - unsurprising given there was no cash or big asset transfer in the RTV program.

Households in the treatment group are five percentage points more likely to operate a non-farm enterprise, relative to the control group rate of 25% (Table A17). At the enterprise level, there are no significant differences in profits, sales, or expenses between treatment and control villages (Table A18, panel A), indicating that the household-level income gains stem from a greater number of enterprises rather than higher performance of individual businesses. This is true for both pre-existing enterprises (that existed at the time of the baseline) and 'new' enterprises that have opened since (Table A18, panels B and C).

There is a small increase in overall household income from the sale of livestock and animal products of USD 4.5 PPP (Table 3 column 3). This is a large 38% increase as a percentage of the control group mean of USD 11.8 PPP. Consistent with this, we see households using more livestock inputs such as feed and medicines (Table A19).

5.2 Labour Supply

In line with the increase in income, we find that households are working more on all household economic activities.[17] Total household labour supply increases by about 3.3 days, a 7% increase as compared to the control group's mean of 44 days of labour supply in a month

[16]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 A11).

[17]This increase is driven by household members above 16 working harder and not child labour increasing (Table A20). The labour supply of household members under 16 to casual work has decreased.

(Table 4). This is driven by an increase in labour supplied to the household farm, livestock and businesses of 1.7 days, 1.3 days and 0.8 days a month, respectively, consistent with the increase in earnings from these activities. 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 households to shift away from casual labour outside the household to working on household economic activities.

Table 4: Impact on Labour Supply

	(1) Total Labour Supply	(2) Household Farm	(3) Household Livestock	(4) Household Business	(5) Salaried	(6) Casual
Treated	3.283	1.660	1.247	0.757	0.423	-0.835
	(1.295)	(0.976)	(0.436)	(0.355)	(0.264)	(0.236)
	[0.013]**	[0.092]*	[0.005]***	[0.035]**	[0.112]	[0.001]***
		{0.255}	{0.029}**	{0.135}	{0.255}	{0.007}***
Control Mean	43.918	27.879	6.924	4.318	1.474	3.323
N	3,560	3,560	3,560	3,560	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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.3 Wealth

Total household non-land wealth is USD 389 PPP (31%) higher for treated households as compared to the control group's wealth of USD 1,275 PPP (Table 5). Nearly half of this increase (47%) comes from higher livestock holdings, 28% from household assets, and 16% from savings, with the remainder attributable to small, statistically insignificant changes in loans given and outstanding.[18] The substantial wealth gain is explained by the nearly USD 40 PPP increase in household monthly income, while household expenditures increase by

[18]While we had pre-specified an analysis of net lending – defined as the outstanding value of all household lending minus the outstanding value of all household loans taken – we believe it is clearer and more informative to present the results for loans given and loans outstanding separately.

only USD 20 PPP[19] enabling 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, meaning they are also purchasing livestock (Table A21). The reported increase in ownerships of pigs is verified by enumerators (see Section 7.1 and Table A22).

The USD 108 PPP higher assets (Table 5 column 2) are driven by increases in both small assets such as radios, mobile phones, and pots and pans but also bigger assets such as furniture, beds and mattresses, solar panels and even vehicles (Tables A23 - A24).

There is a sizeable increase in savings of USD 61 PPP (30%). 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 a 7 percentage point (11%) increase in the likelihood of a treated household being a member of a village saving group, relative to a mean of 65% in the control group, as well as an increase in the number of groups they are part of (Table A25). Crucially, these groups are of better quality – they are bigger, with on average 3 more members relative to 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 A26). Consequently, treated households see a USD 45 PPP (30%) increase in the value of their savings in groups, an USD 8 PPP increase in the value of assets held in groups and a 50% increase in income from group assets.[20] This expansion of saving groups can explain the large increases in savings, assets and livestock in the treated households.

Following our pre-analysis plan, we exclude the value of the house from non-land wealth. However, we do measure spending on home improvements and objectively verify these. We find that treated households spend about USD 78 PPP (54%) more on home improvements in the last year. Consistent with this, enumerators observe improvements in wall quality, but not in other dimensions of house investment, such as the floor and roof materials (Table A27).

[19]This is given by the difference between a USD 59 PPP increase in household consumption and a USD 40 PPP increase in household consumption from own production.

[20]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.

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	389.356	107.672	183.819	61.630	12.898	29.938
	(82.058)	(31.422)	(46.920)	(19.383)	(12.273)	(18.621)
	[0.000]***	[0.001]***	[0.000]***	[0.002]***	[0.296]	[0.111]
		{0.005}***	{0.002}***	{0.007}***	{0.675}	{0.316}
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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.4 Consumption

Household monthly consumption is USD 59 PPP (10%) higher than in the control group (Table 6), with the largest increase - USD 45 PPP - coming from food consumption.[21] This increase in food consumption is almost entirely driven by higher consumption of own produced food, consistent with the rise in crop production discussed above (Table A29).

Treated households consume a more diverse diet as a result, consuming on average 0.29 additional food groups out of seven each week (Table A30).[22] 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 falls by 10 percentage points from a control group mean of 31% (Table A31). 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 also decreases.

Beyond the increased consumption from own production, we see increased spending on non-food items: There is an increase in spending on durable goods amongst treated households of USD 3.6 PPP (56%), consistent with the increase in value of household assets that we find, and in spending on non-food non-durable goods of USD 6.5 PPP (8%).

[21] To allow for comparison across studies, we also report consumption per adult equivalent and per capita without education (Table A28).

[22] 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 A11 column (3).

However, treated households do not report a significant increase in education expenditures. Child-level analysis of expenditures and enrolment similarly shows no effects (Table A33, panel A). nor are there significant differences by gender or by age (Table A33, panels B and C). This aligns with evidence from other anti-poverty programs, such as the graduation program, which also found no increase in education spending despite income growth (Banerjee et al., 2015), suggesting programs must explicitly target education to have effects.

Our primary measure of consumption comes from an in-person survey carried out immediately post-harvest. We validate this measure using a phone survey during the lean season (see Section 7.2 for a full discussion of these results). We find that treated households have significantly higher consumption, both from purchased and produced food, greater dietary diversity, and substantially lower hunger for adults and children, during the lean season (Tables A58-A60).

We see a significant decline in consumption poverty, defined using the World Bank USD 2.15 PPP a day poverty line, in treated villages, both immediately post-harvest and in the lean season (Table A32). Consumption poverty is substantially higher in the lean season than post-harvest (65% versus 35% in control villages), highlighting the seasonal nature of poverty in these communities. In treated villages, the increase in poverty during the lean season is substantially less, and only 11 percentage points higher than poverty immediately post-harvest.

Table 6: Impact on Consumption

	(1) Total Consumption	(2) Food	(3) Durables	(4) Non-Food Non-Durables	(5) Education Expenditure
Treated	58.854	45.184	3.601	6.542	2.166
	(14.371)	(12.704)	(1.094)	(1.923)	(2.425)
	[0.000]***	[0.001]***	[0.001]***	[0.001]***	[0.374]
		{0.004}***	{0.004}***	{0.004}***	{0.778}
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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.5 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 A34 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 illness in treated households (Tables A35 and Table A33 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 A36): they are more likely to have a two-tiered disk rack, a handwashing set-up outside the toilet, and a hangline to dry clothes.

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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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 A37). 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 A38 and A39).

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 A40). There is an increase in an index of voice in the community in treatment villages of 0.09 standard deviations, capturing whether people speak at and attend village meetings (Table A41). 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 A42). These improvements in community empowerment are corroborated by reports from the village elder survey (Table A43). 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.

5.6 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.[23] 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. Mechanically, since we are including better-off households in the program, it is important to confirm that the poorest still benefit. 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).[24] 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 pro-

[23]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.

[24]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.

gram. 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 A44, A45, A46 and A47).[25] 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 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 A48, 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.

Consistent with the program benefiting households from across the distribution, we do not see much evidence of changes in inequality within the village.[26] In Table A49 we examine at the village level the effect of treatment on the ratio of the 75th to 25th percentile and Gini coefficient for income, wealth and consumption. While the coefficient on treatment is always negative, there is only a statistically significant decrease in inequality for the Gini coefficient on income.

[25]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.

[26]This was not pre-specified.

5.6.1 Poverty traps

Balboni et al. (2022) find poverty traps in wealth thresholds even when the treatment is a very large asset transfer. A concern with the less expensive program considered here is that the transfer may not be sufficient to move people, particularly the poorest, permanently out of poverty. To explore whether poverty traps are a constraint in this context, we follow Balboni et al. (2022) and plot a transition equation showing the relationship between household assets at baseline and at endline. If the transition equation is globally concave, then there is no poverty trap, and each household converges on a unique steady state. Alternatively, if the transition equation is S-shaped, then households with a starting level of capital that is too low can become trapped at a low steady state – a poverty trap.

In Figure A13, we plot the logarithm of productive assets at baseline, including the value of the asset transfer as part of the RTV program, against the logarithm of productive assets at endline three years later, for treatment and control households separately. To measure productive assets, we follow Balboni et al. (2022) and include livestock, business assets and the value of land. However, in our context, land ownership is ubiquitous, and land markets are thin due to infrequent sales, making the value of land subject to substantial measurement error. Therefore, we also show transition equations for productive assets excluding land in Figure A14.

We find no evidence for an S-shaped pattern in either the treatment or the control group. This is consistent with a meta-analysis of cash transfer studies (Crosta et al., 2024) and was seen in the control group in Balboni et al. (2022). The transition equation for both treatment and control households is consistent with a pattern of mean reversion, as higher initial assets predict a loss of assets over the next three years.

Note, however, that our baseline survey took place a couple of months into the Covid-19 pandemic, when households had just experienced a large negative shock (Mahmud and Riley, 2021). This may have changed the poverty dynamics during the study period. In addition, we are examining dynamics after only three years, when they may take longer to materialise. As a result, we cannot rule out that poverty traps could exist, though we find no evidence in support of them.

6 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 cluster. To test for this, we examine whether there are changes in prices in treated markets compared to control markets and

whether there is evidence of spillovers across treatment and control clusters. We find no evidence for effects of the RTV program on prices, suggestive evidence of positive spillovers for treated households and no evidence of spillovers to control households.

6.1 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 (Cunha et al., 2019, Gadenne et al., 2024). 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.[27] 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.[28]

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 A50. We see no significant effect of treatment on the price index constructed using either weighting procedure. This finding is consistent with that of Egger et al. (2022), which 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 A51 and A52. 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.

While markets are where people purchase most food and small household items, they are

[27]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.

[28]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.

not where most livestock purchases take place or where most of the seasonal crops are sold immediately after harvest. We therefore also look at the sale prices of livestock and crops as reported in the household survey. To do this, we first compute the median price per village amongst all households in the village that reported a sale. The price indices are created by taking a weighted average of these median prices across all products in the index. The weights are calculated using the value of the products for households in control villages. We calculate the crop index separately in season one and season two and include the five major crops that represent 97% of the yield value. We also construct price indices using prices reported by the village elder. Results for the effect of treatment on indices of the average sale price of crops in seasons 1 and 2 and livestock are shown in Table A53. We see no significant effect of treatment on the price indices, except a marginally significant and small increase in the livestock selling price index.

