Impact Evaluation of BRAC's Ultra-Poor Graduation Programme for Host Community in Cox's Bazar

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Executive Summary

Bangladesh has provided refuge to the more than 700,000 Rohingyas who fled from the Rakhine State of Myanmar between August-October 2017. As of December 2019, more than 850,000 Rohingya refugees are residing in these two upazilas—impacting the lives of the host community population (Inter-Sector Coordination CXB IMWG-Bangladesh 2020). The sudden massive influx put further strain on the already economically vulnerable host communities. In Teknaf and Ukhiya—the two southern upazilas of Cox's Bazar—Rohingya refugees constitute more than a third of the local population (UNDP 2018).

With more than 16% of Cox's Bazar population living in poverty (according to HIES 2016), the vulnerability of the affected host population has become even more acute since the influx (BBS 2017; WFP 2020). The refugee influx has generated competition and tension for commodities and services. According to UNDP (2018) the local community is negatively impacted by a fall in wage rate.

The refugees are mostly dependent on relief from humanitarian actors and development partners such as UNHCR, BRAC, IOM, WFP, Action against Hunger, etc. with a limited amount of support also provided to the host communities. In order to further address the vulnerabilities of the host community in Ukhiya and Teknaf upazila of Cox's Bazar, BRAC rolled out its flagship "Ultra-Poor Graduation" (UPG) programme, in collaboration with UNHCR. This programme has been implemented in Bangladesh since 2002 to address extreme poverty, and is designed to provide the targeted ultra-poor households with a combination of interventions including social protection, livelihood promotion, financial inclusion and social empowerment.

In order to fit the host community context, BRAC brought variations in targeting criteria and the intervention package compared to regular programme implementation in other parts of Bangladesh. The programme participants were divided into two groups and were offered customized interventions aligned with the Cox's Bazar context, as the graduation approach is highly contextualized. Group 1, the more vulnerable group in terms of observable socio-economic characteristics, received grant-based interventions; while the slightly less vulnerable Group 2 received interest-free loans plus grant-based interventions.

This report evaluates the impact of the programme. For this purpose, we follow a quasi-experimental approach and focus on the 2018 cohort. This paper uses two rounds of panel data collected from a sample of about 1,600 households (including both Group 1 and 2 participants, and non-participants) to evaluate the impact of the UPG programme on various dimensions of the programme participants' lives.

Our main findings are as follows:

- Households selected for the programme support were asset poor at baseline, indicating that the programme was successful in targeting vulnerable households.
- Per capita income of the households increased by 28.91% for Group 1 and 27.11% for Group 2 from baseline to endline. Interestingly, per capita income of non-participants remained almost the same at both baseline and follow-up surveys. This indicates the importance of providing livelihood support for the vulnerable host community populations in Cox's Bazar district.
- The intervention increased the total labor supply in poultry and livestock rearing of working age men and women from both groups.
- The overall labor market participation also increased for working age women among both groups. The large impact of the programme on women's employment is remarkable as female labor market participation is limited in Cox's Bazar, where 91% of the workers in this district are male (BBS, 2013). Women from this region might be less likely to engage in earning activities due to religious and cultural constraints.
- The programme increased the working age members' time devoted to agriculture work and vegetable/fish cultivation.
- As a result of the intervention, ownership of poultry (chicken) and livestock (cow/goat) significantly increased among both groups, and consequently, significantly impacting the total value of productive assets (excluding land) owned by households in both Group 1 (220.47% increase) and Group 2 (260.96% increase).
- The programme increased owned land by 30% and 25% for Groups 1 and 2 respectively.
- The programme led to increased food expenditure (21% and 11% among Groups 1 and 2, respectively) and consequently increased the overall food security level among both groups. For the more vulnerable Group 1, the programme support enabled them to spend more on food and non-food items immediately, resulting in the higher impact on their consumption expenditure.
- The programme significantly improved the water and sanitation condition of participants of both groups but had a higher impact on Group 1 households. Most noteworthy, the programme significantly decreased (by 198%) open defecation practices among Group 1. In a place like Cox's Bazar where open defecation is quite prominent, such a result demonstrates the success of the intervention.
- The savings match component of the programme is deemed to be a pathway to promote positive financial behavior among the participants. In this regard, the positive significant impact on savings and higher impact on savings at BRAC reflect the success of this component.
- Moreover, the programme increased financial market participation among the ultra-poor households. The programme has been successful to encourage not only Group 2—who received an interest-free loan—but also Group 1—who received full-grants—to engage in

the financial market. It indicates that the intervention increased the affordability of the households to participate in credit market.

- Lastly, we see significant impacts for both groups in terms of women's economic empowerment due to the main female members of the selected households being the recipients of the programme support.

Overall, the results of our impact evaluation study imply that the dynamic and holistic design of the UPG programme targeting the host communities in Cox's Bazar is highly effective in assisting the ultra-poor households, enhancing their lives both socially and economically. A cost-benefit analysis of the programme demonstrated an average benefit-cost ratio (BCR) of 2.72 for Group 1, indicating that an investment of BDT 1.00 yields BDT 2.72 for this group. For Group 2 the average BCR was 2.76. The difference between Groups 1 and 2 in terms of BCR is negligible, indicating that the grant-based intervention for Group 1 is as effective as the credit plus grant-based intervention for Group 2.

This study has two limitations. First, the quasi-experimental evaluation design used provides a methodological limitation. Second, this study shows the impacts just after the completion of the programme cycle. There still remains the scope of measuring the long-term impacts of the intervention through conducting further follow-up surveys.

The substantial impact of BRAC's graduation approach on the livelihoods of the ultra-poor living in the depressed economy of Cox's Bazar indicates scope and need for scaling up this type of graduation approach in such areas within the humanitarian context.

1. Introduction

Between August-October 2017, Bangladesh confronted a humanitarian crisis as more than 700,000 Rohingya refugees started arriving from neighboring Myanmar, fleeing violence and serious human rights violation in Rakhine State. The United Nations High Commissioner for Refugees (UNHCR) described as the fastest-growing refugee crisis. At that time, Bangladesh became one of the major refugee-hosting nations in the world hosting 4.7 percent of the total refugee population.

Such a massive and sudden influx of people further strained resources in Cox's Bazar, impacting the lives of around 400,000 vulnerable host community members (Inter-Sector Coordination CXB IMWG-Bangladesh 2020). In Teknaf and Ukhiya—the two southern upazilas of Cox's Bazar—Rohingya refugees constitute more than a third of the local population (UNDP 2018). Moreover, the host community are already among the most vulnerable groups in Bangladesh (WFP 2019). According to HIES 2016, 16.6 percent of the population in Cox's Bazar district live in poverty (BBS 2017). The arrival of the Rohingya refugees has generated competition and tension for commodities and services, especially labor, shelter, agriculture, health, transportation, and education.

The refugees are mostly dependent on humanitarian relief from organizations such as UNHCR, BRAC, IOM, WFP, and Action against Hunger, etc. According to UNDP (2018), local shopkeepers in the communities face lower prices on essential food items in part due to refugees selling some of the assistance they receive. The report also states that more than 70 percent of respondents in Teknaf and 50 percent of respondents in Ukhiya reported a fall in wages as a result of the influx. The decreased wages ultimately increased the rate of poverty by 2.73 percent and 2.63 percentage in Teknaf and Ukhiya, respectively. A study by COAST Trust (2018) found that the wages of local day laborers in Ukhiya dropped by 50 percent—from BDT 400-500 to BDT 200-250—while livestock grazing stopped in the forests due to refugees settling in the areas.

Despite the economic impact, few initiatives have been undertaken for the vulnerable groups in the host community. Consequently, locals, especially in Teknaf and Ukhiya, have indicated feeling ignored by humanitarian organizations and are concerned about increasing labor competition, deforestation, price increases, and damage to physical and natural resources (ACAPS and NPM, 2018). It is, therefore, crucial that initiatives are taken to help the host communities sustain their livelihood.

BRAC, the largest NGO in the world, has been implementing its flagship "Ultra-Poor Graduation (UPG)" programme in Bangladesh since 2002 to address ultra-poverty. Over the years, the programme has gone through many iterations as BRAC has gained a better understanding of the needs of the ultra-poor and has continually focused on making the intervention more effective.

Currently, the programme adopts preventive, protective, and promotive mechanisms to support basic income security of the ultra-poor such as consumption support, crisis relief, and access to health, and education. Besides, the programme also offers options for livelihood promotion, financial inclusion and social empowerment. In the wake of the crisis faced by the ultra-poor from the host community living in Cox's Bazar, BRAC in collaboration with UNHCR, rolled out its UPG programme in the Ukhiya and Teknaf subdistricts of Cox's Bazar, with customized targeting criteria and intervention package to fit the context.

The purpose of this study is to evaluate the impact of the programme on the lives of the targeted ultra-poor households from the host community. We do so by using a quasi-experimental approach, focusing on the 2018 cohort that covered five unions from Ukhiya and Teknaf. Programme participants were divided into two groups: Group 1 and Group 2. Group 2 was slightly better-off compared to Group 1 members in terms of observable socio-economic characteristics. Thus, Group 1 received the grant-based intervention, while Group 2 received the credit plus grant-based intervention. For the purpose of this research, a baseline survey was conducted in 2018, followed by a follow-up survey conducted in 2020. This paper uses these two rounds of panel data on both programme participants and non-participants to evaluate the impact of the UPG programme on the lives of the targeted ultra-poor households from the host community.

2. Research Objective

The broad purpose of this impact evaluation study is to assess the impact of the UPG programme on the livelihoods, social capacity, and self-reliance of the participants, and also to explore the changes in the economic and social lives of the host community because of the Rohingya refugees' arrival in Bangladesh. The specific objectives of this study are to assess the impact on the following aspects of the programme participants' lives:

1. Labor market participation and income diversification of the household members;
2. Financial market participation;
3. Physical (business and consumption), financial and natural asset holdings;
4. Food consumption pattern; and
5. Economic welfare in terms of food and non-food expenditure;

We also explore changes in employment patterns, basic services, and support services of the host population caused by the influx of the Rohingya refugees. Additionally, we assess the cost-effectiveness of the programme by comparing the benefits against the costs, following a standard cost-benefit analysis.

3. An Overview of BRAC's UPG Programme

In order to tackle the humanitarian crisis of Rohingya refugees, BRAC has been providing support to meet their basic needs i.e., health services, education, and shelter. However, a rapid assessment conducted by BRAC in partnership with UNHCR, Save the Children, the World Food Programme (WFP) and World Vision (WV), revealed that the host communities were also needing support in land cultivation and livelihoods, and were facing downward changes in employment patterns (Save the Children et al., 2018). Host community members expressed concerns predominantly related to price changes and fall in daily wages for laborers (UNDP, 2018).