6.2 Spillovers

Prior studies of cash transfers have found evidence of large spillover effects, both within and across villages (Egger et al., 2022, Haushofer and Shapiro, 2016). The design of the RTV program differs in key ways from cash transfer programs, which makes large 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. We find evidence for some positive spillovers across treated clusters but no spillovers to control clusters.

We test for potential spillovers using the pre-specified distance radii of 5 km[29] around a cluster centroid and augment equation 1 with the number of treated clusters within that radius, controlling for the total number of clusters within the radius (excluding own cluster), following Egger et al. (2022):[30]

$$\begin{aligned} Y_{ic} &= \beta_0 + \beta_1 \text{Treated}_c + \lambda_1 \text{TreatedClusters}_c^{-c} + \lambda_2 \text{TreatedClusters}_c^{-c} \times \text{Treated}_c \\ &\quad + \gamma \text{Clusters}_c^{-c} + \delta Y_{0ic} + \alpha_s + \epsilon_{ic} \end{aligned} \tag{2}$$

[29] We also pre-specified that we would use a data-driven approach to select the optimal radius following Egger et al. (2022), which confirmed that 0-5km is the optimal radius.

[30] Our study was not designed to explicitly test for spillovers, and so we are using natural variation in the concentration of treated clusters generated by our randomisation, following Miguel and Kremer (2004).

Standard errors are calculated following Conley (2008) using a uniform kernel out to 10 km. This approach relies on there being sufficient variation in treatment intensity within the distance radii, which we confirm we have in our setting (Table A54): On average, there are 4.8 treated and 8.8 total clusters within 0-5km of control clusters, and 4.9 treated and 9.7 total clusters within 0-5km of treated clusters.

The total effect of treatment is calculated by multiplying $\hat{\lambda_1}$ and $\hat{\lambda_2}$, the estimated coefficients from equation 2, by the average number of treated clusters in 0-5 km for treated households (4.9) and adding this to the direct treatment effect (β_1). This can be interpreted as the effect for a household in a treated cluster with the average number of treated clusters within 0-5km of the cluster. The total effect for the control group is calculated by multiplying $\hat{\lambda_1}$, the estimated coefficient from equation 2, by the average number of treated clusters in a 0-5km radius for control households (4.8). This can be interpreted as the total effect for a household in a control cluster with the average number of treated clusters within 0-5km of the cluster.

Results for the 5km radius are shown in Table A55. In panel A, we show the reduced form treatment effect estimated using equation 1, as shown in Table 2. In Panel B, we show the total effects, including spatial effects, estimated using equation 2. The total effect for treated households is consistently larger than the treatment effect estimated assuming no spillovers across clusters. The total effect for treated households on income is USD 49 PPP, 25% higher than the reduced form estimate of USD 40 PPP. The total effect for treated households on consumption is USD 96 PPP, 63% greater than the reduced form estimate of USD 59 PPP. This is suggestive evidence of positive spillovers across treated clusters. The total effect in the control group is consistently small and insignificant, suggesting there are no spillovers, either positive or negative, on them.

The pattern of spillovers that we observe only across treated clusters is suggestive of aggregate demand-based spillovers across clusters: for example, a business may be more profitable the better-off everyone else is around it. Similarly, traders may travel to a village to make purchases if there are sufficient items for sale both within the village and in the local area to make travel worthwhile. If spillovers had operated through labour markets and local hiring, we would have expected spillovers on both the control and treated households.

7 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.

7.1 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 use 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 A11). We had enumerators verify the household ownership of a pig and the existence of a pig shelter (Table A22).[31] These observations confirm the presence of pigs in treated households.[32] We had enumerators verify a variety of health practices that households were encouraged to implement during the WASH training, observing high continued adherence even three years later (Table A36).

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 A56). We then examine heterogeneous treatment effects by social desirability (Table A57). 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.

7.2 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.[33] The phone survey also provides further insight into whether treatment

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

[32] 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.

[33] 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

effects are increasing or decreasing over time (see discussion in Section 7.3). An additional advantage of the phone survey is that we could feasibly blind enumerators to treatment status, ruling out any bias from their side.[34]

We find that the treatment effects from the phone survey are larger than those seen in the endline survey (Table A58). Consumption is USD 154 PPP higher amongst treated households compared to control, 39% higher than the control group mean of USD 397 PPP. Every dimension of consumption is higher in the treated group, though the majority of the increased value of consumption is coming from food consumption (USD 113 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 USD 397 PPP compared to USD 583 PPP 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 A59). 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 A60). 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

minutes).

[34]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.

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 follow-up rate and the additional quality checks we could conduct using audio audits make us confident in the validity of this data.

7.3 Temporal Dynamics of the Treatment Effects

We find a strong positive impact of the RTV program on household economic outcomes around three 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.[35] 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 A61). 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, 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.[36] 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 A62). This provides evidence that not only are impacts not diminishing, they may in fact be growing over time.

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

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

8 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 three 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 for which there is comparable data, 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 three years. The RTV program is therefore an extremely cost-effective approach to alleviating rural poverty.

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. As consumption was not measured at the end of year one, we use the year two consumption treatment effect from the midline survey as a proxy for year 1, following the approach in Banerjee et al. (2015). We assume that consumption gains cease after year 3 and use the change in assets at year 3 to proxy the value of future consumption. This yields a conservative estimate of program benefits as, if consumption gains persist beyond year 3, the actual benefits are likely underestimated.[37]

Program cost data came directly from our implementing partner, RTV, and includes 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). For comparability with other programs, we convert the cluster-level program cost into a per-household served cost by dividing by the total number of households in a cluster.

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 benefits and costs are reported on a per household basis.[38] The total benefits of the RTV program are USD 1,369 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.

We compare the benefit-cost ratio of the RTV program against other multifaceted anti-poverty and cash transfer programs in (columns (2)-(5)). For the comparison to other multi-

[37]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.

[38]Rows (b) and (c) are taken from Table A64 column (1) and multiplied by 12 to annualise them. Row (d) is taken from Table A65 column (1). Row (e) is taken from Table A66 column (1) and multiplied by 12 to annualize it.

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.[39] We report both the benefits and costs in the year they were reported for in the paper, preventing direct comparisons of these across studies.[40]

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).[41] We see that after three years, the benefit-to-cost ratio of the TUP program on average, in India and in Bangladesh is between 23% and 65%.[42] In column (5), we report the costs and benefits of the cash transfer.[43] 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.[44]

[39]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.

[40]See Table A63 for a detailed comparison of program costs for the multifaceted programs in 2014 USD PPP.

[41]We deflate costs to year 3 rather than year 4, and show benefits up to year 3, so that they are comparable with Banerjee et al. (2015) and our estimates.

[42]For this analysis, we consider only costs and benefits after three 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 three 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 three years is almost equal to the benefit-cost ratio of the TUP program at 10 years.

[43]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 three years.

[44]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.

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	305	351	344	61	564
(c) Y2 annual nondurable consumption ITT	305	351	344	106	363
(d) Y3 household asset ITT	103	18	6	40	406
(e) Y3 annual nondurable consumption ITT	656	251	251	237	202
(f) Total benefit (b)+(c)+(d)+(e)	1,369	971	945	444	1,553
Benefit-cost ratio (f)/(a)	368%	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 three 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 three 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 three years. These are generous assumptions and represent an upper bound on the total three year benefits.

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) and Bandiera et al. (2017) (Figure A15). All outcomes are measured in standard deviation terms, allowing a comparison across programs in different countries and time points.[45] This provides a more

(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.

[45]For this analysis, we construct outcomes as closely aligned with Banerjee et al. (2015) and Bandiera et al. (2017) as possible. While the outcomes measured in Banerjee et al. (2015) are reported at the same time point as this study, those in Bandiera et al. (2017) are from a year later. Detailed notes on any differences in the construction of an outcome between our studies are reported in the table notes. Consumption, assets,

comprehensive picture of the 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 income and consumption, where the TUP program in Bangladesh has significantly larger positive effects. Overall, the RTV program offers comparable benefits across outcomes to those seen under the TUP graduation program.

9 Conclusion

We examine a unique universal livelihoods program provided to every household in a village. In the program, households receive agricultural and small livestock inputs, training and mentorship, healthcare and saving support. Using an RCT in 335 villages randomly assigned to receive the program or not, we see that the program leads to large improvements in the welfare of 4,000 randomly selected households from these villages three 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 better-off households or the more vulnerable households such as female-headed households being unable to benefit from the program. Households of all types, from across the distribution, and from different types of villages all benefit from the program. We also see no evidence of inflation or spillover effects on control clusters. We see some evidence of positive spillovers across treated clusters. 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). The program is a cost-effective approach to alleviating rural

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 political are indices composed of different questions across the studies. Note that since all outcomes are being transformed into standard deviations, treatment effects will mechanically be larger if the standard deviation of an outcome is smaller in one study than another. This could be the case if the study sample is more homogeneous in one context over another, either due to targeting on narrow eligibility criteria or the inclusion of only one geographical area.

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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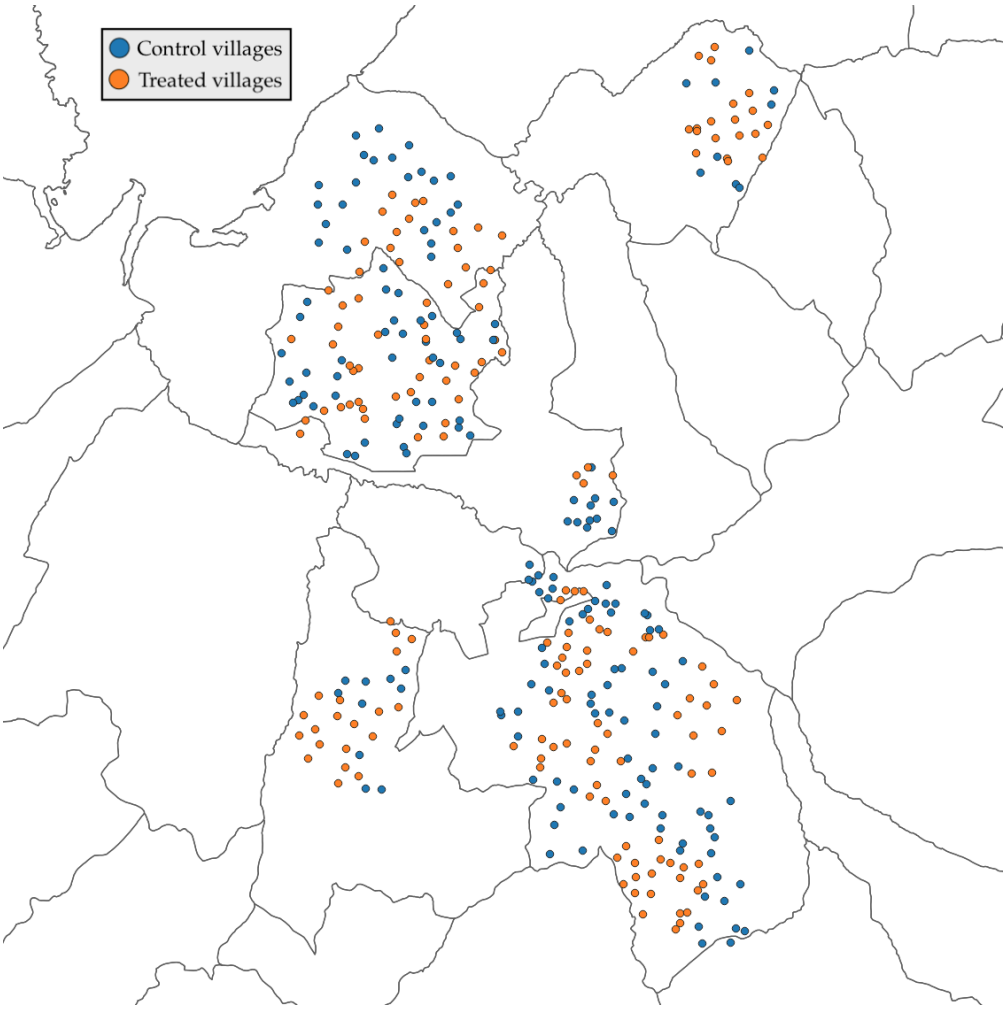
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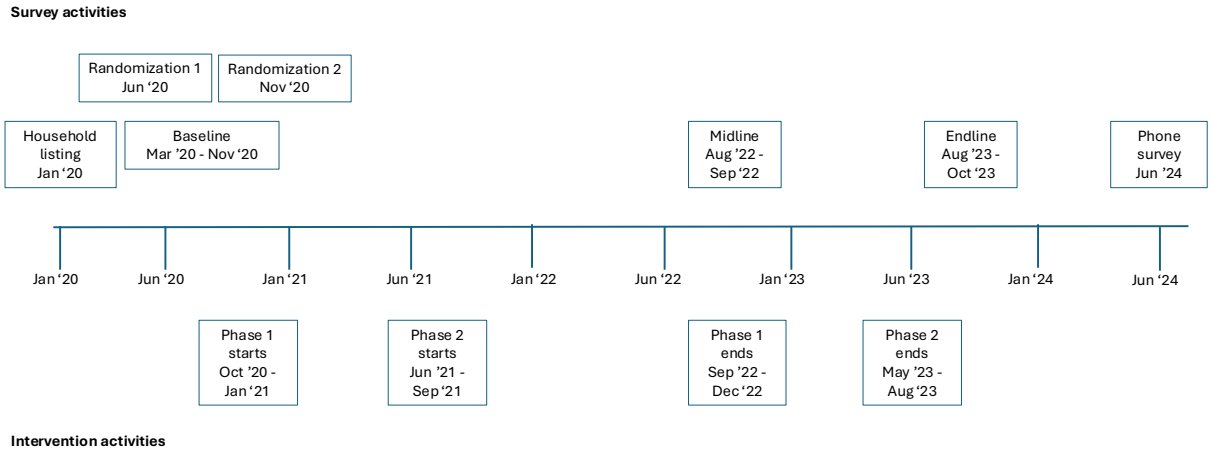
Online Appendix

Figure A1: Map of Study Villages



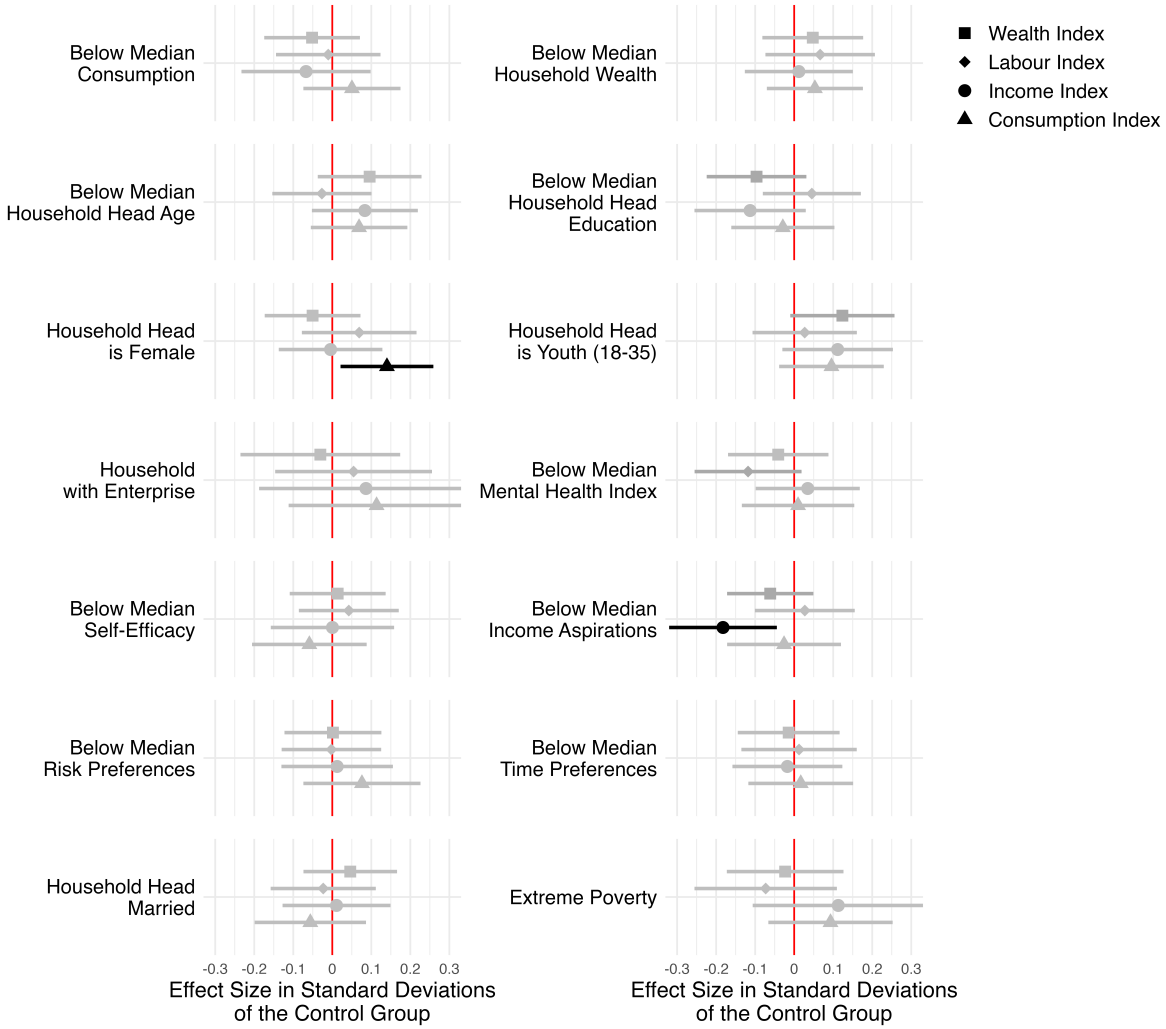
Notes: This figure displays of map the study villages, with treatment villages in orange and control villages in blue. Black lines indicate sub-county boundaries.

Figure A2: Experiment Timeline



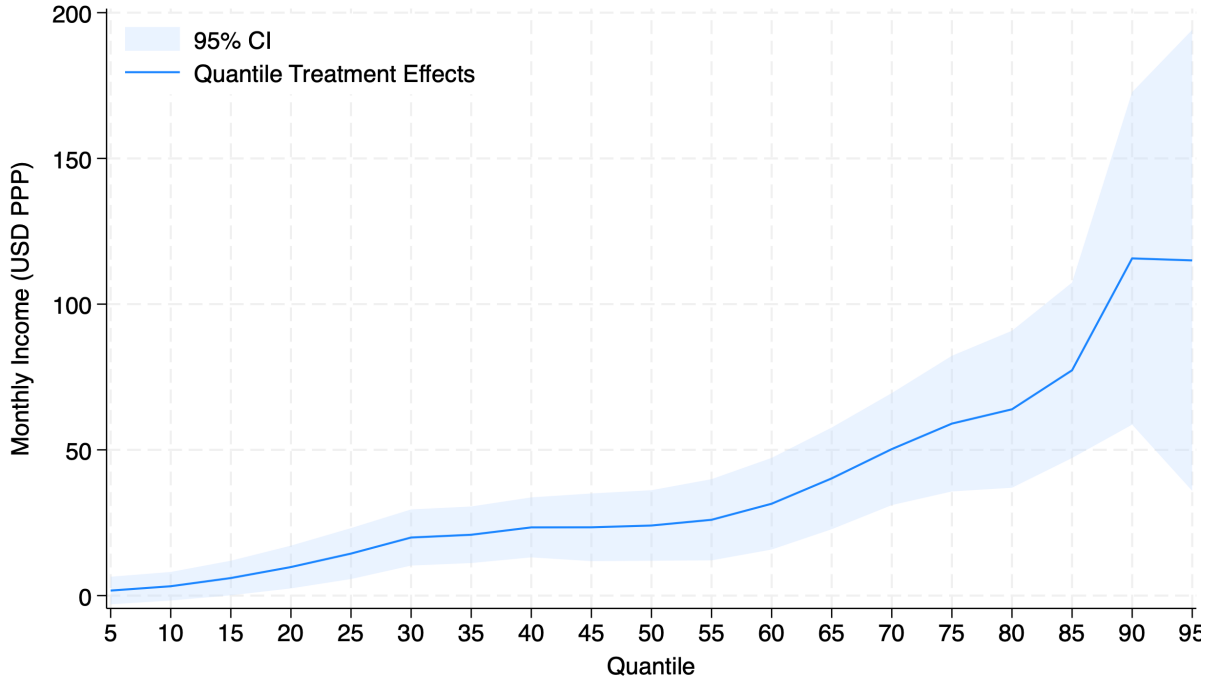
Notes: This figure displays a visual representation of the experimental timeline, beginning in January 2020 and ending in June 2024.