BRAC in collaboration with UNHCR, implemented its flagship UPG programme – formerly known as "Targeting the Ultra Poor" (TUP) programme – to provide support to the vulnerable people from the host communities so that they can cope with the ongoing challenges and ensure self-sustainable livelihoods.[5] The programme covered 2,028 ultra-poor households in Teknaf and Ukhiya. Considering the vulnerabilities of the host population in Cox's Bazar, the programme design has been modified to a unique set of suitable targeting criteria and support package for this community.

Target Group, selection, and intervention

The pre-requisites for being eligible as programme participant are given below.

- Per-capita monthly income of maximum BDT 1,900;
- At least one active[6] female member in the household;
- Household member(s) is not a current borrower of any formal financial or microfinance institutions.

The selection criteria for Group 1 and 2 are presented in Table 1.

[5] The UPG programme implemented in rural areas across the country is found to be very effective in improving the economic and social lives of the participant households (Das and Misha 2010; Bandiera et al. 2017; Ara et al. 2017).
[6] 'Active' refers to being physically capable of maintaining the enterprise offered by the UPG programme.

Table 1. Selection criteria for Group 1 and 2

SL	Group 1 selection criteria	SL	Group 2 selection criteria
1.1	No active male member in the household. Even if there is an active male member, the female household member still needs to work due to conditions of extreme poverty	2.1	The household is dependent on male member's income. A female household member might work to further maintain the household
1.2	Household owns a maximum of 15 decimals of land, including homestead	2.2	Household owns maximum 30 decimals of land, including homestead
1.3	Household owns a maximum of BDT 5,000 worth of productive assets	2.3	Household owns maximum BDT 12,000 worth of productive assets
		2.4	Borrowed money from a moneylender in the last six months due to economic strain following the Rohingya refugee influx

For Group 1, participants were selected if they met criteria 1.1 along with any one of the remaining two criteria. For Group 2, participants were selected if they met any two out of the four criteria listed.

As the Group 1 eligible households were more vulnerable than the Group 2 eligible households, the Group 1 package included asset transfer as grants while the Group 2 package included an interest-free loan (towards purchasing a productive asset or initiating a small business venture) and a partial grant.

The complete support package offered to the finally selected ultra-poor households included the following components:

i. Enterprise development training;
ii. Asset transfer (in the form of productive assets like cows, goats, poultry, etc.) as a full grant for Group 1 and as a partial grant for Group 2;
iii. Hands-on coaching through regular group and home visits;
iv. Matched savings;
v. Healthcare service; and
vi. Community mobilization.

4. Evaluation Design and Data Collection

This study uses a quasi-experimental design comparing ultra-poor households selected for the intervention with near-eligible households from the same community. Given the context and the urgency of extending support to the target population, it was not possible to conduct the research employing a randomized control trial (RCT) design as it requires thorough and lengthy planning for proper implementation. RCT also involves the ethical concern about limiting the intervention only to the treatment group leaving the equally deserving control group without support, which

the implementing team decided to avoid in the context of the crisis already described. Since there is adequate evidence establishing the effectiveness of the UPG model in a regular context, the call to go with a quasi-experimental design for evaluating the UPG model for the host community in Cox's Bazar in the context of the Rohingya refugee influx was agreed upon by both the implementation team and the research team.

BRAC and UNHCR selected five unions (two from Ukhiya and three from Teknaf) near the camp where the Rohingya refugees are residing, from which the study sample was selected. We planned to survey 400 households from Group 1, 400 households from Group 2, and another 800 near-eligible households. The near-eligible households were primarily selected for the intervention but they failed to arrive at the final selection. Throughout the rest of the report, this group is referred to as the non-participant group.

The sample households were proportionately divided across the five unions. In case of union wise sample distribution within the participant group (i.e., within Group 1 and Group 2), we follow the approximate ratio of Group 1 and 2 households targeted by the programme for intervention in each union (40:60)[7]. As for union wise distribution of the non-participant group, the non-participant sample is equal to the participant (Group 1+2) sample for each union. As mentioned earlier, the sample for this research covers all five unions (Rajapalong, Palongkhali, Hhykong, Hnila, and Baharchara) from the two upazilas of Ukhiya and Teknaf where the programme was implemented in 2018. More details on union-wise sample distribution are available in annex 1.

A baseline survey was conducted in July-August 2018. The respondents of the survey were the main female members of the sample households as the UPG programme usually targets the main women from ultra-poor households as programme participants. The female household member who is responsible for running the household and is knowledgeable about the household's daily affairs is referred to as the main female member. However, it is worth noting that she may or may not be an earning member or involved with household decision makings (done by the household head alone or in consultation with her/other members).

The baseline survey included 402 households from Group 1 and 401 households from Group 2, as well as 802 non-participant households. The follow-up survey conducted in March 2020 (i.e., almost two years after the intervention was initiated) included 1,562 of the 1,605 households covered by the baseline survey. Among them, 394 households were from Group 1, 392 from Group 2, and the remaining 776 from the non-participant group. Table 2 shows the attrition rate in the follow-up survey along with the reasons for attrition. Interestingly, the attrition rate is quite low (2-3%) compared to follow-up surveys in other contexts.

[7] The tentative ratio is calculated based on the number of finally selected Group 1 and Group 2 households in the BRAC branch offices of the mentioned unions till July 8, 2018.

The surveys included information on: labor market participation; earnings; food and non-food consumption and expenditure; natural, physical and financial asset holding; self-reported food security; and social inclusion. Information on changes in the host community's economic and social lives after the arrival of the Rohingya refugees was also collected.

Table 2. Attrition in the follow-up survey

Attrition rate and reasons		Group 1	Group 2	Non-participant	Group 1 vs Non-participant	Group 2 vs Non-participant
		(1)	(2)	(3)	(4=1-3)	(5=2-3)
Attrition rate (%)		1.99	2.24	3.24	-1.25	-0.98
Number of observations		402	401	802		
Reason for attrition (% of attrited households)	Migration (%)	62.5	66.67	53.85	8.65	12.82
	The respondent was unavailable (%)	25.00	0	3.85	21.15*	-3.85
	The respondent was dead (%)	12.50	0	15.38	-2.89	-15.38
	The respondent went to visit friends/family (%)	0	11.11	7.69	-7.69	3.42
	Household was not found (%)	0	0	3.85	-3.85	-3.85
	Others (%)	0	22.22	15.38	-15.38	6.84
Number of observations		8	9	26		

During the follow-up survey, we recorded changes in group assignment for some of the households. That is, some households had actually different groups assigned compared to the baseline information. Considering these final group assignments, this evaluation utilizes data on 332 households from Group 1, 302 households from Group 2, and 928 non-participant households.

5. Descriptive Statistics

Comparison between basic baseline characteristics of the programme participant groups and the non-participant group revealed statistically significant differences between participant and non-participant groups in terms of several indicators (see Annex Table A2). This was expected as the intervention was not randomly assigned. Specifically, the mean age of respondents among non-participants was higher than participants in Group 2 (31 years) but lower than those in Group 1 (39 years). About 60% of Group 1 women and 3% of Group 2 women were divorced/separated/widowed while the ratio among non-participant women was 22.2%. However, both participants and non-participants were asset poor at baseline: Groups 1 and 2 owned only 2 decimals of land on average, while non-participants owned 3 decimals. Figure 1 presents a side-by-side comparison of the three groups of surveyed households for several other crucial indicators.

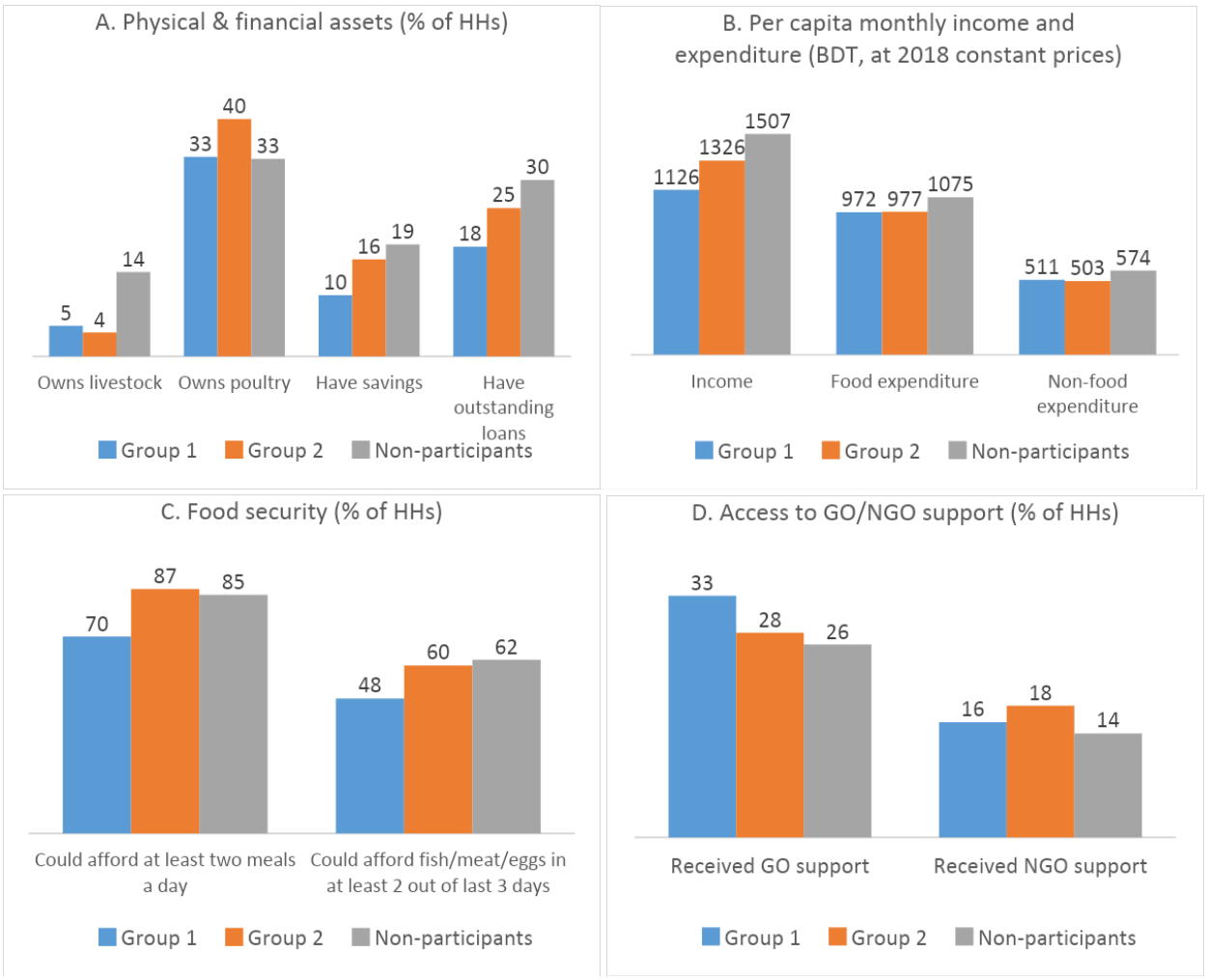

Figure 1. Surveyed households at baseline, at a glance

As illustrated by Figure 1.A, in terms of livestock ownership, non-participants were significantly better-off with about 14% of them owning livestock, while the proportion was only 4%-5% among the two participant groups. However, no significant difference was found between participants and non-participants in terms of poultry ownership. In the case of financial assets, there was a significant difference between Group 1 and non-participants. Only 10% of Group 1 households had savings and 18% had outstanding loans, while 16% of Group 2 households had savings and 25% had outstanding loans.