Figure A3: Heterogeneous Effects by Household Characteristics on Primary Outcomes



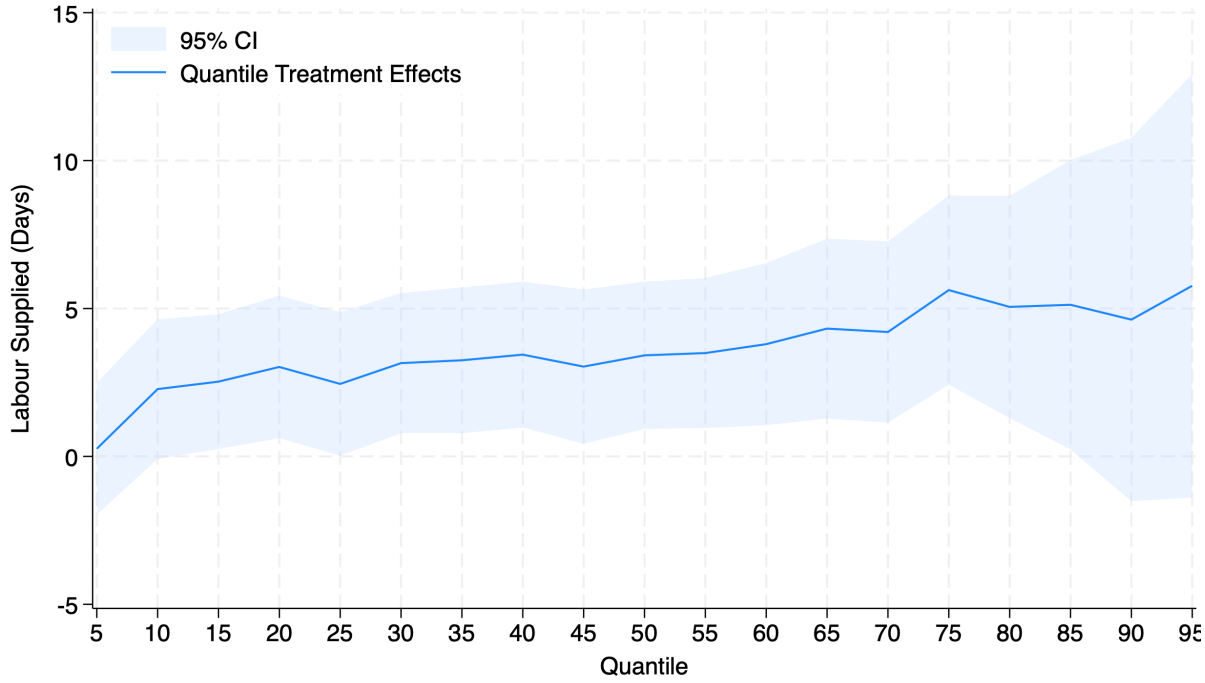
Notes: This figure plots the coefficient of the interaction between treatment and a dimension of heterogeneity using a heterogeneous treatment effects specification. Each sub-figure corresponds to a different dimension of heterogeneity. All outcomes have been normalised relative to the control group. 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



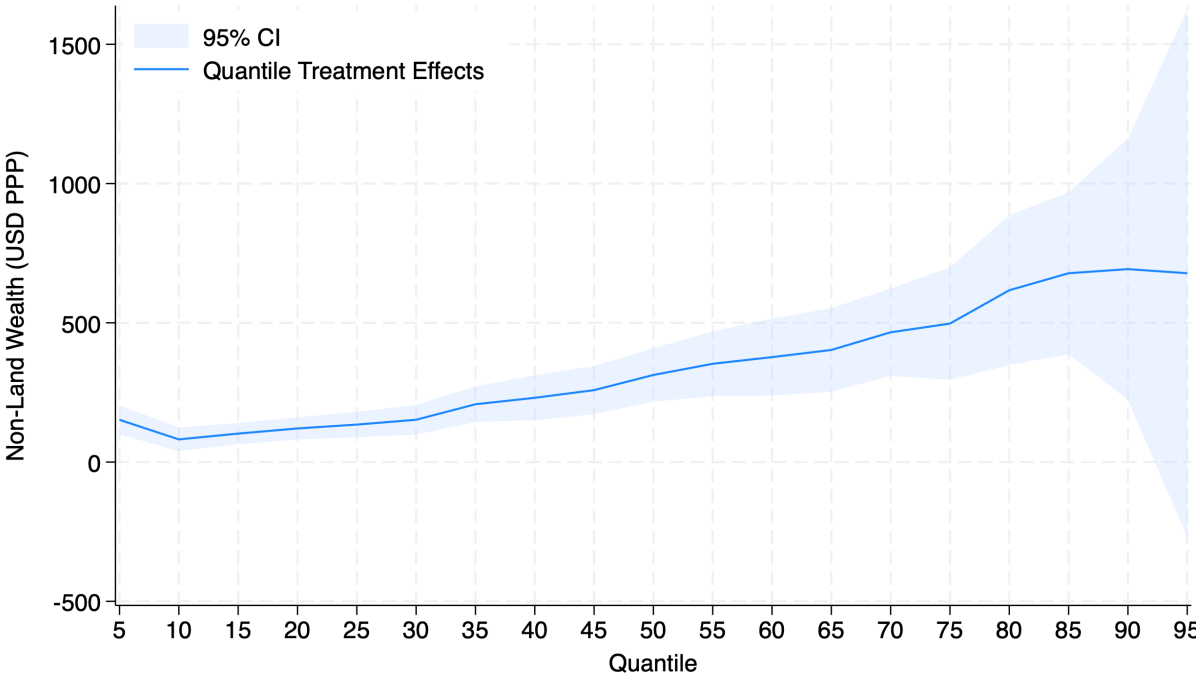
Notes: The figure presents quantile treatment effects. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. All regression include stratification fixed effects. 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)



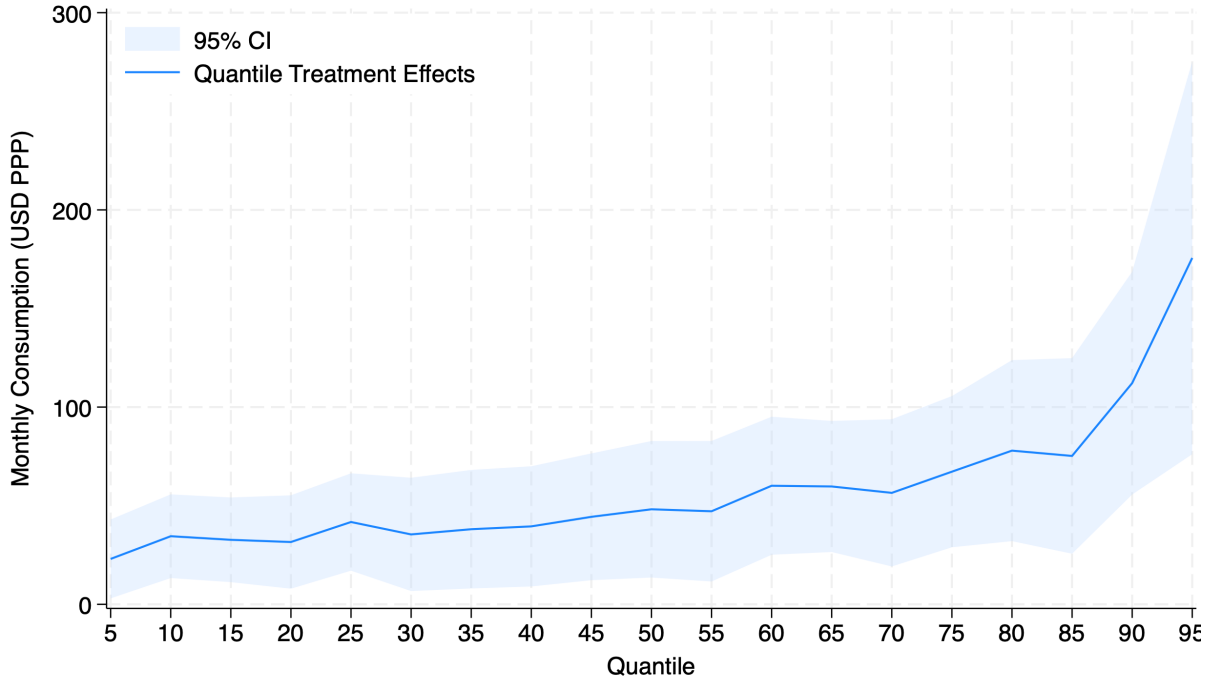
Notes: The figure presents quantile treatment effects. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual work. All regression include stratification 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



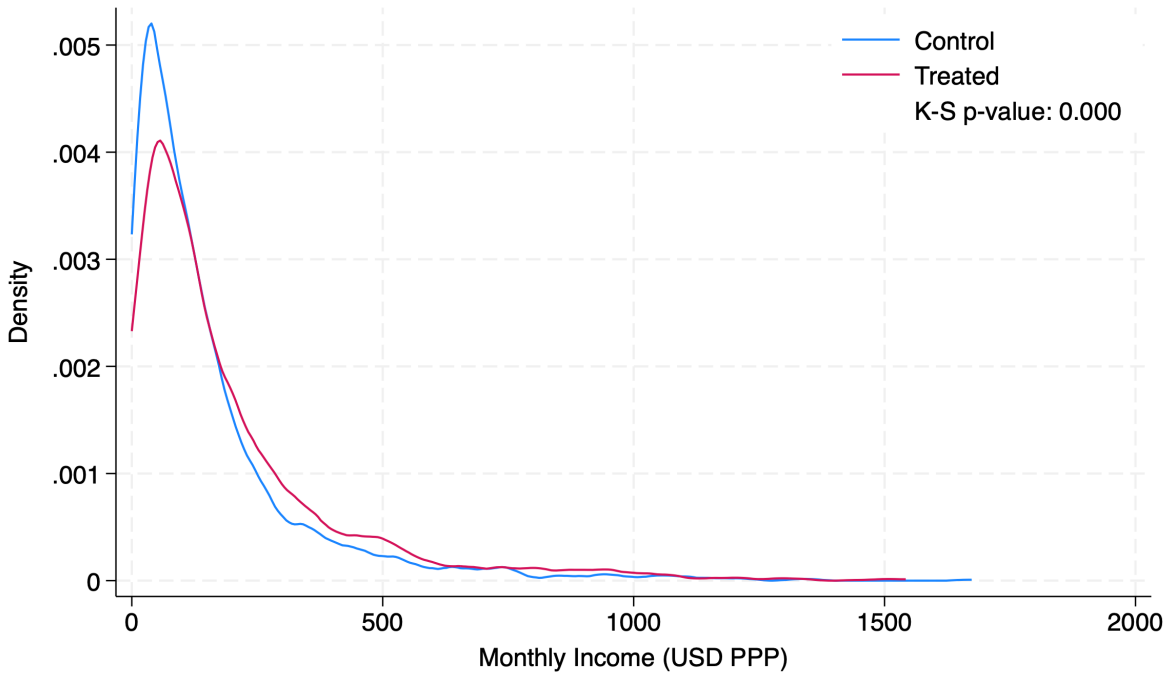
Notes: The figure presents quantile treatment effects. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. All regression include stratification fixed effects. All values in USD PPP at the 2023 exchange rate 1:1315, adjusted for inflation 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