As Figure 1.B. shows, at baseline, programme participant groups had an average per capita monthly income of about BDT 1,100-1,300. This amount was significantly higher among non-participants (BDT 1,500). This suggests that the targeting of ultra-poor households was done quite effectively. Average per capita monthly expenditure on both food and non-food items was higher for the non-participant group compared to both Groups 1 and 2.

Figure 1.C. shows that a significant proportion of participants (70% of Group 1 and 87% of Group 2) could afford at least two meals a day; but protein intake was relatively low among Group 1. About 48% of households from Group 1 could consume fish/meat/eggs in 2 out of the 3 days before the survey, which was significantly lower compared to non-participants (62%).

Lastly, Figure 1.D. shows that the proportion of participant households that received support from the Government or from non-government organizations was slightly higher than that among non-participants; but the difference was not statistically significant.

To summarize, the above statistics indicate that at baseline, Group 2 was better-off compared to Group 1 in terms of observable characteristics.

Figures 2-8 illustrate changes in some key outcome variables for Group 1, Group 2, and non-participants during baseline and follow-up. There was no improvement in per capita monthly income of non-participants, whereas both Groups 1 and 2 experienced a substantial increase in their income from baseline to follow-up (see Figure 2).

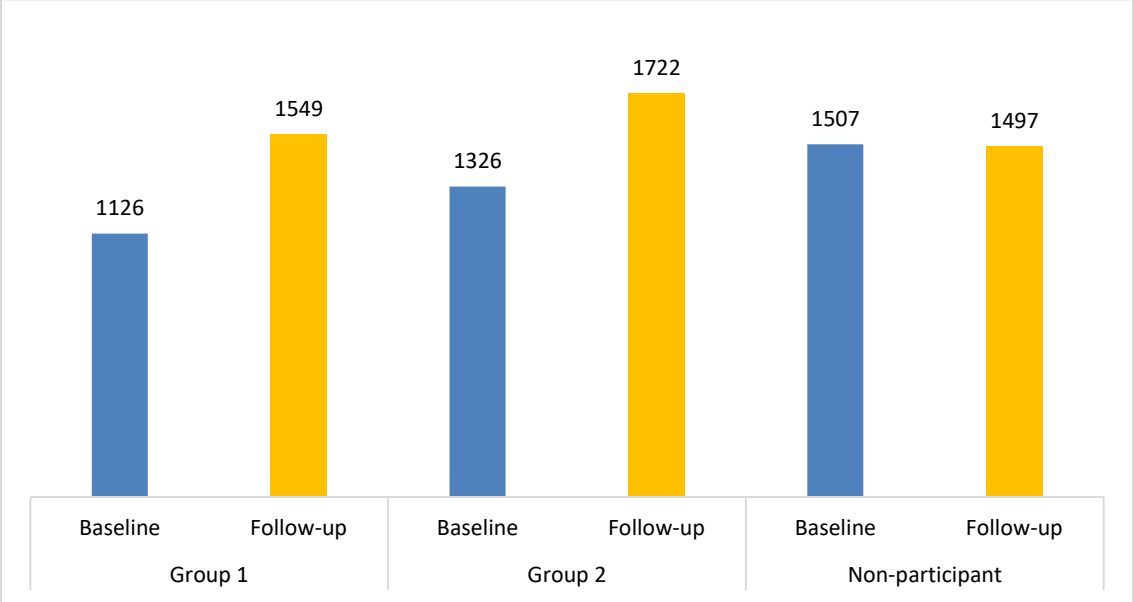

Figure 2. Change in per capita monthly income over time (mean, BDT, at 2018 constant prices)

Unlike the non-participant group, male members of both Groups 1 and 2 were found to be working for slightly longer hours on average than before. It is worth mentioning that the average working hours of women have also increased substantially, predominantly among Group 2 (Figure 3).

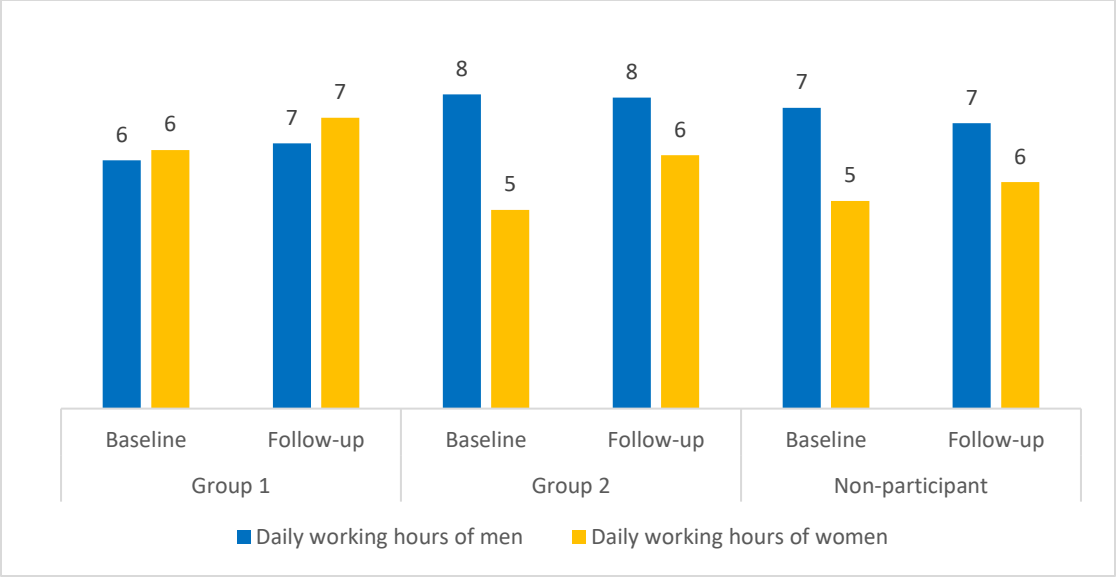

Figure 3. Change in daily working hours of men and women (mean, hours)

Statistics revealed that both Groups 1 and 2 experienced a much larger increase in total productive assets compared to non-participants. The difference in this increase is the highest for the number of livestock (including both cow and goat) and poultry owned by Groups 1 and 2 (see annex Table A3). As illustrated in Figure 4, the overall amount of the total value of assets increased dramatically for participants, unlike for non-participants. Similar to productive assets, ownership of non-productive assets also grew at a higher rate among participant groups than non-participants. The total value of non-productive assets owned by the non-participants increased over time; however, it more than doubled for both Groups 1 and 2.

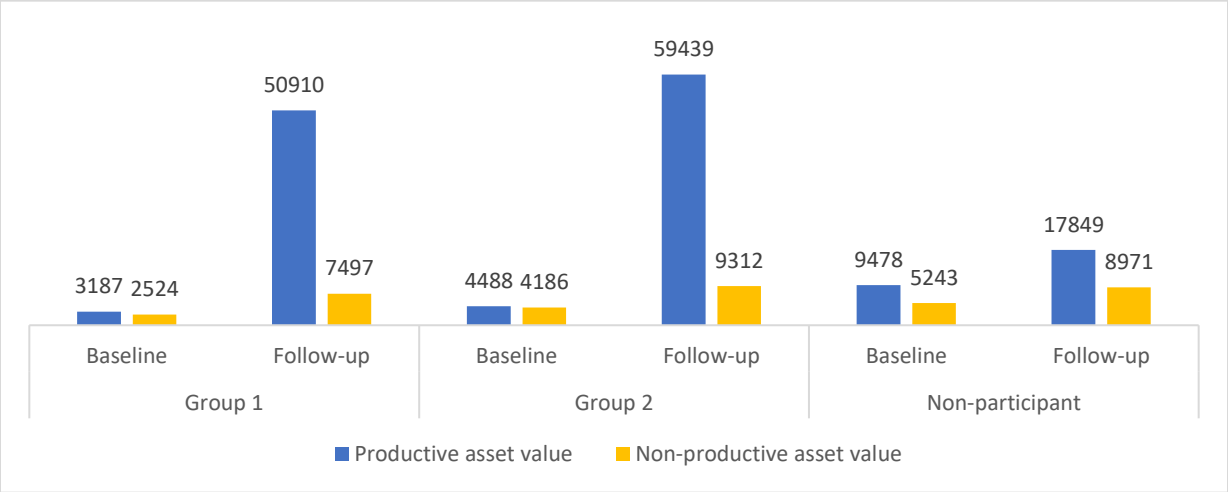

Figure 4. Change in value of productive and non-productive assets owned (mean, BDT)

Figure 5 depicts the households' access to financial assets including both savings and outstanding loans, while Figure 6 shows the average amount of savings and outstanding loans of the different groups of households. Among Groups 1 and 2, the proportion of households that had outstanding

loans increased from baseline to follow-up (17% to 31% for Group 1, and 24% to 34% for Group 2) but it remained almost the same for the non-participant group over the years (Figure 5). As for the average amount of savings, the amount significantly increased for all three groups; but the increase was larger among participant groups (Figure 6). The trend of change in the outstanding loan amount was also similar.

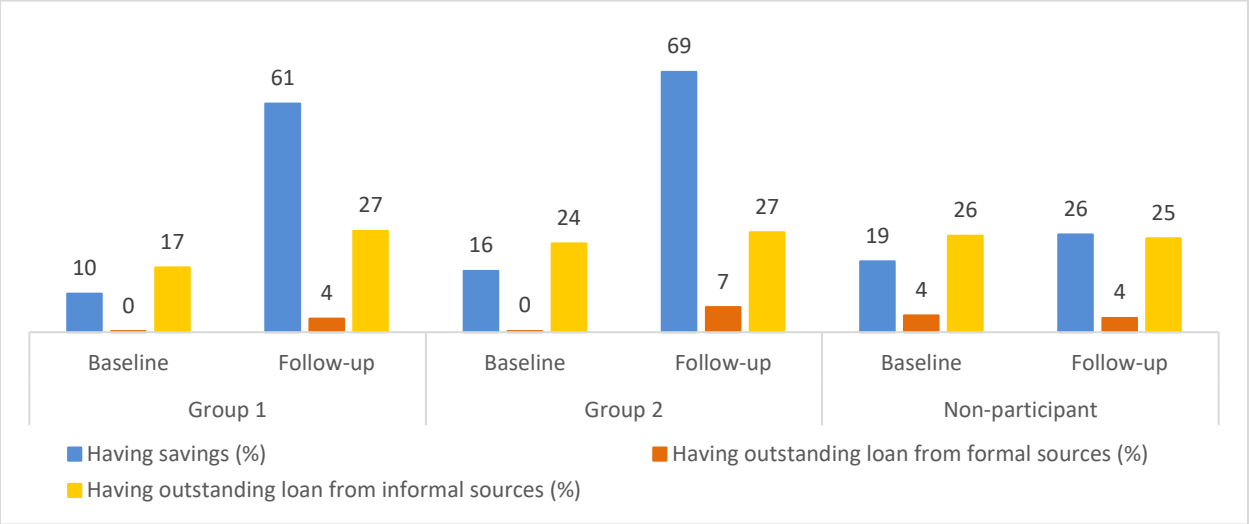

Figure 5. Change in access to savings and loans from formal and informal sources (% of HHs)[8]

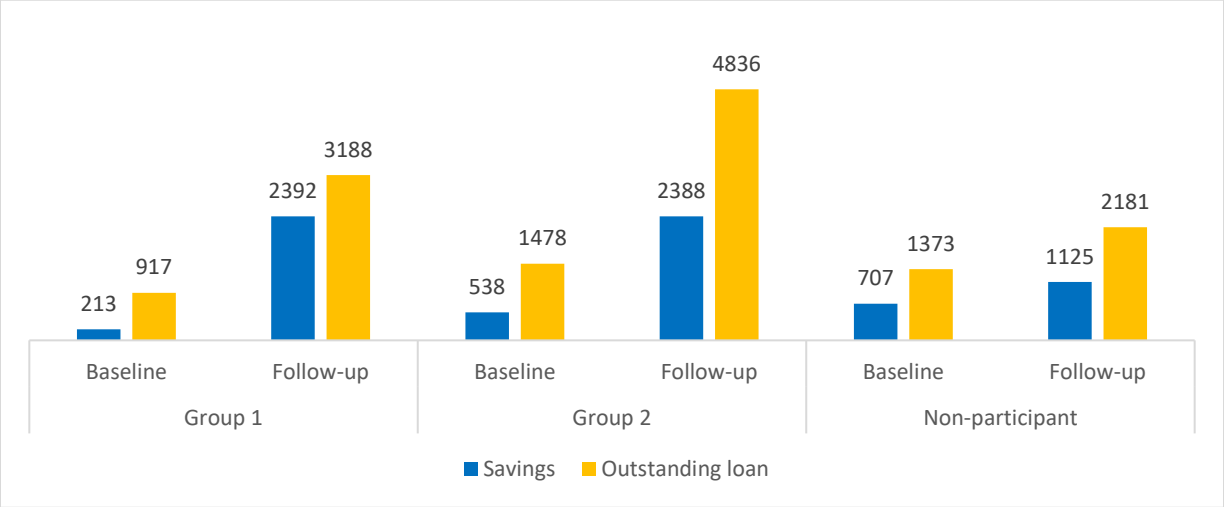

Figure 6. Change in the amount of savings and outstanding loan (mean, BDT)

Figure 7 illustrates that livestock and poultry ownership increased over time; however, the increases were higher among Groups 1 and 2 households compared to non-participant households.

[8] Formal sources include banks and other NGOs, and informal sources include moneylenders, shopkeepers, friends, and relatives.

It is worth mentioning that over time, both Groups 1 and 2 also experienced a greater increase in the size of total land owned compared to the non-participants (see Annex Table A3).

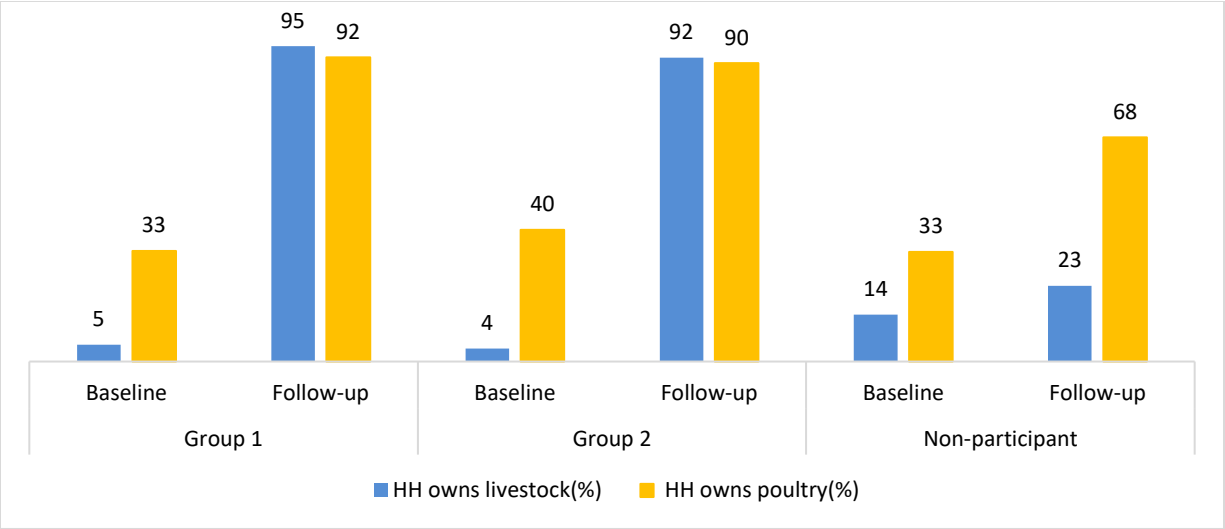

Figure 7. Change in livestock and poultry ownership (% of HHs)

Figure 8 shows that the proportion of households receiving support from only the government increased at a similar rate for both participants and non-participants. At follow-up, more households were being assisted by only NGOs than before as well. The proportion of households who received support from both government and NGOs is also higher at follow-up across all groups.

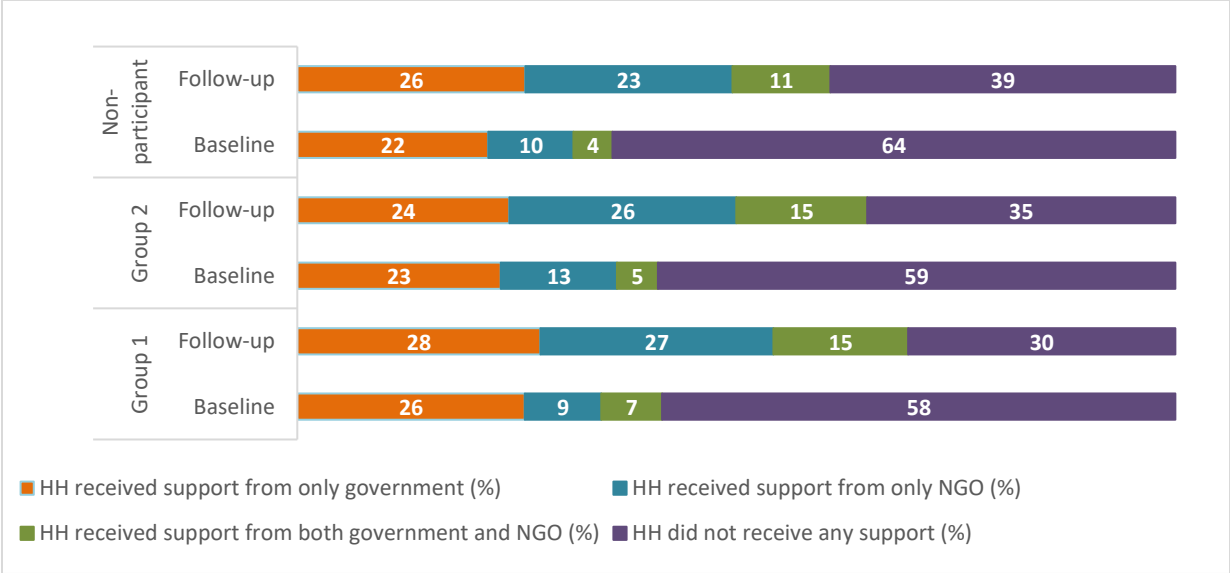

Figure 8. Change in access to Govt. and NGO support (% of HHs)

Additional analyses conducted for other indicators also reveal improvement among the participant groups compared to the non-participants (see Annex Table A3). For example, while morbidity

rates increased for both participants and non-participants, the increase is smallest for Group 2. Interestingly, in terms of practicing open defecation, no improvement was found among the non-participants over time, while this practice drastically decreased among both participant groups.

Table 3 depicts the savings of the UPG programme participant groups with the programme. Group 2 had slightly more savings on average with the programme than Group 1 (BDT 2,138 against BDT 1,930). Both participant groups received 29 group visits[9] on average. Group 2 members saved BDT 25 per visit more times on average compared to Group 1 (21 against 26). This is logical as the total savings of Group 2 at the UPG programme were higher.

Table 3. Savings at UPG programme

Indicator	**Group 1**	**Group 2**
Total savings at UPG programme (BDT)	1929.72	2137.93
Matched savings (BDT)	1141.00	1292.25
Average number of times the respondent received group visits	28.68	28.51
Number of observations	**332**	**302**
Average number of visits in which respondent saved more than BDT 25	20.82	26.25
Number of observations	**319**	**277**

6. Estimating Equation

As mentioned earlier, a balancing test analysis showed that for most of the observable characteristics analyzed, the difference between participant and non-participant groups was statistically significant. In other words, there exist imbalances across observable characteristics due to the lack of randomization. To control for these imbalances, we used difference-in-difference (DiD) with fixed effects to estimate the effect of the intervention. We estimate the following equation using baseline and follow-up data separately for Group 1 and Group 2:

$$y_{it} = \Omega_i + \alpha_2 GRP1_i + \alpha_3 YEAR_t + \alpha_4 GRP1_i * YEAR_t + \epsilon_{it} \ldots\ldots\ldots\ldots (1)$$

$$y_{it} = \Omega_i + \alpha_2 GRP2_i + \alpha_3 YEAR_t + \alpha_4 GRP2_i * YEAR_t + \epsilon_{it} \ldots\ldots\ldots\ldots (2)$$

Where, Ω_i are household fixed effects. y_{it} is the outcome variable of interest for individual/household *i* in year *t*; In equation 1, $GRP1_i$ is a binary variable taking the value of 1 if the individual/household *i* is from Group 1 and 0 if from non-participants group; In equation 2, $GRP2_i$ is a binary variable taking the value of 1 if the individual/household *i* is from Group 2 and 0 if from non-participants group; $YEAR_t$ is a dummy variable taking the value of 1 if t refers to

[9] During the programme cycle, the participant households regularly receive both one-to-one visits and group visits by the field-level UPGP programme staff. During these visits, savings and loan installments are collected and various important social issues are also discussed to make the participants knowledgeable about these issues.

follow-up and 0 if t refers to baseline; and ϵ_{it} is an error term. α_4 in both equations (1) and (2) identify the causal effect of the programme on the respective participant groups.