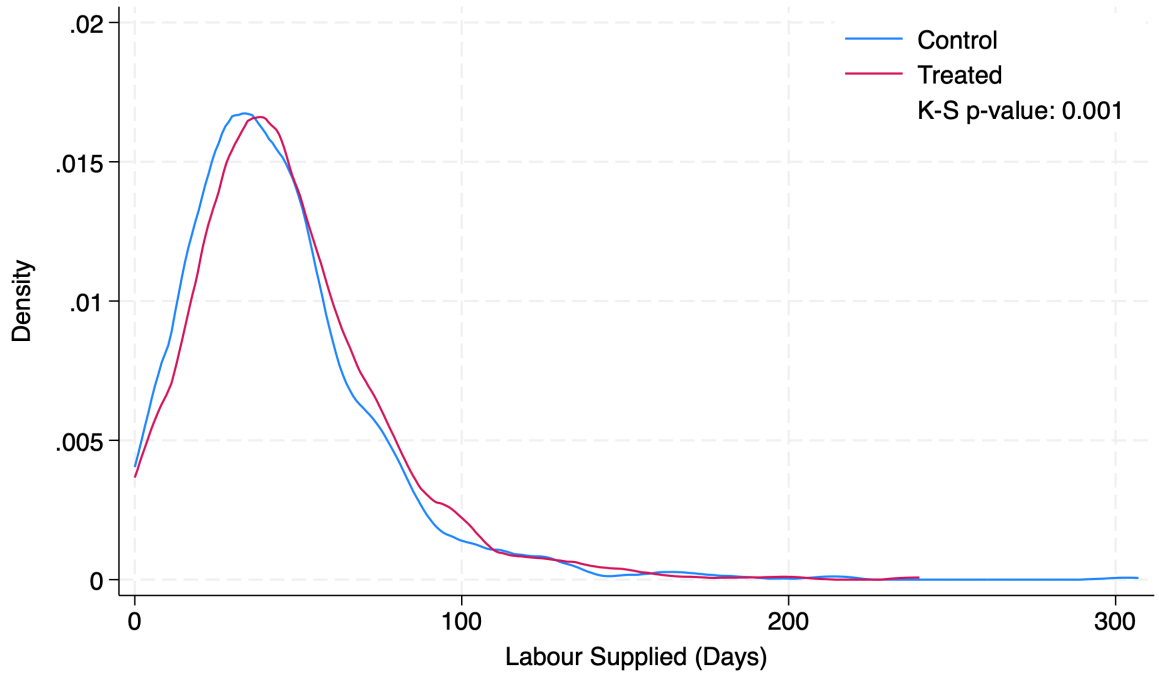
Notes: The figure presents quantile treatment effects. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. All regression include stratification fixed effects. All values 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



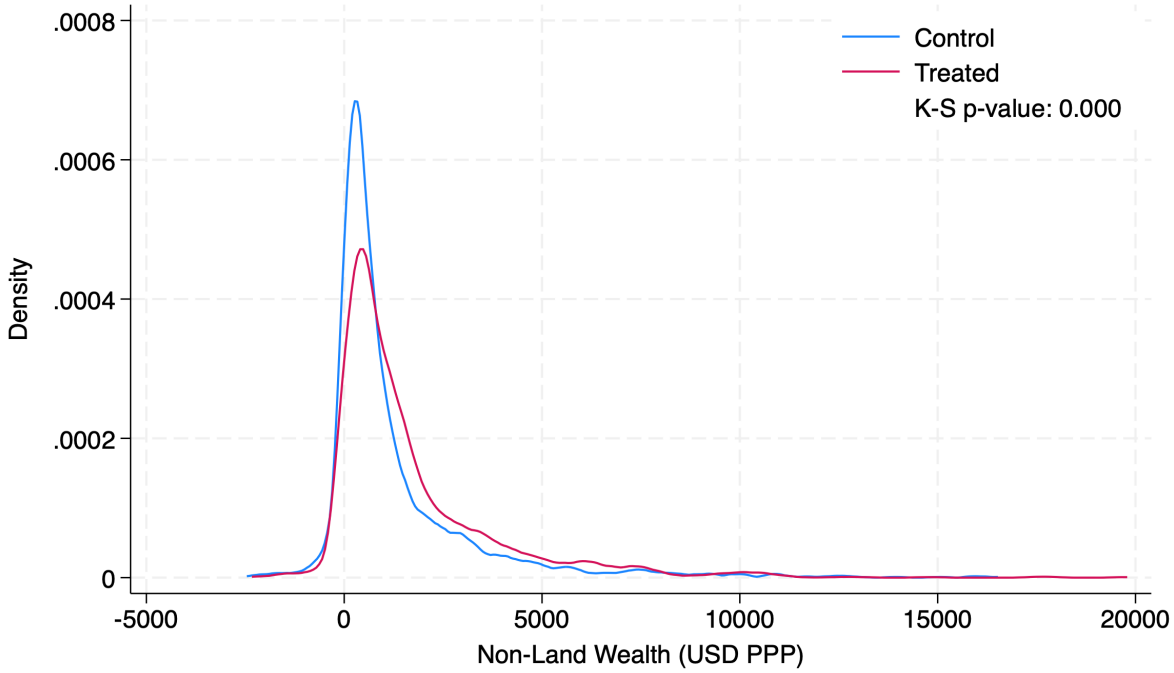
Notes: This figure plots the distributions of Monthly Income for control and treated households. Monthly Income is monthly household income comprised of scaled aggregate of the sale of crops and perennials, sale of livestock and animal products, business profits, wages, and rental income. K-S p-value 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)



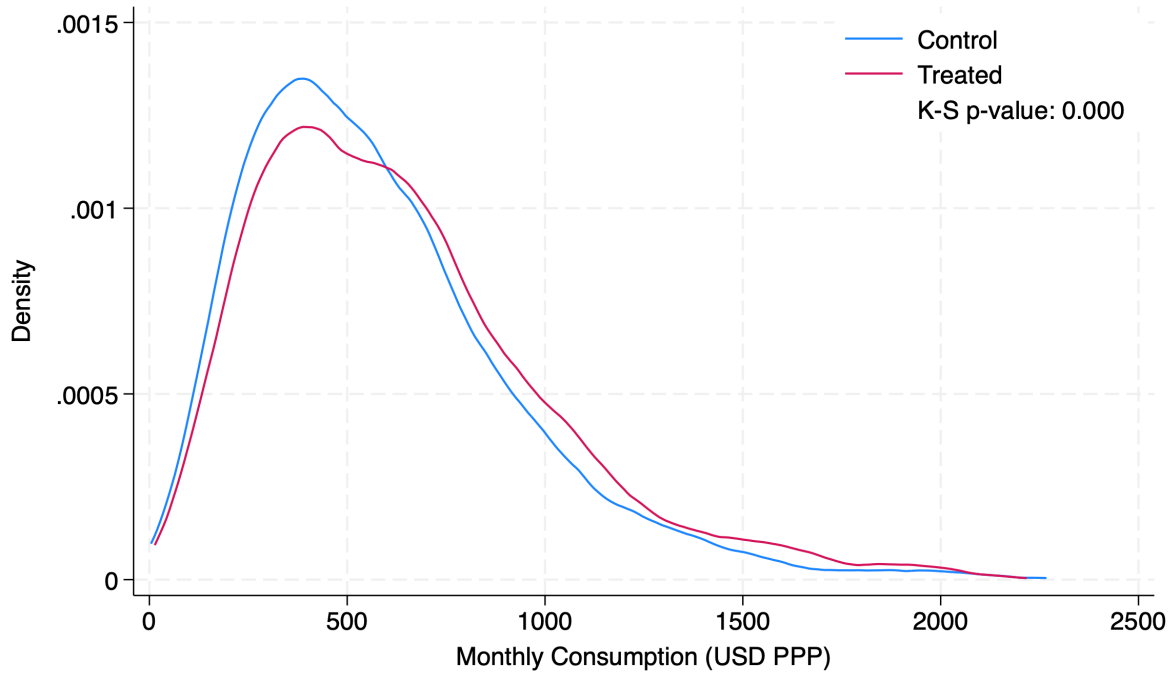
Notes: This figure plots the distributions of Labour Supplied (Days) for control and treated households. Labour Supplied (Days) is reported in days and aggregates across all household members the labour supplied to farm, livestock, and business household economic activities, as well as salaried and casual 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



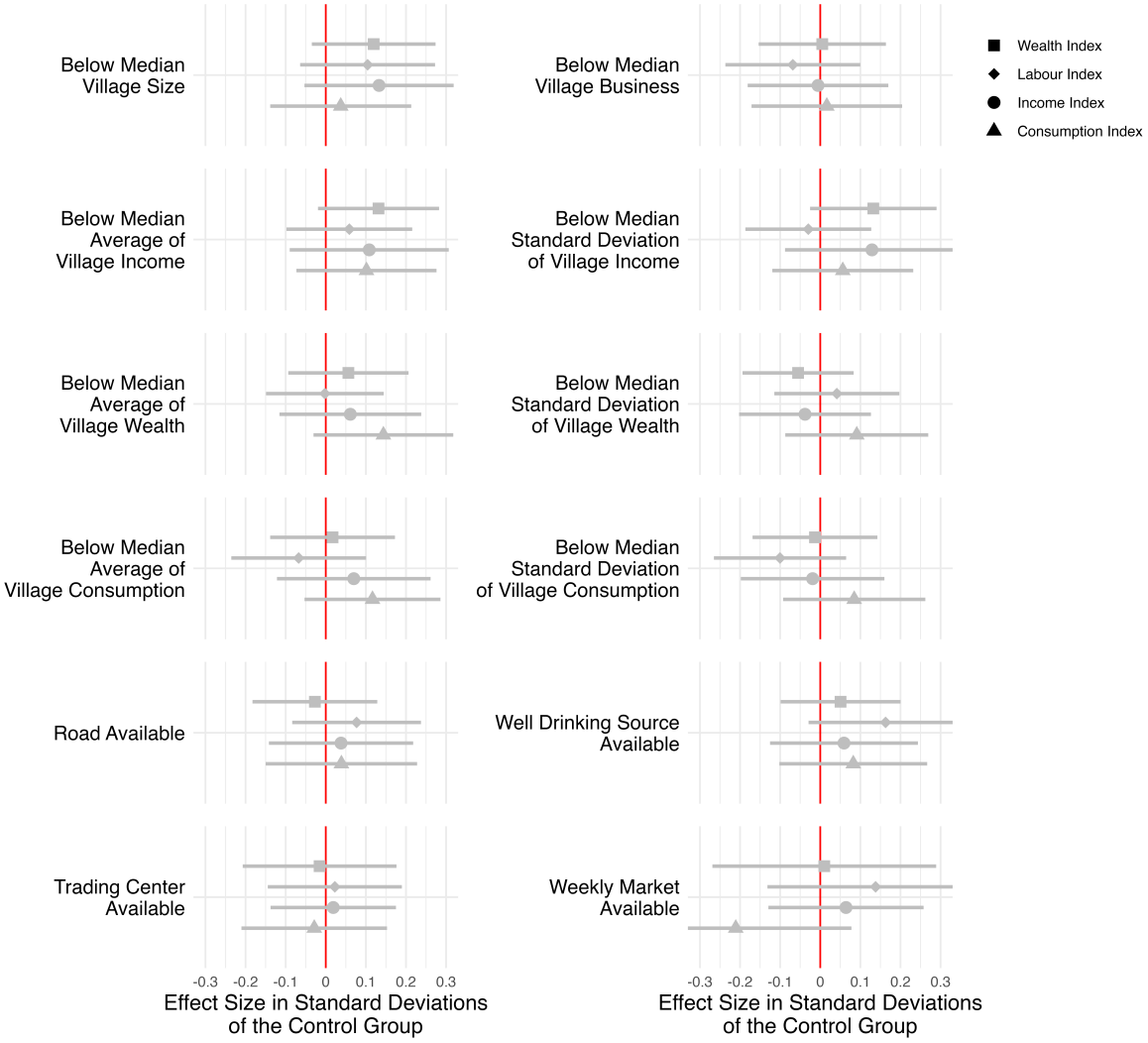
Notes: This figure plots the distributions of Non-Land Wealth for control and treated households. Non-Land Wealth is an aggregate of household value of assets, livestock, savings, and loan taken and outstanding. spending. K-S p-value is the value from the Kolmogorov–Smirnov test of the equality of the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

Figure A11: Distribution of Monthly Consumption

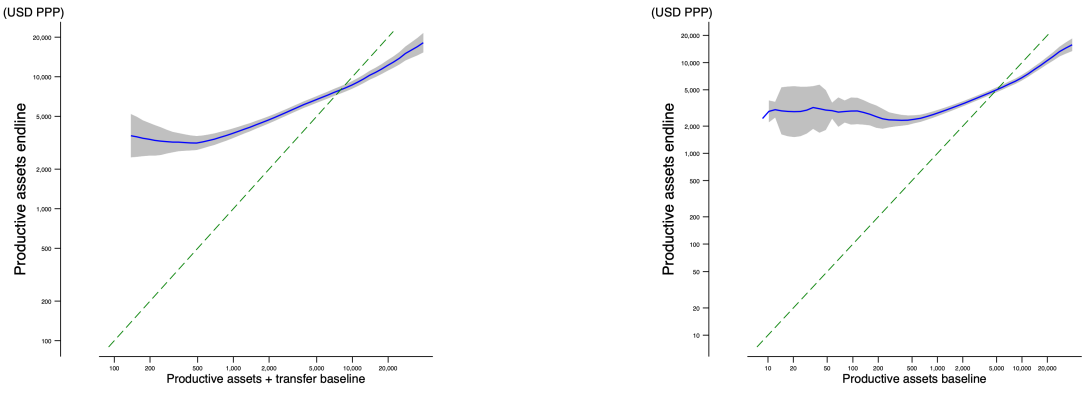


Notes:This figure plots the distributions of Monthly Consumption for control and treated households. Monthly Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education K-S p-value is the value from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

Figure A12: Heterogeneous Effects by Village Characteristics on Primary Outcomes



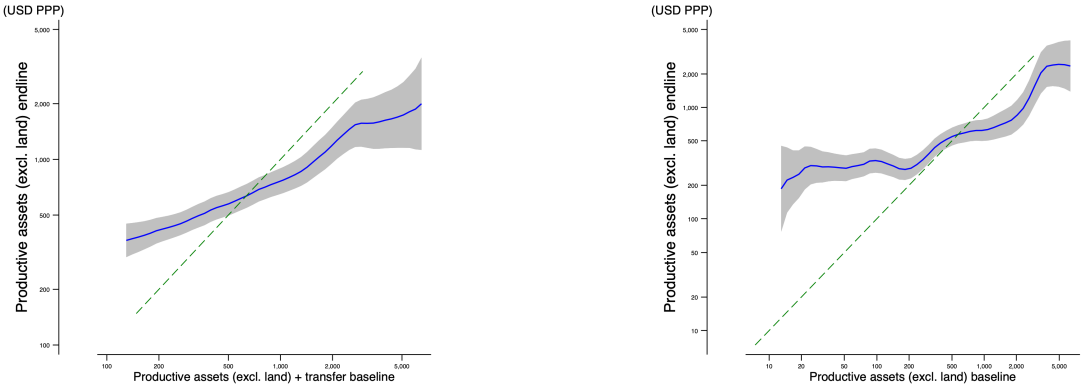
Notes: This figure plots the coefficient of the interaction between treatment and a dimension of heterogeneity using a heterogeneous treatment effects specification. Each sub-figure corresponds to a different dimension of heterogeneity, that is determined at the village level. All outcomes have been 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.



(a) Treatment (b) Control

Figure A13: Local Polynomial Estimates of the Transition Equation (Productive Assets)

Notes: Productive assets are measured as the natural logarithm of the total value in USD PPP of all livestock, business assets and land owned by the household. The transfer is assumed to be USD 130 PPP per household for treated households. The solid line plits the smoothed values of a local polynomial regression with an Epanechnikov kernel of optimal bandwidth. The grey area depicts 95 percent confidence bands. The dashed line represents the 45 degree line at which assets in at endline equal baseline assets.

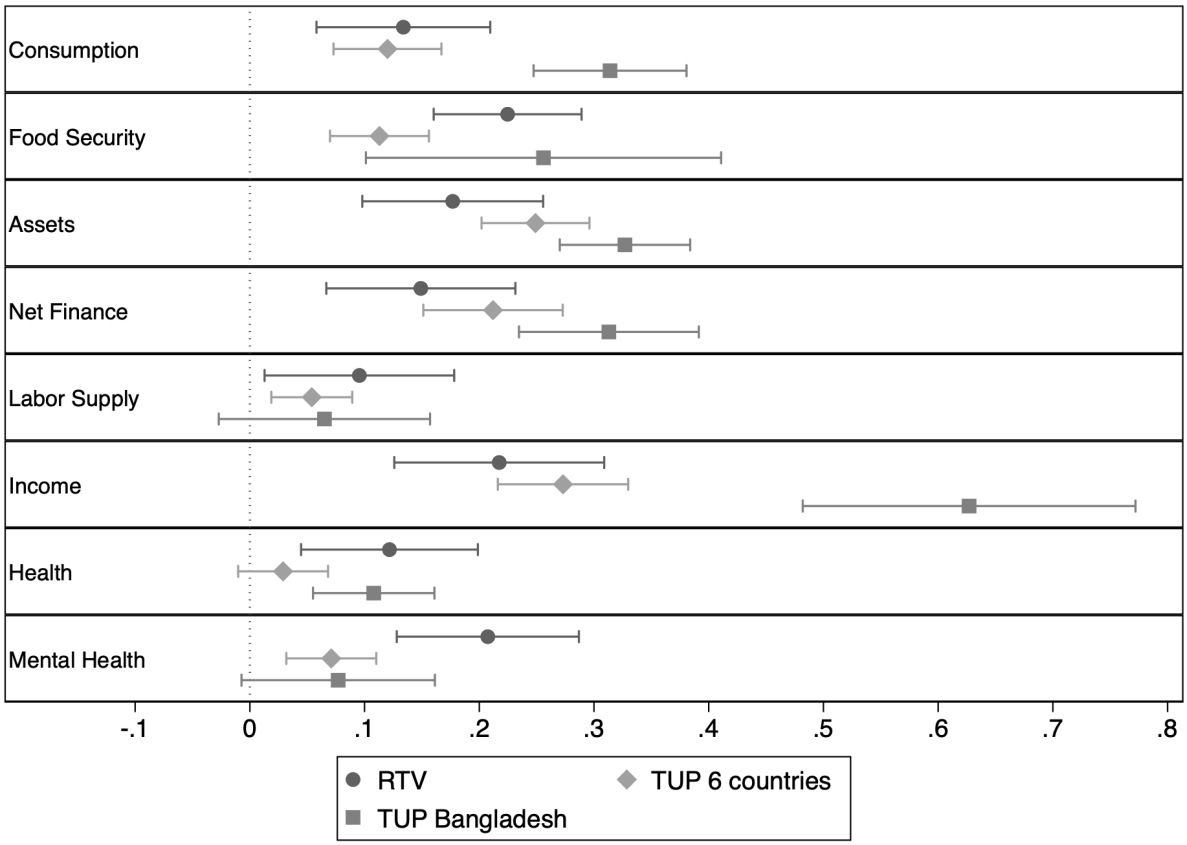


(a) Treatment (b) Control

Figure A14: Local Polynomial Estimates of the Transition Equation (Productive Assets Excluding Land)

Notes: Productive assets are measured as the natural logarithm of the total value in USD PPP of all livestock and business assets owned by the household. The transfer is assumed to be USD 130 PPP per household for treated households. The solid line plits the smoothed values of a local polynomial regression with an Epanechnikov kernel of optimal bandwidth. The grey area depicts 95 percent confidence bands. The dashed line represents the 45 degree line at which assets in at endline equal baseline assets.

Figure A15: Comparison of treatment effects between the RTV program evaluated here and the TUP programs examined in Banerjee et al. (2015) and Bandiera et al. (2017), standardized summary outcomes



Notes: Treatment effects and standard errors for "TUP 6 countries" taken from Table 3 column (4) of Banerjee et al. (2015) 3 years after the start of the program, for "TUP Bangladesh" from Table VI of Bandiera et al. (2017) 4 years after the start of the program and author's findings 3 years after the start of the program as specified below. Consumption, assets, net finance and income are defined in identical ways for all studies as follows: Consumption is total monthly consumption per capita, where consumption includes food, non-food and durables goods consumption (ie education spending is excluded compared to the definition of consumption used for this study, and consumption is converted to per capita) (see Table A28). All studies use similar measures of food security, capturing hunger of adults and children (see Table A31 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), minutes in the last day in Banerjee et al. (2015) and is the total time the main female respondent and male household head spent in productive activities on a typical day during the past year in Bandiera et al. (2017). Income is the household 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) and Bandiera et al. (2017) use indicators like daily living activities and self-reported health, while this study also considers work inability due to illness and activity difficulties (see Table A34 for our components). For mental health, Banerjee et al. (2015) emphasizes emotional distress and prolonged worry, Bandiera et al. (2017) capture self-reported happiness and mental anxiety, whereas this study measures depression, stress, life satisfaction, and happiness (see Table A37 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. Costs incurred between 2020 and 2021.