7. Results and Discussion

7.1. Impact on Employment and Income

Due to the intervention, employment in poultry/livestock rearing, agricultural labor, and vegetable/fish cultivation increased among Groups 1 and 2 working-age members. By contrast, the employment in maid work and begging decreased among Group 1. For Group 2, the intervention decreased participation in other income-generating activities.

Table 4 below presents the estimated impacts on employment of working-age male and female household members and per capita monthly income. Column 1 reports estimated results using equation (1) and column 4 reports estimated results using equation (2). Panel A of Table 4 presents the impacts on the labor supply of male members, panel B that of females, panel C on labor market participation of working-age members, and finally panel D on per capita monthly income. It is worth mentioning that during both survey rounds, information on income for the last year prior to the survey was collected. Per capita monthly income reported in Table 4 is at 2018 constant prices using the consumer price index (CPI).

Table 4. Impacts on employment and income

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Panel A: Impacts on labor supply of 15-64 year old males (hours worked per day)					
Poultry/livestock rearing	0.13***	0.18***	0.06	225.20	302.11
	(0.04)	(0.03)			
Agricultural work in owned land	0.03	0.38***	0.31	8.86	120.11
	(0.08)	(0.08)			
Agricultural day labor (work at other's field)	0.02	-0.12	1.34	1.63	-9.04
	(0.17)	(0.16)			
Maid/beggar	-0.08	0.02	0.00	-1890.20	560.11
	(0.05)	(0.04)			
Vegetables/fish cultivation	0.35***	0.22**	0.55	63.20	39.00
	(0.11)	(0.11)			
Others	0.27	-0.31	4.72	5.66	-6.61
	(0.25)	(0.23)			
Total time devoted to earning activities	0.73**	0.35	7.02	10.37	4.97
	(0.29)	(0.27)			
Number of observations	4797	5015	1914		

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Panel B: Impacts on labor supply of 15-64 year old females (hours worked per day)					
Poultry/livestock rearing	0.93*** 0.06)	0.87*** (0.06)	0.60	156.50	145.94
Agricultural work in owned land	0.09** (0.43)	0.08* (0.04)	0.16	58.30	52.78
Agricultural day labor (work at other's field)	0.12 (0.08)	-0.08 (0.07)	0.27	43.72	-28.41
Maid/Beggar	-0.76*** (0.10)	0.04 (0.08)	0.26	-291.37	15.34
Vegetables/fish cultivation	0.07* (0.04)	0.17*** (0.04)	0.18	38.17	91.48
Household chores	0.02 (0.07)	-0.22*** (0.07)	1.91	0.92	-11.63
Others	-0.14 (0.13)	0.12 (0.12)	2.19	-6.20	5.66
Total working hour	0.34* (0.19)	0.98*** (0.18)	5.57	6.07	17.66
Number of observations	5444	5246	2002		
Panel C: Impacts on labor market participation (% of working-age population engaged in the occupation)					
Poultry/livestock rearing	14.09*** (1.43)	10.34*** (1.38)	19.32	72.68	53.34
Agricultural work in owned land	1.87** (0.91)	5.30*** (0.94)	5.87	31.90	90.17
Agricultural day labor (work at other's field)	1.64 (1.16)	-0.83 (1.11)	30.85	5.33	-2.70
Maid/beggar	-6.73*** (0.86)	0.24 (0.67)	2.22	-302.87	10.59
Vegetables/fish cultivation	3.75*** (1.06)	4.81*** (1.06)	8.81	42.53	54.62
Others	0.16 (1.13)	-2.79** (1.10)	91.06	0.17	-3.05
Number of observations	10241	10261	3916		
Panel D: Impact on income					
Per capita monthly income (BDT, at 2018 constant prices)	432.84*** (74.51)	405.86*** (82.53)	1528.37	28.91	27.11
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

Results confirm that the intervention greatly increased working-age males' labor supply in poultry and livestock rearing for both groups. The impact for Group 1 is equal to 225% of the non-

participant group's mean at the time of the follow-up survey, and for Group 2 it is 302%. This result is unsurprising as the intervention provided to Group 1 households with grants was mainly in the form of poultry and livestock, while most of the Group 2 participants used credit plus grant-based supports to purchase these assets. The magnitude of the impact for Group 2 is higher perhaps because Group 2 consists of a comparatively younger male demographic who partially contribute to the household income. Time devoted to vegetable/fish cultivation increased significantly for both groups as well. For other occupational categories, there is no statistically significant effect for working-age males. However, point estimates indicate that due to the intervention, working-age males from Group 1 likely to reduced time devoted to begging.

The above results also reveal that the intervention increased the average working-age female household members' time devoted to poultry and livestock rearing by 157% for Group 1, compared to the non-participant group's mean, 146% for Group 2. While the intervention increased working-age women's time devoted to agricultural work and vegetable/fish cultivation for both Groups 1 and 2 as well, the magnitudes of the effects for both groups is low compared to the effects on the time devoted to poultry and livestock rearing. The prevalence of working as a maid or begging significantly decreased for Group 1. For Group 2, the intervention resulted in a 12% reduction in the labor supply in household chores. Consequently, the intervention significantly increased the total time devoted to earning activities for women from both Groups 1 and 2. The substantial impact of the programme on women employment is important as Cox's Bazar is one of the poorest districts in Bangladesh, with an annual GDP 6% less than the national average, and has a very low participation of women in the labor market (Khondker and Mahzab, 2015).

Since the intervention increased the total labor supply of working-age members of both Groups 1 and 2, though not all the effects were statistically significant, there was an expectation of an overall positive effect on household income. Results reported in Panel D of Table 4 confirm that the intervention indeed increased the household income of both Groups 1 and 2. The impact on per capita monthly income of Group 1 was around 29% of the mean of the outcome of the non-participant group at follow-up, with an increase of 27% noted for Group 2.

According to Save the Children et al. (2018), almost all respondents in the host communities surveyed between December 2017 and January 2018 reported having reduced wages and fewer labor opportunities due to the increasing proportion of Rohingyas in the labor market. They also reported looking for alternative survival modalities. This highlights the importance of the intervention's impact in generating labor opportunities for the most vulnerable segments of the host community.

7.2. Impact on Productive and Non-productive Assets

The intervention significantly raised the total value of productive assets owned by households in both Group 1 and 2. Table 5 below shows the impact of the intervention on selected productive

assets. The programme significantly increased the number of livestock (cow and goat) and poultry owned by the households. This result was expected since, as mentioned, the intervention provided Group 1 with these assets as grants, while Group 2 received partial grants for purchasing these assets. Table 5 also depicts the positive impacts on the ownership of engine-powered vehicles for Group 2 and a significant increase in the ownership of mobile phones for Group 1.

Table 5. Impact on productive asset ownership

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3=1/2*100)	(4=1/3*100)	(5=2/3*100)
Cow (number)	1.06*** (0.05)	0.97*** (0.05)	0.24	440.47	403.24
Goat/pig (number)	1.04*** (0.07)	0.82*** (0.07)	0.25	410.54	322.30
Chicken/pigeon (number)	7.36*** (0.47)	9.29*** (0.52)	4.52	162.96	205.66
Tractor/power tiller/pump (number)	-0.00 (0.01)	0.00 (0.00)	0.00	-5.12	1.82
Engine-powered vehicles (number)	-0.00 (0.01)	0.02** (0.01)	0.01	-21.91	150.75
Mobile phone (number)	0.21*** (0.06)	0.04 (0.06)	1.25	17.05	3.40
Tree (if priced more than BDT 500) (number)	0.59 (0.49)	0.24 (0.51)	1.05	56.07	23.33
Sewing machine (number)	-0.02 (0.01)	0.01 (0.02)	0.05	-36.78	22.49
Total value of productive assets (in BDT)	39351.41*** (2466.41)	46579.48*** (4457.26)	17849.11	220.47	260.96
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

Land is a key productive asset in rural Bangladesh. According to the Labour Force Survey 2016-17, the agriculture sector provides employment opportunities for about 40% of the total employed population aged 15 or above (BBS 2018). But ultra-poor households have very limited access to cultivable land as evidenced by Column 3 in Table 6. Although ownership of cultivable land did not increase, the intervention successfully increased the amount of cultivable land taken on lease/mortgaged/share-cropped by 44% of participants in Group 1 and 145% of participants in Group 2. This finding resonates with the increase in working-age member's time devoted to agriculture work and vegetable/fish cultivation for both. The intervention decreased the amount of

hilly *khas* land used for purposes other than homestead and cultivation in both Groups 1 and 2. This might suggest that host communities are using more of such land for cultivation or homestead. Point estimates do suggest an increase in the use of hilly *khas* lands by both groups for cultivation, but the impact of the intervention, in this case, was not significant.

Table 6. Impact on land

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3=1/2*100)	(4=1/3*100)	(5=2/3*100)
Total owned land (decimals)	1.41* (0.76)	1.19* (0.72)	4.66	30.17	25.42
Owned homestead land (decimals)	1.46*** (0.46)	1.19** (0.49)	4.00	36.40	29.79
Owned cultivable land (decimals)	0.30 (0.40)	-0.34 (0.42)	0.60	49.33	-56.14
Cultivable land taken on lease/mortgaged/share cropping (decimals)	3.61* (2.08)	12.01*** (2.35)	8.26	43.67	145.35
Hilly *khas* land used for homestead (decimals)	1.05* (0.56)	0.76 (0.60)	2.32	45.27	32.76
Hilly *khas* land used for cultivation (decimals)	0.05 (0.34)	0.29 (0.36)	0.31	15.13	94.76
Hilly *khas* land used for other purposes (decimals)	-0.05** (0.02)	-0.06** (0.03)	0.02	-232.40	-294.07
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

The below Table 7 shows the effects of the intervention on household durable assets. Results demonstrate that the intervention increased ownership of chair and ceremonial clothing for main female and male members of both Groups 1 and 2. The magnitude of the effect on ceremonial clothing for females from Group 1 was 18% of the non-participant group's mean at follow-up. For Group 2, on the other hand, the corresponding impact was 20%. For other indicators reported in Table 7, the point estimates are statistically insignificant. Table 7 also shows that the point estimate of the effect on the total value of non-productive[10] assets was positive but statistically insignificant.

[10] Like Bandiera *et al.* (2017), we include television, radio, mobile phone, jewellery, cloths, furniture and so on under household non-productive assets.

Table 7. Impact on household durable assets

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Number of assets owned by HH					
Television	-0.01 (0.01)	0.00 (0.01)	0.03	-42.09	1.26
Electric fan	-0.06 (0.05)	0.12** (0.05)	0.75	-7.90	15.67
Refrigerator	0.00 (0.01)	-0.01 (0.01)	0.01	10.66	-77.48
Chair	0.19* (0.11)	0.28** (0.11)	2.01	9.47	13.77
Table	0.02 (0.04)	0.04 (0.04)	0.49	3.50	8.67
Ceremonial clothing for main female	0.40*** (0.14)	0.43*** (0.15)	2.22	18.09	19.57
Ceremonial clothing for main male	0.14 (0.12)	0.49*** (0.13)	1.31	10.36	36.91
Total value of non-productive assets (in BDT)	1244.75 (1104.33)	1397.82 (1137.50)	8971.09	13.88	15.58
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

7.3. Impact on Food Security

Analyzing the survey respondents' perception of respective household food security status, we find that both interventions (i.e., full grant-based support for Group 1 and credit plus grant-based support for Group 2) significantly improved the participants' food security situation (Table 8). The magnitudes of the impact for Groups 1 and 2 are 105% and 178% of the non-participant group's mean at follow-up, respectively, in terms of having food surplus. There was a significant rise in the proportion of households always experiencing a surplus as well as the proportion of households experiencing neither deficit nor surplus. Moreover, due to programme support, households having occasional food-deficits reduced for both groups. Most importantly, the effects on the first three indicators in Table 8 depicting the household's ability to consume food at regular intervals and access to nutritious food were all positive and significant for both groups. The magnitude of the impact is notably higher for most indicators for Group 1.

Table 8. Impact on self-reported food security

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Could consume fish/meat/egg at least two days out of the last 3 days (yes=1, no=0)	0.23*** (0.04)	0.16*** (0.04)	0.69	33.90	23.37
During the last year, could regularly have at least two meals a day (yes=1, no=0)	0.17*** (0.03)	0.05 (0.03)	0.85	20.47	5.73
During the last year, had nutritious food regularly (yes=1, no=0)	0.20*** (0.04)	0.20*** (0.04)	0.44	45.84	44.71
Always have food deficit (yes=1, no=0)	-0.15*** (0.03)	-0.02 (0.02)	0.09	-176.39	-19.63
Always have food surplus (yes=1, no=0)	0.07*** (0.02)	0.13*** (0.02)	0.07	105.26	177.80
Occasional food deficit (yes=1, no=0)	-0.20*** (0.05)	-0.22*** (0.05)	0.54	-37.57	-41.26
Neither food surplus nor deficit (yes=1, no=0)	0.28*** (0.04)	0.11*** (0.04)	0.31	89.78	36.59
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

7.4. Impact on Expenditures

Table 9 depicts programme impacts on food, non-food, and total consumption expenditures. The expenditures are reported at 2018 constant prices using CPI. A significant positive impact was found on the total monthly per capita food expenditures for both groups. The magnitude of the effects for Group 1 was around 21% of the non-participant group's mean at follow-up compared to 11% for Group 2. Programme participants increased expenditures on protein-rich food items (meat, fish, eggs, yogurt, milk, and pulses). This result was expected as the programme had a significant effect on food consumption. Consequently, the effect on the total consumption expenditures was positive and significant as well. This increase resonates with the significant increase in per capita household income for both groups. However, there was no significant effect on non-food expenditures.

Table 9. Impact on expenditures (in BDT)

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Total per capita monthly expenditure on food	312.11*** (56.29)	160.58*** (55.31)	1491.77	20.92	10.76
Per capita monthly expenditure on protein	208.53*** (32.73)	160.87*** (32.91)	383.11	54.43	41.99
Per capita monthly expenditure on cereals	21.34* (12.57)	-19.43 (12.48)	392.29	5.44	-4.95
Total per capita monthly non-food expenditure	104.02 (74.95)	-15.31 (53.08)	780.44	13.33	-1.96
Total per capita monthly consumption expenditure	416.13*** (103.12)	145.27* (87.67)	2272.21	18.31	6.39
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

7.5. Impact on Housing

Ultra-poor households commonly live in dilapidated housing. An increase in household income of these households was therefore expected to result in the improvement of their housing condition. As shown in Table 10, both Groups 1 and 2 significantly improved their housing compared to non-participants group. Specifically, compared to the non-participant group, Group 1 was likely to increase their number of rooms. Group 1 was also more likely to have a tin-shade roof, a separate kitchen, ring/sanitary latrine, and self-owned tube-well compared to their non-participant counterparts.

Results reported in Table 10 also show that Group 2 was more likely to have a tin-shade roof, a separate kitchen, ring/sanitary latrine, and self-owned tube-well compared to the non-participant group. The intervention does not have a statistically significant effect on access to electricity for either of the groups. According to UNDP (2018), most people in Ukhiya and Teknaf areas live in one-room houses with polythene roofing and are thus vulnerable to weather phenomena such as strong winds, monsoons, floods, etc. Thus, a significant increase in tin-shaded roofs and ring/sanitary latrines indicate an overall improvement in housing conditions for the participants.

The intervention also significantly decreased open defecation practices among Group 1 household members. The magnitude of the effect was 198% of the non-participant mean at follow-up.

Table 10. Impact on housing

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Number of rooms	0.16*** (0.05)	0.00 (0.05)	1.78	9.15	0.00
Having pakka roof (yes=1, no=0)	0.00 (0.01)	-0.01 (0.01)	0.02	14.11	-63.77
Having tin-shade roof (yes=1, no=0)	0.10*** (0.03)	0.06* (0.03)	0.75	12.83	8.01
Having pakka wall (yes=1, no=0)	-0.02 (0.01)	0.00 (0.01)	0.05	-28.00	8.87
Having tin wall (yes=1, no=0)	0.00 (0.02)	-0.00 (0.02)	0.13	2.83	-1.93
Having separate kitchen (yes=1, no=0)	0.11*** (0.04)	0.13*** (0.04)	0.51	21.26	26.27
Having ring/sanitary latrine (yes=1, no=0)	0.34*** (0.04)	0.20*** (0.04)	0.55	61.57	35.47
Open defecation (yes=1, no=0)	-0.07*** (0.02)	-0.02 (0.02)	0.03	-197.71	-59.71
Drinking water from tube well (yes=1, no=0)	-0.00 (0.01)	-0.01 (0.01)	0.99	-0.28	-0.68
Drinking water from own tube well (yes=1, no=0)	0.09*** (0.03)	0.08** (0.03)	0.35	25.82	22.76
Having electricity (yes=1, no=0)	-0.03 (0.03)	0.03 (0.04)	0.79	-4.37	3.91
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

7.6. Impacts on Savings and Credit

As mentioned earlier, one of the components of the intervention was the one-time credit plus grant support for Group 2. After repaying the loan portion of the support, this Group was eligible to take loans from BRAC's Microfinance Programme, which provides loans to poor people across Bangladesh. Hence, it was expected that the intervention may increase their loans after completion of the programme cycle. Similarly, the programme may increase savings. Thus, this section examines the effects on outstanding loans and savings at the time of the follow-up survey (i.e., two years after the intervention). Results demonstrate statistically significant impacts on savings (Panel A, Table 11). Group 1 and 2 were 43 percentage points and 46 percentage points more likely to have savings compared to non-participants. The magnitude of these effects was 167% and 176% of the non-participant group mean at follow-up for Groups 1 and 2. In terms of the amount of

savings, the effect for Group 1 was 157% of the non-participant group's mean at follow-up, and the corresponding figure for Group 2 was 127%.

Moreover, upon categorizing savings based on the institution where savings are kept (Panel A of Table 11), a significant increase of savings at all categories (home, bank/PO/insurance, BRAC, other NGOs, and money guard) was seen for Group 1 women. For Groups 1 and 2 women, savings at home and at BRAC increased significantly due to the intervention. The magnitude of the effects was 441% and 476% of the non-participant group mean at follow-up for Groups 1 and 2. Given the increase in income found earlier, such an increase in savings makes sense.

Panel B of Table 11 shows the estimated effect of the intervention on outstanding loans. There is an increase in total outstanding loans for both Groups 1 and 2. There is also a positive and statistically significant effect on outstanding loans at BRAC for both Groups 1 and 2.

Table 11. Impact on financial assets

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Panel A: Savings					
Having savings (yes=1, no=0)	0.43*** (0.04)	0.46*** (0.04)	0.26	167.00	176.08
Total savings (BDT)	1760.92*** (533.85)	1432.64*** (511.94)	1124.88	156.54	127.36
Savings at home (BDT)	300.31 (211.94)	832.89*** (247.36)	464.47	64.66	179.32
Savings at bank/PO/insurance (BDT)	638.82* (353.45)	-126.84 (275.71)	343.43	186.01	-36.93
Savings at BRAC (BDT)	614.63*** (93.46)	664.10*** (100.69)	139.46	440.74	476.21
Savings at other NGO (BDT)	197.30** (77.20)	96.84 (69.82)	83.14	237.32	116.48
Savings kept with moneyguard (BDT)	9.85 (105.82)	-34.34 (105.76)	94.40	10.44	-36.38
Number of observations	2520	2460	928		
Panel B: Loans					
Having outstanding loan from any sources (yes=1, no=0)	0.13*** (0.04)	0.09** (0.04)	0.29	36.67	13.33
Total outstanding loan from any sources (BDT)	1461.99*** (552.55)	2549.34*** (752.95)	2180.93	46.64	30.07
Loan from BRAC (BDT)	301.02* (175.51)	733.77*** (199.60)	245.11	67.04	116.89

Loan from other NGOs (BDT)	146.55 (118.11)	179.11 (209.03)	77.67	122.81	299.37
Loan from moneylender (BDT)	-51.26 (154.16)	270.01 (246.25)	236.05	188.68	230.59
Loan from relatives/friends/neighbors (BDT)	646.44 (440.34)	1423.98** (624.66)	1334.40	-21.71	114.39
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

7.7. Impact on Social Inclusion

As mentioned earlier, one of the components of the intervention was social integration through community mobilization. Three indicators of social integration were used, reported in Table 12 below. In terms of social inclusion, the intervention provided a greater impact for Group 1 compared to Group 2. Group 1 was more likely to get an invitation from non-relative neighbors and be able to seek help from *Shalish*[11] compared to the non-participant group. For Group 2, estimated effects on these two outcomes were positive but statistically insignificant. Concerning receiving help from a non-relative neighbor when needed, the estimated effect was negative for both groups (statistically significant for Group 1, but not for Group 2), perhaps because after receiving the intervention, programme participants' need for assistance from non-relative neighbors decreased.

Table 12. Impact on social integration

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Got invitation from non-relative neighbor (yes=1, no=0)	0.13*** (0.04)	0.03 (0.04)	0.79	15.94	4.00
Received help from non-relative neighbor when needed (yes=1, no=0)	-0.02 (0.04)	-0.02 (0.04)	0.80	-2.90	-1.93
Can seek help from *Shalish* (yes=1, no=0)	0.09** (0.04)	0.02 (0.04)	0.78	11.57	2.44
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

[11] *Shalish* is a traditional, social system for resolving petty disputes by local notables. This system is widely prevalent in rural Bangladesh. Marginalized segments of the population are often sceptic about seeking justice through the *Shalish* as they commonly lack the voice to raise their issues as well as the informal network that can help them stand their ground.