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
Consumption Per Capita Per Day	2.82	2.77	3.14	3.60
Food Purchased Consumption	159.99	148.08	169.66	207.57
Food Produced Consumption	192.49	225.33	321.21	413.11
Equivalent (USD PPP)				
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)	80.47	96.48	135.03	307.11
Crop Sales (Monthly)	38.10	49.40	79.62	142.69
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	225.311	219.815	-3.527
	(172.938)	(167.666)	(9.866)
Wealth	668.550	684.702	25.786
	(1,060.472)	(1,017.508)	(38.256)
Total Income	73.513	73.343	1.077
	(133.748)	(135.606)	(6.112)
Total Labour Supply	44.438	40.135	-3.131
	(40.002)	(38.451)	(3.099)
Asset Value	386.166	395.251	16.788
	(521.621)	(524.175)	(19.067)
Livestock Value	292.525	295.185	7.343
	(707.200)	(673.379)	(23.202)
Savings	58.498	52.969	-4.356
	(116.811)	(111.547)	(4.979)
Net Loans	-68.638	-58.703	6.011
	(216.158)	(211.577)	(12.096)
Crop Sales	36.816	36.820	0.711
	(60.533)	(63.284)	(3.144)
Income from Animals	4.341	4.383	0.197
	(26.558)	(26.878)	(1.188)
Profits	16.859	18.258	1.861
	(93.997)	(97.263)	(3.701)
Total Wage	14.219	13.154	-1.236
	(33.771)	(33.022)	(1.591)
HH Has Business	0.133	0.132	0.001
	(0.340)	(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	0.960	-0.005
	(0.186)	(0.196)	(0.006)
WB Consumption Poverty Line	0.802	0.811	0.008
	(0.399)	(0.391)	(0.018)
Not Depressed	0.497	0.477	-0.018
	(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: Endline Control Village Summary Statistics

			Percentiles			
	Mean	Median	5^{th}	25^{th}	75^{th}	95^{th}
Panel A. Economic Characteristics						
Number of Households	91.92	83.50	36.00	60.00	119.00	172.00
Average Income	156.7	146.6	56.7	104.0	195.0	294.3
Average Wealth	1,281.6	1,100.2	362.8	765.9	1,608.2	2,994.9
Average Consumption	584.8	563.1	402.4	494.1	658.8	812.7
Standard Deviation of Income	161.4	134.7	57.1	85.8	223.3	347.4
Standard Deviation of Wealth	1,686.4	1,448.0	476.0	865.2	2,231.1	3,849.0
Standard Deviation of Consumption	314.9	291.9	172.4	241.7	387.6	523.1
Panel B. Access to Amenities						
Primary School	0.45					
Secondary School	0.05					
Trading Center	0.91					
Weekly Market	0.16					
Mobile Money	0.34					
Well Drinking Source	0.84					
Health Center	0.04					
Panel C. Distance to Amenities (km)						
Primary School	1.24	0.50	0.00	0.00	2.00	4.00
Secondary School	5.16	4.00	0.00	2.50	6.40	15.00
Trading Center	0.17	0.00	0.00	0.00	0.00	1.20
Weekly Market	15.10	3.00	0.00	1.00	5.00	9.00
Mobile Money	2.01	1.00	0.00	0.00	3.00	7.00
Well Drinking Source	0.27	0.00	0.00	0.00	0.00	2.00
Health Center	5.43	5.00	0.50	3.00	7.00	15.00
N	170	170	170	170	170	170

Notes: All economic statistics are reported from the endline household data for all villages, while data on amenities is from the endline village elder survey. Number of households is from the listing activity. Total Consumption is monthly household consumption comprised of scaled food consumption (produced and purchased), durable goods, non-food non-durable goods and education spending. 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.

Table A5: 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 A6: 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. Midline is a binary variable equal to 1 if the household was surveyed at midline 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. 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 Primary Outcomes (Robustness Specifications)

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Panel A. No Baseline Controls				
Treated	40.403***	2.906**	420.191***	56.961***
	(8.882)	(1.284)	(84.893)	(14.835)
Control Mean	154.713	43.918	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 A8: Impact on Household Size, Fertility and Migration

	(1) Household Size	(2) Number of Children Under 6	(3) Any Migration
Treated	0.063	0.011	-0.007
	(0.065)	(0.045)	(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. 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 A9: Impact on Crop Sales

	(1) Annual	(2) Season 1 Crops	(3) Season 2 Crops	(4) Perennial Crops
Treated	251.032***	83.863***	89.637***	70.491***
	(54.895)	(25.018)	(25.770)	(18.040)
Control Mean	929.085	368.799	393.215	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 A10: 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 A11: 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 A12: 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 A13: Impact on Crop Yield Values

	(1) Beans	(2) Maize	(3) Irish Potatoes	(4) Sweet Potatoes	(5) Groundnuts	(6) Total
Panel A. Season 1						
Treated	37.754**	44.662**	24.916*	17.058***	11.524***	175.150***
	(16.785)	(18.282)	(13.800)	(4.758)	(3.545)	(41.066)
Control Mean	265.944	261.690	102.396	63.392	45.910	797.556
N	3,560	3,560	3,560	3,560	3,560	3,560
Panel B. Season 2						
Treated	41.317**	43.894**	19.608*	9.139**	13.980***	144.503***
	(17.840)	(21.159)	(11.814)	(4.112)	(3.555)	(41.428)
Control Mean	256.841	274.831	97.928	49.216	39.660	770.246
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. The value of the yields for Beans, Maize, Irish Potatoes, Sweet Potatos and Groundnuts is 97% of the total yield value. 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 A14: Impact on Crop Yields

	(1) Beans	(2) Maize	(3) Irish Potatoes	(4) Sweet Potatoes	(5) Groundnuts
Panel A. Season 1					
Treated	17.816**	51.177*	1.709*	0.341***	3.563***
	(7.943)	(26.338)	(0.885)	(0.113)	(0.867)
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	22.887**	47.055*	1.224	0.169*	3.520***
	(8.969)	(28.433)	(0.818)	(0.095)	(0.894)
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. 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 A15: 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	83.863***	18.544	24.053*	8.893*	25.085	-0.026	0.013***
	(25.018)	(12.429)	(14.019)	(5.260)	(18.459)	(0.032)	(0.004)
Control Mean	368.799	125.674	167.687	55.081	228.769	2.321	0.738
N	3,560	3,560	3,560	3,560	3,560	3,258	3,169
Panel B. Season 2							
Treated	89.637***	28.410**	26.922	13.735***	28.750	-0.011	0.019**
	(25.770)	(11.192)	(16.747)	(5.055)	(20.802)	(0.031)	(0.008)
Control Mean	393.215	128.876	184.892	61.481	238.122	2.073	0.760
N	3,560	3,560	3,560	3,560	3,560	3,007	2,928

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, of beans and maize sold respectively. Beans Price and Maize Price are the prices of beans and maize respectively and are only reported for households who reported a sale. 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 A16: Impact on Business Outcomes

	(1) Profits	(2) Sales	(3) Expenses	(4) Stock	(5) Assets	(6) Stock Purchases	(7) Asset Purchases
Treated	12.351***	30.851**	2.871	39.014	19.823	32.464**	0.255
	(4.665)	(15.304)	(2.494)	(24.059)	(16.569)	(14.656)	(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 Characteristics

	(1) Has Business	(2) Hires Workers	(3) Days of Operation	(4) Has Customers Outside Village
Treated	0.052***	0.002	0.892**	0.055***
	(0.015)	(0.007)	(0.345)	(0.015)
Control Mean	0.252	0.060	4.738	0.192
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 A18: 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 A19: 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 A20: 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 A21: Impact on Values and Quantities of Livestock

	(1) Cows	(2) Goats	(3) Pigs	(4) Chickens	(5) Sheep	(6) Ducks
Panel A. Value						
Treated	48.987	76.055***	46.345***	14.295***	1.166	0.327
	(43.645)	(21.023)	(9.132)	(2.986)	(4.924)	(0.761)
Control Mean	240.408	219.640	97.241	45.730	21.921	3.394
N	3,560	3,560	3,560	3,560	3,560	3,560
Panel B. Quantity						
Treated	0.087*	0.564***	0.368***	1.207***	0.004	0.017
	(0.049)	(0.153)	(0.071)	(0.297)	(0.045)	(0.048)
Control Mean	0.259	1.750	0.833	4.582	0.204	0.215
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. These values are unconditional, so if a household does not own a specific type of livestock, the value and quantity assigned to them is 0. 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 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***	0.368***	0.080***	0.201***	0.077***
	(0.020)	(0.071)	(0.019)	(0.047)	(0.019)
Control Mean	0.334	0.833	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 A23: 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***	0.077**	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	2.595***	6.857***	2.933***	0.057	1.919***	7.094***	0.150
	(0.525)	(2.290)	(0.561)	(0.083)	(0.373)	(1.354)	(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 A24: 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***	0.165***	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	12.784***	1.389***	40.469*	11.924***	27.508***	0.208**	0.683
	(3.209)	(0.503)	(22.111)	(2.838)	(5.176)	(0.098)	(1.785)
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 A25: 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 A26: 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 A27: 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	0.083*	0.007	0.005	0.019	0.067**	38.424*
	(0.042)	(0.014)	(0.006)	(0.022)	(0.031)	(21.210)
Control Mean	0.000	0.158	0.972	0.386	2.338	119.738
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 A28: 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 A29: 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 A30: 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 A31: 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 A32: Impact on Poverty

	(1) Income Poverty	(2) Consumption Poverty	(3) Lean Season Consumption Poverty
Treated	-0.040***	-0.071***	-0.263***
	(0.011)	(0.018)	(0.036)
Control Mean	0.920	0.353	0.654
N	3,560	3,560	3,734

Notes: Poverty is a binary variables equal to 1 if the household is determined to be living in poverty according to either measures of income or consumption based on the World Bank poverty line. 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. 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. 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 Education (Child Level)

	(1) Education Expenses	(2) Currently Enrolled	(3) Missed School Due to Illness
Panel A. Main Specification			
Treated	5.515	0.009	-0.061***
	(9.040)	(0.012)	(0.018)
Control Mean	167.852	0.759	0.434
N	9,827	9,827	7,494
Panel B. Gender Specification			
Treated	0.537	0.005	-0.037*
	(10.221)	(0.013)	(0.019)
Female	-3.450	-0.003	0.038**
	(5.909)	(0.012)	(0.017)
Treated × Female	10.214	0.009	-0.048**
	(10.156)	(0.017)	(0.022)
Control Mean	167.852	0.759	0.434
N	9,827	9,827	7,494
Panel C. Age Specification			
Treated	3.006	0.000	-0.053**
	(6.584)	(0.011)	(0.021)
$\mathbb{1}(\text{Age} \geq 13)$	92.149***	-0.334***	-0.072***
	(11.557)	(0.012)	(0.019)
Treated × $\mathbb{1}(\text{Age} \geq 13)$	3.519	0.034*	-0.018
	(16.799)	(0.020)	(0.027)
Control Mean	167.852	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 A34: 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 A35: 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 A36: 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 A37: 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 A38: 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***	0.207
	(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 A39: 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 A40: 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 A41: 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 A42: 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 A43: Impact on Community Cohesion (Village Elder Report)

	(1)	(2)	(3)
	Trust Scale	Village Helpful	Village Helpful for Financial Difficulties
Treated	-0.077	0.132*	0.196**
	(0.101)	(0.079)	(0.089)
Control Mean	2.241	4.159	3.600
N	335	335	335