7.8. Impact on Women Empowerment

The programme provided all support to the main female member of a selected household as the indirect objective of the programme was to empower women socially and economically. Several indicators related to ownership[12] of productive assets, household decision making, mobility, and violence against women were examined to determine the effects of the intervention on the empowerment of women participating in the programme.

Table 13 presents the estimated effects of the intervention on the number of productive assets such as livestock (cow and goat) and poultry (chicken) owned by the respondent women. We found that the intervention successfully increased women's ownership of livestock and poultry. These results indicate that two years after the intervention, programme participant women owned more assets compared to their non-participant counterparts. These results are likely to indicate that the programme was able to economically empower women.

Table 13. Impact on productive assets owned by the respondent

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Number of productive assets owned by the respondent					
Cow	1.00***	0.85***	0.11	919.71	779.17
	(0.04)	(0.04)			
Goat/pig	0.98***	0.76***	0.20	483.76	379.01
	(0.07)	(0.07)			
Chicken/pigeon	7.06***	8.76***	3.90	181.17	224.78
	(0.46)	(0.50)			
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

Looking into the estimated impacts on decision making power of the respondent women, women of both Groups 1 and 2 were less likely to solely take decisions regarding buying/selling real estate, lending/borrowing, starting a new income generating activity (IGA), education and marriage of children, and household expenditures and savings (Panel A of Table 14). This could be because they were more likely to take joint decisions with their husband in the post-intervention period. In fact, according to the results (Panel B of Table 14), women in Group 1 were more likely to make decisions regarding household expenditures jointly with their husbands compared to the non-participants. In terms of magnitude, the intervention effect on this indicator was 11.71% of the

[12] Ownership refers to the woman having right to make any decision regarding this asset.

non-participant group mean at follow-up. Point estimates of making a joint decision on lending/borrowing, starting a new IGA, and where to save were positive but not statistically significant. For Group 2 on the other hand, female respondents were more likely to jointly take decisions in starting a new IGA and education of children as a result of the intervention. Point estimates for other indicators or joint decision making with the husband were positive for Group 2 women, but not statistically significant.

Table 14. Impact on decision making

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Panel A: The respondent women solely make decision on… (%)					
Buying/selling real estate	-4.89*	-2.52	21.23	-23.05	-11.85
	(2.71)	(2.37)			
Lending/borrowing	-3.22	-0.96	21.98	-14.63	-4.37
	(2.73)	(2.51)			
Starting new IGA	-4.35	-1.31	21.34	-20.41	-6.16
	(2.68)	(2.47)			
Education of children	-4.51	-3.28	22.41	-20.14	-14.65
	(3.02)	(2.80)			
Marriage of children	-6.72**	-1.66	17.24	-38.98	-9.64
	(2.82)	(2.41)			
Household expenditure	-2.66	-1.75	22.20	-11.96	-7.90
	(2.81)	(2.59)			
Where to save	-0.93	-1.21	22.09	-4.23	-5.46
	(2.84)	(2.56)			
Number of observations	2520	2460	928		
Panel B: The respondent women jointly make decisions with husband on … (%)					
Buying/selling real estate	-0.15	4.91	58.62	-0.25	8.38
	(3.17)	(3.46)			
Lending/borrowing	1.26	4.84	56.36	2.23	8.59
	(3.22)	(3.55)			
Starting new IGA	3.99	5.83*	57.54	6.93	10.13
	(3.21)	(3.47)			
Education of children	-1.98	8.56**	52.91	-3.73	16.18
	(3.34)	(3.73)			
Marriage of children	-3.79	4.04	57.65	-6.58	7.00
	(3.36)	(3.74)			
Household expenditure	6.38*	4.88	54.53	11.71	8.95
	(3.23)	(3.52)			
Where to save	1.15	3.41	58.19	1.97	5.86
	(3.11)	(3.36)			
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

Table 15 shows the impact of the intervention on the physical mobility of the respondent women. Results show that due to the intervention, programme participant women from both Groups 1 and 2 visited veterinary clinics more often compared to non-participant women. The magnitude of the impact was 253% and 344% of the non-participant group's mean at follow-up for Groups 1 and 2. Programme participant women from both Groups 1 and 2 also visited hospitals/clinics more times compared to non-participants. Concerning visits to the local market Group 1 experienced statistically significant positive effects. For Group 2, the effect was positive but statistically insignificant.

Table 15. Impact on physical mobility

Indicator	Impact estimates for Group 1	Impact Estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
In the last three months, the number of times respondent women visited…					
Upazila health complex	-0.08 (0.10)	-0.02 (0.10)	0.43	-18.47	-4.25
Government hospital/clinic	0.52** (0.22)	0.45** (0.21)	1.36	38.23	33.03
Non-government hospital/clinic	0.39* (0.21)	0.03 (0.17)	0.79	49.52	3.69
Government veterinary Clinic	0.82*** (0.02)	0.08*** (0.03)	0.03	253.45	243.95
Upazila agriculture office	-0.01 (0.02)	-0.01 (0.02)	0.01	-72.05	-100.00
Local market	4.14*** (1.16)	0.77 (1.04)	6.64	62.40	11.56
Other service institutions	-0.11 (0.12)	0.06 (0.14)	0.17	-66.23	36.27
Number of observations	2520	2460	928		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

Table 16 depicts the impact of the intervention on violence against women. Information on the indicators reported in this table was collected only if the respondent was married at the time or was married in the last year. None of the indicators of violence against women were statistically significant.

Table 16. Impact on violence against women

Indicator	Impact estimates for Group 1	Impact estimates for Group 2	Follow-up non-participant mean	Impact as % of non-participant mean for Group 1	Impact as % of non-participant mean for Group 2
	(1)	(2)	(3)	(4=1/3*100)	(5=2/3*100)
Percentage of respondents who suffered the following violence					
Took assets against will	-4.19 (3.03)	0.71 (2.07)	3.23	-129.75	21.97
Prevented from going to parents' HH	0.41 (4.48)	0.80 (3.22)	4.03	10.22	19.72
Prevented from working outside home	4.72 (5.35)	2.10 (3.88)	4.57	103.34	45.91
Divorce/threatened to divorce	-0.44 (3.68)	0.68 (2.36)	4.33	-10.12	15.79
Husband married again/threatened to marry again	0.16 (3.53)	0.53 (2.32)	3.50	4.65	15.21
Physical and emotional pressure for dowry	-0.29 (3.04)	1.97 (1.97)	2.15	-13.36	91.53
Number of observations	1299	1513	372		

Note: Figures in the parentheses are standard errors. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Column (1) and (2) show impacts using equations 1 and 2.

8. Male Perception of Women Empowerment

During the follow-up survey, some questions were asked to the main male members of some sample households regarding their perception of women empowerment. Of the 1,562 households surveyed for this study, males from 232 households were interviewed: 85 males from participant groups and 147 males from the non-participants group. Table 17 details the findings.

Regarding wives' decision-making related to land, loans, daily expenses, and children's education/marriage, 90%-95% of the males from participant households showed a positive attitude. The corresponding proportion for non-participant group was slightly lower (82%-90%). However, most differences were not statistically significant. These statistics suggest that male members were generally conscious of their wives' rights and value their opinions, indicating the men's growing acceptance of egalitarian gender norms. These results are encouraging but caution should be taken in interpreting these results due to the small sample size.

The percentage of males who think women should/can be owners of valuable assets is around 84% among participant households and 88% among non-participants. Yet, only 15% of participant male members and 10% of non-participant male members believe that women can always go out of their homes to work.

About 69% of males in participant groups reported hearing about violence against women in their locality. These proportions are significantly different from the corresponding proportion for the non-participant group (54%). This is an indication of the prevalence of violence against women in the surveyed areas. Analyzing males' perception of violence, we see that around 75% of males in both participants and non-participants groups consider physical abuse by the husband as acts of violence. It should be noted that among males of participant households, 51% consider sexual assault as an act of violence.

But drastic drops are noticed when asked about verbal acts such as insults/threats, not allowing women to go outside, etc. Only 28% of the participant men and 37% of non-participant men consider verbal abuse an act of violence, while only 18% of participant men and 12% of non-participant men believe that not letting women go outside without permission is a form of violence. These findings indicate that most males interviewed have a less holistic concept of violence, acknowledging only the physical form of violence while disregarding the emotional aspect.

In the context of a conservative environment like Cox's Bazar, the positive differences between the participant and non-participant households in terms of the perception of male members towards their spouses are notable, however, these differences are not significant.

Table 17. Male perception of women empowerment

Indicator	Male members of participant HH	Male members of non-participant HH	Difference (participant vs non-participant)
	(1)	(2)	(3=1-2)
Males' opinion on women's decision-making rights (% of males think that …)			
Women can always/sometimes take decisions regarding buying/selling land	92.94	88.43	4.51
Women can always/sometimes take decisions regarding loans	91.77	86.40	5.37
Their wives/female member of HH can always/sometimes take decisions about his new IGA	91.77	82.99	8.77
Thinks their wives can always/sometimes take decisions regarding children's education	94.12	85.03	9.08**
Their wives can always/sometimes take decisions regarding children's marriage	90.59	84.35	6.23
Their wives can always/sometimes take decisions regarding daily expenditures	90.59	89.12	1.47
Their wives can always/sometimes take decisions regarding savings	92.94	88.44	4.51
On violence against women			
Have heard about violence against women in their locality (% of males)	65.88	54.42	11.46*
Considers the following as violence against women (% of males):			
Physical abuse by husband	75.29	74.83	0.46

Indicator	Male members of participant HH	Male members of non-participant HH	Difference (participant vs non-participant)
	(1)	(2)	(3=1-2)
Abuse by in-laws	58.82	57.14	1.68
Acid attack	43.53	53.74	-10.21
Harassment/insults/threats	28.24	36.73	-8.50
Not allowing to go outside without permission	17.65	11.56	6.08
Not allowing to go to parents' house	20.00	23.81	-3.81
Rape and other sexual harassment	50.60	52.38	-1.79
Not allowing to work outside	16.47	8.16	8.30**
Thinks women should/can be owners of important assets (% of males)	83.53	87.76	-4.23
Thinks women can always go out for work (% of males)	15.29	9.52	5.77
Number of observations	85	147	

Note: ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

9. Cost-benefit Analysis

In this section, we analyze the cost-effectiveness of the programme model. The change in household consumption expenditure[13] as the key measure of the programme's benefits is used as per Banerjee et al. (2015) and Bandiera et al. (2017). A one-time change in household assets[14] as measured in year 2 is also included. Panel A of Table 18 reports the cost per household; the programme spent US$ 604.4 per household in Group 1 and US$ 486.1 per household in Group 2. The cost is converted using the exchange rate[15] of 2018 published by Bangladesh Bank at year 0 and then impute the cost of BDT 56,119 for Group 1 and BDT 45,134 for Group 2 at year 2 using 6% annual inflation rate since the benefits are calculated based on DiD with fixed effects estimates at year 2. The first two rows under panel B of Table 18 report the DiD with fixed effects estimates of programme effects on household consumption expenditure at years 1 and 2, respectively.

We estimate the programme impact in year 2[16] using our baseline and follow-up surveys. We compute the impact in year 1 assuming that the impact in year 1 is slightly higher than half of that

[13] Household consumption expenditure includes total expenditure on food and non-food items.

[14] Household assets include television, radio, mobile phone, jewellery, clothes, and furniture and so on.

[15] On average US$1 was equal to BDT 82.9 in the period of February 2018.

[16] In Table 11, we report DiD with fixed effects estimate on per capita monthly consumption expenditure. Based on this estimate we calculate annual impact (416.13*12*4=19974) for Group 1 and for Group 2 it is (145.27*12*5=8716).

in year 2[17]. We report the net present value of future consumption changes from year 3 onward, assuming that year 2 changes are repeated for 20 years from the transfer date (so 18 more years after year 2) in the third row of Table 18 upon following the social discount rate and time horizon used by Bandiera et al. (2017). We report the change in household asset at year 2 (reported in Table 7) in the fourth row. On the other hand, the fifth row adds up all benefits from row one through four to compute total benefits. Finally, the sixth row shows the benefit-cost ratio calculated by dividing total benefit (fifth row of Panel B of Table 18) by cost at year 2 (Panel A of Table 18).

The benefit-cost ratio shows how much return investment of BDT 1 can yield. For the UPG programme model designed for the vulnerable host communities in Cox's Bazar, the average benefit-cost ratio (BCR) is 2.72 for Group 1 indicating that investment of BDT 1 yields BDT 2.72 for the group. The average BCR is 2.76 for Group 2. The difference between the interest-free loan plus partial grant-based model and grant-based package in terms of average BCR is trivial. This indicates that the former model for the comparatively better-off ultra-poor in the host communities is as efficient as the latter one for the worse-off ultra-poor.

The seventh row of Panel B of Table 18 reports the BCR at different social discount rates and time horizons. Using the social discount rate of 10%, we start with the lowest time horizon of 5 years and end with 25 years with a 10-year interval. We again start with the highest time horizon of 30 years and end with 15 years with a 5-year interval; and use the social discount rate of 12% lining up with the World Bank[18].

The limitation of computing BCR for this study is that only one follow-up survey was conducted. Thus, we cannot say with certainty to which extent the benefits would change in the near future. Bandiera et al. (2017) shows that the impacts of such a graduation model increases four or seven years after the intervention to a higher extent. Based on only one follow-up survey, there remains the probability of underreporting on the long-term benefits of the programme.

Table 18. Cost-benefit Analysis

	Group 1	Group 2
Panel A: External parameters		
Cost per household at year 0	50106	40298
Cost per household discounted at year 2 at 6% annual inflation rate	56119	45134
Social discount rate=5%		
Panel B: Estimated consumption benefits		

[17] We only have impact at year 2. So, we cannot estimate the impact at year 1 using interpolation as Bandiera et al. (2017) did. However, we find that the impact at year 1 is 58% of the impact at year 2 in Bandiera et al. (2017)'s paper; we use this rate to compute the year 1 change in our paper.

[18] More information available at http://documents.worldbank.org/curated/en/175851529346335395/pdf/ICR00004433-06132018.pdf.

		Group 1	Group 2
1	Change in household consumption expenditure at year 1	11495	5016
2	Change in household consumption expenditure at year 2	19974	8716
3	NPV change in household consumption expenditure from year 3 for 20 years	120013	109291
4	Change in household asset at year 2	1245	1398
5	Total benefits (1+2+3+4)	152726	124421
6	Benefits/cost ratio (assuming benefits last 20 years from transfer date)	2.72	2.76
7	Sensitivity to different discount rates/time horizons		
	Benefits/cost ratio (assuming benefits last 30 years from transfer date)	3.26	3.43
	Social discount rate= 10%		
	Benefits/cost ratio (assuming benefits last 5 years from transfer date)	1.17	0.84
	Benefits/cost ratio (assuming benefits last 15 years from transfer date)	1.94	1.80
	Benefits/cost ratio (assuming benefits last 25 years from transfer date)	2.35	2.31
	Social discount rate= 12%		
	Benefits/cost ratio (assuming benefits last 30 years from transfer date)	2.09	1.99
	Benefits/cost ratio (assuming benefits last 25 years from transfer date)	2.04	1.93
	Benefits/cost ratio (assuming benefits last 20 years from transfer date)	1.97	1.83
	Benefits/cost ratio (assuming benefits last 15 years from transfer date)	1.83	1.66

10. Conclusion

Upon graduation from the UPG programme, and hence out of extreme poverty, participants are expected to have: access to better livelihood options through self-employment; financial inclusion through access to formal and semi-formal financial products; enhanced social integration with the awareness of various social and health issues; be able to make the best use of social capital; and have access to mainstream social and financial services. Overall, our results imply that the dynamic and holistic design of the UPG programme targeting the host communities in Cox's Bazar was highly effective in assisting the targeted ultra-poor households in enhancing their lives in various social and economic aspects.

The results evidenced increased self-employment, labor market participation, higher per capita income, increased financial market participation, and improved access to mainstream programmes and services. Combining these research findings with a reported graduation rate of about 96% after the completion of the programme cycle [19], we can conclude that the UPG programme designed for the host communities in Cox's Bazar was quite effective in lifting the programme participants out of extreme poverty and towards an improved livelihood trajectory.

The programme provided both Group 1 and 2 with training on livestock and poultry rearing, agriculture, and other topics. For both groups, the intervention increased the total labor supply of

[19] Reported in the joint Project End Report prepared by BRAC and UNHCR.

working-age men and women in poultry and livestock rearing. This is not surprising given that the programme transferred these assets to Group 1, and Group 2 participants were given loans and grant support to buy these types of assets. Ownership of poultry (chicken) and livestock (cow/goat) significantly increased among both groups. Further results show that the programme increased per capita monthly income by 28.91% and 27.11% among Group 1 and Group 2 participants, respectively.

For both groups, the intervention has had positive effects on savings around two years after the programme implementation. Estimated effects on consumption expenditure (food and non-food) are also positive and statistically significant for both groups of participants. There is consequently a remarkable improvement in the food security situation among the participants. The programme significantly raised the likelihood of Group 1 and Group 2 households having a regular, nutritious diet and a surplus of food.

The programme also contributed significantly to women empowerment in both participant groups, since the main female members of the selected households were the recipients of the intervention. The intervention raised the households' productive assets (livestock and poultry) through the ownership of the women supported by the programme, economically empowering those women. A significant improvement in mobility was also noticed among them.

Lastly, a cost-benefit analysis of the programme demonstrated an average benefit-cost ratio (BCR) of 2.72 for Group 1, indicating that the investment of BDT 1 yielded BDT 2.72 for the participants in this group. The BCR for Group 2 was 2.76, indicating no significant difference between the credit plus partial grant-based model and the full grant-based package used.

At a broader level, the findings indicate that the UPG programme is effective for the ultra-poor households in the context where the opportunity of wage employment is scarce due to shocks such as a large influx of individuals to an already economically vulnerable area. Therefore, this study contributes to the existing set of literature on the UPG programme by documenting the programme's effectiveness in the context of certain types of shocks. However, given the timeline of this study, it is not possible to conclude on the sustainability of impact, which will require following up on the study after a longer period of time.

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Annex

Table A1. Sample distributions by union

Upazila	Union	Finally selected Group 1 HHs to be sampled	Finally selected Group 2 HHs to be sampled	Non-participant HHs to be sampled (those households that are primarily selected but excluded during final selection)[20]
(1)	(2)	(3)	(4)	(5)
Ukhiya	Rajapalong	100	100	200
	Palongkhali	60	60	120
Teknaf	Whykong	95	95	190
	Hnila	60	60	120
	Baharchara	85	85	170
Total		400	400	800

Table A2. Baseline characteristics of surveyed households

Indicator	Group 1	Group 2	Non-participants	Difference (Group 1 vs Non-participants)	Difference (Group 2 vs Non-participants)
	(1)	(2)	(3)	(4=1-3)	(5=2-3)
Respondent's age (years)	38.61	30.77	35.75	2.86***	-4.99***
Respondent's marital status-divorced/widowed/separated (%)	59.63	2.65	22.20	37.44***	-19.55***
HH having outstanding loans from any sources (%)	18.37	24.83	29.53	-11.15***	-4.69*
HH having savings (%)	10.24	16.23	18.75	-8.50***	-2.52
Land ownership (decimal)	2.00	2.44	3.17	-1.17	-0.73
Livestock ownership (%)	5.12	3.97	14.12	-10.14***	-10.31***
Poultry ownership (%)	33.43	39.74	33.08	0.35	6.65*
Per capita monthly income (BDT, at 2018 constant prices)	1125.52	1325.50	1506.63	-381.10***	-181.13***
Per capita monthly food expenditure (BDT, at 2018 constant prices)	972.49	976.94	1075.07	-102.58***	-98.13***
Per capita monthly non-food expenditure (BDT, at 2018 constant prices)	511.38	503.24	573.88	-62.49**	-70.64***
HH could afford at least two meals a day (%)	69.88	86.75	84.70	-14.82***	2.06

[20] For each Union, non-participant group sample is equal to participant group sample (Group 1 + Group 2).

Indicator	Group 1	Group 2	Non-participants	Difference (Group 1 vs Non-participants)	Difference (Group 2 vs Non-participants)
HH could afford fish/meat/eggs in at least 2 out of last 3 days (%)	47.89	59.60	61.64	-13.75***	-2.04
Received support from government (% of HH)	32.83	27.81	26.19	6.64**	1.63
Received support from non-government organization (% of HH)	15.66	17.88	14.12	1.54	3.76
Number of observations	332	302	928		

Note: ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Table A3. Other characteristics of surveyed households during baseline and follow-up

Indicator	Group 1		Group 2		Non-participant	
	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Cow (no. owned by HH)	0.02	1.12	0.02	1.03	0.20	0.24
Goat/pig (no. owned by HH)	0.06	1.27	0.03	1.01	0.09	0.25
Chicken/pigeon (no. owned by HH)	1.55	11.73	1.68	13.78	1.70	4.52
Total land (decimal)	2.00	4.90	2.44	5.12	3.17	4.66
HH with at least one sick member (%)	59.04	73.49	71.19	73.18	60.24	74.03
HH practices open defecation (%)	7.23	0.30	2.65	0.33	3.66	3.34
Number of observations	332	332	302	302	928	928