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 A44: Quantile Regression for Monthly Income

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	39.706***	3.209	14.419***	24.051***	59.005***	115.702***
	(9.045)	(2.198)	(3.646)	(5.841)	(11.522)	(27.228)
Control Mean	154.713	13.268	39.330	95.000	187.783	368.283
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 A45: Quantile Regression for Labour Supplied (Days)

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	3.283**	2.276*	2.451**	3.417***	5.622***	4.625
	(1.295)	(1.180)	(1.086)	(1.208)	(1.633)	(2.912)
Control Mean	43.918	12.000	24.000	39.000	56.000	78.750
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 A46: Quantile Regression for Non-Land Wealth

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	389.356***	81.408***	134.529***	312.703***	497.295***	692.841***
	(82.058)	(22.071)	(23.021)	(40.994)	(87.722)	(224.406)
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 A47: Quantile Regression for Monthly Consumption

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	58.854***	34.535***	41.742***	48.186***	67.248***	112.141***
	(14.371)	(10.578)	(12.768)	(16.328)	(19.678)	(32.779)
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 A48: Heterogeneous Treatment Effects using Random Forest Algorithms

	(1) Most Affected Group	(2) Least Affected Group	(3) Difference
Monthly Income	44.41***	32.96**	10.05
	(17.84,71.23)	(6.349,59.51)	(-24.51,44.74)
	[0.002]	[0.030]	[1.000]
Labour Supplied (Days)	4.124*	1.413	2.564
	(0.072,8.227)	(-2.613,5.501)	(-2.755,7.930)
	[0.092]	[0.969]	[0.691]
Non-Land Wealth	456.5***	345.1**	102.10
	(203.1,718.1)	(89.19,602.2)	(-233.3,440.1)
	[0.001]	[0.017]	[1.000]
Monthly Consumption	66.39***	46.20*	17.35
	(20.99,111.7)	(1.574,91.07)	(-41.91,77.23)
	[0.008]	[0.084]	[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 A49: Impact on Inequality

	(1) Monthly Income	(2) Non-Land Wealth	(3) Monthly Consumption
Panel A. Ratio of 75^{th} *to* 25^{th} *Percentile*			
Treated	-0.057	-0.479	-0.017
	(0.694)	(2.508)	(0.099)
Control Mean	5.944	9.104	2.372
N	335	335	335
Panel B. Gini Coefficient			
Treated	-0.015	-0.110***	-0.003
	(0.011)	(0.030)	(0.007)
Control Mean	0.479	0.648	0.279
N	335	335	335

Notes: Ratio of 75^{th} to 25^{th} Percentile measures the ratio between households in a village at the 75^{th} percentile relative to households at the 25^{th}. The Gini Coefficient measures the degree of inequality within the village. 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. 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 village being in a cluster 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 A50: Impact on Food and Non-Food Market 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	0.001	-0.009	0.003	0.003
	(0.009)	(0.009)	(0.004)	(0.006)
Control Mean	0.902	0.341	0.187	0.229
N	114	114	114	114

Notes: Price indices are calculated as linear log-price indices weighted by the expenditure shares of each product. Price indices are constructed at the cluster level. For each product, the logarithm of the median price amongst all markets in a cluster is used to create the price indices by taking a weighted average of these median prices across all products. The expenditure weights 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. The methodology follows that of Egger et al. (2022), where missing prices are imputed using the mean price of all other clusters. If there are fewer than 10 clusters with non-missing prices for a product, the expenditure weights for the product are set to 0, and rescaled accordingly. 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 A51: 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 A52: 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 A53: Impact on Village Price Indices

	(1) Village Elder Season 1 Crop Price Index	(2) Selling Season 1 Crop Price Index	(3) Selling Season 2 Crop Price Index	(4) Village Elder Livestock Price Index	(5) Selling Livestock Price Index
Treated	-0.003	-0.008	0.007	0.026	0.025*
	(0.018)	(0.006)	(0.007)	(0.019)	(0.014)
Control Mean	0.737	0.865	0.755	5.742	5.482
N	335	335	335	335	335

Notes: Price indices are calculated as linear log-price indices weighted by the value shares of each product. Village elder price indices use prices reported by the village elder. Selling price indices are constructed at the village level using household survey data based on reported selling prices. For each product, the median price amongst all households in a village is used to create the village-level price. The weights used in the indices are calculated using the value of the products for households in control villages. The methodology follows that of Egger et al. (2022), where missing prices are imputed using the mean price of all other villages of the same treatment status. The Crop Price Index is calculated separately for season 1 and season 2 using the prices for beans (0.39; 0.38), maize (0.38; 0.40), Irish potatoes (0.15; 0.14), ground nuts (0.07; 0.06) and cassava (0.02; 0.02), with weights included in parentheses in order of season 1 and 2. The Livestock Price Index is calculated using prices for mature cows (0.31) goats (0.27), pigs (0.12), chickens (0.05) and young cows (0.09) goats (0.09), pigs (0.04) and chickens (0.02), with weights included in parentheses. 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: Cluster Spillover Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Percentiles					
	Mean	Std. Dev.	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}	N
Panel A. Distance of 0-5km								
Treated Clusters	4.9	2.1	2.0	4.0	5.0	7.0	8.0	114
Total Clusters	9.3	3.7	5.0	7.0	9.0	12.0	15.0	114
Share of Treated Clusters	0.53	0.16	0.36	0.43	0.51	0.62	0.71	114
Panel B. Distance of 0-5km for Control Clusters								
Treated Clusters	4.8	2.1	2.0	3.0	5.0	7.0	8.0	57
Total Clusters	8.8	3.6	4.0	6.0	8.0	11.0	14.0	57
Share of Treated Clusters	0.56	0.16	0.33	0.43	0.56	0.67	0.75	57
Panel C. Distance of 0-5km for Treated Clusters								
Treated Clusters	4.9	2.0	3.0	4.0	4.0	6.0	8.0	57
Total Clusters	9.7	3.8	5.0	7.0	9.0	12.0	15.0	57
Share of Treated Clusters	0.50	0.14	0.36	0.43	0.50	0.58	0.64	57

Notes: The table reports summary statistics for the number of clusters, number of treated clusters and share of treated clusters within a certain distance of a cluster. Panel A includes statistics for distances within 5km for all clusters. Panel B and C separate clusters by treatment status. Distances are calculated using the cluster centroids based on the location of the sample of households from the cluster.

Table A55: Spillover Effects on Primary Outcomes for Cluster to Cluster Excluding Own Cluster with Number of Treated Clusters (0-5km)

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Panel A: Reduced Form				
Treated	39.706***	3.283**	389.356***	58.854***
	(9.045)	(1.295)	(82.058)	(14.371)
Panel B: Spillovers				
Treated Total Effect	48.885***	5.751	415.729	96.498**
	(16.315)	(5.434)	(285.517)	(38.546)
Control Total Effect	7.793	2.441	-1.726	34.778
	(14.740)	(4.285)	(193.788)	(36.004)
Control Mean	155	44	1,275	583
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 shows the reduced form treatment effect estimated using equation 1. Panel B accounts for spillovers across clusters using equation 2. The Treated Total Effect accounts for the number of treated clusters within 0-5km of the cluster centroid for treated households. The Control Total Effect accounts for the number of treated clusters within 0-5km of the cluster centroid for control households. Conley (1999) standard errors in parentheses are calculated using a uniform kernel with a 10 km radius. The 0-5km band used for the total effects was pre-specified in our pre-analysis plan.

Table A56: 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 A57: Impact on Primary Outcomes by Social Desirability

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	33.572***	4.350**	330.308***	58.932***
	(10.228)	(1.911)	(109.319)	(20.039)
High Social Desirability	31.078***	4.121***	155.732*	-19.655
	(9.084)	(1.377)	(88.169)	(15.476)
Treated × High Social Desirability	9.193	-1.953	93.974	0.603
	(14.100)	(2.180)	(139.367)	(23.468)
Control Mean	154.713	43.918	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 A58: Impact on Lean Season Consumption

	(1) Total Consumption	(2) Food	(3) Durables	(4) Non-Food Non-Durables	(5) Education Expenditure
Treated	154.053***	113.436***	1.291***	24.326***	16.071***
	(22.146)	(18.681)	(0.294)	(3.328)	(3.315)
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 A59: Impact on Lean Season Food Consumption

	(1) Food Purchased	(2) Food Produced	(3) Dietary Diversity
Treated	28.682**	84.881***	0.499***
	(11.592)	(12.697)	(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 A60: 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 A61: Impact on Primary Outcomes (Pooled)

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	29.519*	4.413***	331.523***	25.904
	(15.305)	(1.553)	(85.983)	(15.775)
Endline	-24.257***	2.385*	51.600	55.017***
	(8.398)	(1.320)	(59.251)	(12.349)
Treated × Endline	11.190	-1.208	64.816	33.703*
	(13.474)	(1.886)	(79.232)	(19.100)
Total Effect	40.710	3.205	396.339	59.606
p-value: Total Effect = 0	0.000	0.013	0.000	0.000
Control Mean (Midline)	185.021	42.062	1,343.753	547.289
Control Mean (Endline)	154.713	43.918	1,274.839	583.097
N	5,813	5,813	5,813	5,813

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 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 A62: Impact on Primary Outcomes by Intervention Phase

	(1) Monthly Income	(2) Labour Supplied (Days)	(3) Non-Land Wealth	(4) Monthly Consumption
Treated	58.038***	6.081***	556.460***	65.558***
	(13.732)	(1.674)	(119.893)	(23.286)
Phase 2	0.471	3.679**	-18.355	7.885
	(10.380)	(1.777)	(107.561)	(18.512)
Treated × Phase 2	-33.153*	-5.126*	-301.847*	-12.283
	(17.567)	(2.598)	(156.678)	(29.583)
Control Mean	154.713	43.918	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. Phase One occured in Kagadi in October 2020 and Kyenjojo in January 2021, while Phase Two occured in Kagadi in June 2021 and Kyenjojo in September 2021. 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 A63: 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 A64: Quantile Regression for Nondurable Consumption (Midline)

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	25.420*	3.872	8.299	21.159	16.593	53.086
	(15.091)	(11.566)	(12.385)	(15.469)	(19.042)	(33.601)
Control Mean	545.573	223.418	329.137	474.749	693.470	964.454
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 A65: Quantile Regression for Non-Productive Assets

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	103.087***	28.827***	36.668***	73.067***	128.394***	204.523
	(30.810)	(6.586)	(8.029)	(13.314)	(25.515)	(124.841)
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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A66: Quantile Regression for Nondurable Consumption

	(1) OLS	(2) Q(10)	(3) Q(25)	(4) Q(50)	(5) Q(75)	(6) Q(90)
Treated	54.910***	35.947***	36.954***	41.972**	55.603***	108.680***
	(14.007)	(10.508)	(12.278)	(17.436)	(19.345)	(26.717)
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. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.